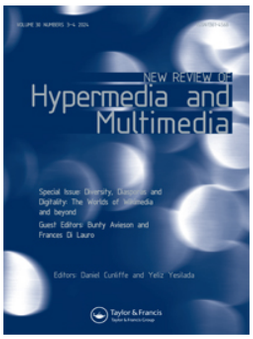

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The early ACM Hypertext Conference's role in developing pre-Web reading on-screen

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ABSTRACT

The first three iterations of the ACM Hypertext conference were highly popular, drawing a diverse audience of researchers and practitioners experimenting with hypertext systems before the arrival of the World Wide Web. While the rise of the Web has often been seen as a disruptive event in the history of hypertext, in this paper I argue that if we focus on the intersection between digital publishing and hypertext, there are stronger continuities. Through archival research into early participants of the Hypertext conferences including Ben Shneiderman and Michael Joyce, I recover some of these lost connections.

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Hypertext, a method for organising media in a multi-linear fashion, has a long history in the fields of information and computer science. Historians often trace hypertext back to early work with digital computers by Ted Nelson and Douglas Engelbart in the 1960s, as well as analogue models developed by Vannevar Bush, Paul Otlet, and H.G. Wells (e.g. Haigh & Ceruzzi, 2021). Despite an intellectual history that stretches back to the early days of computing, the field only built critical mass in the late 1980s, which was made most visible with the early iterations of the ACM Hypertext Conference. Through analysing archival records of participants in the early Hypertext Conferences, in this article I demonstrate how the meeting acted as a catalyst for work on reading on-screen before the rise of the Web in the mid-1990s. While hypertext is a multi-faceted technology, my focus here will be on its connection to publishing, and, more specifically, reading rather than exploring the connections to a host of other interdisciplinary areas such as digital humanities research, information retrieval, and database development.

The ACM Hypertext Conference series continues to be an annual event, but its popularity has diminished significantly since the rise of the Web in the mid-

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1990s.[1] The early years of the Conference represented an important forum for several disciplinary groups from computer scientists and technologists to humanities scholars and established corporations. This can be seen through the attendance list of over 600 participants for Hypertext '91, with half coming from major technology companies (ACM Hypertext '91 Committee, 1991). What started as a significant event for computer scientists developed into a long-standing home for a community with a broad range of interests in the central concept of hypertext, summarised by Mark Anderson and David Millard's taxonomy of "Seven Hypertexts" (Anderson & Millard, 2023).

In this paper, I argue that the early ACM Hypertext Conferences are important in the history of digital publishing because they encouraged experimentation with reading on-screen. My case studies demonstrate that the connection between digital publishing and hypertext is closest when placed in the genre of "corporate electronic publishing," which is insufficiently studied in comparison to publishing electronic literature. At the time, prominent participants such as Michael Joyce believed that the rise of hypertext would be as transformative as Johannes Gutenberg's introduction of the printing press to Europe in the fifteenth century (Joyce, 1994). The broader suite of technologies encompassing the World Wide Web eventually took this role, especially the mixture between HyperText Markup Language (HTML) and HyperText Transfer Protocol (HTTP). Robert Coover's proclamation of the "End of Books" in 1992 was premature (Coover, 1992) but the early ACM Hypertext Conferences nonetheless proved a fertile ground for developing "sociotechnical imaginaries" (Jasanoff & Kim, 2015) of reading on-screen and for sharing early experiments in digital publishing.

In this article, I use archival sources to contextualise these early Hypertext Conferences within broader trends around reading on-screen and the emergence of trade and professional electronic publishing at the turn of the 1990s. Through this analysis, I outline the deep interconnections between the maturation of hypertext with the rise of digital publishing. While the primary aim of most of my subjects was to create software tailored for productivity or creating literary works, these projects' legacies instead fell more narrowly into reading environments and publishing. Early excitement around hypertext software such as HyperCard, HyperTIES, Storyspace and others, equated their productivity software as being a revolutionary platform on a level with a GUI operating system. By 1993, however, non-specialists were beginning to view hypertext through the lens of reading based on their experience of the Web. From the perspective of the mid-2020s, this trend has continued with hypertext fiction as intense work has been conducted to ensure that platforms such as HyperCard and Storyspace can be accessed as legacy software to ensure continual archival access to important early literary works (Grigar & Pisarski, 2024).

