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Libraries as time machines

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Abstract: Libraries are not just book repositories. They are time machines, meaning they can help us travel through time in our imagination and enter worlds we have lost. Partly through their architecture, partly through the texts themselves, they help us evoke the past and wander through it. The history of libraries takes us back to the ambition of gathering all books in one place: this is how the Library of Alexandria came about. But more recent studies show that the history of libraries goes back far beyond Alexandria, practically to the beginning of writing, and its trajectory points to a future marked by the increasing democratization of access to knowledge. Of course, many difficulties make this future seem problematic, but I believe that soon we will have a global digital library freely available to everyone in the world.
Keywords: history of the book; libraries; print culture; access to knowledge; digitization.

Libraries are time machines. Especially old libraries. When we step inside a library that has stood the test of time, we have a sensation of walking into the past. Historians in particular are what the French call passéistes1 – that is, they yearn to enter into the world of the people they study, despite the barrier of anachronism. A passéiste can imagine himself in the past while visiting the Bodleian Library in Oxford, the Old Library of Trinity College, Dublin, the Joanina Library of Coimbra, the Strahov Library in Prague, and many others, which display their collections of old books in ancient architectural settings. Unfortunately, that illusion soon dissolves into a kind of intellectual tourism.

Rare book rooms, however, offer some escape into the past, because their books, in all their physicality, open an entry into alien ways of thinking. My own experience of rare book rooms began in 1957 when I arrived as a freshman in Harvard. I heard that undergraduates were permitted to consult the collections of rare books and manuscripts in Houghton Library. Taking my courage in my hand, I entered the imposing building and asked if I could see Herman Melville's copy of Emerson's essays, which was rumored to exist in the stacks. To my amazement, it arrived on my desk in a matter of minutes—a rather battered, ordinary-looking volume, Essays: by R. W. Emerson (Boston, 1847).

[1] Someone who has an excessive taste for what belongs to the past is turned towards the past.

Soon I was reading a book that Melville had held in his hands and had even marked in places. On page 216 of the essay “Prudence,” he penciled a large X in the right margin of a passage that read: “The terrors of the storm are chiefly confined to the parlour and the cabin. The drover, the sailor, buffets it all day, and his health renews itself at as vigorous a pulse under the sleet, as under the sun of June.” At the bottom of the page, Melville scribbled another X and wrote: “To one who has weathered Cape Horn as a common sailor, what stuff all this is.”

I was reading Emerson through Melville’s eyes. Or was I? At that time, like many students, I felt sympathy for what our professors called “the power of blackness,” a dark view of the world formed in the shadow of World War II by readings of Niebuhr, Kierkegaard, Sartre, and Camus. To us, Melville was a hero and Emerson a light weight. I would revise that view today, and I also would doubt that I could recapture Melville’s innermost thoughts. Yet his margin notes do convey some sense of the way he read, especially if considered in the light of what he wrote-for example, the chapter on “The Whiteness of the Whale” in Moby Dick.

Scholars often study marginalia in order to understand the history of reading, and they draw on other sources such as commonplace books and contemporary manuscript keys to romans à clé, which have been preserved in rare book libraries. In some cases, they have come up with powerful conclusions, and they have done so by studying the book as an object, in all its physicality.

For example, they have pursued a common question: What was the first book printed by movable type in the Western world? The question is important, not only for its relevance to the history of books, but also for what it reveals about the way Gutenberg developed his invention. Scholars used to believe that it was an edition of the Bible printed by Gutenberg that had 36 lines to the page (B36) and that it was followed by a more finely-tuned edition with 42 lines to the page (B42). But by close study of both editions in 1890, Karl Dziatzko, a librarian at Göttingen University, noticed a typographical error in B36 that proved a compositer had used B42 as copy when he set B36 and therefore that B42 came first. Further inspection of the forty-two line Bible showed that Gutenberg had begun by setting forty lines to the page and then increased the number of lines in an effort to save costs. Although he had already done a good deal of printing—particularly of ephemera such as indulgences for the Church—he

continued to experiment and to improvise as he perfected the Western world's first printed book.

