Living in the Cloud:
Who Owns It, Who Pays for It, Who Keeps It Safe, and Will My Kids Inherit the Wind?[1]

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Living in the uncertain world of university administration, I've always taken comfort in those solid tokens of academic reality: books and their libraries. Born and raised on a diet of librarianship, schooled in the unique place libraries hold in the lives and minds of an educated people, and sustained in academic life by the permanent inspiration and commitment captured in the university library, today's information cloud appears uncertain and unreal. It's as if a fantasy world of science fiction had descended, distorting reality in less than a generation. For you who serve this fantasy and try and reassure those of us wandering disoriented by the cloudy days, the turmoil of the academic library world must be exhilarating when it is not terrifying.

Searching for a referent for the future we will all inhabit within a decade or less, and in hopes of finding a vision for the future that resolves all doubts, I turned to the memory of my misspent hours watching various sci-fi classics for a vignette of what our future holds for libraries and information, if all goes well. The classic *Star Trek IV: The Voyage Home* is a film mostly about whales. However, it has an early scene where Spock appears retraining his mind before a computer terminal that has all the knowledge of the universe available. Clearly, by the 23rd century, knowledge and information are easily, universally, permanently, and reliably available through a utility device so ordinary it requires no explanation and simply serves as backdrop to an emotional plot element. [2]

Our cloud today, in the early 21st century, offers us an anticipation of this sci-fi future and posits the inevitability of the universal information appliance.

Absent the movie conceits that permit the resolution of complex problems by illusion, we in the 21st century struggle with mundane concerns about books, journals, articles, newspapers, media, and other information items of our past, present, and at least immediate future. Our information world, built on a foundation of objects collected into physical spaces and organized by humans into sophisticated collections, no longer appears to follow the time-honored rules for preservation, access, authority, or utility. We once worked to bring the objects containing our knowledge into centralized places where their use, preservation, and organization could be managed by highly trained specialists who would ensure that the information would be there, in the right place, accessible whenever requested. Timeless, permanent,

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[1] John V. Lombardi, Co Director, The Center for Measuring University Performance, Arizona State University; President Emeritus University of Florida. Special thanks to Martha Kyrillidou, Senior Director, ARL Statistics and Service Quality Programs for access to ARL data and to Jay Schafer, Director, W.E.B.DuBois Library, UMass Amherst for library support.

[2] *Star Trek IV: The Voyage Home* (Paramount Pictures (1986).

reliable, authoritative, accessible, and above all, physical characterized our knowledge universe, symbolized by our word Library, that place of books.

The transformation that brings us to the 2012 information world progresses at a pace, relative to the rate of change in academic life, nothing short of light speed. Old people like me see university libraries today that bear only architectural similarities to the institutions that supported our invention as academics. Other than some unusual materials, most of what I need is on-line somewhere. I love my librarians, but where I previously needed them, today I just log in. From time to time perhaps I'll get stumped, or the technology will not respond as I hoped it would, and I turn to a librarian (of course via email or some other electronic form) who will resolve the issue for me and send me back to my screen. Like Spock (although with less talent), I try to absorb information from the electronic ether, but unlike Spock, I'm not so sure that everything is universally, permanently, and reliably available.

For the university, these transformations of the information universe present a host of unsolved problems. Universities rarely lead solutions but respond to problems and challenges. In the library world the invention of such services as interlibrary loan, OCLC, and WorldCat solved problems. We expect libraries to collect, disseminate, save, organize, and structure the artifacts of human knowledge. Without this record of what we know, researchers would continually rediscover what is already known. Research requires the availability of past discoveries, and the traditional role of libraries in providing the record of those past discoveries is now fundamentally challenged by others with much narrower missions and shorter time frames.

Although the library's timelessness rests on a belief that knowledge is permanently valuable, an engine of immediacy fueled by the instant feedback of scientific research powers the digital revolution. This reflects a fundamental distinction between what we might call the vertical and the horizontal disciplines. Physicists and other scientists are vertical people. They build knowledge one item on top of another, each discovery or advance requiring the verification of the immediate previous discovery.

Our historians and other humanists are horizontal people. We build outward from any point on the chronology of human existence. We do not need to know what the Greeks and Romans did to study the Ming Dynasty. If our colleagues learn something new about the American Civil War, those who study the territorial divisions of the Second World War do not need to rewrite their histories. For historians and others with similar intellectual concerns, the total intellectual record housed in libraries, preserved in archives, and maintained by experts is critical, for we may need to build outward from any part of the record at any time. We want to read the latest journal article available on line from JSTORE or some other digital location, but we know that when our graduate student goes to study Shakespeare's sonnets from a new perspective, we will want to send her to the library to find all that has ever been written about Shakespeare and review every edition of those classic works.

