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The Printing Press as Metaphor

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Abstract

These days, we are constantly looking for an image of ourselves in the historical past. “The first ever information revolution,” begins a typical book jacket blurb, “began with the advent of the printed book, enabling Renaissance scholars to formulate new ways of organizing and disseminating knowledge” [Sawday and Rhodes 2000]. A communications scholar offers a view of our place in history that has echoes in countless other publications and presentations: “At present we are witnessing an information revolution whose significance parallels and perhaps even surpasses that of the information revolution caused by the printing press in the fifteenth century” [Jucker 2003, 129]. Publishers, both academic and trade, have created a new genre of book titles that confidently find the digital sizzle in the analog past: *The Renaissance Computer* (on printed books), *The Victorian Internet* (on the telegraph), *Social Media: The First 2,000 Years* (on letters, pamphlets, and graffiti). Scholars give talks with titles like “Books as Social Media” (Leah Price), “Blogging Now and Then (250 Years Ago)” (Robert Darnton), and “What’s in a Visitor’s Book? Social Media and Volcanic Tourism in the Nineteenth Century” (John Brewer).

Surrounded as we are by these analogies — by these claims in favor of specific ways of construing the relationship between the past and the present, and by the significance claims that go with them — it seems fair to ask what purposes they serve. There is no doubt that we feel ourselves to be in the midst of a period of dramatic change in our media and information environments. My interest in this essay lies not in these environments themselves, but rather in our popular uses of historical metaphor to explain them. Why, in particular, do we turn to the rise of the printing press, out of all the options available, as our standard analogy for the rise of the internet? What value does this metaphor hold for us, what does it enable and what does it constrain, and what value does metaphoric thinking in general hold for analysis in media studies? It is as common for us today to use the printing press as a unit of measure in estimations of information history as it is for us to discuss our current circumstances in terms of an *information revolution.* But how historically accurate are these kinds of description? What do they mean for the ways in which we as futurists make use of history — and what do they mean for the ways in which we as historians take the long view?

Introduction

These days, we are constantly looking for an image of ourselves in the historical past. “The first ever information revolution,” begins a typical book jacket blurb, “began with the advent of the printed book, enabling Renaissance scholars to formulate new ways of organizing and disseminating knowledge” [Sawday and Rhodes 2000]. A communications scholar offers a view of our place in history that has echoes in countless other publications and presentations: “At present we are witnessing an information revolution whose significance parallels and perhaps even surpasses that of the information revolution caused by the printing press in the fifteenth century” [Jucker 2003]. Publishers, both academic and trade, have created a new genre of book titles that confidently find the digital sizzle in the analog past: *The Renaissance Computer* (on printed books), *The Victorian Internet* (on the telegraph), *Social Media: The First 2,000 Years* (on letters, pamphlets, and graffiti). Scholars give talks with titles like “Books as Social Media” (Leah Price), “Blogging Now and Then (250 Years Ago)” (Robert Darnton), and “What’s in a Visitor’s Book? Social Media and Volcanic Tourism in the Nineteenth Century” (John Brewer).

There is no doubt that we feel ourselves to be in the midst of a period of dramatic change in our media and information environments. My interest in this essay, however, lies not in these environments themselves, but rather in our popular uses of historical metaphor to explain them. Specifically, my interest lies in the practical and theoretical functions that historical metaphor serves in the intellectual marketplace. It is as common today for us to use the printing press as the central unit of measure in estimations of information history as it is for us to discuss our current circumstances in terms of an *information revolution.* Surrounded as we are by these analogies — by these claims in favor of specific ways of construing the relationship between the past and the present, and by the significance claims that go with them — it seems fair to ask what purposes they serve. Situating an examination of this rhetoric within a larger discussion of the market forces that affect rhetorical practice, I seek to delimit a context for the emergence of a distinctive set of contemporary tropes. What do these kinds of historical analogy mean for the ways in which we make use of history, and what do they mean for the ways in which we as historians take the long view? Why, in particular, do we turn to the rise of the printing press as our standard analogy for the rise of the internet? What meanings does this metaphor constrain, what values does it offer to overwhelm those constraints, and what value does metaphoric thinking in general hold for analysis in media studies? 2

As I will show, this rhetoric offers a powerful reminder of the extent to which technological discourse — inside as well as outside the academy — is obliged to respond to market imperatives. The tropes that join Zuckerberg with Gutenberg sell; thus they feature in the titles, cover blurbs, journalistic ledes, and other peripheral elements of texts that do not advance the arguments they imply. Objections to the revolutionary myths of technological history — for example, that digital practice has failed to supplant the paper world or that computers possess no single or unified history — risk retreating from figure to ground when these elements are in play. Indeed, this set of tropes participates in a longer history of technological rhetoric that utilizes slippery language to shape the story of technological change in a form with popular appeal, a rhetoric that, as Leo Marx has noted, includes our uses of the word *technology* itself. 3