The analysis of physical copies has been particularly important in Shakespearean scholarship, because Shakespeare's original manuscripts have not survived, and an Ur-text can only be imagined by close study of the early editions, which vary enormously. Hamlet appeared first in a primitive quarto of 1603, next in an improved quarto of 1604-1605, which is twice as long, and then in the first folio edition of 1623, which has 85 new lines and differs greatly from both of the earlier editions. Moreover, every copy of the first folio differs from every other copy. So, Henry Clay Folger's obsession with collecting copies for the Folger Library in Washington, D. C. was not absurd, despite those who derided him as Forty Folio Folger after he had acquired more than three dozen copies. Analytical bibliographers like Charlton Hinman and Peter Blayney have identified three distinct issues of the first folio along with at least 100 stop-press corrections and the peculiar practices of nine compositors who set the type. The Folger Library has become a scientific laboratory, and we now can calculate the relative reliability of every passage in the Shakespeare canon, even if we cannot come up with a perfect text.

This kind of scholarship can seem so esoteric as to make the academic library look like a preserve for the privileged few. Yet academies have grown up around their libraries to the benefit of many millions. In 1638, John Harvard, a Puritan dissenter who had studied at Emmanuel College, Cambridge, died in the primitive settlement that would eventually develop into Cambridge, Massachusetts. He left his library of 400 volumes to the small academy that had been founded there two years earlier. Suddenly it had the largest library in North America: 400 volumes! In gratitude, it adopted the name of Harvard and began to grow around its core of books. Now, nearly four centuries and 20 million books later, the library is the soul of a great university. Other universities have developed in the same way, and they typically locate their libraries at the centers of their campuses.

Another theme in the history of libraries expresses a utopian dream: the possibility of making all knowledge available to all humans. That will take us far back into the past and also into the future, thinking of libraries as time machines.

First, however, I should take notice of a warning by Jorge Luis Borges. In his distopian story "The Library of Babel," he showed that the dream could turn into a

nightmare, a frantic pursuit to gain control of the infinite. Another of his stories, “The Book of Sand,” warns that a fantastic book of books, one that contained all the books in the world, proved to be so unbearable to its owner that he hid it in the stacks of the National Library of Buenos Aires. The library’s former director, Alberto Manguel, has assured me that it has never been found.

From what little we know about the Library of Alexandria, it embodied both the bright side and the dark side of the history of libraries. In its popularized versions, it calls up a romantic vision: the greatest library that ever was, all knowledge from antiquity packed into one palatial space, and then a tragic ending—fire set by none other than Julius Caesar. Trapped in Alexandria by a superior force, he supposedly torched his ships in the harbor as a tactic to repel an assault before reinforcements arrived to save him. Hellenic culture went up in flames. Many of the greatest works of philosophy and literature were irreparably lost. From that conflagration, only the ashes remained, and today we cannot even locate the site where the great library stood.

That version of events is wrong, but it is a compelling vision, widely accepted as historical truth. Taken as a legend, it can be read as a cautionary tale about the history of libraries and their role in shaping the world of knowledge. On the bright side, it represents the aspiration to bring together all the knowledge in the world. On the dark side, its destruction feeds into lamentations about cultural catastrophe—for example, the common view that “the book is dead” (electronic devices have taken its place, trivializing the very act of reading) and that “libraries are obsolete” (nobody goes there any more).

Those views are also wrong and, at the same time, revealing. A history of cultural Jeremiads, if it could be pieced together, would expose the unease of intellectuals faced with changes in the means of communication. In 1928 Walter Benjamin declared, “Everything indicates that the book is nearing its end.” At about the same time, Ezra Pound prophesied, “The art of letters will come to an end before AD 2000.” More recently, Alvin Kernan devoted an entire book to The Death of Literature. Prophecies of doom can be detected far back into the past, along with other symptoms of disorientation such as “information overload,” a common experience in the sixteenth century when, as Ann Blair has shown, “information” was coined as a term that suited the feeling among humanistic scholars of being overwhelmed by printed texts.

