

# Reinventing the Library

FOR ONLINE EDUCATION

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# Reinventing the Library

**FOR ONLINE EDUCATION**

**FREDERICK STIELOW**



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What is more important in a library than anything else—  
than everything else—is the fact that it exists.  
—*Archibald MacLeish*



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## < preface >

When it was proclaimed that the Library contained all books, the first impression was one of extravagant happiness. All men felt themselves to be the masters of an intact and secret treasure. There was no personal or world problem whose eloquent solution did not exist. . . . The universe was justified, the universe suddenly usurped the unlimited dimensions of hope. . . . As was natural, this inordinate hope was followed by an excessive depression. . . . A blasphemous sect suggested that the searches should cease. . . . Others, inversely, believed that it was fundamental to eliminate useless works.  
—Jorge Luis Borges, “*The Library of Babel*” (1941)

**B**ORGES PRESAGES EXUBERANCE AND REQUISITE CAUTION as libraries enter the teens of the twenty-first century. Some remain optimistic about the prospects on the “information superhighway.” A counter-chorus grows wary. Economic crises threaten financial underpinnings and the employ of librarians. World Wide Web actively intrudes on traditional domains. The world’s knowledge no longer fits neatly on library shelves. The need to travel and handle physical objects vanishes. Every area of library activity is fundamentally reordered. And, as stressed in this book, a disturbingly different type of library setting emerges for consideration.

An institution that literally defined human history faces existential tests. Can libraries control their destinies in the web age? Could the Web subsume the library as institution? Or, as featured here, are there redeeming and redefining roles from online education?

## **PERSPECTIVES**

The following chapters offer exploration through uniquely experienced and occasionally provocative perspectives. Though the book is of value for a variety of settings and library school students, the locus is higher education. Rather than a top-down research institution or consortial approach, dialog is from the bottom up. The voice seeks to address, inquire, and empower at the level of the practicing repository for the new of a virtual campus.

### **VIEWS FROM THE VIRTUAL**

Even the best of current commentaries reflect print-era biases. The reality of centuries of practice backed by millions of dollars in infrastructure remains hard to escape. The book continues as the defining trope. Instead of transformational embrace, defense and recodification of established practices naturally lurk beneath the surface. Discourse mirrors reluctant transit from paper to “blended” electronic operations.

These dialogues launch outside the book “box.” Conjecture is replaced by postmodern commentary from a previously unheard setting. Rather than projections on what may be coming, discussion is from an already reinvented library. Origins lie in a rapidly expanding online library—one with some eight years of experimentation and successfully serving over 100,000 patrons in more than 120 countries. Analysis comes absent huge abodes, vested personnel, or even ownership of information assets. Metaphors are of the web and the cloud. Functions are predefined from the electronic with barely a thought of paper. Through such rarified air, nothing is assumed. All operations are subject to critical examination and rife with change.

### **FOR-PROFIT JUXTAPOSITION**

The outsider viewpoint is accentuated by a first-time look through the lens of online, for-profit universities. Part and parcel of a rising global economy, these are uniquely web creations. They originate without deference to vested infrastructures or established practice. Planners consciously inveigle against land-based traditions. Competitive forces unapologetically scrutinize for advantage and market share. Rather than assume entitlement and value, the landscape turns capitalistic and decidedly entrepreneurial. It presupposes heightened accountability, including prospects for ROI (return on investment) and unseen levels of justification for the very presence of an academic library.

## TECHNOLOGY NEXUS

The treatment presented here also draws on personal engagement inside the “technology box.” Observations date to the late 1960s with the running of a data processing shop and systems analyst training prior to entering librarianship. Subsequent experience parlays web-era management in both academic and public library system settings. Knowledge is harvested from the past of an Internet services provider (ISP), successful automation of dozens of libraries in a multi-county system, and building a virtual library for an online university.

My views are also bolstered by employ as a professor in schools of library and information science. The inquiry benefits from the familiarity earned through decades of teaching, including classes that range from the history of the book and preservation to an introduction to automation and web-based archives. To those are added a myriad of professional committee assignments and consultations along with two earlier web-related books.

That combination informs an environmental scan across the jungle of onrushing encounters, threats, and opportunities. I give attention to practical work-a-day insights yet do not shy from surfacing atavisms, the realities of the consumer marketplace, or the potentials of a born-web generation. Emergent applications are queried from Web 2.0 to voice recognition, touch screens, and 3D imaging. These pages proffer search engines as a new type of audience and service determiner. Libraries are invited to exit campus comfort zones for online classrooms and automated learning management systems (LMSs). Librarians are asked to step to the forefront, to engage and compete for new web-based roles within the university.

