Plain Text: The Poetics of Human–Computer Interaction (Book Proposal)

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Theme and Argument

Plain text is a file format and a frame of mind. As a file format, it contains nothing but a “pure sequence of character codes.” In technical terms, it stands in opposition to fancy text: “text representation consisting of plain text plus added information.”1 As a frame of mind, it indicates a preference for human-readable input and output, for computational tools that are simple and elegant, and for open systems that are transparent to the user. The book unfolds a history of and an argument for plain text. In making my case, I argue that “other information” routinely embedded in all forms of contemporary textuality includes much more than instructions for “font size” and “paragraph justification.” Increasingly, devices that mediate literary activity encode specific models of governance and control.

The central concern of the book is to dispel the illusion of verisimilitude between text on paper and text on the screen. The words may look the same, but the underlying material affordances of the medium differ in significant details. As an obvious example, consider a news report that changes slightly based on the reader’s location, or an e-book reader device that highlights popular passages. For a literary scholar, such instability of medium means analysis cannot be confined to reading for meaning alone. How will close reading persist, when the reading device reconfigures a text dynamically, to fit individual taste, mood, or politics? The formulation of this narrowly literary-theoretical concern leads to the broader question of empowered human–computer interaction. Building on the work of scholars like Jerome McGann, Wendy Hui Kyong Chun, Katherine Hayles, Matthew Kirschenbaum, Lori Emerson, Lisa Gitelman, and Johanna Drucker, I contend that textual legibility is becoming increasingly crucial to a critical understanding of what it means to remain human in a digital world.

Software developers, graphic designers, system administrators, and project man- agers routinely architect technologies that have deep cultural significance, af- fecting a range of cultural practices: from the ways we relate to our family and friends to the formation of shared cultural archives. Because such “cul- tural techniques” are formative of our culture, supposedly technical decisions like choosing a text editor, a filing system, or a social networking platform can- not be adequately addressed in shallow instrumental terms limited to efficacy, speed, or performance. A secondary aim of this volume is therefore to convince computer “users” to view their computational environments as a literary system of sorts. I mean a “literary system” differently to what one might conventionally mistake for a “binary” or “digital” one, however imprecise those terms are in everyday use. In clarifying usage, I ask those who may have considered them- selves mere “users” to become close readers, thinkers, and makers of technology, able to apply the same critical acuity to reading code and device as they do to the close reading of prose and poetry. Ultimately, the book makes a case

1The Unicode Consortium. The Unicode Standard: Worldwide Character Encoding, Ver- sion 1.0, Volume 1. Reading, Mass.: Addison-Wesley, 1990.

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for the recovery of textual roots already latent in the mechanisms of modern computing.

The book is structured along a trajectory that begins at the material foundations of modern textual technology, moving from the stratum of circuit and silicon to reach up, through layers of abstraction (files, folders, and operating systems), towards the reader. In following that path, I reconstruct the passage of an elec- tron from the mechanical action of the keyboard, to magnetic storage medium, and to liquid crystal, which, together, give rise to pixels, letters, words, books, and literature. In using this approach, my book introduces a method of textual microanalysis. Where distant reading perceives patterns across large-scale lit- erary corpora, microanalysis breaks textuality down to its minute constituent components. It is at this level that I find that readers and writers are in danger of becoming fundamentally alienated from the immediate material contexts of their knowledge production.

Annotated Table of Contents

Chapter 1: We Have Always Been Digital

This chapter introduces the book’s central themes and arguments, commencing some of the historical work necessary to the development of a shared critical vocabulary in use throughout. I argue that discourse around the digital human- ities needs a robust sense of the digital. Popular intuitions about the “look and feel” of digital aesthetics suggest that sometimes the adjective carries the connotation of “discrete,” while at other times, it is used to mean something more fluid and continuous, past the point of human perception. A discussion of Liquid Crystal Display technology (LCD) flows into a section that deals with digital representation from the perspective of analytic philosophy and through the aesthetics of Nelson Goodman. My summary of that tradition reveals that language and text are already in some sense “born digital,” that is “reproducible” and “differentiated” throughout. Furthermore, digitality depends on “reliable processes of copying and preservation”—attributes that can mean something different to a philosopher than to a librarian. From these insights I take it that

“being digital” is not an intrinsic ontological condition, but rather a structure imposed from without. Case studies from the history of telegraphy illustrate the concluding discussion on the nature of binary and plain text formats, in a distinction that supersedes the dichotomy between analog and digital media.

