

Volatility, Instability, Ambiguity: the Evolving Digital Record
by Marlene Manoff (mmanoff@mit.edu), April 2007

I've been building collages since I was a teenager. My methods have remained roughly unchanged. I cut up books, magazines and catalogs. I assemble and glue hundreds of cut up paper images onto a flat surface. The results were always difficult to read. Viewers would get up really close trying to figure out what they were looking at. And that was part of the point. But somewhere in the last few years viewers have begun to read my collages differently. Almost everyone now wonders whether they are looking at digitally created images. At first I wasn't sure what to make of this although I liked the fact that, if anything, the pieces had become even more ambiguous. Recently I decided to embrace the confusion by adopting a digital metaphor for my analog work. I named the exhibit currently in the MIT Humanities Library "Ripped and Recoded: Collages by Marlene Manoff" (<http://news-libraries.mit.edu/blog/archives/304>).

As a librarian, I'm acutely aware of the growing ambiguity of cultural objects. I see it playing out on a grand scale. The world is awash in new digital objects that resist our attempts to describe and categorize them. These objects are forcing us to see more traditional physical artifacts in new ways. The recent growth of interest in the history of the book is largely the result of a new self-consciousness. Emerging information technologies have encouraged us to see the evolution of the book as part of a larger historical process. Just as I've been forced to rethink the effects produced by my paper-on-paper collages, many of us are being challenged to rethink the nature of cultural objects.

Acquiring, preserving and making accessible new media and new forms of cultural production are provoking a re-conceptualization of libraries, museums and archives. As described in the call for papers, “traditional printed texts – and films and TV shows as well – invoke, allude to and define themselves against their rivals and ancestors...”ⁱ Libraries, museums and archives preserve those rivals and ancestors so as to enable research as well as the creation and transmission of new cultural objects. These institutions are at the heart of both cultural and academic production. Scholarship is essentially an interpretation of and a contribution to the historical record.

The rapid growth in information technologies and the ubiquity of mass media have both contributed to fears about a loss of historical memory and fueled compelling speculation about the role of the archive in the reproduction of culture. In part this has meant a recognition of the contingent nature of the historical record – the way it is shaped by social, political, and technological forces. If the archive cannot or does not accommodate a particular kind of information or mode of scholarship, or if for some reason scholarship or cultural work cannot be preserved, then it is effectively excluded from public memory. While computers are in many ways the ultimate memory tool, providing the ability to store and access immense bodies of information, they introduce new vulnerabilities because the digital record is particularly susceptible to manipulation, distortion and erasure. We have yet to find ways to preserve and guarantee future access to content created on continually evolving hardware and software. Since the introduction of computers in the 1960s, tremendous amounts of information have been lost to superseded

platforms just as huge amounts of information disappear daily from the web. A growing literature is helping us understand the ways in which both the electronic and print record may be at risk.ⁱⁱ

One of the more interesting aspects of preserving both old and new kinds of cultural objects is that it forces us to think about them differently. The difficulties of integrating digital objects into collections of books, manuscripts, papers, paintings, drawings, tapes, microforms, etc., provide new insight into the nature of these objects and shed light on the way in which history shapes our assumptions about the nature of cultural artifacts.

In the past fifteen to twenty years libraries have undergone a process not unlike other postmodern institutions – a blurring of categorical distinctions, a melting or erosion of the boundaries between the new and different kinds of work that they do and between the new and different kinds of objects to which they provide access. Users find it difficult to distinguish library catalogs from indexes, from full-text databases, from e-books, from document delivery, from interlibrary loan and from whatever else libraries are choosing to mount on their local networks.

The boundaries between libraries and the rest of the world are also becoming more porous. As scholarship is increasingly made available online, we are witnessing a disappearance of the border between academia and the rest of the world. The scholar and her work have become nodes on a vast information space that both integrates and confuses commerce and culture. Similarly, we are witnessing an erosion of the distinction

between the library and the network. Users often cannot distinguish precisely where a library's web presence ends and where resources mounted elsewhere begin.ⁱⁱⁱ

Large electronic databases made available by libraries are themselves hybrid entities, blurring the distinctions between indexes, articles, newspapers, journals, statistical data and other kinds of information. Although for many users these distinctions are not important, this hybridity does matter. For one thing, it raises the question of the extent to which libraries (and thus the historical record) depend upon the existence of clearly identifiable objects. Stacks, reserve rooms, circulation desks, reference areas, and library buildings were designed to house and circulate discrete physical artifacts. For many years, anything that libraries needed to save could be accommodated by these arrangements. This is no longer the case.

