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reading platforms alongside live-feed and subscription-based content.

The generic term *e-book* continues to confuse textual content with a physical format (the codex book). In early designs of e-books, some clumsy attempts were made to imitate physical features of the book, such as page drape or page turning, but the first formats were little more than a continuous stream of text navigated with forward and back arrows. More essential features, such as bookmarks, tables of contents, indices, marginalia, footnotes, and bibliographical references, came more slowly. Among the most dramatic transformations of migrating texts from print to digital formats was that typographic and layout features were eliminated, as if these had no relevance to the experience of reading. Governed by the conviction that content is independent of format or material history, and that the experience of reading a text produces the same results no matter how the reading material is received, this repurposing of text for digital delivery sacrificed some of the crucial aesthetic dimensions of codex books.

A basic conceptual tension continues to drive design of e-books along the lines of emulation and imitation, whether to design them to resemble physical books in a virtual screen space, or whether to let the electronic capabilities push their design toward a new form uniquely suited to the digital, networked environment. Increasing emphasis on repurposable intellectual content and works produced across an array of related platforms is also creating imaginative design solutions. In their brief existence, e-books have acquired increasing sophistication, such as the capacity for annotation, underlining, navigation, search, and cross-reference. Electronic document design has taken advantage of the ability to use embedded media for audio and video, as well as special effects created with augmented and virtual reality platforms. As devices have differentiated, competition for market share has intensified the drive to distinguish pads, platforms, and tablets from each other by pitting price point against specific features, and many major companies are focused on the potential for merging entertainment, games, reading, fiction film, and educational activities in new ways.

The great advantage of e-books is mobility and convenience, replacing the bulk and heft of paper-based volumes with a single device that holds a library of materials in a single place for immediate and repeated use, thus producing the consumerist illusion of infinite supply available on demand.

One of the unexpected consequences of the development of e-books has been the intense reflection it has prompted on the character of the codex book as a material form. Even as pads and tablets become more common and the experience of reading focuses on the screen, interest in the material history and design of the physical codex is growing. As new devices and platforms emerge, attention to the relation between specific materialities and the aesthetic expression may increase, with benefits accruing to all media formats as a result.

■ See also BOOK TO E-TEXT, HISTORY OF COMPUTERS, MOBILE GAMES

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Electronic Literature

Scott Rettberg

Electronic literature is a generalized term used to describe a wide variety of computational literary practices beneath one broad umbrella, defined by the Electronic Literature Organization (ELO) as "works with important literary aspects that take advantage of the capabilities and contexts provided by the stand-alone or networked computer."

The term is somewhat fraught and often challenged as not sufficiently or accurately descriptive to suit the more taxonomically minded of its scholars and practitioners. By way of reduction and assemblage, one might patch together definitions of "electronic" and "literature" in a way that makes some sense: "electronic literature is the result or product of literary activity carried or performed using the computer." But of course, that would leave us with most literary activity that takes place in the contemporary era. What is really meant by "electronic literature" is that the computer (or the network context) is in some way *essential* to the performance or carrying out of the literary activity in question.

Prior to the 1990s, the term *electronic literature* was most often used to refer more generally to texts that appeared or were stored in electronic form. This usage is still not uncommon, particularly in scientific fields. Research published in online journals or databases might be referred to as "the electronic literature" of the given field.

Jill Walker Rettberg (2012) found evidence that Jay David Bolter was using the term to refer specifically to literary works made for the computer as early as 1985 in an article titled "The Idea of Literature in the Electronic Medium." In their 1987 Hypertext Conference paper "Hypertext and Creative Writing," which was the first presentation of the Storyspace hypertext authoring software, Bolter and Joyce use the term once, writing, "All electronic literature takes the form of a game, a contest between author and reader" (see *STORYSPACE*). Bolter again uses the term in the 1991 edition of *Writing Space*.

By the mid-1990s the term was in wider circulation and referred specifically to born-digital literary artifacts. Walker Rettberg notes that one prominent use of the term was in Robert Kendall's "Writing for the New Millennium: The Birth of Electronic Literature," published in *Poets & Writers*, a popular magazine targeting an audience of American writers.

