2023

Review of Bitstreams: The Future of Digital Literary Heritage

Kara Watts-Engley
Simmons University, wattseng@simmons.edu

Follow this and additional works at: https://elischolar.library.yale.edu/jcas
Part of the American Literature Commons, and the Archival Science Commons

Recommended Citation
Available at: https://elischolar.library.yale.edu/jcas/vol10/iss1/12

This Book Review is brought to you for free and open access by EliScholar – A Digital Platform for Scholarly Publishing at Yale. It has been accepted for inclusion in Journal of Contemporary Archival Studies by an authorized editor of EliScholar – A Digital Platform for Scholarly Publishing at Yale. For more information, please contact elischolar@yale.edu.

Literary production has always been tied to specific developments in technology. This has become even more apparent since the advent of personal computing and the digital media age. Consider the following scenario: a writer may compose her work on a word processing program on a laptop, then save the file to a cloud storage system, email the file back and forth as she goes through revisions with her editor, and finally work through page proofs of the text via specialized software from her publisher. Years later, the writer’s papers are donated to an archive along with her home laptop, and the archivists must decide how to best preserve the laptop files when many of the programs used to create them are obsolete. Later, a researcher reviewing the writer’s work at the archive faces the difficult question of how many of the hundreds of laptop files should be considered “drafts.” The researcher also wonders what difference it makes to be examining these drafts through software that is only emulating the laptop’s original programs. The researcher is looking at the files in ways that appear close to, but are not exactly, the files as they originally appeared to the writer.

As this example makes evident, the literary is also the technological. How does an awareness of technology’s impact affect the future of literary creation, critique, and preservation? For Matthew Kirschenbaum’s *Bitstreams: The Future of Digital Literary Heritage*, this is among the core questions of literary, archival, and bibliographic studies in the contemporary digital media age. Known for his earlier book *Mechanisms: New Media and the Forensic Imagination* (2008), Kirschenbaum continues his pioneering work in the field of digital literary studies. Kirschenbaum is concerned with “actual facts” of the digital realm, referencing Virginia Woolf’s call for “actual facts” in her 1938 work *Three Guineas*. He points out that the realities of literary composition now involve computers, multimedia distribution, and a diverse media archive in which printed and digital objects intermingle through what is known in computing as the bitstream. A “bitstream” generally refers to a “contiguous sequence of bits for storage or transmission” (ix). Bits, a lexical blend of “binary digits,” use the binary sequence of ones and zeroes that forms the foundation for all digital information. Kirschenbaum’s book seeks to explore the bitstream’s “infinitely variegated world of actual digital storage” (11).

In focusing on the bitstream, Kirschenbaum shows how we should reconsider the basics of archival studies, bibliography, and literary analysis. He argues that future literary heritage involving digital materials “must reckon with the inherent properties of magnetic storage media and computer software and operating systems; but it must also cultivate a commensurate set of values (including market value) to help ensure the persistent survival of hard drives and USB sticks as they are buffeted by the contingencies of time and circumstance” (13). In other words, the preservation of digital materials must include specific awareness of what comprises these materials and their contexts.

Kirschenbaum does not aim to set out specific recommendations for best practices in working with the bitstream in bibliography, archival studies, or literary criticism, however.
Instead, he offers a guiding principle: to develop “habits of mind.” The book explores these habits, with Kirschenbaum presenting three case studies engaging access, use, and preservation in order to demonstrate how wide-ranging such an attention to the materiality of the bitstream can be.

Chapter 1 takes on digital surrogacy and access. Of all of Bitstreams’ chapters, it is most readily situated in archival studies. Kirschenbaum examines floppy disk drafts of Toni Morrison’s 1987 novel Beloved, held by the Department of Rare Books and Special Collections at Princeton University Library. His purpose is to understand the relationship of the Microsoft Word files related to Beloved that were saved across four disks to the other Beloved manuscripts in the collection. “Were the contents of the Word files duplicated in the page scans of hard copy materials” or did “recovered files represent unique states of the text” or stages in the composition process (18)? In other words, what difference does it make for a researcher when the materials at hand are digital or analog, or both? The electronic files and the hard copy scans of manuscript pages provided by the archive are ultimately only similar, not identical. This is a primary feature of the bitstream, Kirschenbaum notes, and these pages are evidence of the “non-self identicality of the bitstream” (20).

