Envisioning Future Libraries

A Presentation by Jeffrey Garrett to the University of Wisconsin Community, Madison, Wisconsin, November 28, 2012

Our Topic Today

- "What is your vision for a 21st century research library, especially with regards to active innovation? What types of new activities do you see university libraries developing in the coming decade to support faculty research, scholarly communication, and teaching? Given budget constraints, how can we implement this?"

The "Earlier Era" . . . of Cave Walls and Books

- "After a few thousand years or so of an earlier era, when people were recording their experiences on cave walls and in books, we can now envision a point at which anyone can instantly, and routinely, find the tiniest needle in this vast data haystack of knowledge. . . ."

- "[I]n the post-Google era, memorization will be obsolete, because even the most obscure fact will be instantly retrievable.

  -- *Newsweek* and *Wired* science writer Steven Levy in 2004

End-of-Libraries Scenario no. 324:
Louis Sébastien Mercier's *L'An 2440* (1770)
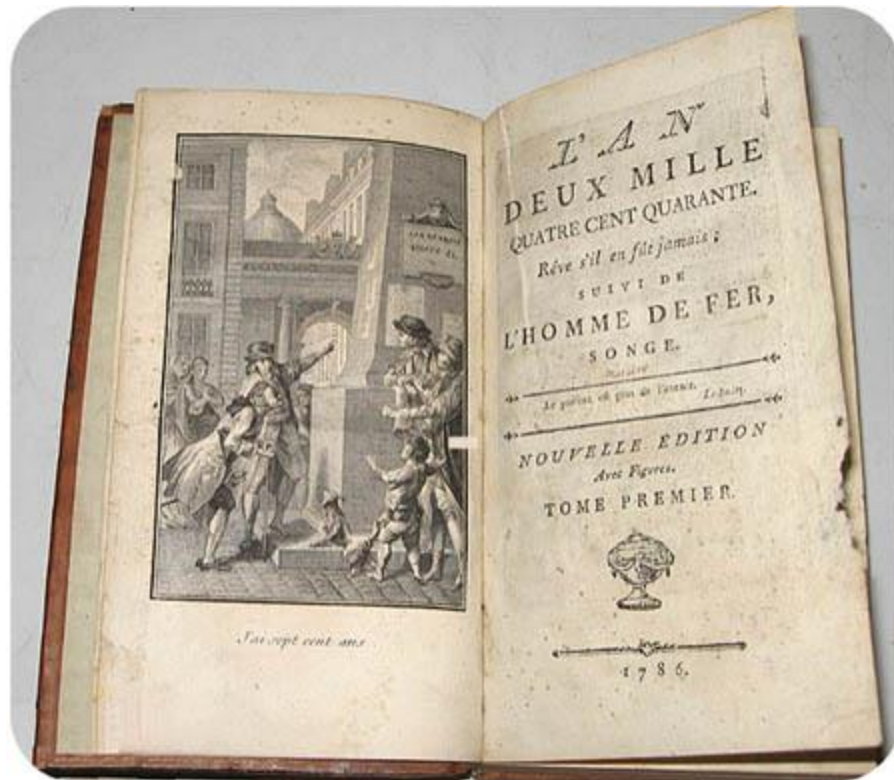
Traditional Book Sizes
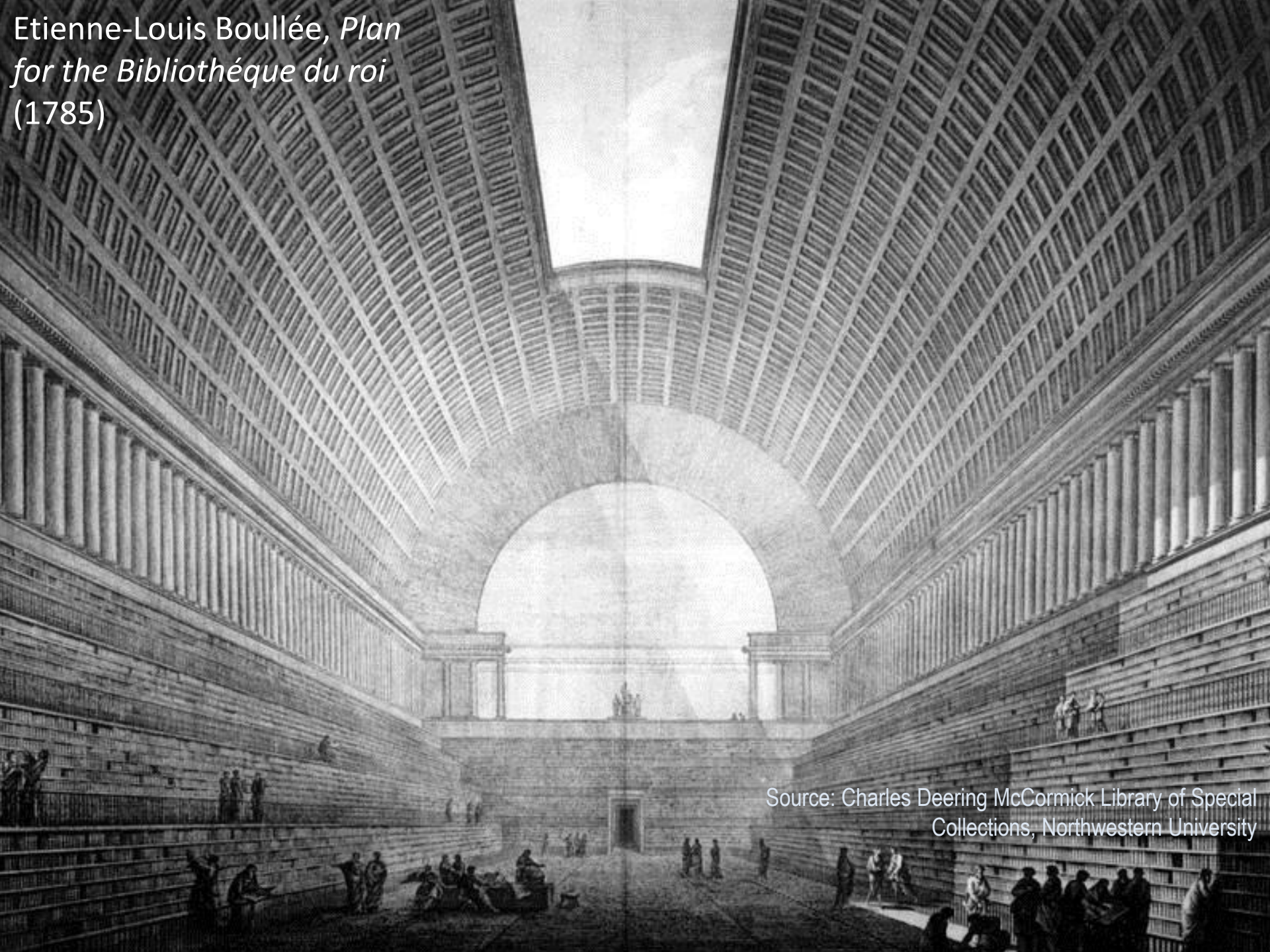
Quarto: Regular bookshelf size