In the mid-1990s *electronic literature* was one of many terms in circulation to refer to digital writing practices and was by no means the most prominent. *Hypertext fiction* and the more generic *hypertext* were terms generally used to describe the works published by

The ELO's simple definition of electronic literature is supplemented by a list of "forms and threads of practice," including

- hypertext fiction and poetry, on and off the web;
- kinetic poetry presented in Flash and using other platforms;
- computer art installations that ask viewers to read them or otherwise have literary aspects;
- conversational characters, also known as "chatterbots";
- interactive fiction;
- novels that take the form of e-mails, SMS messages, or blogs;
- poems and stories that are generated by computers, either interactively or based on parameters given at the beginning;
- collaborative writing projects that allow readers to contribute to the text of a work;
- literary performances online that develop new ways of writing.

This list was intended not to be exclusive or constraining but to serve as a leaping-off point for further extensions, and that has certainly been the case as one surveys the works that have been published by the ELO in two collections and exhibited by the organization at its conferences in the years since. Some of these forms are clearly established as forms of e-lit: in particular, hypertext fiction and poetry, kinetic poetry (or alternatively "media poetry"), interactive fiction, and generated poetry and fiction all have a substantial history at this point. If hypertext fiction's heyday in the 1990s has come and gone, one can certainly point to a substantial body of creative work and critical discourse around it. Kinetic poetry and its cousins today remain the subject of major international festivals and exhibitions. Interactive fiction is the focus of a thriving amateur creative community. Poetry and fiction generators (see *COMBINATORY AND AUTOMATIC TEXT GENERATION, STORY GENERATION*) have perhaps the longest history of any of the forms concerned, stretching back to Christopher Stratchey's 1952 *M.U.C. Love Letter Generator* and remaining a subject of considerable creative and computational activity today.

Looking at the ELO list of examples of electronic literature, there are also some (possibly instructive) anomalies. Was it necessary to specify one particular brand of software—Flash? And how precisely do computer art installations "ask viewers to read them"? Perhaps both of these questions point to some of the ambiguities of electronic literature. One such ambiguity is the importance of platform: while Flash was much less dominant in digital poetic practices in 2012 than it was in 2004, it is very much the case that a creative community of digital poets and art makers gathered around that specific platform in the late 1990s and early 2000s, just as a community of early hypertext fiction writers had gathered around the particular platform of Storyspace earlier (see *STORYSPACE*). The platform in electronic literature constrains and affords practices in a material—and some might even say determinative—way. While it might have mattered very little, for instance, which make of typewriter one used to pound out a manuscript, the use of guard fields in a Storyspace hypertext or tweens in a Flash poem has very specific aesthetic effects on the way that a reader interacts with and perceives a work.

In the other phrase referring to computer art installations, we see one of the ways that we are pulled in different directions. If the person experiencing a computer art installation is a "viewer," but she is also asked to read it, is she not also then already a "reader" (see *READING STRATEGIES*)? Or is she most likely both a viewer and a reader? Many electronic

literature installations are what Dick Higgins would have described as *intermedia*. Such an installation might be described as an art installation in one context and a literary work in another, or both simultaneously. The idea of pure forms breaks down, as does a strict ontology of the work itself. Just as it is the case that these sorts of installations are both artwork and literary artifact, calling for both spectacular affect and readerly contemplation, it is most often the case that works of electronic literature are both *written* works in the sense that we understand most literature to be and computer programs that we *run* and of which we are *users*. We encounter electronic literature as both a reading experience and an application, an artifact that may also encompass the tool used to produce it.