## TOWARD AN IDEA

*Reinventing the Library for Online Education* moves between practice and theory—the classical blend of *praxis* and *techne*. The ultimate pretense is to advance a web-age library component within the critical baseline launched by John Henry Newman (1858) in the classic *The Idea of a University*. The practical orientation mirrors the Toronto School of Harold Innes, Marshall McLuhan, and Walter Ong. A “medium is the message” and global village orientation continue to offer predictive and crucial perspectives for transiting the web revolution.

Like Newman and the Toronto School, this book relies on a dose of historical analysis. It suggests that the allure of new technologies can prove dissembling. Naïve instrumentalism lends to overlooking the power of the library narrative.

Yet library genealogy continues to play its defining role within the university, even an online university. History remains differentiating bedrock for survival and success.

Academic libraries also have lessons to learn and economic prospects to uncover from their past. An understanding of an originating mission of student service proves pivotal for the future. The field can draw too on previous encounters with communications revolutions to address the web phenomenon as something in midstream. Final answers at this stage would be presumptuous—but delayed response fatal.

**Related influences.** Management and economic theory come to the fore. Approximation-based planning and change management inform a complex transition. The implications of a global information economy merit special consideration. Acknowledgment is given to rising managerial trends but leavened by doses of Sun Tzu's military, Machiavelli's political, and Max Weber's bureaucratic awareness.

The treatment reflects a variety of other theoretical components as well. Contemporary commentators and futurologists influence near- and long-term projections on the fate of university libraries. Linguistics and literary theories pepper this book. Indeed, much of challenge resolves to the evolutionary nature of language and grammar in revolutionary flux.

Ultimately, the narrative is bookended between two towering figures from the 1940s.

- **Jorge Luis Borges.** As already seen, the commanding Argentine librarian/author sets the stage with insightful jolts of caution, respect, and awe for the complexities that we now face.
- **Vannevar Bush.** This leader of the wartime science community helped inspire the Web and much more in the landmark "As We May Think" (1945). His *memex* concept remains a humbling reminder of still unachieved benchmarks for virtual libraries.

## › Thinking Web

Aside from trust that the reader will credence views from the fringe and blatantly economic positions, this book's most daunting quest is an altered type of thinking. Not unlike the postpress rise of Cartesian modes and individualism, the new medium is transforming thought and how people approach information gathering. How then should the library and librarians respond in rewiring practice, service, and terminology?

## LAYOUT AND SUBTEXT

This book’s design pays subtle homage to McLuhan. Echoing his landmark *Gutenberg Galaxy* (1962), it reflects the Web’s unfolding impact on written communication. Print composition is augmented by electronic consciousness. Core chapters invite random access through a wiki-like encyclopedic framework and “stub” commentaries. Periodic “Readers’ Advisories” invite “hopscotching” within the text. Footnoting is deprecated. The semistandard bibliography is altered, with URLs preferred. Citation leans away from pagination in deference to the utility of simple string searches. End matter extends to a “Webliography” of sites consulted.

Visual components also emphasize what McLuhan termed “gravitational” effects on composition:

- Bulleted or enumerated lists with boldface and italic trimmings are frequent features.
- Author-date (parenthetical) citation style replaces footnotes.
- Multilevel headings are far more frequent than in the past. Rather than boldface type, they began with underlying HTML coding (e.g., h1, h2 . . . h5) and design for search engine discovery.
- Information boxes/sidebars are frequently inserted for digressions and conversations that were previously relegated to footnotes.
- Paragraphing and sentence structures are deliberately shortened from scholarly norms.
- Type font for headings is Verdana—the first font designed for the Web. Released in 1996 from Microsoft’s typography group, Verdana offers a sans serif face for enhanced online viewing and better transition from inking to pixelated representations on the computer screen.

The results are admittedly attenuated. The product is still framed as a standard book and unfolds through monographic chapters. It has to meet publisher demands rooted in print that strip off the structures and embedded metadata in the production process. The work is inherently “time stamped.” Input and considerations are largely fixed by the draft’s November 1, 2012, dispatch to the editors. Equally important, a book in hand cannot include hyperlinks. Ink on paper lacks the ability to repurpose resources automatically in multiple locations—or to add flourishes like automated references, glossaries, updating, videos, and external commentary.