Duodecimo: Fits into a pocket

iPhone: Also fits into a pocket

Etienne-Louis Boullée, *Plan for the Bibliothéque du roi* (1785)

A Vision of Libraries and Learning: The Matrix

- *The Matrix* (1999) has several examples of meeting in-matrix information needs without having to "exit" back to the real (=physical) world to get answers.

- **Here is one . . .**

In a Big Library, A Good Mind is Not Enough

- "The power of the unaided mind is highly overrated. Without external aids, memory, thought, and reasoning are all constrained." (Donald A. Norman)

- In today's mixed information environment, we are still ferrying data back and forth between online and paper/physical environments—leading to redundant work, as well as occasional and sometimes serious transcription errors.

- Future innovations should be simple, elegant tools that give us more time *and confidence* within what is an increasingly electronic environment, with less need to go "afk" to get our work done.

Scientists See Promise in Deep-Learning Programs

By **JOHN MARKOFF**

Using an artificial intelligence technique inspired by theories about how the brain recognizes patterns, technology companies are reporting startling gains in fields as diverse as computer vision, speech recognition and the identification of promising new molecules for designing drugs.

The advances have led to widespread enthusiasm among researchers who design software to perform human activities like seeing, listening and thinking. They offer the promise of machines that converse with humans and perform tasks like driving cars and working in factories, raising the specter of automated robots that could replace human workers.

The technology, called deep learning, has already been put to use in services like Apple's Siri virtual personal assistant, which is based on Nuance Communications' speech recognition service, and in Google's Street View, which uses machine vision to identify specific addresses.

But what is new in recent months is the growing speed and accuracy of deep-learning programs, often called artificial neural networks or just "neural nets" for their resemblance to the neural connections in the brain.

"There has been a number of stunning new results with deep-learning methods," said Yann LeCun, a computer scientist at New York University who did pioneering research in handwriting recognition at Bell Laboratories. "The kind of jump we are seeing in the accuracy of these systems is very rare indeed."

How Are We Managing Our Virtual Real Estate?

- " . . . it is not space that demands our attention now so much as our *representation* of space, and our ability to mould and manage ideas within boundaries that are fundamentally intangible: what we need is a reconsideration of spatial paradigms in an immaterial world."

Jessica Helfand, *Screen: Essays on Graphic Design, New Media, and Visual Culture* (2001)

§. 2.

Begriff der Bibliothek-Wiffenfchaft, und unmittelbare Folgerungen daraus.

„Bibliothek-Wiffenfchaft" ift alfo: der auf fefte Grundfäze fyftematifch gebaute und auf einen oberften Grundfaz zurükgeführte Inbegriff aller zur zwekmäffigen Einrichtung einer Bibliothek erforderlichen Lehrfäze.

> Der Zwek einer Bibliothek, welcher fich ebenfalls aus ihrem Begriffe ergiebt, ift: fchleunige Befriedigung jedes literärifchen Bedürfniffes.

Mithin ift der Zwek der Bibliothek-Wiffenfchaft: vollftändige Angabe der dienlichften Mittel zur Beförderung des fchnellen Auffindens der Bücher, nach Mafsgabe der

Martin Schrettinger (1772–1851), the Founder of "Library Science"

"The purpose of a library . . . is the rapid satisfaction of every information need."