As libraries devote a growing proportion of their budgets to networked resources, they must address the difficulty of integrating them into traditional bibliographic structures. Many digital resources are in a state of constant change, and so libraries are continually challenged in their attempts to provide reliable pointers to and descriptions of evolving and mutating information objects. Database providers like Lexis Nexis and ProQuest do not guarantee that their database products will remain consistent over time. Their interfaces and search tools change. Particular texts, newspapers or journals in a database may drop out, back-files of journals may disappear or new content may be added without warning. As content disappears from these products, libraries may literally be providing access to a different "object" from one day to the next. This is a radical change in library

practice. Libraries have gone from collecting static, essentially unchanging objects to providing access to digital entities that are notoriously resistant to containment and control. The fundamental problem is that we are witnessing the development of new forms of cultural production that resist integration into traditional bibliographic and material structures for preserving and securing the past.

Libraries have developed systems to authenticate and distinguish versions or editions of printed objects. But the challenges are much greater when there are multiple electronic versions and also when there are both print and electronic versions of ostensibly the same text or object. Roger Chartier, who applauds the benefits of widespread digitization, nevertheless declares that it is "fundamentally wrong" to assume "an equivalence between media and that a text is still the same regardless of its form: printed, microfilmed, or digital."^{iv} Chartier claims that it is essential to preserve the ability "to consult texts in their successive forms."^v To lose access to original texts, whether canonical or mass produced, is to risk "losing the intelligibility of a textual culture that is inseparable from the objects that have transmitted them."^{vi} In the digital environment it is becoming ever more difficult to determine what constitutes an "original text" and even more difficult to imagine how one might go about preserving the intelligibility of a broad swath of digital culture at a particular moment in time.

Libraries face the issue of what constitutes an original or authentic object when selecting material available in multiple formats. New resources may be obtainable in several electronic and print versions. Decisions about whether to acquire and preserve print or

digital versions could have significant impact on future scholarship. Given the greater convenience to users of electronic versions, libraries often choose electronic over print formats, particularly when acquiring scholarly journals. This may assume an equivalence that doesn't always hold. But even if the electronic version is an adequate substitute for print or even when the official or original version is the electronic version, our ability to preserve these versions remains an open question.

Recent initiatives such as Portico and Lockss/Clockss, both supported in part by the Mellon Foundation, are attempts by the library and scholarly community to guarantee the ongoing accessibility of digital scholarship, but these projects are still in their infancy and there is no way to gauge their long-term viability. In a September 2006 report issued by the Council on Library and Information Resources (CLIR), the authors surveyed twelve archiving programs for electronic journals, including the two just mentioned. They found that “current license arrangements are inadequate to protect a library’s long-term interest in electronic journals,... that much scholarly e-literature is not covered by archiving arrangements, and that while e-journal archiving programs are becoming available, no comprehensive solution has emerged and large parts of e-literature go unprotected.”^{vii}

As physical artifacts digital media are prone to degradation over time. This kind of disintegration is sometimes called bit rot or data rot. A more critical obstacle to preservation is that a particular document or digital object may no longer be accessible because the hardware, operating system or application for which it was designed is no longer available. Digital media are often dependent on particular configurations of

hardware and software. This platform dependence is both a manifestation of their materiality and a challenge to their preservation.

Novelist Bruce Sterling addressed the threat of platform dependence when he told a group of computer game designers that he didn't want his words tied "to the fate of a piece of hardware, because hardware is even more mortal than I am."^{viii} Sterling claims that the obsolescence of platforms deprives game designers of the ability to access and experience the work of their predecessors. To address this problem, the Learning Games Initiative at the University of Arizona is building a collection of games and game devices that now includes thousands of games as well as the game systems needed to play them. Describing this project, Judd Ethan Ruggill and Ken S. McAllister, declare an archive central to the serious study of gaming and deplore the fact that scholars of game theory and history often write about games that they haven't seen or played because the games simply have not been available or accessible. Without an archive, Ruggill and McAllister claim that the field of game studies has been "founded on just a wisp of material and experiential history."^{ix} As they note, the challenges of building and maintaining a game archive are substantial and include the space requirements of housing arcade machines the size of refrigerators. But for game scholars, as for scholars in other fields, a reliable archive is not optional.

Bruce Sterling speculates that the lack of artistic respect accorded computer games might be attributable in part to the instability of the medium (and thus the absence of a reliable archive). He claims that "every time a platform vanishes it's like a little cultural

apocalypse."^x The threat of cultural apocalypse is increasing, and not just for video games. As digital formats multiply, the possibilities for saving or migrating the content of the vast quantity of digitally produced information recedes. A major challenge for libraries is to find ways to preserve platform-dependent digital works and to prevent the loss of complex digital media. But how do we decide what can and should be saved and how do we describe it so as to make it accessible?