## CONTENT OVERVIEW

*Reinventing the Library for Online Education* unfolds in two major sections. Part A, “Preparing within a Revolution,” spotlights a set of knowledge arenas to guide the construction of a virtual academic library. Three background chapters proffer top-down overviews:

- Chapter 1, “The Narrative,” glosses the powerful story that is library history. Discussions promote an origins myth along with lessons from a series of technologically related paradigm shifts, which demark the evolution of the university library.
- Chapter 2, “Web Technology and Libraries,” provides technical background on the Web and its first-round effects on academic libraries.
- Chapter 3, “Disruptions on the Long Tail,” brings economics firmly to the fore. The library is set as a cog within a new information economy—one that includes unprecedented competition, added government oversight, and the disruptive forces of online universities.

Part B, “Virtual Campus Discourse,” immerses the reader from the bottom up in an onrushing reinvention of the library. Discussion emanates from a critical era at the start of the second decade of this century. Questions are implicit and explicit. How can a library control its destiny with collections that are no longer owned or physically housed? How do academic libraries reverse current trends and prove their worth in a highly competitive atmosphere?

Explorations are based on practical experiences and a virtual campus-based classroom/research information services (CRIS) model. In this setting, library theory is redefined for librarian-centric services and demonstrations of value. Chapters engage as a series of applied exercises:

- Chapter 4, “Setting the Stage,” juxtaposes a mainstream validation crisis and opportunities against a proposed remediation model from the virtual campus.
- Chapter 5, “Elimination Commentaries,” strips away superfluous library practices for print-based artifacts and storage needs.
- Chapter 6, “Redefinition Commentaries,” deconstructs remaining library functions for virtual operations.

Chapter 7, “Construction Commentaries,” the final set of commentaries, is immersed within a growing array of concepts, tools, and services being wrought by the medium.

Chapter 8, “Rewiring Online Librarians,” hypothesizes an elevated role for librarians. Librarians replace collections as the centerpieces for a new type of academic library—but they require rewiring.

Chapter 9, “Managerial Strategies,” offers concluding analysis that draws from the previous discussions. It provides pragmatic suggestions for the implementation of an academic online library with emphasis on a for-profit virtual campus.

A speculative epilogue looks at prospects for empowering a higher-education economic zone along with a multilayered concept for the virtual academic library.

The text closes with a ceremonial colophon. Dating to the preprint era, such “final strokes” were once used to identify the source of handwritten compositions. The device reappears with background on the author and the electronic scriptorium that birthed the study—library operations on the virtual campus of the fully online American Public University System (APUS).



## ◀ *acknowledgments* ▶

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The bulk of accolades are reserved for “my folks”—the best group of online librarians in the field—and their compatriots in electronic course materials and APUS ePress. Appreciation goes in particular to Susan Hyland, Lydia Crawford, and Andrea Dunn. They stood with me from the start in rewiring a different vision of service. Finally, to wife Susan Rosenfeld and son Thane goes the grudging thanks for putting up with me. ☺



# PREPARING WITHIN A REVOLUTION

Gaining understanding within a revolution is perforce daunting. Basic assumptions and the underpinnings of the field are being ripped away. Legacies from the past intrude. The library struggles for solutions while accommodating at breakneck speed. Unprecedented competition and financial strictures emerge. The hunt is on for guidance and models, but where is the experience—especially for smaller and midsize facilities?

This initial section of *Reinventing Libraries for Online Education* proffers insights from history but moves quickly to background and questioning from web technology and for modern economic considerations. The intent is a “view from 30,000 feet” to better guide practical choices for chaotic and threatening times.

## › Readers' Advisory

Although interlaced, the book's sections may be read independently. Part A offers general background fodder, including philosophical and theoretical contents. Those bent solely on practical applications may jump ahead to part B's “Virtual Campus Discourse.”



# THE NARRATIVE

Prepare for the unknown by studying how others in the past have coped with the unforeseeable and the unpredictable.

—George S. Patton

**G**ENERAL PATTON'S ADVICE HOLDS FOR THE WEB. HISTORY is too valuable to ignore—or leave solely to historians. Whether learning from success or tribulation, the past remains a precious tool. This is especially so for libraries. Their narrative provides an unparalleled baseline for future sustainability. Historical understanding and methods offer the manager valuable counterpoint and distance. Factual background and nonlinear evaluation help balance against the blinding allures of technology and latest business fad. Rather than awakening to unpleasant hindsight, foresight based on the past sharpens awareness for

- **Atavisms.** Tradition and allegiances to established practice can be dissembling for coping within a revolution. What should be discarded or at least questioned? Are there related lessons for bringing change to staff, operations, and audiences?
- **Functions and structures.** History helps avoid reinventing the wheel and clinging to presentist biases. What components from the past to use, not use, or—perhaps—resurface or refurbish?