Table 1. Overview of archival sources consulted.

Archive	Location (Collection)	Notes	Hypertext Conferences attended
Ben Shneiderman	University of Maryland (0284-UA)	Creator of HyperTIES, publisher of *Hypertext Hands-On!* and editor of *ACM Hypertext on Hypertext*	1987–1991
World Wide Web	CERN (CERN-ARCH-WWW)	Mostly records from Robert Cailliau	1991 [Berners-Lee]
Douglas Engelbart	Stanford (M0638)	Little direct mention of his interaction with the early hypertext conference but correspondence with colleagues from that time period	1987
Esther Dyson	Computer History Museum [California] (X2780.2004; X2957.2005)	Correspondence with various early hypertext actors including Eastgate Systems, Electronic Book Technologies, and Ted Nelson	1987
Keith Henson	Stanford (M1292)	Documents Henson's work as part of the Xanadu Operating Company in the late 1980s and early 1990s	1987 [Nelson]
Mark Weiser	Stanford (M1069)	Weiser never attended the Hypertext Conferences but he had a higher level overview of Xerox PARC's research activity, and several of his colleagues attended	1987–1991 [Xerox PARC colleagues]
Michael Joyce	Harry Ransom Centre, University of Texas-Austin (MS-4989)	Records related to Joyce's participation in early Hypertext Conferences, his development of Storyspace, and interaction with Eastgate	1987–1991
David Durand	Computer History Museum [California] (X5485.2010)	A Brown University student who worked on FRESS and documented the platform for the next hypertext wave.	1987–1991
Institute for Research in Information and Scholarship (IRIS)	Brown University (OF.1ZCO.1)	The fulcrum of hypertext activity at Brown University	1987–1991
Ted Nelson	Internet Archive	Materials documenting Nelson's Project Xanadu and hypertext before the ACM Hypertext Conference series	1987

Methods

My research draws from the archives of selected individuals and organisations who attended the early iterations of the ACM Hypertext Conference between 1987 and 1993. I have outlined the ten main archival sources used for both the background research and writing up of this article in Table 1.[2] I chose an archives-based approach of exploring the history of hypertext to complement existing research that focuses instead on oral histories (Barnet, 2013) or documenting bibliometrics during the development of the conference series (Anderson & Millard, 2022). The material in archives cannot offer a representative sample of all historical actors working on hypertext (after all, it requires both subjects and archives to consider the material to be noteworthy). Nonetheless, it offers an alternative perspective that is often eluded from oral histories and the digitised versions of conference proceedings in the ACM Digital Library.

My sample was shaped according to what was available during three research trips to North America in 2018, 2019, and 2023, as well as an archival visit to CERN in 2023. In order to ensure the best coverage, I searched for archives related to speakers at the first three North American ACM Hypertext Conferences (1987, 1989, 1991), which identified eight of the ten archives listed in Table 1. Many key figures in the early Hypertext Conferences are completely inaccessible through archives. This is also only a sample of archives due to the material and temporal constraints of accessing every possible relevant archive. While there are other pertinent archives I was unable to access (e.g. the Charles Babbage Institute's holdings for the ACM), this offers a partial sample of activity. Nonetheless, as I focus on publishing-related activity, my sample is closer to the size of the relevant subset of research subjects.

Several prominent actors in the history of hypertext are missing as archival subjects, and can only be discovered within others' records. First, I was only able to access records related to Ted Nelson through secondary sources, such as David Durand, Keith Henson, and Esther Dyson, as well as some digitised materials on the Internet Archive. The bulk of his papers had yet to be processed at Stanford University during my last research trip in November 2023. Likewise, Tim Berners-Lee's papers are not part of CERN's World Wide Web holdings, and it is unclear what material he has retained (Fomasi et al., 2023). Finally, Mark Bernstein, Chief Scientist and Publisher at Eastgate Systems, has been instrumental in the development of the ACM Hypertext community but he has not donated his papers to an institutional archive. Instead, he frequently appears in others' correspondence. My sample here is not comprehensive and there are many missing voices both from within the archives I accessed, but also more generally from outside of the published record.

