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Challenges to Archiving and Documenting Born-Digital Literature: What Scholars, Archivists, and Librarians Need to Know

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In October 2015 I visited the David M. Rubenstein Rare Book & Manuscript Library at Duke University to conduct research into *Uncle Roger*, the first commercial work of electronic literature by pioneering artist Judy Malloy. There, among the twenty-seven boxes comprising the Judy Malloy Papers, I sifted through notebooks, computer readouts of code of her works, images she took of her many works, correspondence with other artists, and exhibition papers. The materials associated with *Uncle Roger* were contained primarily in Box 3. Despite the fact that *Uncle Roger* was limited to one box and was organized in folders, it was still difficult to determine what constituted the serial novel, what can be called Version 1.0, or where the information was located for the database narrative created in GW-BASIC, or Version 4.0. Furthermore, the hand-made artist's box with hand-designed inserts, Version 3.3, was dispersed in different folders in the box, and the floppy disks themselves were archived separately and were, understandably, inaccessible for use. Unless someone knew exactly what they were looking for among the materials in the archive, they would have

not known that the item entitled “Topic 14: A Party in Woodside, as first told on WELL, 1986 December” represented *Uncle Roger, Version 1.0*, or known to look for *four* inserts for Version 3.3.

My experience with *Uncle Roger* is not unique. Electronic literature scholars can point to many examples of works where digital and analog materials are packaged together as “the work.” Some, like John McDaid’s *Uncle Buddy’s Phantom Funhouse*, include music cassettes, among many other items. Others, like Kate Pullinger, Stefan Schemat, and Chris Joseph’s *The Breathing Wall*, were packaged peripheral technology; this particular example came with a headset with a microphone along with the work on CD-ROM. Even web-based works like Amaranth Borsuk and Brad Bouse’s *Between Page and Screen*, may necessitate a print book. In light of current archival practices, how does one make such works available for study so that they retain their integrity? Herein lies the challenge.

I have attempted to address this challenge with the lab I have built for works of electronic literature at Washington State University Vancouver and the documentation I’ve been doing in that lab for these works. The lab is called Electronic Literature Lab, or “ELL,” and the documentation project is called *Pathfinders*.

Enter ELL

ELL consists of forty-five vintage Macintosh computers and two PCs, all representing various operating systems and media affordances dating back to 1977 and collected for the purpose of accessing electronic literature and documenting it for future generations. It also consists of a personal library of over 200 works of e-lit catalogued in an online database.

I began putting together my library when I was a graduate student in the early 1990s. As time passed, I became acutely aware that works produced a mere twenty years ago were quickly becoming forgotten and overlooked. After the introduction of the Apple iPhone in 2007, which has rendered works produced in Flash obsolete, I shared my collection through exhibits, which I have done at the Library of Congress in the United States and the Modern Language Association conferences in 2012, 2013, and 2014, among other venues.

While preservationists are able to make some electronic literature works available via emulation and migration, copyright laws prevent many early works from undergoing these processes. But beyond the legal issues, something is indelibly lost in moving electronic literature from its original source material into a new format. ELL, instead, follows the model of preservation called “collection,” by making it possible for scholars to study works on the device on which they have been originally produced or for which they were originally accessed. Anyone reading the emulated

version of Malloy's *Uncle Roger* instead of the Apple IIe, for example, can understand the different experience the migrated version affords. Lost in translation are the sounds—the beeps and whirring—the computer makes when interacting with the work that let us know we were on or off the right track, the heaviness of the computer keys when striking them with one's fingertips, and bright green words flickering slightly against the dark green background of the interface itself, sensory modalities indelibly inscribed as the shared cultural experience at the time of the work's publication.

Enter *Pathfinders*

Since its inception, ELL has drawn one post-doctoral student a year and has seen many visitors at its lectures, artists talks, workshops, and courses, but like any specialized lab or library it is challenged when making the work in the library widely available to scholars. Enter *Pathfinders*, a project funded by the National Endowment for the Humanities' Office of Digital Humanities and led by Stuart Moulthrop and me.

In 2013 we harnessed ELL to document four seminal works of early digital literature: Judy Malloy's *Uncle Roger* (1986–8), John McDaid's *Uncle Buddy's Phantom Funhouse* (1993), Shelley Jackson's *Patchwork Girl* (1995), and Bill Bly's *We Descend* (1997). We chose these four because they are examples of long-form writing that represent a specific individual contribution unique to the field as well as reflect a wide range of experimentation taking place during this period. As mentioned previously, Malloy's *Uncle Roger* was first published in 1986 as a serial novel delivered to an online audience on the *Whole Earth 'Lectric Link* (WELL). Later iterations were migrated to platforms by re-programming it in UNIX Shell Scripts, Applesoft BASIC, GW-BASIC, and HTML. John McDaid's *Uncle Buddy's Phantom Funhouse* was produced with HyperCard, a software application available on Apple computers for creating hypermedia. Like Malloy's *Uncle Roger*, *Funhouse* is a novel, but one that includes sound and printed elements as part of its storytelling strategy. Shelley Jackson's *Patchwork Girl*, produced with Storyspace—a hypertext authoring system created and sold by Eastgate Systems, Inc.—is viewed by many as the high point of hypertext literature in the pre-web period of the early digital age. Finally, Bill Bly's hypertext novel *We Descend*, also created with Storyspace, takes advantage of the affordances of this tool to experiment successfully with the multitemporal narrative and intricate narrative structure.