Chapter 2: Literature Down to the Pixel

In this chapter, I continue the historical narrative started in Chapter 1, along with presenting the methodological and theoretical underpinnings of the book. I think of it as the “laying the grounds” chapter. Having established the roots of digital textuality in the history of character encoding, I begin the work of

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moving from first-order concepts such as “text” and “code” up to second-order concepts such as “file,” “folder,” and “document.” The chapter starts by devel- oping a theory of “microanalysis,” the closest possible kind of reading that pays attention to the material contexts of knowledge production. I argue here that the concern with value in literary criticism detracts from the machinations of naked circuit control embedded into the contemporary text apparatus. Unlike scholars in the Foucauldian tradition (who often trace the machinations of power through discourse, on the level of representation), I concentrate my analysis on mechanisms of control at the material roots of literary practice. In constructing a media history through primary sources on the early development of Turing machines, I show the explicit admixture of content and code: one meant to communicate messages to humans and the other to program universal machines. I conclude by arguing that Turing machines were anticipated not by the Bab- bage calculator alone, but also through a series of advances in communications, word processing, and media storage. A notion of text (as opposed to number) is hence “baked into” the system.

Chapter 3: Laying Bare the Device

At the heart of the book and central to its argument, Chapter 3 begins by outlining a recent discussion on surface reading. I ask: What lies beneath the text, literally? The question leads to the common distinction between form and content. Here, I find that, going back to the Russian formalist reception of Hegelian aesthetics, “form” was at times used to indicate concrete shape and at times to indicate abstract universals, such as technique and formula. A case study in removable storage—like ticker tape and floppy disks—elucidates the movement of text: from human-legible inscription on the page and punch card to magnetic inscription invisible to the naked human eye. The case study unfolds the distinction between print, in which matter, form, and content lie flat, and screen, where the three layers occupy physically distinct strata of the Document Object Model, providing only the illusion of flattened textuality. The apparent immateriality of digital text brings promise of epistemological (social) and even phenomenological (personal) transformation. But it also has a major practical drawback. Inscription on magnetic tape cannot be assumed to correspond to the composite screen image. Forms of governance like Digital Rights Management can now be embedded deep within the structure of the “data object” itself and further hidden from view—precluding, and sometimes making illegal outright, the possibility of interpretation (of any sort). The discussion concludes with a stark image illustrating the contrast between screen surface and the underlying bit structure. To produce the image, I use reverse-engineering tools to inject malicious code into an Adobe Acrobat file (.pdf). The deformed text threatens to damage the literary device. A thick description of the literary device, now as gadget or instrument, brings legibility to the fore of reading ethics.

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Chapter 4: Recursive Encounters with Oneself

This chapter continues the movement from the device to the reader. It begins with a close reading of Beckett’s Krapp’s Last Tape. The title character makes yearly audio recordings of himself, only to revisit them and to enter into a sort of dialog with his own voice from the past. I posit this encounter with the archive as Krapp’s “media being” and suggest that such encounters are commonplace, through similar practices of depositing “snapshots” of one’s consciousness into files, bookshelves, and folders. Sartre’s idea of an “appointment with oneself” helps us see this external structure of files, folders, and library furniture as cognitive extension, in need of delicate pruning and arrangement. Documents, in this light, are shown to exist not as completed works, but as “vectors” that mutate and move through time and space. Pushing off the communication model offered by Claude Shannon, I ask: What is being externalized, communicated, and preserved? And answer: It is not simply a message, but the subject itself.

Chapter 5: Bad Links

If documents are vectors, where do they terminate? In this chapter I examine three answers, given at three distinct moments in recent literary history. First, I recall the discourse surrounding structuralist “intertextuality”—the idea that textual meaning is always created in relation to another text. Second, I review the promises and the failures of “hypertext,” an idea which gained prevalence in literary studies with the advent of the internet. Third, I reflect on the cur- rent moment, in which “network analysis,” a technique that seeks to visualize linkages between texts, is being held up by some as the next step in the evo- lution of textual studies. In all three of these methodological moments, I find a similar premise of emergence: the notion that order appears spontaneously as an aggregate result of simple interactions at the level of the system. I take the occasion of examining the hyperlinked essays of Gwern (a mysterious con- temporary “researcher, self-experimenter, and writer”) to further criticize what I call the “systems view” of literature, which elevates networks to the status of ethical and aesthetic actors.