Nonetheless, archival research presents an opportunity to focus on documentation that is otherwise inaccessible through other historical research methods. The archives I consulted were all donated by the individuals or by their estate. Therefore, there is a level of curation and intention about the records and artifacts included, which are presumed to have been important to the individuals, at least at the point they were acquired. There are benefits to examining the curation and juxtaposition of published and unpublished sources. For example, archives offer access to parts of the historical record about scholarship and research that can otherwise remain invisible (committee work, reviews, correspondence, grant applications) that provide useful documentation of processes rather than outputs. Some of this process can be recovered through other historical research methods such as oral histories or interviews, but for the purpose of this project, I focus on archival materials as an under-explored source in the history of hypertext.

Archival research does come with some limitations. For example, there are power dynamics in relation to which materials are gathered, preserved, and

made available that "implicitly governs how history should be written" (Maza, 2017, p. 167). Furthermore, Schwartz and Cook (2002) assert that "users of archives (historians and others) and shapers of archives (records creators, records managers, and archivists) add layers of meaning, layers which become naturalized, internalized, and unquestioned." We should not view archives as neutral sources of inherent ground truths but rather critically engage with the records contained within them as potentially useful sources. For example, Fomasi et al. (2023) offer an in-depth critical reflection on the blind-spots in CERN's World Wide Web archival holdings.

My focus on Hypertext Conferences between 1987 and 1993 is deliberately narrow (encompassing four North American conferences and two European events), but nonetheless captures an important period in both the history of hypertext and the ACM Hypertext Conference's formation. I focus on the pre-Web years of hypertext. While Berners-Lee's paper on the Web was rejected as part of the conference proceedings and main talk track in 1991 (Berners-Lee (1999, p. 55) recalls the rejection was a combination of unfinished work, insufficient citations to the field, and "violat[ing] the architectural principles that hypertext systems had worked on up till then"), he was instead invited to run a technical demonstration. By the 1993 iteration, the Web was central to many proposed presentations (ACM Hypertext '93 Committee, 1993). My end date of 1993 therefore offers a useful point of comparison for the transition between pre- and post-Web eras of hypertext scholarship. On the other hand, the starting point of 1987 is an artificial distinction as the first conference brought together hypertext researchers who had been working in the field for up to twenty years.[3] Despite this, the ACM Hypertext Conference series is better documented than the two decades preceding it, even though archival evidence exists for projects like Jim Schuyler's Hypertutor in the mid-1970s. Hypertutor integrated hypertext into the University of Illinois's PLATO system to develop it into a more sophisticated computer-aided instruction system (Schuyler, 1974). Focusing on the ACM Hypertext Conference and its prominent attendees may overlook some of this early history, but the impact is likely to be minimal. The 1987 inaugural workshop represented the culmination of most research conducted on hypertext in the preceding years, with many individuals and companies presenting their products from the previous decade. Even though the published and digitised proceedings show a limited number of accepted conference papers, contemporaneous records in the archives show a much larger gathering that brought together most researchers who had been working on hypertext during the 1980s.

Forming the hypertext field

The early Hypertext Conferences present a unique opportunity to document and analyse the formation of an interdisciplinary field within computer

science. Initial efforts in hypertext were carried out in isolated groups, although there was some interaction among key individuals, most of whom were primarily linked with different fields. For example, Andries Van Dam was known for his work in Computer Graphics and Ben Shneiderman with Human-Computer Interaction. The field began gaining momentum in the mid-1980s partially due to a shift in personal computing with the greater adoption of Graphical User Interfaces in operating systems such as Microsoft Windows and Mac OS. In turn, this led to the launch of GUIDE, HyperCard, Intermedia, Notecards and Storyspace prior to the first Hypertext Conference to complement other pre-existing systems for workstations such as KMS.

There was therefore already considerable excitement in the potential of hypertext technologies prior to the first Hypertext Conference. Early documentation for the first event demonstrates a level of interest from across the industry: It was not branded as an exclusively ACM conference, but drew support from the ACM and SIGCHI, alongside the Computer Society of the IEEE, and the hosts at the University of North Carolina (ACM Hypertext '87 Committee, 1987). Joint conferences between the ACM and IEEE are not a historical rarity but this decision nonetheless demonstrates the importance placed on hypertext during the 1980s.[4] The practice of applying for funding from various bodies was dictated by event economics, but successful outcomes demonstrated a broader interest.