Schrettinger's Subject Catalog Entry for "Ink"

Sample leaf from Schrettinger's *Alphabetischer Realkatalog*, perhaps the first subject catalog: (*Dinte. V: Schreibgeräthe*, "Ink, see also Writing Implements")

Donald Norman and User-Centered Design

- Text of the citation for the 2006 Benjamin Franklin Medal in Computer & Cognitive Science to Donald A. Norman: "… for the development of the field of **user-centered design**, which **utilizes our understanding of how people think** to develop technologies designed to be easily usable."

- "Donald Norman believes that everyday things need not wreak havoc in our lives. Instead, he likes things that make us smile, things that we can use gracefully the very first time. His goal is to make the interplay between science and application extremely productive, with **machines designed so well we do not think about them as machines**."

Your search starts here

Collection: The Berkeley Folk Music Festival Archive, consisting of 30,000 posters, photos, flyers, programs, and other materials documenting the festival from 1957 to 1970

Course: Digitizing Folk Music History

Instructor: Michael Kramer, history and American studies

Challenge: "Digital humanities and digital history are comparatively new fields that force us to ask the question, 'How can you use the electronic powers of computing to add to human scholarship?' I wanted the students to explore how digitizing these materials could help tell historical stories in new ways."

Student feedback: "This was probably the best course I've taken at Northwestern. Using Special Collections in the way we did was a once-in-a-lifetime opportunity. A truly important way to study history."

BERKELEY FOLK MUSIC
FESTIVAL
JUNE 26-30

Collection: Twentieth-Century American Serials

Course: Reading Black Power

Instructor: Kinohi Nishikawa, African American studies

Challenge: "So much of Black Power scholarship and media coverage has come with a slant, right or left. I wanted my students to encounter primary source materials on their own terms through an encounter with primary source materials.

Student feedback: "Covering the Black Power movement from only perspective on the movement as well as on African American studies in a broader sense. It was a great way to deconstruct the movement and made me think critically in a new way."

THE BLACK PANTHER
INTERCOMMUNAL NEWS SERVICE
ANGELA DAVIS,
A BLACK WOMAN
IN THE
LIBERATION STRUGGLE
PART II OF A CONVERSATION WITH ANGELA DAVIS

When **Music Library** head D. J. Hoek mentioned to visiting musicologist Keith Clifton that the Library had just acquired the manuscript of an unpublished, never-performed fugue by Maurice Ravel, Clifton's eyes lit up. He was in the Library researching another topic, but he'd done his dissertation on Ravel. Over the next five years the conversation between Hoek and Clifton blossomed into the 2010 world premiere of Ravel's Fugue in F Minor, broadcast by Chicago's classical music station WFMT-FM and presented on television by the Big Ten Network. The Library later published a facsimile edition of the manuscript that included a transcription of the score, essays about the composition, and a recording of the premiere.

"The value of a manuscript or any other item in the library," Hoek said at the premiere, "truly isn't realized until a researcher connects with that item and discovers something meaningful. We do not build collections for the sake of building collections; we build collections for the sake of making connections."

Music Library

- Among the largest music libraries in the United States, with extensive holdings of books, scores, recordings, manuscripts, and archival collections

- Recognized internationally for unmatched commitment to classical music of the 20th century

"The value of a manuscript or any other item in the library truly isn't realized until a researcher connects with that item and discovers something meaningful. We do not build collections for the sake of building collections, we build collections for the sake of making connections." – D.J. Hoek, Music Librarian

A NEW CHAPTER BEGINS

Search journals, primary sources, and now books on JSTOR.

Search

How Northwestern Became a Poster Child for Google Scholar

Google Scholar BETA

Support for Libraries

About Google Scholar

Google Scholar Help

Advanced Search Tips

Support for Libraries

Support for Publishers

Add Google Scholar to your site

Find library resources with Library Links

Northwestern University Library increases access to its electronic holdings using Google Scholar Library Links

The libraries at Northwestern University are committed to providing students, faculty, staff, alumni, and visitors with access to a rich collection of materials that encourage exploration and learning. With more than 4.6 million volumes, 4.3 million microforms, and nearly 42,000 current periodicals and serials, the libraries' holdings rank 11th among the nation's private universities. The University Library, located on the main campus, comprises main subject collections, branch libraries, and several specialized departments. It serves more than 15,000 full-time students, including 7,000 undergraduates living on campus in Evanston, Illinois and thousands of graduate students living in Evanston and Chicago. In every branch, collection, and department, librarians and staff are aware of technology's impact on the collections and draw on specialized expertise and skills to help users launch, organize, and execute a successful search for information.

Challenge

Northwestern University Library works hard to make sure that every student has access to the highest quality academic resources. At a time when more students are using the web for research, and more traditional scholarly resources are available in digital format, that means ensuring easy access to the full breadth of the library's extensive electronic holdings.

"As collection management librarians, it's our job to spend wisely and make sure our patrons get the maximum benefit from the resources we provide," explains Jeff Garrett, Assistant University Librarian for Collection Management and Bibliographer for Classics. "One of our most important goals is to increase community access and drive more traffic to our licensed holdings, as well as to raise awareness generally about library resources."