Everything New Is Old Again

The analogy that joins “our time” with that of Johann Gutenberg precedes the internet age, reaching back at least to the works of Marshall McLuhan in the 1960s and 1970s (especially his 1962 blockbuster, *The Gutenberg Galaxy*) and Walter Ong in the 1980s. McLuhan and Ong heralded an electronic age that seemed poised to return society, albeit somewhat differently configured, to the forms of orality that predated the era of print. For them, a medium was not only a vehicle of expression, but an almost inevitable logic that could shape entire social constellations and forms of being. For example, while the logics that govern print culture include fixity, systematization, and multiplicity, oral culture — both in its “primary” (pre-print) and “secondary” (post-print) configurations — operates by logics of fluidity, instability, and collective composition [Kernan 1987, 54]. 4

In 2007, the Danish scholar Lars Ole Sauerberg gave new life to this view of media history by introducing the concept of a *Gutenberg Parenthesis,* a historical model that Thomas Pettitt has done much to popularize [Pettit 2007] This model frames the *culture of print* that came in the wake of the printing press as a temporary interlude rather than a permanent structural change: “a mere parenthesis between the oral world of almost all of history prior to the invention of the printing press and the secondary orality that we are experiencing as from the invention of the Internet” [Cordon-Garcia et al., 2013]. The Gutenberg Parenthesis model seeks to unseat print culture from the throne of modernity and progress, suggesting instead that print culture, despite its apparent triumph over history, is in fact a temporary anomaly, with the prevailing order of human communication remaining on the side of speech and immediacy [Ong 2005, 207]. 5

For scholars working within a modern liberal framework, the appeal of this model is multidimensional. For one, the figure of the Gutenberg Parenthesis represents an effort to make media history less triumphalist. From the perspective of cultural pluralism, a valuable function of this historical model is that it presents the historical development of technology as an uneven pattern of recursion, restoration, and repetition, and thus allows the subject of literacy and orality to be pursued in the era of the internet without reducing it to an argument about the civilized and the non-civilized. The printing press stands as the pivotal point that represents the beginning of the Gutenberg Parenthesis, just as the computer stands as the pivotal point that represents its end. 6

A second function of the model is to naturalize and effectively modernize the art of pre-modern eras, whether to make new authority claims as readers of old literature or to claim for ourselves, living in a time of tweets, viral videos, and other seemingly cheap and forgettable media forms, the power, grandeur, and rootedness of Shakespeare. Pettitt portrays the Gutenberg Parenthesis as a framework with which we can connect "postmodern ideologies regarding artistic originality and appropriation" with the ideologies that governed Elizabethan aesthetic culture. By these lights, only the *recent* past is a foreign country; Shakespeare is revealed to have been a sophisticated practitioner of remix culture and a connoisseur of the database.[1] Thus a better understanding of our own culture prepares us to understand the attitudes and mores of the more distant past [Pettit 2007, 2]. Louise George Clubb, a proponent of this view, writes:

> In the context of this occasion and the cultural climate it breathes, the playmaking system of the Renaissance assumes a modernity — more precisely, a postmodernity — through the similarity of the modes of creative production before and after the parenthesis. Recognizing a *Gutenberg Parenthesis* makes it easier to recognize a theater technology that overlapped with the print culture of the era Marshall McLuhan called the *Gutenberg Galaxy,* which fifty years ago was not yet established in the critical vocabulary as a perception of a major paradigm shift, much less of a passing phase. Shakespeare straddled the threshold, entering the parenthesis simultaneously with the actors of the commedia, whose literary progenitors were already in it, at least insofar as their plays were written in the hope of printing… unstable cobbled pre-parenthetical theater that were excised when the texts were editorially stabilized for the press. [Clubb 2010, 17]

Finally, the figure of the Gutenberg Parenthesis provides a model that allows scholars to theorize about media history in terms of stasis and disruption. For example, Jill Walker Rettberg, in an article that refers back to Pettitt, claims that a look backward from the rise of print and print literacy can show us the same primordial soup that produced digital social media. We should celebrate, she says, that we have left the stiff and formal interim "dominated by print and its attendant norms such as the idea that you can have an autonomous, fixed text, or the idea that a text or cultural object is originally composed once, and thereafter passively reproduced by readers, musicians or performers" [Rettberg 2007, 8]. Recently, Pettitt has even proposed the historical existence of a *Privacy Parenthesis*: "a great pause between the semipublic life of the villager and the semipublic life of the netizen, during which culturally contingent values such as privacy and exclusivity came to seem like natural social rights" [Pettit].