In a digital environment, libraries wrestle with the question of what it is they are collecting, describing and saving. Is the object the database or is it the journal, the article, or other data that it contains? The electronic environment presents new kinds of questions involving the boundaries of the electronic object. Is a database or a website a single object and does it include every object to which it hyperlinks or that links to it? Is a blog a single object or a different object every time a new entry is posted? What about websites which are in a state of constant flux? Is the same website viewed through two different browsers the same object? Are Mac and PC versions of the same software the same object? If we aren't certain what constitutes the object, how can we know what we are selecting, acquiring, cataloging, storing or archiving? What does it mean to build a library collection in an environment of dynamic and volatile objects?

This is not just a library issue. Our methods for transmitting and preserving culture and for advancing and perpetuating knowledge presuppose the existence of discrete artifacts that can be described, organized and saved as separate entities. In this sense, the networked environment represents a profound shift toward the creation of new aesthetic

and information objects that are deeply embedded within their systems of hyperlinks and given to recombination, repurposing, reformatting and disappearance. One might as well declare the entire Internet to be a single object as to insist that it can be meaningfully carved up into separate preserveable entities.

Research requires the ability to maintain the integrity of evidence. If we cannot describe and preserve distinct information objects, how do we support systems of citation and verification that are crucial to the conduct of the scholarly enterprise? The reproduction of culture requires the ability to map, authenticate and preserve new forms of scholarship and information. What would be the impact of the erosion of a documentary record? Are we moving toward an oral culture that accepts the loss of large portions of once-recorded knowledge? Historian Lisa Gitelman argues that there is a cultural impulse to preserve and to interpret. As she puts it, what cultures do is “save themselves.”^{xi} So what would it mean to not be able to preserve many forms of cultural production? Can a culture exist without a historical record? Are we at the beginning of just such an era or are we on the cusp of new solutions?

As we confront these challenges, libraries have become very interesting places to work. On the one hand, libraries continue to play a central role in the preservation of culture and tradition, maintaining a connection with an ancestral past seemingly imperiled by technology and globalization. On the other hand, libraries are contending with increasingly complex and unstable information objects, adapting to changing modes of knowledge production, negotiating licensing agreements, helping users to navigate vast

quantities of unmediated information, providing guidance in intellectual property and advocating for greater openness and access to information.

Academic libraries traditionally saw their role as supporting teaching and research. They still do. But this now involves new kinds of cultural and technical work to acquire and sustain materials which challenge the conventional categories central to library organization. Ambiguity and mutability are anathema to traditional systems of bibliographic control, but they are also emblematic of the contemporary information scene and they are challenging libraries to reinvent bibliographic systems to map the vast decentered information spaces in which we operate.

ⁱ (http://web.mit.edu/com-forum/MiT5/subs/MiT5_call.html, (accessed January 4, 2007).

ⁱⁱ Marlene Manoff, "Theories of the Archive from Across the Disciplines," *portal: Libraries and the Academy* 4, 1 (2004) (<http://hdl.handle.net/1721.1/35687>).

ⁱⁱⁱ Marlene Manoff, "Hybridity, Mutability, Multiplicity: Theorizing Electronic Library Collections," *Library Trends* 48,4 (Spring 2000): 857-876.

^{iv} Roger Chartier, "Languages, Books, and Reading from the Printed Word to the Digital Text," *Critical Inquiry* 31, 1 (Autumn 2004): 147.

^v Ibid.

^{vi} Ibid., 150.

^{vii} Anne R. Kenney, Richard Entlich, Peter B. Hirtle, Nancy Y. McGovern, and Ellie L. Buckley *E-Journal Archiving Metes and Bounds: A Survey of the Landscape*, Council on Library and Information Resources, Publication 138, September 2006. <http://www.clir.org/pubs/abstract/pub138abst.html> (accessed April 7, 2007)

^{viii} Bruce Sterling, "The Wonderful Power of Storytelling," (speech, Computer Game Developers Conference, San Jose, CA, March 1991), <http://lib.ru/STERLINGB/story.txt>, (accessed April 3, 2006).

^{ix} Judd Ethan Ruggill and Ken S. McAllister, "Beyond the Steady State," *Flow* 5 (February 2007), <http://flowtv.org/?p=50> (accessed April 7, 2007).

^x Sterling, 5.

^{xi} Lisa Gitelman, *Always Already New: Media, History and the Data of Culture* (Cambridge, Mass: MIT Press, 2006), xii.