Chapter 6: Engineering for Dissent

In this final chapter, I argue for the recovery and the preservation of plain textu- ality in the day-to-day practice of modern computing. Returning to the history of the .txt file format, I find that early documents from the International Telecommunication Union archive display unease with encrypted, non-human- readable formats of information exchange. A theoretical treatment of techno- logical skepticism (from Karl Marx and Martin Heidegger to Lewis Mumford) concludes with a discussion about a subject’s role in actively shaping material conditions of media being. As documents that reflect externalized states of

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consciousness aggregate in storage locations far removed from the subject, they become increasingly susceptible to centralized forces of surveillance and control. Plain text allows political subjects to decouple externalized mental states from mechanisms of governance. (In other words, to decide actively when to opt in and when to opt out.) This affordance is not, however, a deterministic property of literature, the internet, or any other information exchange system. Rather, the design of complex systems must itself become critical practice which, in complement to critical theory, can actively engineer for textual mechanisms that make individual dissent possible.

Tech Appendix (optional)

The book assumes no prior technical expertise. It can be read sequentially as a conventional piece of scholarship in literary/textual theory or new media stud- ies. But, because much of the book deals with conditions of textuality extant and recoverable from modern computing devices, I propose to heed the call of scholars like Jerome McGann and Wendy Chun for the advancement of theory through practice. To this end, I envision an optional appendix that can exist on paper or as a companion website, creating an “augmented reading environ- ment.” The appendix would follow each chapter (sequentially) with a series of experiments at the “command line,” a powerful text-based way of interacting with the computer.

Inspired by the ethos found in Kenneth Ward Church’s classic “Unix for Poets” and by the form of Roland Barthes’s seminal S/Z, the appendix gives readers an opportunity to test theoretical intuitions found in the body of the book against the reality of contemporary computation. For example, the difference between binary and plain text formats (discussed in the early chapters) could be made more apparent in comparing the output of cat file.txt and cat file.pdf in the terminal.2 In the later chapters, the conversation on access could be augmented with an exercise on file permissions. Diagnostic utilities like ping and traceroute would be brought to bear on network effects mentioned in the

“Bad Links” chapter. In this way, the appendix can serve to extend historical and theoretical awareness into practical know-how. An intuitive understanding of the political issues surrounding digital text, be they “open access,” “freedom of information,” or “online censorship,” begins to develop at that instrumental level.

Ready-made tools and graphical interfaces for human-computer interaction of- ten obscure the underlying complexity of the computational environment. For example, while writing a relatively complicated piece of code, a journalist in my digital humanities class once confessed to being confused about the relationship between files and folders. Plain Text is a book about files and folders: it is about textuality as encoded in specific ways on machines that have a shared material

2Use actual file names if you plan to test this out.

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history. The book’s technical appendix, although not required for the compre- hension of its main ideas, would help cultivate theoretical intuitions based not on speculation alone but also on “knowledge at hand.”

Field Significance

The book seeks to redress a weakness in the field of digital humanities, par- ticularly at the point of its relevance to literary studies. Scholarship at the intersection of these two fields is sometimes criticized for being ahistorical or atheoretical, abandoning deep traditions of literary theory and criticism, even where such traditions would help bolster the case for the digital humanities. The nominally related field of new media studies has the opposite problem. Al- though theoretically sophisticated, it sometimes produces research far removed from the actual practice of creating new media (the archetypal example given by Katherine Hayles is that of a contemporary photography critic not familiar with the use of the “layers” tool in Photoshop). By contrast, I situate Plain Text at the intersection of theory and practice: somewhere between “technical literacy for new media studies” and “philosophical bases for computing in the humanities.”

In pursuing the above strategy I make several decisive contributions to the fields of media studies, literary theory, and the digital humanities:

First, my approach is manifestly materialist. Throughout my argument, I seek to recover the material contexts (paper, silicon, and magnetic storage media) that give support to higher-order social and cognitive phenomena (like literature, text, and discourse).

Second, the book contains a strong undercurrent of humanism. In making ex- plicit the ways in which changes in the material substratum affect higher-order cultural techniques (of knowledge production and literary dissemination), I ar- gue for the reinstatement of human agency in a conversation that has largely turned towards the object, the system, and the post-human. The book’s narra- tive arc can be imagined as developing from first-order material bases of textual production, to second-order phenomena, to the emergence of the subject in the later chapters.