Access to the library's electronic resources is especially critical for Northwestern's graduate students. "Students at every level use the library, but grad students are the heaviest users," says Garrett. "Many of them live off campus, in the city. I don't know if you know how cold it is in Chicago in February. So this isn't only about service – it's about survival."

"The reason Google Scholar is being promoted is that it allows us to use the popularity of Google to get people to capitalize on the high-quality information we're paying for."

Jeff Garrett
Assistant University Librarian for Collection Management Bibliographer for Classics Northwestern University

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KWIC and Dirty? Human Cognition and the Claims of Full-Text Searching [1]

by Jeffrey Garrett

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Abstract

Over the last several years, full-text searching of large text corpora has placed an extraordinarily powerful tool in the hands of humanities students and scholars. Use of these corpora is now entering mainstream research and, not surprisingly, is affecting research methods and the nature and quality of research outcomes. To what extent does the availability of new and copious sources of full text—along with the tools to mine them—relieve mental economy, freeing individuals from committing to memory not only names and facts but complex thoughts? Are we finally proceeding from a traditional (and obsolete?) "just in case" paradigm to a long-overdue "just in time" model for learning and scholarship? Using evidence from the literary record and from current research in human cognition, the author points to certain disjunctions between the machine processes that enable full-text searching and the subtle cognitive processes that underlie human learning and reasoning. Like all powerful tools, full-text searching requires circumspect use—and in no way relieves humanists and other researchers of the need to read extensively and think deeply.

Correcting for Spelling Variation in Early Modern Texts

- Task: "Search all texts for phrases with any form of the word 'saint' followed within five words by any form of the word 'sinner'."

Result (detail):

saint sinner.

5 occurrences. Please follow the link(s) at the bottom of the page t ch found.

Search in Texts or Find Documents

Search for:
saint sinner [Search] [Clear]

Show Occurrences: ○ In Context ● Line by Line ○ Similarity

○ Single Term and Phrase Search (default)
● Phrase separated by [5] words [or fewer ▼]
○ Proximity Searching in the same Sentence or ○ in the same Paragraph

Orthography: ○ Original ○ Modern ● Lemma

lif that neuer dyeth. **Seynt** Girgorye seith. That the felon **synners** sha
y for theyr sy~nes. As **say~t** Austen sayth / the **synner** soroweth for syn
ction, nor none of the **sayntes**, but the beste men were **synners**, lette i
d reders, in what wyse **saynt** Austayne wolde a **synner** sholde knowledge h
ayeth thys noble clerc **saynt** Hierom) of **synners**, yt he myght wipe awey
ction, nor none of the **sainctes**, but the beste men were **synners**, lette
ith pictures, yt these **saynctes** are moste **synners**, and these wyse, most
all we thynke that the **saintes** are more mercifull in hearing **sinners**, t
iust, the Moone to the **Saints**, the faithful vvitnesse to **sinners**, the a
e no men: nor among ye **Saintes**; for they were all **sinners**: neither amon
ith the dead, the holy **sainctes** with vs poore **sinners**, Angells with men
the soules both of the **sainctes** and of **sinners** doe either perishe with
y iudge. This man is a **Saint** and that man a **sinner**; he the seruant of G
y Christ in the 20. of **Saint** Iohn, to reconcile **sinners** by that forme o
mented by the force of **Saint** Pauls power of binding **sinners**, giuen by C
te the punishment that **Saint** Paule had inflicted vpon this **sinner**, Sain

Subject Headings in Full-Text Environments: The ECCO Experiment

Jeffrey Garrett

Bibliographic records regularly combine two incommensurable types of description: one that captures the physical and textual facts of a work, the other that seeks to encompass succinctly the work's intellectual content. This article deals with the second type of bibliographic description: subject headings and their contribution to resource discovery. The article reports on an experiment at Northwestern University Library to add subject headings to online records for the Eighteenth Century Collections Online (ECCO). The author assesses the benefits of this enhancement by using a representative research topic: a search for contemporary material on the East India Company (1600–1873). This article extends arguments recently presented by Gross and Taylor (2005) in two directions: first, by considering the importance of subject headings for access to historical materials; and, second, by examining the value added by subject headings even when the full text of a work is available online.

If the focus of bibliographic description is the *artifact*—the precise capture of its physical and textual facts—the focus of subject headings work is the library *user* and his or her content-related needs

but normally the question to be asked is whether they are good or bad, helpful or irrelevant, rather than true (accurate) or false (incorrect). The assignment of subject headings cannot and need not conform to the same standards that apply to

THE MANAGEMENT OF THE TONGUE.

Under these following Heads.

1 Of Conversation.
2 The Babbler.
3 The Silent Man.
4 The Witty Man.
5 The Droll.
6 The Jester.
7 The Disputer.
8 The Opiniater.
9 The Heedless and Inconsiderate Man.
10 The Complimenter.
11 The Man, who praises others.
12 The Flatterer.
13 The Lyar.
14 The Boaster.
15 The Ill Tongue.
16 The Swearer.
17 The Promiser.
18 The Novelist.
19 The Tale-Bearer.
20 The Adviser.
21 The Reprover.
22 The Instructer.
23 The Man, who trusts others, or is trusted with a Secret.

Done out of

LON

Printed by D. Leach, the Star, the corne
Fleetstreet. 1706.