- **Image/prestige.** The library goes beyond physical services. What are the potential and responsibilities from its historical legacies, allegiances, and symbolic values?
- **Technological perspective.** The Web is not the library's first encounter with a transformational technology. What are applicable lessons from earlier communications revolutions?
- **Threat response.** The ivory tower is being assaulted. Marginalization again rears, and any sense of entitlement must be obviated. What are the threats from both external competition and internal acquiescence?
- **Strategy and tactics.** In General Patton's terms, what is the appropriate mix of defense and offense—of strategy and tactics—for sustainability and advancement in the web era?

## › Readers' Advisory

This chapter offers a highly abbreviated overview. Those with developed awareness of the library's place in history may wish to jump ahead to the next chapter. Those with historical animus or narrow applied focus, however, are advised to still hopscotch to the "Sorbonne and the Invention of the University Library" then "The University and Education Reordered" in this chapter.

## PROLOGUE

The idea of library is inherent to civilization, but its meaning varies with time and circumstance. This book's context is the library as stand-alone entity or branded subset of an institution—such as a university library. In addition to intellectual and civic context, I add stress for often underplayed ties to technology and pedagogy. Such tradition dates to the invention of writing at the literal dawn of history. Working as party to emergent political/religious systems, castes of priestly scribes developed groundbreaking technologies. These first technocrats engaged in two overlapping zones:

- **Religious/state services.** Writing transcended divination. With it, scribes could capture and reuse the words of their deities in a displayable and inheritable fashion. With it too, governments and religions were legitimated.
- **Notarial services.** The same skill set supported administrative controls and government bureaucracies. Governments could institute regularized

taxes. Laws and commercial transactions could be captured in reproducible form for verification.

The science of writing did not stand alone. Efforts bridged into education and knowledge building. They stimulated companion skills in mathematics along with investigations of the heavens and natural events. Such directions necessarily brought forth a subsidiary institution that would give name to their underlying enterprises.

**Birth of the repository.** Scribal functions naturally extended to record keeping. The storage and retrieval of content gave birth to the library/archives as institution. Care and growth of collections eventually called forth specializations. Those in charge needed expertise for different types of materials, storage units, and access. They had to handle museum-like artifactual collections, including sanctified objects. Preservation and copying functions entered. Over time, sacred and commercial realms would be augmented by educational materials, scholarly observations, and even a bit of pleasure reading/literature.

## CLASSICAL PORTFOLIO

The democratic crucibles of ancient Greece and Rome fostered a remarkably mature form of library. Their institutions were a concrete manifestation of the doctrine of the “Good.” In keeping with Plato’s articulation for his philosopher kings, the library was a realization of the state’s duty to its people. Establishment would come from an informed polis and required citizens’ embrace as stakeholders. Temple traditions blended into a lasting duality:

- **Information services.** Temple and state duties extended to an enlarged clientele and enhanced services:
  - » *Public access.* Access to information was extended to the citizenry—the *polis*—as a democratic right.

### › Hydraulic Societies

Western writing traditions date to Sumer and Egypt in the fourth millennium BCE. These were early agricultural civilizations beset by annual floods and also characterized as “hydraulic” societies. As proposed by Wittfogel (1957), writing and the parallel development of number systems provided the practical modus for the formation of sophisticated government. Recording authority was needed to deal with washed-out boundaries and water distribution.

- » *Publication controls*. Responsibility for the provision of information extended from self-publishing to collecting from external sources.
- » *Education/scholarly operations*. The library supported education along with creation/distribution of secular knowledge.
- » *Stewardship*. Priestly responsibilities for the words of the gods transited toward the secular and preserving the documentary heritage for future generations.
- **Monument/cultural symbol**. The institutions became a civic statement somewhat independent of their religious placement. Beyond active services, the library signed:
  - » *Legitimacy*. Political, cultural, and business bodies basked in the propriety wrought by the presence of the institution. Like a monument, the library helped affirm tradition and an establishment's right to exist.
  - » *Scholarship/science*. Thanks to its educational overlap and holdings, the institution became a recognized signpost of wisdom, scholarly studies, and advancement.
  - » *Prestige*. Whether altruism, duty, or conspicuous consumption, the library conferred respectability and social status. It readily became a locus for charitable contributions but also periodically an enticing fashion statement. As Stoic philosopher Seneca lamented over Roman values in the middle of the first century CE:

You will find, then, in the libraries of the most arrant idlers all that orators or historians have written—bookcases built up as high as the ceiling. Nowadays a library takes rank with a bathroom as a necessary ornament of a house. I could forgive such ideas if they were due to extravagant desire for learning. As it is, these productions of men whose genius we revere, paid for at a high price, with their portraits ranged in line above them, are got together to adorn and beautify a wall.