The inclusion in the list of "novels that take the form of e-mails, SMS messages, or blogs" (see *E-MAIL NOVEL*) is an indication of the directions we might expect electronic literature to take in the future. The particular communication platform listed (when is the last time you heard someone refer to a text message as an SMS?) is not particularly important. The essential idea here is that our communication technologies effect changes in the form, style, and content of writing, and that just as literary forms have been modified, and literary genres have emerged, from every previous historical shift in textual communication technologies, we might expect that novels will be written in the networked platforms that have been widely adopted as part of the practice of everyday life. Who will write the Great American Facebook novel, or best encapsulate a moment of epiphany in a work of cathartic Twitterature? And will we even, at that point, recognize the relationship between those and the forms that preceded them?

The last two items on the list, "collaborative writing projects that allow readers to contribute to the text of a work" (see *COLLABORATIVE NARRATIVE*) and "literary performances online that develop new ways of writing" (see *PERFORMANCE*), are the least descriptive of precise forms of genres, yet they gesture toward a certain direction of literary practice without necessarily guiding us there by hand. Collaborative writing projects might include many different types of practices. While *Wikipedia* would likely not fit anyone's understanding of electronic literature, projects such as Judd Morrissey, Mark Jeffrey, et al.'s narrative database project *The Last Performance*, which involves contributions by more than a hundred contributors responding to a shared set of constraints and together building a kind of literalized architecture, certainly do. While "literary performances online" might involve just about any kind of writing that unfolds over time on the network, performance is an apt way of describing practices that do not seem intent on sitting still long enough to be understood as discrete artifacts. Particularly when the dominant environments of textual exchange online, such as contemporary social networks, are based more on a model of rapidly flowing conversation than they are on anything approaching the fixity of a book, one can anticipate that performance work, such as Alan Sondheim's various textual and extratextual actions on e-mail lists and virtual worlds, Mez's deconstructive interventions, or Rob Wittig and Mark Marino's "netprov" projects, will increasingly become representative of one type of electronic literature more based on the experience of unfolding process, interaction, and response than on movement toward a fixed literary artifact.

The list of examples of different electronic literature practices provided by the ELO could have gone for pages without arriving at a clear stopping point, and that is ultimately *the* point. Electronic literature is experimental literature and is not as yet tied to any specific market logic. It is literary research and development, but of a particular

Eastgate Systems to refer to node-based literary works connected by links (see *HYPERTEXTUALITY*). The generic *hypertext* itself was defined by Ted Nelson, first in 1965 as “a body of written or pictorial material interconnected in such a complex way that it could not conveniently be presented or represented on paper,” and then in 1970 as “forms of writing which branch or perform on request.” Both of Nelson’s definitions of *hypertext* are broadly applicable to the majority of types of work that are understood as electronic literature today. Works of e-lit are generally interconnected in ways that are not easily amenable to print publication, and they branch, or importantly *perform* on request. Yet, as Noah Wardrip-Fruin notes, by the late 1990s “in the literary community, the definition of hypertext shifted so that it applied almost exclusively to chunk-style media” (2004, 127). Owing to both the prominence of Eastgate-published hypertexts such as Michael Joyce’s *afternoon, a story* and Shelley Jackson’s *Patchwork Girl* and even more profoundly the brand of hypertext encoded in HyperText Markup Language (HTML), in the late 1990s hypertext was largely understood to be works of the link-and-node variety (see *MARKUP LANGUAGES*). If one forgot Nelson’s original definitions, hypertext would seem an awkward fit, for instance, with an aleatory or generative work that produced a new narrative each time it was run, or with a digital poem that moved in the space of the screen yet required little interaction from the reader (see *DIGITAL POETRY*). While both of these can be understood as hypertexts in Nelson’s sense that they perform on request, neither can be easily parsed into a link-and-node structure.

Other terms also presented problems. While one might think, for instance, that the term *interactive fiction* could be applicable to any work of fiction in which the user’s interaction plays a significant role in determining the structure or outcome of a story (including the order in which nodes are displayed in a hypertext fiction), the term was already colonized by the devotees of the text adventure game-based genre (see *INTERACTIVE FICTION*). An active “IF Community” had already by the 1990s developed an elaborate self-sustaining infrastructure for the development and distribution of works in this text parser genre, complete with its own platforms, archives, and competitions. So while hypertext fictions were interactive in the sense that their readers would select links or follow paths, they were distinct from the type of “interactive fiction” that requires its readers to type queries and instructions to participate in the narrative.