Innovating to Enhance the Power of Keyword Searching

'ΑΥΤΑΡΧΙΑ· OR THE ART OF SELF-GOVERNMENT,

IN A

Moral Essay.

In Three PARTS.

leman in the University for Publick Use.

Epict.

on Corrected.

Isham, R. P. D. Hen.
pisc. Lond. à sacris.

for W. TAYLOR,
Noster Row. 1713.

Link to resource(s) by clicking here: Full text online

Notes: Anonymous. By Laurent Bordelon.
Copy filmed at UMI microfilm Early English Book
Reproduction of original from the British Library.

References: English Short Title Catalog, ESTCT100726.

ibrary of Congress subject headings: Conduct of life --Early works to 1800.
Self-control --Early works to 1800.

Location: INTERNET

Fourth Edition
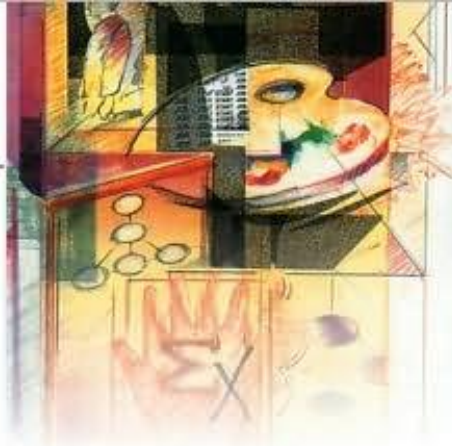
Reframing Organizations

Artistry, Choice, and Leadership

LEE G. BOLMAN

TERRENCE E. DEAL

Best-selling authors of *LEADING WITH SOUL*

A Conceptual Model for Understanding Libraries: Frames Analysis (Bolman/Deal 4th ed., 2008)

A Conceptual Model for Understanding Libraries: Frames Analysis (Bolman/Deal)

	Structural Frame	Human Resource Frame	Political Frame	Symbolic Frame
Metaphor for the Organization	Factory or machine	Family	Jungle	Carnival, temple, theater
Central Concepts	Rules, roles, goals, policies, technology, environment	Needs, skills, relationships	Power, conflict, competition, organizational politics	Culture, meaning, metaphor, ritual, ceremony, stories, heroes
Image of Leadership	Social architecture	Empowerment	Advocacy and political savvy	Inspiration
Basic Leadership Challenge	Attune structure to task, technology, environment	Align organizational and human needs	Develop agenda and power base	Create faith, beauty, meaning

From: Lee Bolman, Terrence Deal, *Reframing Organizations*, 4th ed. (2008), 18

The Importance of the Conceptual Framework
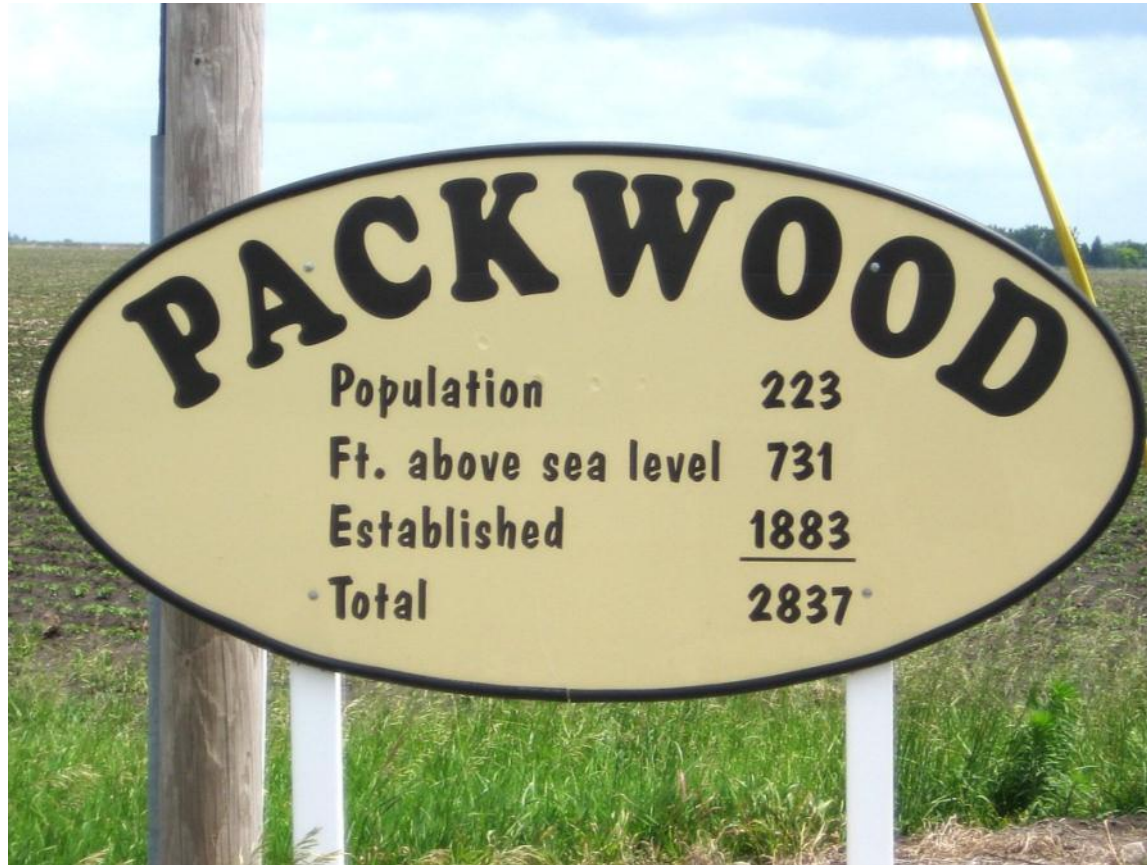
Fact: Numbers help us understand our world, but without being imbedded in a conceptual framework, they do not contribute to understanding.