Our digital gurus tell me that a focus on physical things misses the point. It will all be in the cloud, they say. The entire record of Latin American history will be available, they promise. You will not need to know about the Nettie Lee Benson Library at the University of Texas, remember the work of Emma Simonson collecting Latin American materials for the Herman B Wells Library at Indiana University, or celebrate the preservation of the Jay I. Kislak Collection on the Culture and History of the Americans at

the Library of Congress. Everything will be available online, instantly, permanently, reliably. This may work for Commander Spock in the 23rd century, but as a practical matter, the path to this glorious future is, as yet, unfinished.

Some parts of our information universe seem to be doing OK. The online journals are available thanks to our libraries and institutions spending large portions of their budgets on these virtual systems. Our library buildings, no longer essential for holding all our physical information objects, become homes for elegant spaces that in a previous and much less enlightened age we would have called study halls. Our library colleagues struggle with new mechanisms to consolidate purchasing, secure better prices from the purveyors of information products, and create sophisticated search strategies. New ventures emerge with exotic names that announce the end of the library, my favorite being the Hathi Trust. We watch with awe the emergence of this quasi-public not-for-profit with multiple and significant participation and distinguished leadership but not universal ownership funded primarily by powerful universities and foundation entrepreneurs. The enterprise captures the enthusiasm of university presidents (because it is the Next Big Thing), it earns the respect of the foundation intellectual caretakers of initiative, and it seeks to implement in real time, and with real process and legitimacy, the universal digital library of the future.[3]

Unfortunately for those of us in the real world, these initiatives, essential and valuable as they are, leave us uncomfortable because between the open stacks of yesteryear and Spock's information appliance lie an exceptional number of complications. Some are technical and theoretically resolvable, others are much less amenable to solution being based on human concerns. One of those is profit.

Profit is a terrible thing, especially when it is someone else's at my expense. Our university-based information ecology has always been part of a competitive environment. We compete to purchase the faculty who publish books and journals, buy back their work from publishers for the library, and resell the use of those publications to students and faculty. Libraries compete within the university to capture a sufficient share of revenue, in part by persuading their institutions to value the biggest, broadest, most significant collections of materials possible. Bragging rights for large collections, big budgets, and magnificent buildings became part of the competitive universe of university prestige along with superstar professors, high SAT students, and winning sports teams.

Taking advantage of this competitive environment, we published books and journals, sold books and journals to the academic marketplace, and relied on the library to buy just enough of these items to bring the profitability of the journal and book business up to acceptable standards. "How many copies of my brilliant historical monograph will we sell?" I ask. "Oh, about 500, mostly to libraries" they answer. The usage statistics show that this brilliant monograph, resident happily in the stacks of 500 university libraries and on the home shelves of 10 scholars, circulated twice in each of three libraries during the last

[3] The Hathi Trust has about 500 university and consortia participants, including the Library of Congress. Based at the University of Michigan and drawing on the computing resources of Michigan and Indiana University, the achievements of this consortium since its founding have been remarkable. Issues of permanent ownership, universal access, copyright, sustaining funding, and succession planning remain under development. See Center for Research Libraries Report on *HathiTrust Audit and Certification* (2011) [http://www.crl.edu/sites/default/files/attachments/pages/CRL%20HathiTrust%202011.pdf] and *Hathi Trust Digital Library* website at [http://www.hathitrust.org/].

fifteen years. That makes it one of the more popular scholarly monographs in the collections of those three libraries since fifty percent of their items never left the quiet darkness of remote storage.

We supported this luxury of comprehensive library collections as part of the American research university branding and packaging scheme. This scheme packages high and low cost services under a single brand sold to multiple audiences at flat rates. The university, we said, is a prestigious physical place, a center of learning, a location where students come of age and become useful citizens, a venue where advanced training takes place, and a community where the knowledge of human kind is advanced. This is the package, the place we call the American Research University, and we sell it to our customers in undergraduate, graduate, professional, and research units.

The financial model underlying the packaging system establishes a baseline cost for the existence of the university that includes buildings, grounds, libraries, recreation centers, sports facilities, computing, and other general services such as utilities and administration. We embed these charges into the cost of each of the branded units or products we sell. We then add a fee for the specific services associated with each product: So much for an undergraduate package, so much for a graduate package, and so much for a research package. This produces a revenue stream that pays the baseline cost as a priority and adjusts the fees charged for specific services as required. Our libraries compete within the institution to acquire their share of the baseline costs, presenting its assets as essential elements of all the products the university sells and as a prestige enhancement to the overall brand. This is a fine model. It built famous twentieth-century research universities with their libraries: Michigan, Indiana, Berkeley, UCLA, Harvard, Stanford, Duke, Texas, Florida, Chicago to name but a few.