By the second North American iteration in 1989, the IEEE no longer co-sponsored the conference, which had re-branded as "ACM Hypertext" and was supported by three ACM Special Interest Groups (SIGs): Information Retrieval (SIGIR), Office Information Systems (SIGOIS), and Computer-Human Interaction (SIGCHI). The conference was collocated with the SIGDOC conference in Pittsburgh (ACM Hypertext '89 Committee, 1989). As Inna Kouper has previously discussed, SIGLINK (the precursor of SIGWEB) was only formed after the 1989 iteration of the conference (Kouper, 2017). The SIG was formed to highlight the diversity of the "humanities-sciences-industry" nexus at the heart of the hypertext conferences (Kouper, 2017, p. 341). By the early 2020s, SIGWEB was the only regular Special Interest Group sponsor of the Hypertext Conferences.

Computer science as a discipline accords great prestige to published conference proceedings, and so acceptance of a full paper at an ACM Hypertext Conference was competitive. Many of my research subjects' full papers were rejected (not just Tim Berners-Lee's original World Wide Web paper) and they presented through alternative means such as posters, position papers, and panels, despite having a strong reputation in the field, and often within the wider discipline of computer science. While the published proceedings of computer science conferences document parts of the event more accurately than other conferences that may not even publish accepted abstracts, this is often a sliver of the other formally accepted materials that might provide a greater insight into developments.

Hypertext and the emergence of digital publishing

Hypertext scholarship has always been a self-critical field and its central interests have shifted as it moved in and out of the mainstream of computer science. Nonetheless, recent iterations of the Hypertext Conference have highlighted these existential questions, suggesting that hypertext might be a methodology or infrastructure (Anderson & Millard, 2023; Atzenbeck & Nürnberg, 2019). These conversations often exclude an important aspect of hypertext's early development, and arguably the reason why the Web was so successful: its connection with the nascent electronic publishing industry. This was an important facet of early hypertext researchers' understanding of the importance of their work. For example, the archives document competing claims from scholars claiming to have created the first "electronic book" including Andries van Dam (1989) and Ben Shneiderman (with the caveat of its commercial nature) (Shneiderman & Hume, 1989) but elsewhere he made the claim without that limitation (Shneiderman, 1989c). As Rowberry (2022) demonstrates, there is a much longer tradition of "electronic books," both commercial and experimental, dating back to at least the 1970s.

Beyond these claims of novelty, the academic community were keen to question how hypertext could shape the future of reading on-screen. There was a real drive within the community and adjacent journals such as *Electronic Publishing* and *Hypermedia* to move to digital platforms, which would have gone ahead regardless of the ACM's involvement (Hypermedia Editorial Board, 1990). These efforts were short-lived as the dominant mode of digital scholarly publication trended towards a facsimile model, driven initially by Adobe's PostScript format and their later PDF standard. By 1994, the ACM Electronic Publishing Plan outlined a roadmap towards the contemporary ACM Digital Library that would prioritise "original and SGML files, and possibly PostScript files" (Denning & Rous, 1995) although by the time the initiative launched in 1997, the Digital Library only accepted PDFs (Association for Computing Machinery, 1997).

The early wave of experimental publications foregrounded non-linearity and narrative complexity to demonstrate the capabilities of the software. This work occurred within the context of the broader multimedia CD-ROM boom documented by Microsoft Press's 1986 publication, *CD-ROM: The new papyrus* (Lambert & Ropiequet, 1986). Projects were often entrepreneurial in nature and occurred beyond the formal scope of ACM publishing. For example, Eastgate published the "Hypertext '87 Digest," a selection of full and position papers, on Hypergate, the company's flagship hypertext product before it acquired the rights to Storyspace. In a press release for the publication, Mark Bernstein noted that he believed that digital hypertext versions of conference proceedings were likely to be the future of scholarly communication due to their value beyond the print versions (Eastgate Systems, c1988).

It is unclear how widely distributed this publication was as Frank Halasz told Stuart Moulthrop that he was planning to edit a hypertext version of the 1989 proceedings but had not seen the results of the Hypertext 87 project (Halasz, 1989).

Having established the connections between the early ACM Hypertext Conference and contemporaneous initiatives around digital publishing, in the second half of this paper, I focus on some of the core actors in these early years. In the following three case studies (HyperTIES, FRESS/Electronic Book Technologies, and Storyspace), I offer an overview of how they intersected with the emerging field of electronic or digital publishing.