The method innovated for documenting these is called the Traversal, which Stuart and I define as audio and video recordings of demonstrations performed on historically appropriate platforms (Grigar and Moulthrop 2015). It involves a reflective encounter with a digital text in which the possibilities of that text are explored in a way that indicates its key features,

capabilities, and themes. The term is borrowed from Michael Joyce who used it in his essay, “Nonce Upon Some Times: Rereading Hypertext Fiction,” to refer to any particular reading of a hypertext (Joyce 1997: 581). His use of the term was adopted from directed-graph theory and influenced by Espen Aarseth’s notion, from *Cybertext*, of the “traversal function,” the mechanism by which certain elements of a systematic text are presented in a specific encounter or reading (Aarseth 1997: 62). For Stuart and me the Traversal always involves human agency, even though it may be strongly inflected by program logic or machine operations.

As we have conceived it, a Traversal must take place on equipment as close as possible in configuration to the system used to create the work, or on which the work might have been expected to reach its initial audience. This specification has two important consequences. First, it ensures fidelity to the original product. Some of the works we considered (and as we discovered, more than we first thought) have been re-engineered and even rewritten for later platforms. Using historically appropriate equipment allowed us to recognize these changes, in some cases bringing them to light for the first time. The use of early equipment also manifests subtle but important aspects of the original user experience. Malloy’s Narrabase works begin with the whirring and clicking of the floppy drive, a kind of computational theme song, before resolving to the words, “Bad Information.” *Patchwork Girl* and *We Descend* both open with initialization screens that enumerate the works’ complement of spaces and links—a display that flashes by all too quickly on newer, faster machines. The physical context of the work is most salient in *Uncle Buddy’s Phantom Funhouse*, which consists of a box of artifacts, including the backup disks from a vanished writer’s hard drive. These objects literally demand an antique Macintosh and, as mentioned previously, a vintage cassette player.

Our Traversals method requires the author and then two readers to perform the work, talking through choices they encounter. Passages are read aloud, hyperlinks are selected and announced, and experiences with the words and media elements are expressed.

Stuart and I videotaped the Traversals and photographed the floppy disks, the containers with which they were sold, and other materials in the package. In some cases we included sound files of works. We provided detailed textual descriptions of the liners of the jewel cases and the notes packaged along with the folios so that if someone in the future wished to recreate the ephemera that accompany the work itself, he or she could. The result of our effort is a multimedia book published in June 2015 on the open-source Scalar platform, containing 173 screens of content, including 53,857 words, 104 video clips, 204 color photos, and 3 audio files. To date we have had over 10,000 scholars from close to 250 universities, centers, libraries, and schools (Grigar and Moulthrop 2015).

What *Pathfinders* Means for the Literary Archival Experience

Imagine with me, if you will, another type of experience with the Judy Malloy Papers at the Rubenstein. This time the scholar is carrying her laptop and has accessed the section on Malloy at the *Pathfinders* book. She is interested in looking at Version 3.3 of *Uncle Roger*, so she opens Box 3. She knows from *Pathfinders* that she should probably study the materials in the folder marked “A Party in Woodside, Apple II version written in BASIC, 1987.” She also knows that she probably needs to look for the folder, “The Blue Notebook, Apple II+ version, written in BASIC, 1988,” and should also consult “Terminals, stand alone copy (disk removed),” as well as “Packaging, disk components” and “Packaging, disk versions, Apple II (disks removed).” In fact, any folder that alludes to a disk for an Apple computer is more than likely related to *Uncle Roger*, Versions 3.1, 3.2, and 3.3. And because she cannot access the floppy disks, she can watch *Pathfinders*’ videos of Malloy traversing through a section of the work and hear the author talk about the production of all three parts of it in videotaped interviews with her. She can compare the materials she is examining in the boxes with the images of Version 3.3 used for the *Pathfinders* project. Doing so provides her with an understanding of the variances between the different artist boxes hand-made by Malloy, thus coming to see the level of material practice involved the digital production of this work.

My lab continues the *Pathfinders* project as *Rebooting Electronic Literature*, publishing an annual open-source, multimedia book by the same name. Thus far, we have documented 16 additional born-digital works, including Michael Joyce’s *afternoon, a story*; M. D. Coverley’s *Califia*, Deena Larsen’s *Samplers*, Rob Kendall’s *A Life Set for Two*, J Yellowlees Douglas’ “I Have Said Nothing,” and Stuart’s own *Victory Garden*. Since these works are inaccessible to readers due to technological obsolescence, the work that Stuart and I are undertaking with *Pathfinders* in labs like ELL to make them available for study, even at the level we are doing, contributes to long-term study of them.