The last decades of the 20th and these first decades of the 21st century have disturbed this model greatly. We have known for years that the duplicate purchases of seldom used materials by multiple libraries constitute a luxury cost. We justified it on the convenience demanded by the faculty. We wanted the book now, not at the end of the week by interlibrary loan. We also justified it on competitive grounds: if the Bancroft bought it then the Benson library had to have it. We tried specializing in purchasing, but the great libraries still wanted to own it all. We complained for years about the cost of serials and the predatory pricing of journal producers, conveniently forgetting that the predatory pricing reflects our insistence on each of our libraries having a subscription. We pay the price, our faculty insist on publishing in those journals, and then we act surprised at Elsevier's less than enthusiastic response to our self-righteous plea that they should be generous because we cannot get our act together.

The advent of the cloud as a real, operationally possible, digital ecology has seriously disturbed the relationships sustaining the traditional library model. To this group, whose recent life is reflected in the report *Redefining the Academic Library* from the Education Advisory Board, none of the indicators of this disturbance are new. You live them every day. The question for librarians and for the universities that support them is: What do we do now?[4]

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[4] *Redefining the Academic Library: Managing the Migration to Digital Information Services* (Washington, D.C.: The Advisory Board Company, 2011)

Since I'm just a visitor here and have no authority or responsibility for anything, an admirable academic status, it's easy to provide some guidance.

1. The old game is over. The comprehensive almost complete physical collection of a university library, as a required prestige entity for major research universities, is a dying species.

2. The option to go it alone is mostly over, except perhaps for a time for the richest among us. Every university must join with every other university to buy access to required information services at the lowest possible unit cost. This is technically feasible and requires only an agreement among institutions. While some collaborative, statewide, or system wide examples exist, they are small compared to what is necessary.

3. Initiatives to digitize everything should be supported. There are endless reasons why the digitized universe may not be all things to all of us, but it is a required element in the new world we live in. What is not digital will not be real within ten years or less. Some imagine that the digital is the copy, but in fact the digital is the item, which may exist in other forms as well for other purposes. I, like so many others of my era, have piles of Xeroxed articles on various topics extracted for one or another project. These no longer matter, they exist for real in JSTORE or MUSE or some other digital form. I have physical copies of my software reviews from the 1980s in my house, but the digital versions identified through Google are better. They are also better than the microform versions in my university library. Digital is the real thing.

4. The librarians and their universities must engage the issues of preservation and permanence. This, among all the many challenges to our digital future, is among the most pressing. Yes, the Hathi Trust has a plan, has backups, has servers everywhere, but their model is not yet sustainable. They are not the government or the Library of Congress. They are a small, intellectually powerful, but proprietary version of us: universities and not-for-profits following the Next Big Thing. When the budget crunch comes again (the next big one), when the digital world has a major technological shift (as it always does), and as the conversion to new digital widgets remains incredibly expensive, especially given the scale of these projects, what happens to the digital representations that are the real thing? Over time, foundations lose interest. Universities have multiple priorities and new crises. The academic leadership of universities changes frequently, each cycle beginning with a new agenda and new ambitions. If the universal digital library has to end up somewhere reliable and permanent, perhaps we should co-opt the Library of Congress. Government often does the wrong things in the wrong ways, but the Library of Congress is permanent, it is ours as a nation, and if the digital library is universal it should have a final resting place as part of our national library, just in case the Hathi Trust's ambitious model falters in a generation or so.

5. The librarians, the universities, the foundations, and the Library of Congress MUST continue to take on copyright. Absent a reliable and stable resolution of the copyright mess, the digital library of universal access will not emerge, no matter how technically and academically clever we are. Ownership, ownership, and ownerships are the keys. Libraries prospered because whatever our other failings, we owned the material. We could loan it, copy it for academic purposes, and

dispose of it. The digital artifact is only rented, and the ownership issues can prevent the emergence of a rational (not to mention affordable) digital library. Who has to fix this? We do. The market, the providers of the content, and the users of the materials are us. We have conflicting goals and incentives, but librarians must continue to educate and mobilize presidents, trustees, legislators, provosts, deans, and faculty on the destructive power of much of the current copyright process. Otherwise we will have a copyright war similar to the war over music, except we have MANY fewer consumers of our academic copyrighted materials. Our consumers, unlike the 12-year olds and their colleagues who broke the digital rights management system of music, are not likely to be the vanguard of an academic hacker elite. The Hathi Trust's magnificent ambitions fail faced with copyright, and the digital resources disappear out of the cloud, seen by all of us on the ground, and disappear into dark storage inaccessible but perhaps saved for a future more enlightened 23rd century world. Recent court cases appear to recognize the special challenges here, and all of us must support the institutions participating in challenging restrictive copyright practices.[5]