However, it is revealing that nearly all of these efforts to find the future in the past focus far less on understanding the past than on understanding the future. The use of popular terms like *social media* when discussing 18th- and 19th-century visitors' albums and commonplace books promises that we can identify the seeds of the future in the present by discovering our doppelgängers on the other side of a brief swerve in history. In both academic literature and the trade press, it has been a popular argument in recent years that the apparent endings we are witnessing in our own time — the end of privacy, the end of mass media, the end of the book — represent simply a return to the past, to a historical norm of greater stability and longer duration. The end of the printed book means the close of a Gutenberg parenthesis between manuscript networks and e-mail networks; the end of privacy is the close of a privacy parenthesis between the intrusiveness of the village well and the casual intrusiveness of Facebook stalking; the end of mass media is simply the end of a brief interlude in the nineteenth and twentieth centuries, supported by the economics of advanced industrial society, in which gathering and disseminating high-quality news was an easier and cheaper task for huge enterprises than for lay citizens [Pettit]. Yet past and present have never joined up quite so easily. This approach to modeling history, although there is something admirable in its presentation of an alternative to the literature of elegy and nostalgia that has accompanied the "rise" of the digital age, itself succumbs to a false nostalgia, and a false parallelism, in the suggestion that a return to the past can heal a division that would otherwise be a wound. Any return to ways of being that can be identified as "past" must be a return with a substantial difference. Surely a lack of privacy in the village or the clan, when intimacy was intimacy with several hundred people, was a significantly different experience from a lack of privacy in a networked world of 7.4 billion people.

Technology and Teleology

Sauerberg, Pettitt et al. do not hide the fact that their claims rely on associating specific periods of media technology

with an intrinsic logic and trajectory. Part of my argument is that this association often implicitly attends more casual uses of the printing press metaphor, even when it is not explicitly stated. For this reason, I would like to pause briefly to discuss the recent history of this idea in media studies. Historians now tend to shy from the idea that technology is an entity capable of acting under an autonomous and self-derived logic.[2] Raymond Williams, Adrian Johns, Michael Warner, and others have presented alternatives to views of media change in terms of internal logic or seismic rupture. These scholars argue that media change is gradual, iterative, and occurs in reciprocal exchange with change in other aspects of society.

12 Williams most famously articulates this view in his 1975 book, *Television: Technology as a Cultural Form*, which argues that in the early years of any new medium — television included — that medium can move in any number of directions; in time, it settles down in a single direction, which then comes to seem natural and inevitable. Early witnesses of the rise of television failed to perceive many of the directions it might have taken, including a superior visual picture, in part because its definition as a *mass communication* medium obscured them. In the meanwhile, users of domestic television sets settled for an inferior standard of visual quality because of the social system that surrounded television broadcasting. Williams writes, "[T]here were, in the abstract, several different ways in which television as a technical means might have been developed... After a generation of universal domestic television it is not easy to realize this. But it remains true that, after a great deal of intensive research and development, the domestic television set is in a number of ways an inefficient medium of visual broadcasting" [Williams 1977, 28]. Or, to borrow a phrase from evolutionary biology: not all traits are adaptations.

13 Johns turns a perspective informed, in part, by Williams to an analysis of the medium of print during its initial spread through European culture. Against the more deterministic claims of McLuhan, Eisenstein, and Kernan, among others — that the print medium enforced on the world of letters new logics of fixity, systematization, and the organization of information, in the process setting in motion the social and intellectual revolutions of the early modern period — he shows that it was necessary for human agents in the world of letters to enforce those qualities on printed texts [Johns 2009]. The emergence of *stable, reliable* editions of printed texts represented not fulfillments of an inherent print *logic,* but rather the struggle of various literary and scientific communities to tame the messy and unstable world of print. Warner, meanwhile, works from the position that terms such as *new* media and *obsolete* technology act rather in the way the misleading term *mass communication* did (if Williams is right) in the early years of television, obscuring a more plural and pregnant reality. For Warner, this includes the reality that differing media systems always coexist, few ever becoming in a real sense obsolete, and all of them constantly renewing themselves in response to one another [Warner 1990].

14 But the *uses* of tropes are a different matter from their accuracy. In practice, the uses of these analogies draw upon their ability to tacitly present technology as an autonomous force that operates according to its own logic and in dramatic leaps. That media change occurs in seismic shifts, or that it occurs due to the autonomous "logic" of new technologies, are not widely held ideas in media studies, but nonetheless they form the core of some of the most widely used *narratives* in media studies. In this view, the printing press is a ubiquitous analogy for the computer in part because it readily summons narratives of seismic innovation. Even the language of "obsolete" technology and "new" media reaffirms these buried metaphors on a smaller scale. As I will discuss, the popularity of these metaphors may best be attributed to marketplace pressures in Silicon Valley and the academic marketplace of ideas. While we normally imagine debate in terms of challengers vying for dominance in the marketplace, there are times when the presence of a marketplace itself acts as a dominating force, and this is true, albeit in different ways, in industry and the university alike.

