

Materiality, Juxtaposition, and Discovery: The Case for Libraries

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Throughout history, libraries have been the repositories of culturally significant informational materials. From the scrolls of the library at Alexandria to the holdings of the Library of Congress, libraries collect, preserve, and offer access to these information artifacts. Charged with both preservation—prolonging the existence of materials [1] -- and access—enabling the right and opportunity for material use[2] --many libraries find themselves in a precarious balance. To preserve a book, its use must be restricted. To offer access opens the possibility for mishandling, even destruction.

Many institutions faced with this polarity turn to digital reproduction and access. This way, users can still access the information embodied in the physical material, if not the item itself. From the folios of Shakespeare to the e-book lending at your local public library, more and more collections are becoming digital, changing from a model of material and interpersonal interaction to that of human-computer interaction. Technological, social and economic trends affecting libraries push them away from physical material to an increasingly online-access environment. The “bookless library”[3] is the future.

But much is lost in this move from physical to digital library material. On the surface alone, we lose the physical characteristics of books—the weight of signatures in our hands, or the smell of old paper and glue, “like leather and caramel and dust and sunlight, all blended together”[4]. Authors take pride in not only the intellectual content of their work, but its physical manifestation as well: even Paul Dourish commented that *Divining A Digital Future* “looks beautiful” and is “nice to have on my shelf!”[5] The physical book itself is a type of art form, as the genre of “artist’s books” attempts to demonstrate[6]. Just as the Mona Lisa embodied in crayon would be a very different experience from its extant media, so too do books lose their inherent artistic qualities upon digitization. Even ‘ordinary’ books—trade fiction, mass-market paperbacks, and the like—reveal something to us about their owners and collectors, simply by their collocation in a particular order on a physical shelf[7].

Information and the materials that embody it cannot be considered separate entities. While some circumstances of

information digitization may seem trivial, such as the conversion of *Moby Dick* from print to e-book formats, there is more at stake than just the transport and conveyance of informational content. Both the user experience of physical interaction and the placement of information within the context of a larger collection is lost. While digital properties certainly expedite known-item retrieval, juxtaposition inherent in materiality enables browsing, which supports the random and serendipitous discovery that can inspire new ideas and creative solutions [8]. Digital material, by its very nature, cannot have a physical placement[9]. Without this situated embodiment, we lose relationships of order and juxtaposition, and the possibility of discovering previously unforeseeable useful or inspirational information that may be created simply by the placement of one book next to another on a shelf.

When we move to digital materiality, this type of access and discovery potential is lost. A 2008 citation analysis posits that search access of online journals may be responsible for a narrowing of scholarship and discovery of resources, especially in relation to browsing the print journals of the past [10]. The implications of these limitations on scientific discovery are astounding. Despite the affordances of and people’s inclinations toward browsing as a method of information seeking and discovery, the opportunity to do so still remains unincorporated in many information systems [11, 12, 13]. Information access tools, like online library catalogs, traditionally emphasize searching over browsing, presumably because of the affordances of digital materials for keyword and full-text retrieval. But if we continue to neglect browsing in our online catalog interfaces in favor of known-item and direct searching techniques, we run the risk of alienating information seekers as well as overlooking and eliminating opportunities for important inspiration and discovery.

Libraries are in a prime position to develop tools and techniques that enable digital support for the types of juxtaposition-based discovery inherent in collections of physical materials. A recent design by the Donald Judd Library [14] offers an online simulation of browsing library shelves, using photographic images of the library overlaid

with bibliographic catalog data. Users can still be inspired by the physical characteristics of the materials, such as color, age, or cover image, as well as benefitting from the information manifested by item placement. Other burgeoning technologies may also help enable digital objects with the same or similar juxtaposition and relationship-based presentation intrinsic in physical material. For example, LightSpace [15] uses depth cameras to provide digital interaction in everyday environments and allow for “a more convincing simulation of the manipulation of physical objects.” Technologies like this might be harnessed to offer a 3-D digital version of a bookshelf that could allow the user a much closer experience to that of physical materials by keeping the emergent information created via physical placement. In addition to interface presentation, backend architecture for supporting discovery through digital juxtaposition is key. What kinds of metadata will digital objects need to simulate physical material relationships or even create new ones? What kinds of relationships between objects beyond physical placement might inspire new information discovery?

The transition to digital materiality offers many benefits—quick search and retrieval, full-text access on demand, and more. However, we need to consider the experiences and opportunities for discovery that are eroding away. Hayles [16] asks: “how much had to be erased to arrive at such abstractions as bodiless information?” Eliminating opportunities for juxtaposition, browsing, and serendipitous discovery systematically eliminates potential inspiration and innovation.

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