6. Libraries, librarians, and their institutions must embrace and redefine special collections, as encompassing the remaining physical artifacts of knowledge, not just rare books and manuscripts. All surviving physical artifacts of books and manuscripts will become special collections. We must curate the physical books and journals, as long as they are being produced or are unavailable in digital form, as representatives of our intellectual heritage. When we look at the surviving physical objects as artifacts of our heritage, every library no longer needs a physical copy. Not every library needs a Gutenberg Bible, nor will every library need a printed copy of my wonderful digitally available monograph on Venezuelan history. One is enough, if preserved as the artifact that it is. The more that is reliably digitized, the fewer duplicate examples of physical artifacts we need in our collections. Librarians need to plan for this future, devise a collaborative process to dump the unused duplicates while preserving the artifacts of record for the future. This will reduce the cost of storage for the duplicate and unused items, now kept in anticipation of a request for physical access that the digital versions will make unnecessary.

7. Libraries must develop the logic, ideology, and rhetoric for the competitive value of the new library functions. Belonging to the universal digital library and paying its costs is a requirement of the competitive research university. Librarians and their associations must lead their universities in developing institutionally endorsed policies for buying access to digital information, for participating in and leading digital collaborations. Librarians must devise the strategy that invests in digital access while sustaining superb special collections of unique

[5] The Georgia State Case decision is here: http://www.infodocket.com/wp-content/uploads/2012/05/GA-State-Opinion.pdf. For the Google settlement see Jennifer Howard, *Chronicle of Higher Education*, "Publishers Settle Long-Running Lawsuit over Google's Book-Scanning Project," October 4, 2012 [http://chronicle.com/article/Publishers-Settle-Long-Running/134854/]. The case between the Authors Guild and the Hathi Trust, as well as the UCLA video streaming case, are reviewed in Steve Kolowich, "A Legal Sweep," *Inside HigherEd*, October 12, 2012 [http://www.insidehighered.com/news/2012/10/12/hathitrust-ruling-universities-fair-use-winning-streak#ixzz29ZNWS8JD].

information artifacts. Absent librarians from the leadership of this conversation, other university priorities will dilute the investment in library capabilities and expertise, and technocrats will drive the solutions.

8. Libraries should avoid thinking they are primarily part of the teaching function or that their future is as support troops for e-learning. Librarians will do these things, but these functions do not convey power and prestige. Many support functions will migrate into the cloud, outsourced to experts. Librarians must focus on leading the institution's interaction with digital collaboratives, insist on their associations' participation in the design and execution of big projects, and assert their preeminence in the allocation of funding to digital information infrastructure. If computer experts and non-librarian administrators control the digital information budget, the library will become marginalized within the university's grand design. Power and significance come from spending the university's money on important things. Digital information is an important thing that librarians should manage.

9. Libraries should continue to support learning commons coffee shop study halls, if only to plant the library's name on popular places and avoid geographic marginalization. But the learning commons is a charming enhancement not a fundamental competitive quality driver of research universities.

10. All of the transformations will continue to take place at the same time, although some more quickly, some more slowly. Librarians must play all the games all the time on all fronts, winning some, losing others, but always participating in every single game. To leave the business of information to computer gurus, foundation entrepreneurs, private enterprise providers, and ambitious administrators will guarantee the collapse of the library as a central university competitive asset. Librarians do not need to accept, adopt, or invest in every new idea or proposal, but they must be there at the decision points, both inside and outside the university.

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These are interesting times, complicated by economic constraints and accelerated by technological innovation. Librarians, their associations, and their colleagues throughout the academic world must own the change. It will not be enough to innovate, offer suggestions, and provide useful services.

Graceful collegiality is useful, but aggressive engagement in the decision process is essential. If librarians are only called in at the end to help implement a decision about information management already made by computer techs and administrative entrepreneurs, the library slides off center stage and becomes but an operational support unit for what may well be shortsighted quick-fix solutions. The library and its people are critically important to the continued significance of the American research university.

We need you, we rely on you, and we admire you.