15 This pattern places the printing press metaphor in a lineage of technological rhetoric that includes the terms information and even *technology* itself. The philosopher Leo Marx has argued that over the course of the twentieth century, the term "technology" became a misleading and philosophically "hazardous" concept, used largely as a placeholder to fill a void between the artifacts we create and the kinds of social change we want to discuss. As I discuss below, the role — one of the roles — that the printing press metaphor serves in the discourse of technological change resembles the role that Marx has identified for the concept of *technology*. The effort to find the key term or analogy to label our own time belongs to a predictive impulse: an assumption, often buried but still forceful, that technological culture develops according to an autonomous force and essence, and that by identifying this essence we can gain a privileged vantage

point onto the future.

16 In our general uses of it, the printing press as a symbol of technological change likewise tends to imply that historical change is revolutionary and progressive. Marx connects projections of this kind with the uses we make of the term *technology.* The term is particularly dangerous, Marx says, when we use it in ways that attribute to *technology* autonomy and agency, as in "Technology is changing the way we live" [Marx 1997, 968–97]. The word in its current sense is in fact a recent coinage. Up through the late nineteenth century, "the word *technology* primarily referred to a kind of book; except for a few lexical pioneers, it was not until the turn of this century that sophisticated writers like Thorstein Veblen began to use the word to mean the mechanic arts collectively. But that sense of the word did not gain wide currency until after World War I" [Marx 1997, 24–25]. [3]

17 Rather in the way that, according to Williams, the pressures of technological innovation respond to prevailing ideologies and new social needs, the word *technology* rose to dominance in our discourse by adapting to the needs of the moment. It better served an emerging system of belief about history and progress than prior terms for the same general concept, such as *the mechanic arts, the practical arts*, and *the industrial arts*. This system of belief included, first, the joining of an earlier Enlightenment belief in historical progress (i.e. a view of history as a force moving toward more advanced and enlightened stages of civilization) with a newer belief that scientific and mechanical innovation were responsible for, indeed constituted, this movement. The Enlightenment conception of history, as Kant articulated it, assumed, first, that history has a forward impulse and a destination, and second, that this destination consists of political progress, which improvements in the mechanical arts might help (but only help) to bring about. In the early nineteenth century, people began to speak as though improvements in the mechanic arts were themselves the goal toward which history moves, and thus constitute what people continued to call "progress". This conceptual shift entailed a new treatment of history as the story of man's intellectual conquest of nature. Together, Marx argues, these ideological changes "created a semantic void, that is, a set of social circumstances for which no adequate concept was yet available — a void that the new concept, *technology*, eventually would fill" [Marx 2000, 25–8].

18 A factor that sharpened the urgency of this "conceptual void" was the specific form that the most visible improvements in the mechanic arts took during the Industrial Revolution. The railway, the electric telegraph, and other defining features of industrial life entailed massive and rhizomic social, bureaucratic, and mechanical systems, difficult to separate and each a complex entity in its own right. The railway alone required, besides the engine itself:

> (1) various kinds of ancillary equipment (rolling stock, stations, yards, bridges, tunnels, viaducts, signal systems, and a huge network of tracks); (2) a corporate business organization with a large capital investment; (3) specialized forms of technical knowledge (railroad engineering, telegraphy); (4) a specially trained work force with unique railroading skills, including civil and locomotive engineers, firemen, telegraphers, brakemen, conductors — a work force large and resourceful enough to keep the system going day and night, in all kinds of weather, 365 days a year; and (5) various facilitating institutional charges, such as laws establishing standardized track gauges and a national system of standardized time zones. [Marx 2000, 30–31]

19 The shrinking (in systems like the railway) of the *pivotal artifactual component* in relation to the whole sharpened the need for a term that could refer to a complex system while seeming to refer to a specific instrument. Further, in keeping with the conceptual shift toward a sense that industrial change is a goal in its own right, this semantic need entailed a meaning that would encompass not only an instrument in the service of progress, but also the fact of progress itself [Marx 2000, 36]. The term *technology* emerged to fill that need. Thus we can say today that automotive technology (for example) permeates the world in the form of cars, trucks, roads and highway infrastructure, the shipping and delivery industries, industries for materials such as steel and glass, through to the abstract benefits of living in an automotive society. Computer technology is likewise omnipresent, from tablets, phones, and PCs through to children's toys, washing machines, sewage systems, power plants, and, of course, automotive technology [Marx 2000, 38]. The value of the term *technology* lies in its very ambiguity. As Marx writes elsewhere in reference to the concept of *the machine*: "The whole issue becomes irrelevant once we recognize that we are dealing with a metaphor, and that its immense appeal rests, not on its capacity to describe the actual character of industrialization, but rather on its vivid

suggestiveness. It evokes the uniqueness of a new way of life, as experienced, and, most important, it is a vivid expression of the affinity between technology and the great political revolution of modern times." [Marx 2000, 187n]