The Structural Frame

	Structural Frame	Human Resource Frame	Political Frame	Symbolic Frame
Metaphor for the Organization	Factory or machine	Family	Jungle	Carnival, temple, theater
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The Human Resource Frame

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Jeff Garrett

Gaining acceptance for a plan to integrate all of Northwestern's rare materials and special collections into a single state-of-the-art location for storage and use

The Context and the Challenge

rare and special material storage and access in our libraries. Simultaneously, I appointed a 10-member planning group consisting of several department heads and their adjutants. They researched the literature, examined comparable institutions' experiences, and developed a plan to implement major change specific to

Completed Blue Sky Functional

Northwestern. As the process progressed, they became the owners of reform. They were the advocates for their own process and conveyed their enthusiasm to their supervisors and to other members of their departments.

The Blue Sky Project Working Group presented the completed plan (detail left) to the entire division in March 2012.

Library to become the representative (and actual) home for all rare and special materials at Northwestern.

unsupervised and environmentally unstable seminar room,
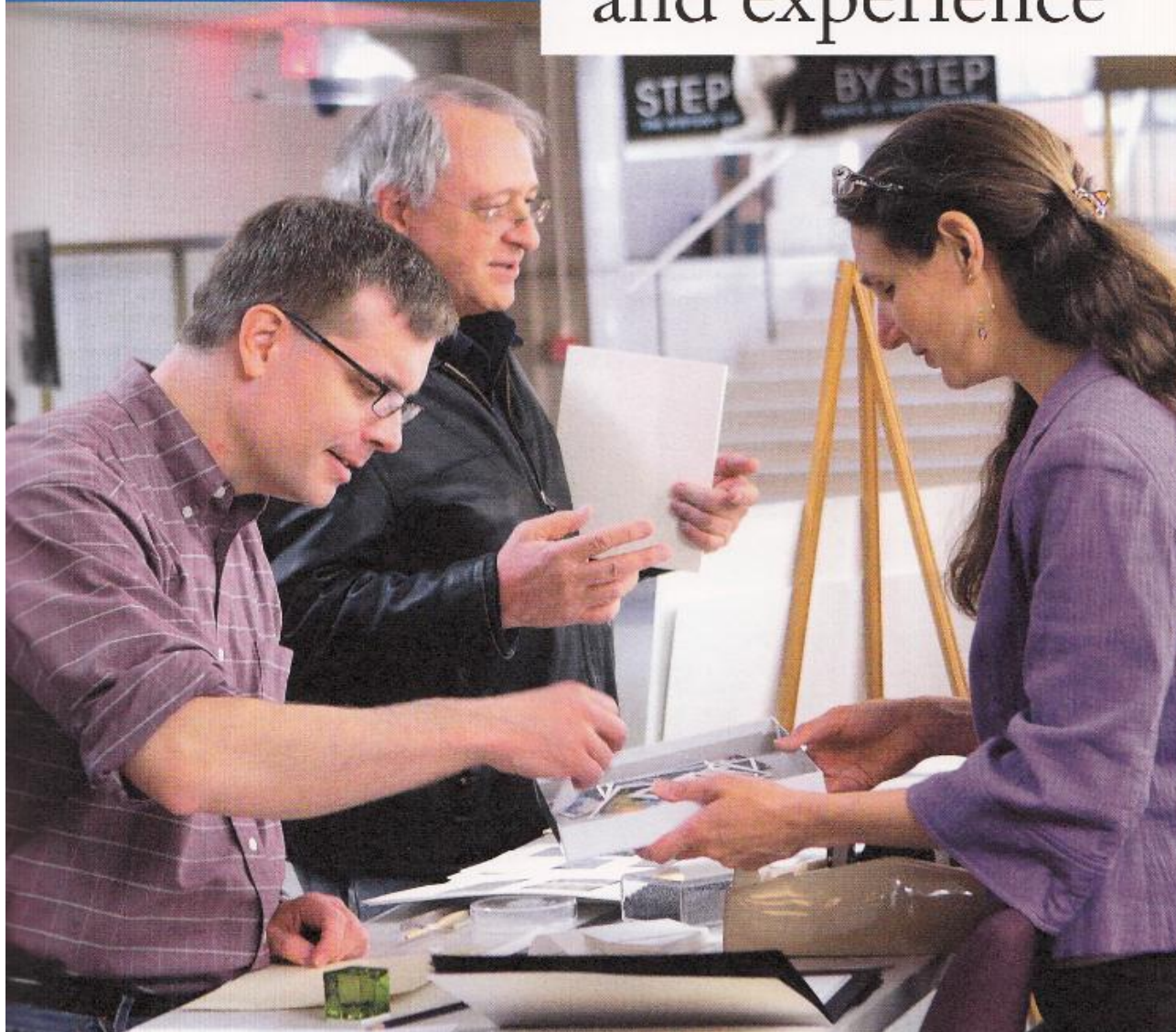Melville J. Herskovits Library of African Studies