True, historians can often find instances in the remote past of present-day phenomena that are taken to be unprecedented. To detect continuity in place of change is one of the tricks of their trade, and a misplaced sense of continuity should not blunt our understanding of the unparalleled transformation of the information environment in the recent past. It took two millenia to advance from the invention of writing, which happened around 4000 BC, to writing with alphabetical characters, invented around 2000 BC, in the Western world. Another two and a half millenia went by before the invention of printing on paper with movable type, and after that the technology of printing hardly changed for three and a half centuries. To be sure, the Chinese and Koreans invented paper and printing long before the breakthroughs in the West, but in Asia as well as Europe basic innovation in the technology of communication belonged to a longue durée measured in many centuries—until the recent past. The pace of change in our own lifetimes has been staggering: the Internet (1974), the World Wide Web (1991), and then one breakthrough after another: search engines, algorithmic relevance ranking, smart phones, social media, and artificial intelligence.

Looking backward across all those changes, one can ask whether the Library of Alexandria should be considered as a turning point in the history of information. Insofar as that question involves technology, the answer is no. The library's holdings consisted almost entirely of papyrus scrolls, and it contributed little or nothing to the most important technological change of its time—that is, the shift during the first two centuries of the Common Era from the volumen or scroll, which one read by unrolling, to the codex, a book made up of sheets, folded and bound together, which one reads by turning pages.

Yet the Library of Alexandria stands out as a monument in the history of knowledge. Although it came to an unhappy ending (but not Caesar's fire) and left little evidence of its existence, it began as a breathtakingly ambitious attempt by the Ptolemaic rulers of Egypt to collect and preserve everything known to man.

From the beginning of their 300-year rule over Egypt, the Ptolemies made the Library of Alexandria an expression of their grandeur. They invested enormous resources into building up its collections, sending agents to purchase books on every conceivable subject from every available source. According to Galen, the great Greek physician, the kings ordered each ship that docked in Alexandria to be searched for

books. If any were found, they were sent to the library and copied. Then the copies were returned while the library kept the originals. Galen also reported that the third king of the Ptolemies asked to borrow the original manuscripts of Sophocles, Aeschylus, and Euripides from Athens. The Athenians agreed, provided that Ptolemy III deposit an enormous treasure as a guarantee that he would return them. He had the manuscripts copied and sent back the copies in place of the originals, telling the Athenians to keep the treasure.

The ambition of the Ptolemies was to create a universal library by acquiring the text of every book in the world—that is, the Western world. They had no idea of the parallel tradition of literary scholarship in ancient China, where combinations of knowledge and power also supported great dynasties.

You could interpret this library policy as a form of “soft power” or even, as one authority puts it, cultural imperialism. By collecting all the books in the world, the Ptolemies tried to assert their dominion over classical Greek civilization and to create a monument to their dynasty that would last forever. It was their version of the pyramids.

That view, I must admit, involves a good deal of speculation, because we have little evidence about the functioning of the library. Although it is often mentioned by contemporaries like Plutarch and Galen, it eventually disappeared without leaving a trace of its existence, and much of the research about it concerns the problem of its extinction.

It may have suffered some damage from the fire set by Julius Caesar during his brief conquest of Egypt in 48-47 BC. But if it did, the fire reached only the smaller, so-called “daughter” library of the Serapeum, and the main library was spared.

After Egypt was incorporated as a province of the Roman Empire, the library remained intact, but it received progressively less funding and went into decline. Its demise probably occurred in 272 AD during a civil war, which destroyed the area inside Alexandria known as the Brucheion, where the library was located. Reports by later travelers indicate that nothing remained but ruins by the end of the fourth century AD.

What little we know about its holdings mainly comes from notes made by monks when they copied classical texts during the Middle Ages. These references indicate how much from classical antiquity has been lost. In the case of Euripides, for example, contemporary evidence shows that he wrote 92 or perhaps 95 plays. All of

them probably were included in the library of Alexandria, yet only 18 or possibly 19 have survived in their entirety. So, yes, the loss of the library was a catastrophe, even though it did not happen all at once in a great bonfire.

Still, the library had existed for 600 years, making its collections of at least 400,000 scrolls available to visiting scholars and dominating the world of knowledge throughout the Hellenistic Age—quite a record when compared with modern libraries, except, of course, the University Library of Oxford, which is now a century older than its Alexandrian predecessor and still going strong.