20 Like the railway engine — or the computer chip — the printing press is a small material artifact that readily elides into a much larger social, organizational, and mechanical system, the scope of which is vast and indeterminate. The view of the effects of the printing press that Walter Ong promoted (that the transition from *oral culture* to *literate culture,* along with the changes this implies in terms of education, cultural production, trade, and so forth, was immediate and thoroughgoing) and the opposing position that eventually succeeded him (that these changes were slow and gradual) both participate in the post-industrial rhetoric that elides a single artifact with an unknowably large system. In short, the metaphor of the printing press serves in our discourse much the same role that Marx has identified for the concept of *technology.* The trope is useful precisely because our understanding of its boundaries is so nebulous that we can apply the trope without having to commit to any specific point of reference.

21 Indeed, building on Marx's lead, Paul Duguid has recently argued that *information* is a term that takes on a problematic anachronism when we use it in reference to periods before the quite recent past. In a lecture at Harvard in 2014, he stressed the changes in meaning that the term has undergone throughout the history of its usage. Until the mid-nineteenth century, the word *information* was a transferred use of the verb *to inform*, rather in the way that *delineation* is a transferred use of the verb *to delineate*. For much of the twentieth century, the term vacillated between vague meanings in popular usage and quite different specific meanings in specialist terminology. [4] Duguid argues that we have come more recently to use the word *information* as a placeholder, a catchall term for phenomena we do not know how to identify or describe [Duguid 2014].

22 In short, when we use the printing press as a metaphor for changes in our information culture, we succumb to anachronism twice. First, this metaphorical use relies on a now-belated concept, dating to the aftermath of the Industrial Revolution, of a single artifact that can represent a wider matrix of political, social, cultural, and institutional effects while diffusing specific claims about what those effects might be. Our understanding of the effects of the printing press is so multifarious that we can, and generally do, apply the figure as a placeholder for the unknown. By comparing changes in our information culture to changes that the printing press "created" in an earlier information culture, we open our claim to include a wide range of possible meanings, but in the process we drain the comparison of specific value. Second, and more importantly, by unreflectively using the printing press as a metaphor for changes in an information culture, we elide long-term shifts in ideology and material practice that may represent the most important forms of difference among various media systems.

Public Stories and Private Strategies

23 Another context that illuminates the marketplace value of the printing press metaphor is that of Silicon Valley. The distinctive incentive structures of Silicon Valley — start-up culture, venture capital financing, payment in stock options, IPOs — are geared toward the rhetoric of revolutionary change. For a company seeking investors to claim that the near future will be radically changed from the present, and that this change will be predicated on the autonomous force of changing technologies, implies that the future is manageable and claims ownership of that terrain. It recommends investors to the company and consumers to its products. To claim that technological change is gradual, iterative, unpredictable, and never fully complete, and that the future of technology will depend at least as much on social and cultural factors as on machinery viewed in isolation, would obviously be a weaker sell [Hyde 2003]. [5]

24 Yet industry practice can differ dramatically from the public narratives that technology companies present. The books on business strategy and innovation that have enjoyed the most success and influence within the technology sector often present, by contrast with public narratives of revolution and upheaval, a granular and iterative narrative of technological change. For example, Clayton Christensen's theory of disruptive innovation, most famously articulated in a best-selling 1997 book, *The Innovator's Dilemma*, proposes that technological change in the marketplace often occurs as lower-cost, lower-quality technologies gradually eat up the market share of higher-quality technologies [Christensen 1997]. Not only is Christensen's book (and his follow-up books on the same subject) an enduring best-seller in industry, but also corporations such as Apple implement business strategies that put into practice the view of technological change

he advocates; for example, creating smaller, semi-independent companies that are meant to gradually “disrupt” Apple’s current products, at which point they will be absorbed back into the Apple mothership [McFarquhar 2012].