The Opportunity

The doors to Deering Library are being reopened in October 2012—after having been locked since the
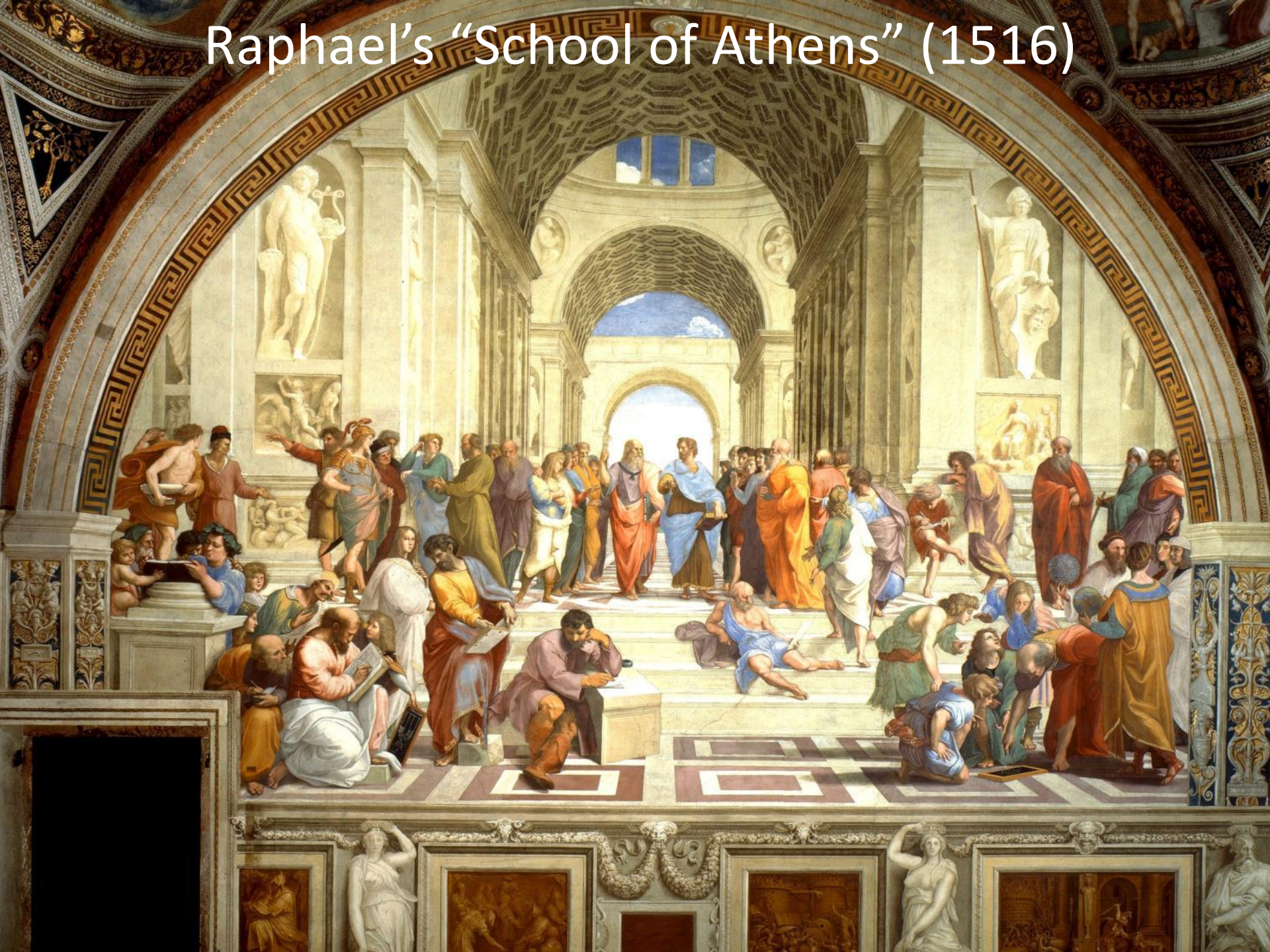
Get comfortable
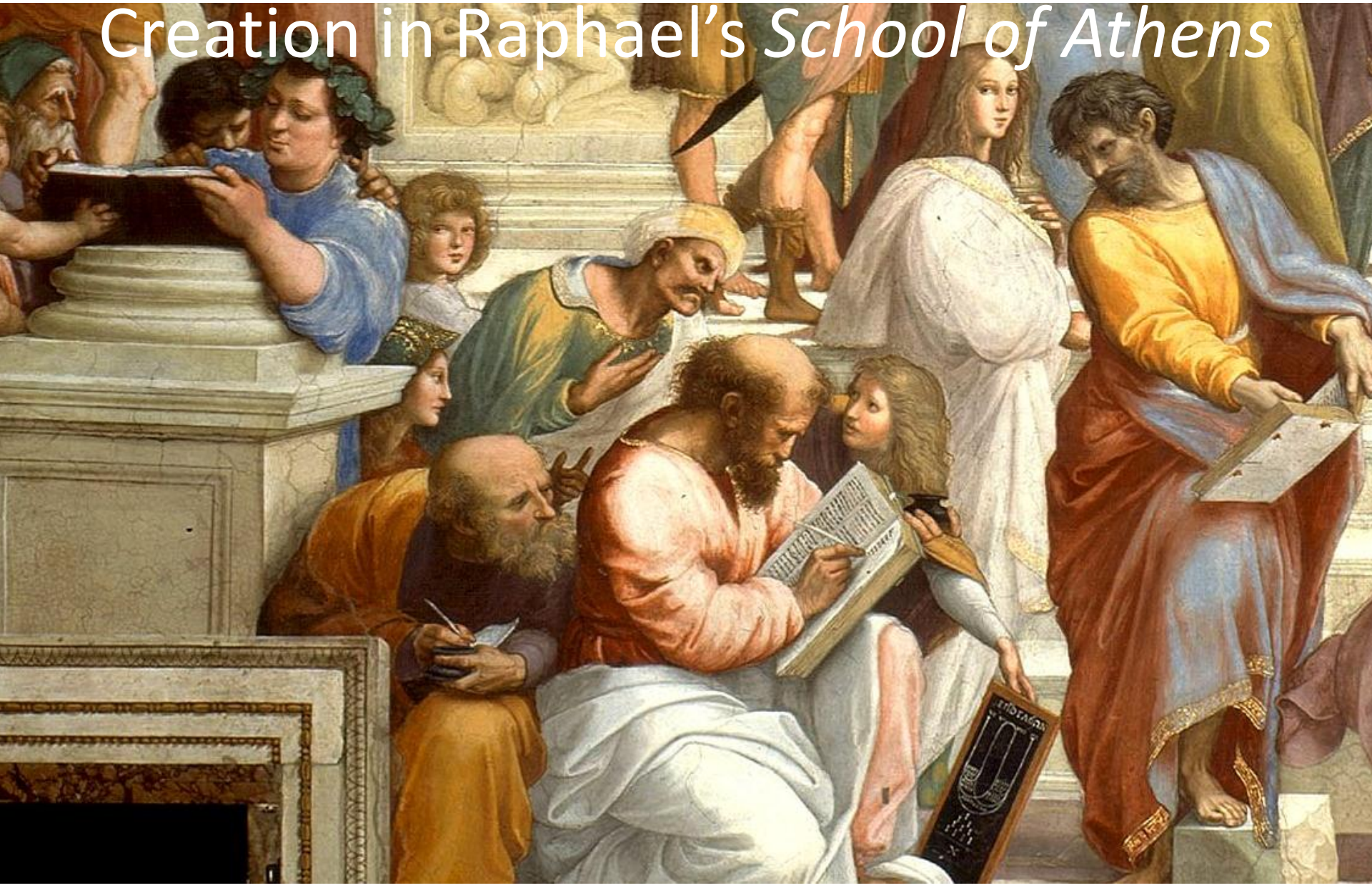
Integrate learning and experience