Finally, my work is experimental in that it affects history and theory through practice. Because engineering is an evolutionary practice, contemporary reading and writing implements contain within them traces of their early development. This means that lines of code from software running Unix systems in the 1970s are still in some real sense present on modern machines (like Apple Macintosh laptops and Android phones, which run Unix-derived operating systems). This property allows for a media archeology that can “lay bare” the device, making good on the implied archeological metaphor: involving excavation, surveying, and artifact discovery at the machine level.

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Existing Literature

Plain Text makes a theoretical intervention in the cluster of media studies- and digital humanities-related fields that include science and technology studies, platform studies, history of data, software and critical code studies, and media archeology. Recent comparable books in this space include: Paper Knowledge, by Lisa Gitelman (Duke University Press, 2014); Coding Freedom: The Ethics and Aesthetics of Hacking, by Gabriella Coleman (Princeton University Press, 2012); Mechanisms: New Media and the Forensic Imagination, by Matthew G. Kirschenbaum (MIT Press, 2012); Files: Law and Media Technology, by Cor- nelia Vismann (Stanford University Press, 2008); Programmed Visions: Soft- ware and Memory, by Wendy Hui Kyong Chun (MIT, 2013); How We Think: Digital Media and Contemporary Technogenesis by Katherine Hayles (Chicago, 2012); Beautiful Data: A History of Vision and Reason since 1945, by Orit Halpern (Duke, 2015); and several titles in the Electronic Mediations series at Minnesota University Press, which published Lori Emerson’s Reading Writing Interfaces in 2014.

My work extends the research program represented in these volumes in several important directions. While committed to broadly theoretical concerns—that is, ideas that can guide or challenge the way we study texts, their production, their meaning, and their impact on the people who use and produce them—my argument also dwells in the realm of traditional philosophy and (more narrowly) philosophy of text and technology. Furthermore, more than a decade of profes- sional experience in software development grounds my thought in the fields of software and electrical engineering to an extent greater than one generally finds in similar manuscripts. Finally, my sources may betray academic training in comparative literature. The reader should not be surprised to encounter origi- nal translations and texts that undercut the preponderance of North American material.

Consider, for example, my first chapter, called “We Have Always Been Digital,” which commences with a discussion of “digital representation” as philosophers Nelson Goodman and John Haugeland define it in the analytic tradition. I proceed by testing their intuitions on the basis of something called the “soap opera effect” particular to modern liquid crystal displays (LCDs) and in the related video-processing technique of “motion-compensated frame interpolation.” The resulting analysis clarifies the various (and often conflicting) meanings of the word digital in media studies and in the digital humanities. In the second chapter of the book, “Literature Down to the Pixel,” I visit late nineteenth- and early twentieth-century U.S. and European patent archives to argue that universal Turing machines, usually viewed as computational algorithms, should also be considered in the genealogy of communications and text processing equipment, as devices that cannot quite shake the material legacy of paper and pencil. Similarly, in the third chapter of the book, “Laying Bare the Device,” I take a deep dive into Russian formalist aesthetics and resurface to examine the Hegelian legacy in the development of the Document Object Model (DOM).

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Although I do not mean to engage in the debate on disciplinary formation, I prefer to describe my work as “computational culture studies,” both in the sense of “the study of computational culture” and as “computational approaches to the study of culture.” It is important for me to make the case for the reciprocal motion between the constituent elements of “computation” and “culture.” Too often rhetoric around the digital humanities resembles a one-way street, in which computational methods are promised to reform the humanities unilaterally.

Books like Alexander Galloway’s Laruelle: Against the Digital (University of Minnesota Press, 2014), Matthew Fuller’s Evil Media (MIT Press, 2012), and Johanna Drucker’s What Is? (Cuneiform Press, 2013) represent the sharp edge of a critical counter-movement to digital positivism. But this response, too, could be balanced against the constructive potential of the digital humanities, which extend humanistic inquiry into new and exciting directions. As was the case with the “linguistic turn” in the decades prior, almost all fields of human knowledge are now experiencing a turn towards computational methods that offer insights at previously unavailable scales of analysis. Witness the emerg- ing fields of computational biology, computational chemistry, computational linguistics, computational geometry, computational archeology, computational architectural design, computational philosophy, and computational social sci- ence, among others. The impact of computation therefore cannot be lightly dismissed. In Plain Text, I stake out a middle ground between Stephen Ram- sey’s laudatory Reading Machines (University of Illinois Press, 2011) and David Golumbia’s disparaging The Cultural Logic of Computation (Harvard University Press, 2009). Ultimately, I argue in favor of a transformative use of technology in the humanities, with reciprocal effects that promise mutual enrichment.