25 In a 2003 article in the *Harvard Business Review*, Nicholas Carr directed attention toward the relationship between the incentive structures of the digital economy and the ways in which commentators embedded in those structures frame and direct historical comparison. These comparisons, he argues, tend to emphasize moments of revolutionary change, a structure that coheres with the hype-driven framework of venture capital financing: “Many commentators have drawn parallels between the expansion of IT, particularly the Internet, and the rollouts of earlier technologies. Most of the comparisons, though, have focused on either the investment pattern associated with the technologies — the boom-to-bust cycle — or the technologies’ roles in reshaping the operations of entire industries or even economies. Little has been said about the way the technologies influence, or fail to influence, competition at the firm level” [Carr 2003].

26 At stake in this form of historical comparison is an understanding of the actual role of computers in the contemporary business world, a role that Carr describes as distinctly non-revolutionary. Carr argues that once a new technology moves past the relatively short phase of being a *proprietary* technology — the phase during which only one or a few companies can benefit from the use of that technology — it becomes an *infrastructural*technology, which everyone uses and which therefore confers no comparative advantage. Technology firms that rely on venture-capital funding and the sale of stock options therefore have a substantial incentive to behave as though they are perpetually in the proprietary cycle. Their rhetoric reflects this fact. But such rhetoric is highly misleading, he argues; most computing technologies become infrastructural technologies in a relatively short time [Carr 2003].

27 Another context is commercial publishing, the world’s most ferocious attention economy. Incentive structures in publishing, too, promote the production of rhetoric that frames computing technology in terms of revolutionary change. In the trade press, which is, after all, self-consciously a consumer market, this relationship is less troubled; books on technology abound whose titles include the word *revolution* or suggest its tenor. Examples include *The Soft Edge: A Natural History and Future of the Information Revolution*, *Groundswell: Winning in a World Transformed by Social Technologies*, and *Smarter than Us: The Rise of Machine Intelligence* [Levinson 1997], [Li and Bernhoff 2011], [Armstrong 2014]. Academic publishing, too, seems to manifest a perception that the market rewards depictions of media change as revolutionary and technology-driven, although this perception is in tension with prevailing academic theories of media change. Consider, for example, the stream of recent books on computing whose titles turn on the famous name of Gutenberg, such as: *From Gutenberg to the Global Information Infrastructure* (2000), *From Gutenberg to Google* (2006), and *From Gutenberg to Zuckerberg* (2011) [Borgman 2000], [Shillingsburg 2006], [Naughton 2011]. Some of these books argue that Gutenberg effectively restarted the calendar, initiating an epoch governed by a distinctive logic. Others do not, but for the sake of the market they still take advantage of the famous name.

28 That this phenomenon is most pronounced in the aspects of published works that are directly associated with the marketplace, such as titles, blurbs, and other framing devices, shows that these pressures affect the tactics even of authors who reject a seismic view of technological change. For example, in a widely praised media studies book of recent years, Asa Briggs and Peter Burke, *Social History of the Media: From Gutenberg to the Internet* (2010), the authors take care to emphasize that the social history of media does not actually begin with Gutenberg, and that media change is a diffuse and nonlinear process:

> This book concentrates on the modern west, from the late fifteenth century onwards. The narrative begins with printing (c. AD 1450) rather than with the alphabet (c. 2000 BC), with writing (c. 5000 BC), or with speech, but despite the importance often attributed to Johann Gutenberg (c. 1400-68), whom readers of one British newspaper voted “man of the millennium” (Sunday Times, 28 November 1999), there is no clean break or zero point at which the story begins, and it will sometimes be necessary to refer briefly back to the ancient and medieval worlds. [Briggs and Burke 2010, 5]

29 Yet the most visible parts of the book telescope our attention to those zero points of the press and the internet: not only the title, but also the image on the cover, which places together, in a pas-de-deux, the letter “i” (a common symbol of

internet culture) and a printing press. This sort of motif is common. The cover illustration of *From Gutenberg to Zuckerberg* is a printing press that is visibly emitting a wi-fi signal.

30 Trade books, which sell solutions as much as they do analysis, may have a special incentive to claim that changes in media technologies create changes in human consciousness. Nicholas Carr's bestseller *The Shallows* (2010) opens with the claim that "For the last five centuries, ever since Gutenberg's printing press made book reading a popular pursuit, the linear, literary mind has been at the center of art, science, and society" [Carr 2010]. But although critics such as Briggs and Burke have moved away from models like Carr's, which echoes McLuhan and Ong in its longing look back at a vanishing or vanished mentality, the framing elements in their works often tacitly endorse these models. In this sense, the marketplace exerts a strong enough force that scholars can find themselves making implicit claims in favor of views of media culture and media change that they question or even explicitly oppose. These claims serve functions that are valuable enough in the attention economy of ideas that we may find ourselves deploying them, however unwillingly, against our own arguments.