In the 1990s, there indeed seems to have been a tension between the literary hypertext community and this definition of interactive fiction. Indeed, hypertext author John McDavid reports that members of Rob Swigart’s 1988 hypertext fiction workshop felt that the phrase “This is not a game” was so important to early hypertext practitioners that they put it on a t-shirt “in *real* big letters” (Wardrip-Fruin 2005). In the same article, Stuart Moulthrop reports that in retrospect “our allergy to games looks incredibly foolish, both because Infocom’s market experience didn’t end all that happily, and more important because there was so much good work coming out of [the interactive fiction] community, and still is.” There was clearly anxiety among hypertext fiction writers, who considered their work to be part of a literary tradition, to see their work classified as “mere game.”

E-poetry and *digital poetry* are terms that were also in circulation in the mid-1990s and are still used today. The circulation of “e-poetry” is largely due to the success of the Electronic Poetry Center at SUNY Buffalo, spearheaded by poet Loss Glazier and the subsequent launch in 2001 of the E-poetry Festival. The E-poetry Festival has seen five further biennial iterations. As in electronic literature, or e-mail, the e- in e-poetry represents “electronic” and as such is equally ambiguous. While e-poetry does not have any

implicit connotation of link-and-node, it is exclusive in the sense that fiction, documentary works, or drama would generally be considered outside the frame. Some might argue that “digital poetry” or “digital literature” would be better terms. “Digital poetry” of course excludes fiction in the same way as “e-poetry,” but “digital literature” has a slightly more denotative frame, in that at least one of the *Oxford English Dictionary* definitions of digital (“Of a computer or calculator: that operates on data in digital form; [of a storage medium] that stores digital data”) both specifies computers and sets itself in direct contrast to “analog” (see *ANALOG VERSUS DIGITAL*). Yet “digital” is almost as imprecise as “electronic” as a modifier. And while the involvement of the computer is essential to this sort of work, the underlying binary nature of its operations might seem less so.

Cybertext is a term neologized by Espen Aarseth in the eponymous monograph *Cybertext* and caught on during the 1990s. The “cyber” prefix was derived from the Greek *kubernan*, a verb meaning “to steer or guide,” and Aarseth’s term directs attention to the configurative operations of many ergodic works, which require nontrivial effort from the reader in order to traverse the text. Of course, there is no particular reason why cybertexts need be electronic—the *I Ching* is one of Aarseth’s prominent examples—nor that they be particularly literary. Many computer games that make no effort to offer either narrative or poetry easily could fit within Aarseth’s typology.

When the first organizers of the ELO were debating the name of the new nonprofit organization back in 1999, they consciously chose to use this term rather than hypertext, digital poetry, interactive fiction, writing for programmable and networked media, or any other more specific term precisely because of its generality. As previously noted, in 2004, the ELO agreed to define electronic literature as “works with important literary aspects that take advantage of the capabilities and contexts provided by the stand-alone or networked computer.”

As a number of people have pointed out subsequently, the phrase “important literary aspects” is a bit slippery. In *Electronic Literature: New Horizons for the Literary*, Hayles excuses the tautology of this phrase, explaining that readers “come to digital work with expectations formed by print” and that “electronic literature must build on these expectations even as it modifies and transforms them.” Hayles further draws attention to the distinction between “literature” proper, which one might presume is limited to verbal art forms in which words are dominant, and “the literary,” which Hayles proposes as “creative artworks that interrogate the histories, contexts, and productions of literature, including as well the verbal art of literature proper.” Hayles felt this distinction important largely because of the fact that when she, Nick Montfort, Scott Rettberg, and Stephanie Strickland were editing the *Electronic Literature Collection*, volume 1, in 2006, they encountered in the submissions, and indeed chose to include in the collections, a number of works in which the written word was not the primary focus if indeed it was present at all. Giselle Beiguelman’s *Code Movie 1*, for example, is a movie that presents the hexadecimal code of a jpg in an animation with music. The numbers fly past and would signify nothing were it not for the fact that they are the signifiers underlying an object that is never seen within the work itself. There are no words in the piece, yet the editors chose to include it in the *ELC 1* because it deals in an interesting way with the relationship between code and language, transcoding and transcription (see *CODE*). So while it is not primarily concerned with language per se, it is about writing, and about how meaning is made in digital environments. As Hayles would argue, it is a literary work even if it itself is not literature.