HyperTIES

HyperTIES, a project led by Ben Shneiderman at the University of Maryland's Human-Computer Interaction Laboratory, was one of several cross-platform hypertext tools that had enjoyed a successful release prior to the first Hypertext workshop in 1987. The system was clearly designed to be an early form of "electronic book" (Shneiderman, 1987b) that focused on producing content that was appropriate for the dominant screen technology of the 1980s. Rather than attempting to create a facsimile of print, there was instead a focus on smaller chunks of text that could be navigated through scrolling through pages or links embedded within the text. Cognetics licensed HyperTIES in Summer 1985 (Shneiderman, 1989a, p. 2) and the product was already deployed across industry and the academy by the first Hypertext Conference.

Advertising for HyperTIES in May 1987 hyperbolically stated that it "does for the PC what the printing press did for paper. With Hyperties you can link together text, graphics, even video images, to create […] virtually any interactive publication or presentation you can think of" ([Cognetics], 1998). Ben Shneiderman, writing in 1989, recounts that the idea emerged from student project work in 1983 that led to a collaboration with the US Holocaust Memorial Museum and Education Center (Shneiderman, 1989a). The system was initially called TIES (The Interactive System) but developed into HyperTIES in 1987, to some consternation as hypertext was only entering the public imagination, which led to feedback emphasising associations between "hypertext" and "out of control" ([Computer Science Corporation], 1987).

Shneiderman's work on HyperTIES did not result in a series of consumer-focused publications, other than a few exceptions within academic publishing such as Shneiderman and Greg Kearsley's *Hypertext Hands-On*—likely the publication that encourage Berners-Lee to adopt blue links for the Web[5] (Blanchard, 2023, p. 634)—and the ACM's *Hypertext on Hypertext*, a hypertext version of the proceedings of the first ACM Hypertext Conference. Instead, HyperTIES, and several other early hypertext platforms were more successfully implemented as "Corporate Electronic Publishing" systems, (Hyperties User's

Group, 1990) which were designed for internal documentation or transitory engagement in places like museums. The software was distributed to a variety of organisations including NASA (Shneiderman, 1986) and IBM (Shneiderman, 1989b), as well as forming the basis for safety training for the Union Carbide Corporation (Union Carbide Corporation & Cognetics Corporation, 1988) and instructions manuals for Toshiba (Shneiderman, 1987a). The earliest documented use of TIES is Department of the Interior funding for use with the United States Holocaust Memorial Council computer systems (Shneiderman, 1985).

FRESS and Electronic Book Technologies

Andries van Dam, Professor of Computer Science at Brown University, was one of the few figures to play a pivotal role in the 1960s and 1990s hypertext "Summers", alongside Ted Nelson. Two of his hypertext initiatives were present at the first iterations of the ACM Hypertext Conference. First, File Retrieval and Editing System (FRESS), van Dam's second generation hypertext system from 1968, which built upon his work with Nelson on Hypertext Editing System the previous year, was a prominent historical artifact at the 1993 iteration of the conference (Durand & DeRose, 1993). Second, Electronic Book Technologies (EBT) was a prominent participant in early hypertext conferences, and van Dam was one of the founders. While FRESS remained a research system and was never commercialised, EBT functioned as one of the many electronic publishing intermediaries that flourished during the 1980s and 1990s as it championed native support of SGML before XML became established in publishing workflows.

Durand exhibited FRESS at Hypertext 87 as a historical curiosity, to connect to the long-running hypertext research of luminaries such as Doug Engelbart, Andries van Dam, and Ted Nelson. This presented a degree of continuity between this earlier work, devised in an era of terminals and time-sharing with the burgeoning personal computer market, and was an early attempt of the hypertext conference to shape its own history (Rowberry, 2023). More recently, FRESS has been recontextualised for its broader impact on computing beyond its hypertext applications. For example, Matthew Kirschenbaum frames FRESS as a precursor of the modern word processor due to its development of cut and paste, as well as editing directly on a screen (Kirschenbaum, 2016, p. 121).