31 Indeed, framing the computer narrowly as a communications instrument makes it more available to academic discourse considered as a marketplace. It is reasonable to acknowledge that communication has played a large role in the history of computing; digital computers rely on symbol processing, for example, and the most high-profile operations of modern computers involve communication.[6] Yet it is also reasonable to acknowledge that the history of computers includes many genealogies besides the one that runs through the history of communication.[7] From the perspective of humanities discourse, the most obvious benefit of framing the computer as a communications instrument *to the exclusion of all else* is that it translates all that computers produce into communication. If everything is discourse, then everything can be analyzed discursively. In critical discourse, the printing press metaphor enables us to evoke a sense of forward movement and developmental logic that enhances the significance and narrative coherence of the histories we tell. We can also see elements of such an agenda in the buried metaphors that pervade narratives of media and literary history, such as the *rise* of print and the *rise* of the book. In short, although neither the academy nor Silicon Valley think of the computer as only a communications instrument, both recognize benefits in linking computers to a communications-based genealogy. Even when they acknowledge the diversity of the forms and functions of computing technology, media theorists often find themselves obliged to narrow those functions for the sake of a narrative they can claim as their own.

32 A famous and effective theorist of this form of self-contradiction is Pierre Bourdieu. I invoke him in this essay simply to indicate that the problem is not new, even if it is distinctively of our own time. He describes its operations in several places, but especially in the essay *"Flaubert and the French Literary Field,* where he classifies cultural producers and intellectuals under the description *dominated dominants* [Bourdieu 1993b, 145–211]. As producers of ideology, these figures hold positions of dominance within a culture's general field of power; but they are themselves dominated by the need for their ideas to succeed within a marketplace, and in that sense they resemble, if perhaps are not one with, the dominated [Bourdieu 1993a, 172]. Bourdieu writes of the conditions that produce these figures:

> [T]he literary and artistic field is contained within the field of power, while possessing a relative autonomy with respect to it, especially as regards its economic and political principles of hierarchization. It occupies a *dominated position* (at the negative pole) in this field, which is itself situated at the dominant pole of the field of class relations. It is thus the site of a double hierarchy: the *heteronomous* principle of hierarchization, which would reign unchallenged if, losing all autonomy, the literary and artistic field were to disappear as such (so that writers and artists became subject to the ordinary laws prevailing in the field of power, and more generally in the economic field), is *success*, as measured by indices such as book sales, number of theatrical performances, etc., or honors, appointments, etc. [Bourdieu 1993a, 37–38]

33 In Bourdieu's analysis, in a capitalist society, those who hold economic capital enjoy positions of dominance in the field of power, while those who hold cultural capital find themselves in an ambiguous position of gilded subordination: they help to articulate the values and ideas of their time, and they often find themselves under pressure to legitimate existing power structures, but they can also criticize those structures and disseminate subversive views. The scholars and critics

who discuss technology in the marketplace of ideas, as well as the tech companies that seek to stand out in the crowded attention economy of Silicon Valley, represent distinctively twenty-first century versions of this concept. While in theory and indeed in practice they subscribe to the idea that technological change is gradual and iterative, they regularly invoke the spirit of revolutionary technology because it attracts attention and creates valuable claims for the authority and significance of their work. Although they hold a dominant position in the culture, they are dominated by the marketplace, which is the true form of power.

34 By way of a coda, I would like to draw attention to some of the implications of this line of discussion for our understanding of the literary ecosystem surrounding the young discipline of the digital humanities. Proponents of this discipline, such as Lev Manovich, have occasionally drawn criticism for making excessively revolutionary claims about the applications of computing technology in humanistic studies. Such criticism ignores the fact that this kind of rhetoric is consciously designed to operate within an attention economy that rewards revolutionary claims about technology; that it represents, in part, the most practical of objectives: to obtain support and set provisional boundaries for the discipline. As a consequence, critics cannot properly engage with the claims that it marshals unless they take these objectives into account. We should be able to acknowledge that this kind of rhetoric is, to a certain degree, strategizing, given that we are implicated in this kind of strategizing ourselves. Otherwise we all risk talking past one another. In other words, what is at stake in the effort to properly classify the role of revolutionary rhetoric in digital humanities literature is the ability for the discipline's proponents and critics to meet on a common ground of understanding — which in this case requires us to acknowledge openly the normally implicit and unacknowledged fact that academic discourse is shaped by its presence in a marketplace.