A drop-by class near the library entrance on how to conserve slides and photographs, organized by our Department of Preservation

Raphael's "School of Athens" (1516)

Reading, Writing, and the Ferment of Creation in Raphael's *School of Athens*

More from the Noisy Renaissance Library of Raphael's *School of Athens*

Bring In Da Noise: Luther Posting His 95 Theses

Luther, Martin: [Disputatio pro dedaratione virtutis indulgentiarum 1517] Amore et studio elucidande veritatis: hec subscripta disputabu[n]tur Wittenberge. Presidente R. P. Martino Lutther: Artiu[m]|| et S. Theologie Magistro: eiusdemq[ue] ibidem lectore Ordinario. Quare petit: vt qui non possunt verbis|| presentes nobiscu[m] disceptare: agant id literis absentes. In no[m]i[n]e d[omi]ni nostri hiesu chr[ist]i. Ame[n].|| ... M.D.Xvij. - [Nümberg : Höltzel], 1517. - [1] Bl. Signatur: Luth. 54

"The computer and the noisy world of cyberspace allow us to recapture some of the sociable auditory elements of early modern reading and memory that the modern archive and library have suppressed under the caveat of 'Silentium'."

Leah S. Marcus. "The Silence of the Archive and the Noise of Cyberspace." In *The Renaissance Computer* (Routledge, 2000)

Architects Are Building Exciting—and Inviting—New Libraries

The new library of the Swiss Federal Institute of Technology in Lausanne, Switzerland, designed by the Japanese architectural firm SANAA

The Political Frame

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The Symbolic Frame

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Events Matter!

Performing John Cage's "4'33"" in the Library's main corridor, September 2012

Ritual Matters!

- In October 2012, we had a water pipe burst in our Special Collections Library. About 25 staff members responded instantly, protecting the collections from even worse damage.

- In addition to a reception held to honor these "first responders" at a hotel in downtown Evanston, we also gave each of them a perhaps silly—but it turned out much appreciated!—commemorative button.

- Moral: Being recognized is important!

Thank you!

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