Back to the Challenges at Hand

My work with documenting electronic literature raises five important questions about digital preservation:

1. For what kinds of digital objects is one approach to preservation more desirable than another?

I have been, for example, experimenting with preserving literary apps and have found that each new version of an app's operating system can result in a new version of the work, or that the work itself is updated to fix bugs and include new and better features. It is not possible to save multiple versions because the new one overwrites the old. Thus, in order to preserve versions of an app, I have to have as many smart devices as updates—an expensive endeavor. Also, beta versions I am sent to review are limited in terms of the time frame in which I get to access them. This limitation makes it impossible to compare the commercially published version with the beta version or to collect betas for long-term study.

2. How can differing approaches be combined or coordinated to best serve the interests of future scholars?

In the case of Judy Malloy's *Uncle Roger*, the 1995 migrated web version (Version 5.0) and 2012 DOSBox emulated version (Version 6.0) both provide readers ongoing and ready access to the authorized version of the work. The latter especially works to recreate some of the visceral experience of interacting with a 1980s computer in that it simulates whirs and clicks that one associates with a 1980s computer though it should be noted that these sounds are not the same as found on the original Apple and PC computers. Additionally, the original computer provides a frame that timestamps the work, thus adding to our knowledge of the work much in the same way an original frame provides context for a painting it was constructed to hold into place and showcase. Thus, what Stuart and I learned through *Pathfinders* is that one method of preservation may not be enough; multiple approaches may be necessary to preserve electronic literature effectively for long-term study and understanding of a work.

3. What can researchers working on one sort of digital production (electronic literature, for instance) learn from those concerned with different but related areas (e.g., video games, digital writing more broadly conceived, or social-network discourse)?

I have been guiding students in my academic program with documenting video games with the Traversal method. One such project, *Chronicles: Documenting the Articulation of Culture in Video Games* by Madeleine Brookman, documents the iconic Japanese Role-Playing-Game, *Chrono Trigger*, released originally in 1972. This publication made an excellent case study for the application of the Traversal method to other media forms and showed that it does lend itself to documenting games.

4. How, can researchers approaching the posterity of digital texts from diverse directions benefit from exchange of perspectives and results?

A little over a month ago, I received an email message from Michael Joyce, author of *afternoon, a story*, considered one of the most important works of American electronic literature today. It was published in 1990 on 3 ½-inch floppy disks and later migrated to CD-ROM technology. However, Apple computers running the El Capitan operating system cannot read the work. Curators of the *Paraules Pixelades* exhibit at the Art Santa Monica in Barcelona wanted to show *afternoon* but could not. Michael wanted to know if Stuart and I had produced a video of a Traversal of it. We had not. But within a week we produced one—James O’Sullivan, an electronic literature scholar at University of Sheffield who was visiting my lab, served as a reader for a Traversal, which we videotaped. We were able to send the video to the curators, and the work could be exhibited as a video Traversal. We fully understand that what the audience saw was not the work itself; but what they were able to experience was a performance of it, and it allowed the work to live on to a new audience.

5. How best to make works available in a way that keeps the work in tact so that it retains its integrity?

The answer to this question is twofold: it is helpful if the work is well cataloged in a database, and it is situated in the archive with all of its accompanying materials as one cohesive work.

In regards to the database, identifying and cataloging all elements of a work allows scholars to call up information about the work easily and coherently. For example, if one searches for M. D. Coverley’s *Califia* in the ELL catalog, he or she will find five copies: two of the versions sold by Eastgate Systems, Inc., and three different beta versions. Upon closer inspection of any of these copies, a viewer would see the work’s logo found on the CD-ROM jewel case cover on which the work was published; publication information; a brief description of the work; a link to the official website of the work; information about the format, copies, and notes; and information about the operating systems for which the work can be accessed.

In regards to the physical archive, a work like Stephanie Strickland’s *True North* is both a hypertext published by Eastgate Systems, Inc. in 1997 and a book of poetry published by the University of Notre Dame Press that same year. Because the hypertext is a rearticulation of the book, it is important to keep them together in the archive. Along with these items are the review I wrote of the hypertext, *True North*, for the *American Book Review* in 1997. Thus, electronic and print components are retained together with the work itself available to be viewed and experienced by scholars visiting the lab and collection.

Final Argument

The approach to archiving the physical materials of a work of electronic literature that I am suggesting runs against the mandate to preserve, for if these items—including the floppy disks, diskettes, and CDs—are made available for scholars to use, then they are in danger of being corrupted and/or ruined in the present time, and if the physical materials are not separated by type, then the specific practices needed to safeguard paper, plastic, and the rest against environmental and natural dangers indigenous to them will not be correctly followed. However, the goal of ELL, unlike some other collections, is *not* to preserve individual works for posterity but rather long enough to allow for the works to be properly *documented* for posterity. Truth be told, if I indeed held floppy disks of *Uncle Roger* in an environmental-friendly vault for the next 100 years, there is still no guarantee that the work would survive and lend itself to be read. All it guarantees is that it is still a physical artifact in a sleeve marked *A Party in Woodside*. Without documenting it via *Pathfinders*, Malloy's own diligent efforts, and scholarship of researchers interested in the work because it is available today to be experienced, few if anyone would know what *A Party in Woodside* means.

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