35 Have digital technologies changed much of the surface character of our practice? Reasonable people can disagree. Robert Gordon makes the similarity of our online activities to our offline activities a key component of his proposed solution to the Solow computer paradox, which observes that the omnipresence of computers does not appear to have driven up productivity [Gordon 2004]. Yet even if digital practice to a large extent recapitulates what we were doing before, this is not a persuasive reason for us to ignore the fact that our practice is digital. In recent years, articles in publications ranging from *The Los Angeles Review of Books* to *The New York Times* have taken issue with the digital humanities as a discipline on the grounds that computers are less *revolutionary* than we pretend they are. Writing for the *New Republic*, Adam Kirsch asks why we cannot simply proceed as before with the new tools: "Was it necessary for a humanist in the past five hundred years to know how to set type and publish a book? Moreover, is it practical for a humanities curriculum that can already stretch for ten years or more, from freshman year to Ph.D., to be expanded to include programming skills?" [Kirsch 2014]. Of course, one objection to this kind of comment is simply that scholarship focused on digital practice represents a natural extension of previous critical approaches in the humanities. Since the 1980s, for example, Anglo-American textual scholarship has placed great emphasis on the fact that authors once worked within a literary system that entailed setting type and publishing books; naturally these scholars, and the scholars they train, would take interest in programming and markup. But Kirsch's question can be addressed. While we may be doing much of the same humanistic work online — curating exhibitions, creating films, staging performances, writing and publishing books, teaching courses — that does not mean that the work of humanism will go on unaffected by digital technologies.

36 Some percentage of undergraduates who choose to major in the humanities — I would guess a large percentage — do so in the hope of working in a humanities field later on, and further a humanities field outside the academy. Many think, "This is my kind of field. I think I'll go into publishing, editing, something in the book business, and become a person of letters." But the book business is not what it was even ten years ago. For example, these days, it is common to see internship and job openings at news organs, some of them old and staid, some of them as new as tomorrow's viral video — the *Harvard Business Review*, the *Boston Globe*, New York University's *GovLab*, Buzzfeed — that ask for students who know how to clean, scrape, and otherwise work with data. They sometimes make explicit that they will take someone who can work with data and teach them to write stories in preference to taking someone who knows how to write stories and teaching them to work with data. In a recent job announcement, Buzzfeed asked that candidates, "Have a track record of using data to find, tell, and reinforce powerful stories. Qualifying work isn't limited to journalism; it could include investigations within academia, law enforcement, business, government, and other non-newsroom

environments." In short, it seems increasingly clear that the future of letters, including the future of the roles that various agents play out in the world of letters, requires skill sets that belong to the digital world. If the promises that we make in humanities courses include, implicitly, that the students will eventually be able to work in humanities fields, then these promises should be fulfilled by a humanities education.

This is just one reason to study the traditional humanities alongside new technologies that has nothing to do with whether computers are revolutionary. Making our praise for the discipline hinge on claims of revolutionary change has its uses, as I have tried to show, but this practical utility may have lost its force, since it has begun to make us vulnerable to critics like Kirsch. We do not need to find the analogy that will enable us to perfectly identify the computer age; in the end, we are simply living in it. The printing press and its direct descendants might fade from use, but the humanities will not disappear until we have done with metaphor.

Notes

[1] See, for example, Peter Stallybrass, "Against Thinking," in *PMLA* 122 (2007), 1580-87.

[2] Of course, it remains a prevailing historical model for writers of popular nonfiction on technology and media.

[3] The OED records early uses of the term *technology* to refer to "a discourse or treatise on an art or arts." In 1615, for example, Sir George Buck's *Third University of England*, a "report of the sciences, arts, and faculties" in the city of London, speaks of "an apt close of this general Technologie." In 1706, *Phillip's New World of Words* defines *technology* as "a Description of Arts, especially the Mechanical." As late as 1860, the magazine *Vanity Fair*, waggishly proposing a new "Dictionary for Congressmen," was able to include *technologies* in the flood of dictionaries that characterized the age: "We have Classical Dictionaries, Dictionaries of Science, Dictionaries of Art, Rhyming Dictionaries, — by which those who are not born Poets may achieve Poetry, or, rather, have Poetry thrust upon them, — Cyclopædias and Technologies without Number." [Oxford English Dictionary]

[4] Claude Shannon, the father of information theory, separated *information* from *meaning*, a distinction that runs counter to common usage.

[5] On start-up culture, see also [Saxenian 1994], [Lee et al. 2000], [Smith and Alexander 1988], and [Hiltzik 1999].

[6] Bill Pascoe, email to the Humanist Mailing List, 27 May 2016. Bill Pascoe uses the phrase "symbol processing" in the email I cite for this sentence, in which he says: "When it boils down to it, a computer is a language tool. It's invention and core functionality is symbol processing, and its higher order functioning is also largely about communicating, representation, etc."

[7] See, for example, Michael Sean Mahoney, *Histories of Computing* (Cambridge: Harvard University Press, 2011).

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