Such an examination has clear ramifications for researchers, who may be working with different “versions” of the manuscript, as well as for archivists who must continue to grapple with these variations and account for the paradoxes of collecting and preserving digital information. If we are to take in and keep in equal consideration all of Morrison’s drafts and file versions, or all of our hypothetical writer’s work mentioned earlier, we end up with enormous amounts of data that require the impossible: reliable, future-proof storage. Digitization also fundamentally alters archival memory organization, rendering the process of preservation dynamic rather than static. Referencing the work of Wendy Hui Kyong Chun on computer storage systems, Kirschenbaum writes that memory “was grafted into the language of computing as a lexical cover for the material realities of actual storage technologies that permit no true past—only a kind of endlessly and precariously renewed perpetual present” (36). Because the bitstream is never self-identical, any access of the past says more about the present than the “past” that has been retrieved for viewing. Nothing digital is “ever truly present and nothing may be ever truly gone” (37). In this way, Kirschenbaum brings the common concerns of the digital in the archive together with core ideas in contemporary archival studies: that storage and access are acts of reconstruction, reassembly, and “rememory.”

The second chapter shifts its focus to the poetic experiments of William H. Dickey’s HyperCard poetry and Kamau Brathwaite’s typeface designs. Both examples demonstrate the interconnectedness of history, memory, and media that shape the bitstream. Kirschenbaum explains Dickey’s use of HyperCard, an application on the poet’s 1988 Macintosh SE. The program used renderings of card stacks that users could flip through and edit, including adding buttons on each card that connected one card to another, creating

---

a web of interactive audio and graphic effects. Using this as his main method of literary composition for HyperPoems was a boon for Dickey’s creative output—but an albatross for their preservation. Because Dickey’s poems were composed on a particular software program that is no longer in use, they can only be rendered in a state close to their intended form via imperfect emulations. Kirschenbaum spends thoughtful time on hardware, software programs, fonts, and early desktop publishing, and acknowledges the complexities of Braithwaite’s relationship to his beloved Mac. Braithwaite deemed his computer “Sycorax,” Caliban’s mother and native inhabitant of Prospero’s island in Shakespeare’s The Tempest, because the colonizing West formed its “magical” identity. Likewise, Kirschenbaum elaborates on the details of material and historical production of programmers, coders, and digital typeface creators originating in Italian modernist and postmodernist design. This chapter holds intriguing possibilities for nontraditional archives, such as community-led archives. While the fundamental structural realities of Western capitalist exploitation and the legacy of colonialism are embedded in the digital realm, Kirschenbaum’s discussion of Kamau Braithwaite’s cherished Macintosh opens possibilities for speaking back against these structures, even while working within them, to excavate entangled legacies.

The final chapter is devoted to a deceptively simple question: “What is a book nowadays?” (83). Kirschenbaum takes on J. J. Abrams and Doug Dorst’s 2013 novel S., describing it as a book that is aware of its bookishness by including marginalia, renderings of wear and tear, and library stamps. At the same time, the book’s reliance on digitized processes of book and page design, and its fan-created web presence, render the book not quite as analog as it may seem. To the contrary, Kirschenbaum finds that the bitstream has already absorbed and remade books into post-digital objects.

Kirschenbaum leaves it to the reader to assess the full theoretical applications of his work in Bitstreams, carefully stopping short of interpretation to remain within the bounds of traditional bibliographic study. But key questions proposed in the book are well-suited to be taken up by archival theory. Kirschenbaum’s emphasis on the bitstream’s materiality, for instance, may suggest that digital and physical preservation are more alike than different. Kirschenbaum also demonstrates the complexities of the memory act in ways pertinent to archival studies. After detailing the workings of computer storage systems, he points out that algorithmic biases wrought by data scientists limit the scope of available stored data, including what data gets stored (“remembered”) and what data is lost (“forgotten”). Such technical details may add to current discussions of liberatory memory work and the right to be forgotten.

The closest Kirschenbaum comes to practical advice for the fields of literary studies, archival studies, and bibliography is that each should carry on “an uncompromising commitment to the individuality of all things, every instance, every copy” (111). We ought to extend this to the commitment to the individuality of those people who participate in contemporary literary output and preservation: archivists, writers, researchers, editors, and librarians, to name a few. Quiet starring roles in Bitstreams go to Morrison’s longtime

—

assistants and the archivists at Princeton University Library, where Morrison’s manuscripts and floppy disks are housed; a writer named Deena Larsen, who became a close associate of Dickey’s and who, along with Dickey’s companion and literary executor Leonard Sanazaro, helped preserve Dickey’s poetry; and the varied fans who continue to curate websites and online dialogue about S. More could be made of these figures, who represent a kind of community enabling digital literary preservation. Likewise, we ought to consider the “actual facts” of the workers who construct the material objects that help produce and aid access to the bitstream, including the often-exploited laborers in the global tech industry. They construct computer chips, assemble keyboards, and moderate online content. As a testament to their invisible and underpaid technical labor, some workers performing content moderation have recently voted to unionize.\(^3\) Such workers do not receive acknowledgment in this text, leaving us with rich questions and still more to consider in accounting for the community of laborers participating in digital preservation.

While the digital era continues to impact the scope of archival work, Kirschenbaum’s book serves as a reminder that the facts of preservation remain tied to the material.

---