FRESS was used primarily for educational purposes rather than within corporate settings. We might see its descendants as Learning Management Software such as Moodle or Blackboard. Conversely, Electronic Book Technologies were aimed at the same "corporate electronic publishing" market as HyperTIES. EBT's early Dynatext system, which accepted only SGML as input, was deployed by the international bank organisation,

SWIFT; the US Navy for Tomahawk missile systems documentation; and Boeing's Technical Service Bulletins (Electronic Book Technologies, 1993). It acted as an early iteration of a publishing-as-a-service intermediary rather than a traditional publisher. These entities, often under-documented in archives and other historical sources, played a crucial role in shaping electronic publishing culture. Their significance stemmed from their ability to secure a high volume and value of contracts, which surpassed the impact of traditional publishing models.

Storyspace and Eastgate: moving towards a consumer-based model

Eastgate Systems and the Storyspace platform are widely seen as the strongest connection between hypertext and digital publishing (Barnet, 2012; Ensslin, 2007, 2022). The company cultivated this connection through presenting their publications in an overtly "bookish" manner. Eastgate distributed its hypertext works on floppy disks and CD-ROMs, following bookish conventions to ensure its publications were available in bookshops. Publications were allocated International Standardised Book Numbers (ISBNs), which increased their discoverability within book shop settings. Eastgate also used St Martin's Press for distribution, leveraging their existing network while also pursuing direct sales from mail or conference presence (Bernstein, 1993).

The strong connection between Storyspace and Eastgate Systems developed over the course of the first Hypertext Conferences. At the 1987 conference, Michael Joyce and Jay David Bolter, two of the three creators of Storyspace,[6] presented a full paper called "Hypertext and creative writing" that not only launched the product but demonstrated how hypertext could be used as a storytelling medium (Bolter & Joyce, 1987). Meanwhile, Mark Bernstein, chief scientist at Eastgate Systems, was one of the many participants excluded from the primary historical record of Hypertext '87 but he presented a position paper, which was documented in a separate publication, dedicated to over 100 position papers, that has not been digitised (Smith & Halasz, 1987). He founded Eastgate in 1982 and had developed the Hypergate platform, which was the focus of his position paper submission. It was not until the early 1990s that Bernstein had managed to secure a license to distribute Storyspace and hypertext publications based on the platform.

The development of Storyspace and Eastgate's acquisition of the rights to license and improve the software have been extensively documented by both Belinda Barnet (2013, Chapter 6) and Matthew Kirschenbaum (2012, Chapter 4). I intend to focus here on how Eastgate's acquisition of Storyspace guided the project's path towards digital publishing, whereas early commercial partnerships might have shifted the software's focus towards productivity. In order to understand this, we must first acknowledge the complex entanglement

Table 2. Companies associated with or interested in Storyspace before Eastgate's acquisition.

Company	Note
Riverrun	The commercial spin-off of Joyce, Bolter and Smith's academic research that led to the development of Storyspace
Markle Foundation	A private foundation that provided funding for the development of Storyspace
Brøderbund	The software company who originally licensed Storyspace
Research Design Associates	Another company that was briefly interested in licensing Storyspace in 1990 (Joyce, 1990)

of organisations involved in the pre-Eastgate years of Storyspace outlined in Table 2.

As Table 2 shows, several parties outside of Eastgate maintained an interest in the direction of Storyspace, which meant that the software had a mixed identity for its first few years as a publicly available product. Initially, the arrangement with Brøderbund was brokered by Moira Cullen from Apple Corporation and was ambitious in scope including: "cognitive based text processing and analysis, collaborative and networked writing, AI-based tools and hypertext/hypermedia technology and theory" (Joyce et al., 1988). The programme was not explicitly designed for just hypertext storytelling that became synonymous with the software and indeed, early documentation noted that "STORYSPACE is a structure-oriented, rather than document-oriented hypertext program, and so the connections and interrelationships you create are always available for you to edit and review" (Joyce et al., 1985). It is clear from these statements that Riverrun's early ambitions for Storyspace extended beyond distributing hypertext fiction.

The untaken alternative pathway of Storyspace as general productivity software is reflected in how the software functions and the physical metaphors it deploys help users who may be less familiar with hypertext understand the software. Documentation from the earliest implementations of Storyspace had strong spatial elements in how different chunks of texts are related (Bolter & Joyce, 1985). This spatiality manifested in each screen of materials being considered a "region" and "tunnels" providing links between regions that otherwise cannot be visually connected. This common metaphor was intended to be appropriate for the broad potential audience of Storyspace from creative writers and desktop publishers through to technical writers and corporate managers (Joyce, n.d., p. 5).