Audience and Market

As is the case for most of my work, Plain Text appeals to several key audi- ences. The first comprises media scholars interested in the history of data and computing in the twentieth century. The second audience can be located in textual studies, among scholars seeking to understand the impact of technology on literary theory or book history. Finally, the manuscript targets the broader audience of digital humanities and information science practitioners (particu- larly in the field of human–computer interaction) actively engaged in using and creating textual interfaces that shape contemporary reading and writing praxis.

As a former software engineer and now a literary scholar, I make sure that my research bridges the (perceived) gap between the “two cultures” of science and the humanities. My courses at Columbia University, which include Code & Poetry (Fall 2014), Computing in Context (Spring 2015), and Foundations of Computing for Journalists (Summer 2014), attract a diverse body of students from various disciplines (and particularly from departments of English, history, and computer science). I lecture widely in language departments, in schools of engineering, and in front of publishers, architects, artists, and librarians. As

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one of the founders of Columbia’s Group for Experimental Methods in the Hu- manities, I encourage my students to consider technology reflectively, combining critical theory with a measure of critical practice.

In this spirit, my group has organized workshops on online security for activists; we have reached out to an online community of engineers to help us write media history as a project in citizen humanities; and we are set to teach critical making at Rikers Island in July 2015. I am inspired in these endeavors by collaborators from Digital Humanities labs across the country and by my colleagues in the English Department and at the Berkman Center for Internet & Society, where I am an active faculty associate. I keep these manifold audiences in mind as I complete Plain Text. The book exposes intellectual frameworks that bolster my research and teaching activities. I write to strengthen these projects and to give back to the community that has supported me so generously. I hope to rely on the same goodwill and support networks in reaching out to promote my book.

In my teaching career, I am often asked to create workshops, courses, and cer- tificate programs for graduate students in the humanities interested in computa- tional studies. These have included seminars at the Digital Humanities Summer Institute (U. Victoria), courses for the Lede Program in the Journalism School

(Columbia), and workshops for students at CUNY Digital Praxis and in the NYU Digital Internship Program. Texts usually assigned in courses like that are either volumes published by technical presses for a professional audience or theory-based readings in new media studies related only loosely to teaching the fundamentals of computer science in context. The (optional) technical appendix could serve to supplement the main body of the work with a series of “experi- ments” that illustrate theoretical concepts in action, at the keyboard, making the text applicable to a greater variety of educational environments (beyond the conventional classroom).

Length and Format

I am writing the book as a traditional volume, expounding a sustained the- sis across six chapters (along with a short introduction). At this point, I am aiming for a manuscript of around 80,000 words (not including citations), al- lotting around 10,000 to 15,000 words per chapter. The chapters tend to have five to seven more granular subsections that help to clearly demarcate chapter structure.

The book could include an optional appendix, discussed in detail in the Anno- tated Table of Contents. The appendix does not require any special treatment. In addition, the manuscript contains 15–20 figures, primarily as black-and-white diagrams from technical literature and images created by the author. I have re- ceived a modest subvention to offset any costs associated with image production, publishing, and preparation of the manuscript.

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Relationship to Dissertation and Other Published Work

The book bears a resemblance to my doctoral dissertation in the subtitle only. Several paragraphs from the embargoed dissertation did make it into Plain Text in an ad-hoc manner, but the book as a whole represents a completely new framework and a new direction in my thinking about the subject.

With the approval of the press, I plan to place two of the book’s shorter, more peripheral chapters, in their redacted form, into journals that would help pro- mote and expand an audience for the book as a whole. I also plan to present the same chapters (in an even more compact form) at several upcoming confer- ences, including CHI, the Conference on Human Factors in Computing Systems

(a significant publication organ in the field of human-computer interaction).

Schedule to Completion

The research for this book was enabled by a year-long fellowship at the Berkman Center for Internet & Society. Consequent to the research phase, I taught several classes on the subject, which helped refine my thinking and provided further notes and primary material. As of today, the manuscript stands at roughly 60,000 words, with three chapters completed in their draft form. I am writing actively and plan to have the first draft of the manuscript ready in the summer of 2015. I am on leave next academic year, having cleared my schedule, with plans of seeing this project through to publication.

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