strain that does not necessarily have any specific destination in mind. Writers and artists will always work with the materials available to them in their cultural moment, and the computer and network are now part of that toolkit. From a creative standpoint, layers of constraints have dropped rapidly away from writers. Consider that it was not so long ago that including a song, or a video clip, or information about the reader's location, or an interface that enables the reader to physically enter a three-dimensional environment would have been completely beyond the reach of most writers. There are a plethora of new tools and techniques available to literary practitioners. The skills and knowledge necessary to make use of all of these new affordances range from trivial to profound—it takes very little knowledge to embed a video clip but a rather long time to learn C++. But the majority of the creative constraints on electronic literature are, at this point, those that the authors choose for themselves.

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Electronic Literature Organization

Marjorie Luesebrink

The Electronic Literature Organization (ELO) was founded in 1999 to foster and promote the reading, writing, teaching, and understanding of literature as it develops and persists in a changing digital environment. A 501(c)(3) nonprofit organization

focus is new literary forms that are made to be read on digital systems, including smartphones, web browsers, and networked computers. The ELO's definition of e-literature and its history, goals, activities, and projects/publications contribute to this focus.

The ELO and E-literature

The ELO exists in the context of the computer as a literary element. The term *electronic literature* refers to works with important literary aspects that take advantage of the capabilities and affordances provided by the stand-alone or networked computer. Within the broad category of electronic literature are several forms and threads of practice (see ELECTRONIC LITERATURE).

The field of electronic literature is an evolving one. Current literature not only migrates from print to electronic media; increasingly, "born-digital" works are created explicitly for the networked computer (see BOOK TO E-TEXT). The ELO seeks to bring this network and the process-intensive aspects of literature into visibility.

The confrontation with technology at the level of creation is what distinguishes electronic literature from, for example, e-books, digitized versions of print works, and other products of print authors "going digital" (see E-BOOKS).

Electronic literature often intersects with conceptual and sound arts, but reading and writing remain important to the literary arts. These activities, unbound by pages and the printed book, now move freely through galleries, performance spaces, and museums. But electronic literature does not reside in any single medium or institution.

Because information technology is driven increasingly by proprietary concerns, authors working in new media need the support of institutions that can advocate for the preservation, archiving, and free circulation of literary work. The ELO has continually made common cause with organizations such as Creative Commons, Archiving the Avant Garde, ArchiveIT.org, and the United States Library of Congress, to ensure the open circulation, attributed citation, and preservation of works (see FREE AND OPEN-SOURCE SOFTWARE).

The ELO promotes the discovery of talent and common areas of interest among the membership. The ELO is affiliated with organizations that are allied with the extensive network of people who produce works and the audience that reads, discusses, and teaches e-lit.

History

In the mid- to late 1990s, realizing the promise that electronic media offered for literature but noting the lack of a supporting infrastructure, practitioners, readers, and scholars began discussions on the specifics of groups that would meet this need. Conferences such as "Open Technology Platforms for 21st Century Literature" (hosted by Robert Coover at Brown University in April 1999) and "The CyberMountain Conference" (organized by Deena Larsen in Denver, Colorado, in June 1999) outlined plans for the formation of an electronic literature organization.

The ELO was formally established in late 1999 by electronic author Scott Rettberg, novelist Robert Coover, and Internet business leader Jeff Ballowe. They assembled a board of directors that included writers, publishers, Internet industry leaders, and literary non-