Unfortunately, Brøderbund ceased support for Storyspace in February 1989, citing the challenges of commercialisation ([Brøderbund Software], 1989). This coincided with the peak of interest in hypertext that culminated with the arrival of the Web. When this deal fell through and Eastgate eventually became the sole licensor and distributor, the focus of the software shifted sharply. Eastgate has never solely focused on developing and maintaining Storyspace, and it has published other software such as Tinderbox. Bernstein's acquisition of Storyspace was driven by a desire to preserve and promote important early literary work

published using Storyspace. When interviewed by Belinda Barnet, Bernstein noted that his intention was "to always be able to run [Michael Joyce's] *afternoon* and [Stuart Moulthrop's] *Victory Garden* and [Shelley Jackson's] *Patchwork Girl*" rather than positioning the software as a tool for writing (Barnet, 2012).

Storyspace is the only survivor for this first wave of commercial and corporate hypertext platforms, receiving a new major version, 3.0, in 2015 (Bernstein, 2016). This is no coincidence. Storyspace shifted from potential productivity software[7] to a read-write environment to, finally a largely read-only environment for accessing published works. This shift occurred as hypertext left mainstream attention and other computational paradigms began to emerge, yet interest remained in those now canonical works of early hypertext fiction. This was part of a broader transition in hypertext and digital publishing that was facilitated by the rise of the largely read-only web in the mid-1990s.

Conclusion

In a 1989 Senate Committee led by Al Gore on the nascent Internet, Ted Nelson delivered a speech that he retrospectively called "Hypertext is Inevitable" in which he argued "We stand at the threshold of a titanic change in the use and availability of the written word, a new era of electronic literature" (Nelson, 1989). He, and others in the hypertext community, would be disappointed by the eventual direction the Internet would take for hypertext when the Web became the most popular platform. This disappointment stemmed from a belief that the Web limited the true potential of dynamic hypertext systems by focusing on one-way links and mass distribution rather than more nuanced and complicated systems.

In this article, I have argued instead that we can see an alternative trajectory from the early years of the ACM Hypertext Conference that revolves around digital publishing and reading on-screen that repositions the Web as a continuation rather than a disruption of this earlier work. The four projects I discussed —HyperTIES, FRESS, Electronic Book Technology, and Storyspace—were decades-long projects that survived through hypertext booms and winters. This continuity was, in part, due to these projects' longer-term conceptualisation of hypertext as a publishing platform for aims as broad as experimental literature, professional publishing, and education. While this article has focused on the archives of innovators within the history of hypertext, developing historiographical work into read-only, published hypertext systems opens up possibilities to pivot toward documenting "regular" users, or what Joy Lisi Rankin (2018) describes as "computing citizens' and their "acts of computing." Ben Shneiderman's records present one possible approach to this pathway, as they include extensive documentation of anonymised user experiences.

A secondary aim of this article has been to demonstrate the uses of archives in re-assessing our interpretation of the history of hypertext. As more materials around the early years of hypertext become available, we may be able to reassess some normative assumptions about the priorities and benefits of early hypertext research. This work could be focused on events such as the ACM Hypertext Conference or different research groups and would usefully complement other ways of historicising the discipline. New discoveries about the past of hypertext may help the community to envision future alternatives that both include and go beyond the Web.

Notes

1. Part of the community shifted towards dedicated Web-based conferences including TheWebConf and Web Science.
2. In order to comply with my ethical clearance to use archives featuring participants who are still alive while maintaining citational integrity, I have pseudonymised any historical actors that are not central to the ACM Hypertext community or the donors of the archival materials.
3. In the 1987 edition of *Computer Lib/Dream Machines*, Ted Nelson suggested that it was only in 1986 that "the word 'hypertext' came into common use" (Nelson, 1987, p. 12).
4. The hypertext-adjacent Joint Conference on Digital Libraries remains a collaborative endeavour between the ACM and IEEE.
5. Anders Berglund's work on CERNDOC, an implementation of SGML at CERN had a greater influence on Berners-Lee's implementation of the Web (Gillies & Cailiau, 2000, pp. 178–180).
6. The third, John B. Smith, was the chair of the event.
7. Replaced by Tinderbox in Eastgate System's line-up.

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