Does this story, familiar to classicists, yield any fresh conclusions? From the perspective of library history, two points stand out. First, the library of Alexandria represents the culmination of a shift in antiquity from a literature based on oral transmission to one based on script. Zenodotus, its first librarian, was also the first to edit Homer's epics, and in collating texts, he divided them into books or chapters, adapting them to the eye rather than the ear. Second, the library expressed the ambition to bring all knowledge together and by doing so to exert mastery of everything known. That ambition is still with us.

It did not originate in Alexandria, however. In 1849, archeologists discovered a collection of 30,000 cuneiform clay tablets at Nineveh in northern Iraq. The tablets were assembled by Asurbanipal, an Assyrian king (668-627 BCE), who is now celebrated among library historians as the creator of the "first systematically collected library" –or even the first "national library"--in the Western world.

But he wasn't the first. More recent excavations in Uruk in southern Iraq have turned up the oldest written documents, 4,500 tablets, found anywhere in the world. They date from some time between 3400 and 3000 BCE, not long after the invention of writing. They were word lists, essentially accounts used to keep track of objects and possessions, and they were curated and archived—that is, they belonged to something that could be considered a library. By 2900 BCE, Uruk had developed into an important city, the largest in the world, with at least 50,000 residents. It produced what some consider as the first great work of literature, the Epic of Gilgamesh, which dates, in its earliest version, from 2100 BCE.

So, the history of libraries goes back 5,000 years. It is congruent with the history of literature and of writing itself. The Library of Alexandria was actually a late-

comer in this history, but it certainly expressed an ancient ambition to gain mastery over the world by collecting everything knowable in the form of writing.

We are still at it. In 2004 Google set out to digitize all the books in the world. It began at Harvard, and we gave it access to our collections, the largest of any university library. But when Google asked to digitize books of ours that were covered by copyright, we said no. Google then made the same request of Michigan, Stanford, and the University of California. They agreed, and immediately Google found itself being sued for copyright infringement by the Authors Guild and the Association of American Publishers. After three and a half years of negotiations, the parties reached a settlement. Unfortunately, the settlement transformed what was originally a search service—Google had proposed to help users locate texts from its gigantic data base but not to read more than snippets of them—into a commercial library. As it finally emerged, Google Book Search meant that we in the world of libraries would have to buy back our own books in digital form at a subscription rate that could be ruinous. Google was creating a monopoly of a new kind, a monopoly of access to knowledge in digital form.

On March 22, 2011, the Southern Federal District Court of New York declared the settlement an illegal monopoly in restraint of trade. Therefore, Google Book Search was dead. But, like the Library of Alexandria, it provided an inspiring example; and even before it was declared illegal, it raised a question: would it not be possible to create a non-commercial library devoted to the public good by linking all the digitized holdings in all the major libraries of America?

On October 1, 2010, a group of leaders from foundations, libraries, and computer science met at Harvard to discuss the possibility of applying that principle to the world of libraries in the digital age. We immediately agreed that it was possible to create a Digital Public Library of America, and we set to work, devising a technical infrastructure, a network of contributing libraries, and an administrative center. On April 18, 2013, the DPLA was launched. Its collections now contain 50 million books and other objects. They come from 6,000 institutions located in all 50 states, and they are being used, free of charge, by readers all over the world—except in one country, North Korea.

Similar and complementary projects also exist, notably Europeana, the Hathi Trust, and the Internet Archive. So do problems, including the excessive restrictions

of international copyright law, but I would like to end on a happy note: we now have it in our power to realize a dream that goes back thousands of years. We can create a library that will make all books available to all humanity—and readers will have access to it from a time machine that will help them imagine, however imperfectly, the lives of their predecessors going back to the distant past.

2 Eliminated passages

I have time to mention only four. One is in Alexandria itself, the Bibliotheca Alexandrina. It is a superb cultural center completed in 2002, which has a library with one million printed books and links to the Internet Archive in San Francisco. But it collects works only in Arabic, French, and English, and it has been criticized as a project used to make the Egyptian government look progressive, even though the government does not provide enough funds to sustain it.

Second, there is Hathi Trust, a digital repository in Michigan, which contains material from more than 60 research libraries and provides free access to 5.3 million books in the public domain. Hathi Trust began as a collective attempt to solve the problem of preserving digital works. I think it has great potential as a means for diffusing them.

Third, there is the Internet Archive, a gigantic digital lending library created by Brewster Kahle, an extraordinary computer scientist from MIT, who made a fortune by creating digital companies and then retired to devote himself to open access. His Wayback Machine has crawled the Internet and saved ten million website pages, and he devised a way to make copyrighted books available for free online. He buys and solicits donations of physical books, digitizes them, and makes the digital versions available one copy at a time in the manner of a public library lending books.

Fourth, there is Europeana, a network financed by the European Union, which links digital collections of libraries in many EU countries. It has a cumbersome structure, and the EU does not provide adequate support. But it has great potential, and its technical infrastructure is compatible with that of the Digital Public Library of America.

All of these enterprises must overcome enormous difficulties, notably in solving problems of preservation and in overcoming the restrictions of copyright, which make most books published since 1923 inaccessible. But we are making progress, and in

ten years I believe we will have an open-access, world digital library, which will eventually include almost all the books in existence.

Aside from their importance to education, libraries have helped the underprivileged pursue the kinds of knowledge that are vital to their lives. Ever since its opening in 1911, the New York Public Library has given the city's enormous immigrant population access to works in dozens of their native languages. The Library's 88 neighborhood branches function as community centers, providing among other things help to the unemployed. If you are a Latin American immigrant looking for a job, you don't consult the newspaper, because want ads have disappeared from the press. You go to your local library, where a specialist who speaks Spanish will take you to a computer, teach you how to operate it, and help you find employment. 1,700 Carnegie libraries, mostly in small towns, provide free access to the Internet as well as printed books, throughout the United States.

Various sources indicate that it was the main ingredient of a "Mouseion" or Museum—a combined school and research institute located near the royal palace in the heart of the city. The name "museum" evoked its dedication to the muses, whom it honored with a shrine. It was divided into rooms, which corresponded to subject matter and contained the scrolls arranged alphabetically according to the first letter of the authors' names.

It was not a public library. Far from admitting ordinary subjects of the king, the library and the museum as a whole served as an "institute for advanced study" (if such an anachronism be permitted) for 30 to 50 resident scholars, who received salaries, were given tax exemptions, enjoyed free board and lodging, and took meals together in a common dining room. They occasionally gave lectures, taught classes or directed symposia, for the Museum had a pedagogical component. The head librarian, a scholar appointed by the king, served as tutor to the heir to the throne and also as a priest at the shrine to the muses. Colonnades, porticos, covered walkways, and a garden provided a setting for peripatetic discussion in the style of Aristotle's Lyceum and Plato's Academy.

One resident scholar, Callimachus, created the first comprehensive catalogue of Greek literature, organized by genre and the alphabetical order of authors' names. Whether it determined the organization of the collection is unknown, but a catalogue must have been required to integrate acquisitions and to locate material.

Apparently the resident scholars enjoyed a pleasant, well-subsidized life, at least during the early years of the Library, when funds flowed freely. They were said to consume a good deal of alcohol, and they organized games and festivities among themselves. Inevitably they aroused the jealousy of wits and sophists outside Alexandria. One of their critics, Timon of Philius, dismissed them with an acid one-liner: "In populous Egypt many cloistered bookworms are fed, arguing endlessly in the chicken-coop of the Muses."

That, however, is an illusion, and it does not hold up. When I entered St. John's as a student in 1960, I took a book into the old library and started to read it, imagining myself transported back to the 1630s. It didn't work. The bench was so uncomfortable and so distant from the shelf where I propped up my book that I abandoned the attempt after fifteen minutes. I could not imagine how students in the seventeenth century could stand the strain.

The fantasy of inhabiting the past by visiting a library is also difficult to maintain, because old libraries are always getting younger. They have been constantly renovated. Duke Humphrey's Library in the Bodleian lost most of its late medieval character (1450-1480) when it was remodeled in 1598 and again in 1610-1612. Similarly, the Upper Library of Merton College, built around 1373, was modernized in the sixteenth century when the old book chests were replaced by new-fangled shelves.

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MINI BIOGRAPHY

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