Unfortunately, the same prestige, legitimacy, and religious factors made for a tempting target. Positioning within wealthy temples to other gods was certain to draw the attention of invaders and rebels—doubly so when financial and property records were present. The past and present of libraries thus remain all too replete with demonstrations, destruction, and looting.

## Alexandrian Museum, the Proto-university

Classical formations reached their epitome in the fourth century BCE. In keeping with Aristotelian precepts, the Ptolemaic city of Alexandria in Egypt founded a temple to the muses. The creation remains a transcendent statement. The Alexandrian Museum emerged as a trailblazing knowledge center—the world’s first university before there was a word for university.

The museum articulated space for science and education. A lyceum offered teaching and public forums. The *peripatos*, a colonnaded walkway and gardens, were part of a grand design. They supported contemplative reflection—“a place for the cure of the soul.” Amenities were specifically dedicated by subject, from astronomy and anatomy sections to a zoo of exotic animals. Over time, this creative confluence would be the fount for the “fathers” of math, engineering, physiology, geography, and medicine.

**The academic library.** Space and Aristotle’s literary effects manifested through a groundbreaking library. The Alexandrian version was integral to the museum’s operations but achieved its own fame and lasting legacy. Rather than part-time task, librarianship ratcheted into a full-time occupation. Practitioners became known and even gained a bit of celebrity. For instance, we can point to Zenodotus, the library’s founder; and Callimachus, the first bibliographer and inventor of the *pinakes*, or library catalog.

Alexandria fully embodied what became a continuing ideal. In addition to a precedent-setting drive to hold all of human knowledge, operations fostered experimentation and development of a new auxiliary discipline or science. Alexandria pioneered trappings that continue to define and grace modern establishments—along with intriguing extras:

- **Acquisitions.** Alexandria reveled in the first transnational knowledge collections. This forerunner of modern research libraries forged the first mandate to collect the world’s written information.
- **Cataloging.** The earliest known dedicated department for the bibliographic control of materials also included the first recorded use of alphabetic ordering.
- **Education.** The library boasted its own educational facilities with designated lecture halls.
- **Entrepreneurial center.** The Alexandrian Library augmented its state support by serving as an international hub of the book trade. It also stimulated nearby economic endeavors, such as the production of papyrus.

- **Public presentations.** Space was set aside for public and scholarly declamations.
- **Preservation.** A basic responsibility was ensuring the survivability of key texts.
- **Publishing.** Copyists put forth editions of classical works for internal use by scholars but also for sale and export.
- **Reading rooms.** Functional spaces were designed for scholars to unroll and compare materials efficiently.
- **Mass storage.** The library featured specialized shelving for the world's largest *bibliothekai* of papyrus and an assortment of parchment scrolls.
- **Scholarship.** Staff developed and used the skills of critical bibliography to determine the authenticity of texts.
- **Showcase.** The library's monumental presence made manifest the state's responsibility for the advancement of knowledge.

## DARK AGES

Although the Camelot-like legend of Alexandria survived, the original was doomed. It fell to a prolonged series of Roman, Christian, and Arabian attacks. The halcyon era of librarianship followed a similar path to destruction with the downfall of Rome. By the sixth century CE, a *mélange* of depredations decimated literacy. The Roman Empire's "pagan" temples with their libraries were being destroyed or left to fall into disrepair. Centralized state recording/depository functions were eliminated. The public library impulse fell into abeyance. The library as urban monument along with its authentication studies, publication duties, and mass storage drifted into the dustbin of history.

Religious retreat alone avoided total destruction. Isolated and defensible monasteries sprang up in the face of waves of invasions and civil disorders. These refuges offered a lifestyle of contemplation along with defensive bulwarks against barbarian hordes and internal marauders. In a manner that defies modern comprehension, monks committed to encompassing communal religiosity. Even work should entail devotional value.

Enter one Cassiodorus Senatorus. In the aftermath of the Gothic Wars, this Roman statesman and cleric offered an Edenic alternative at Vivarium (*vivaria*—a place of fishing ponds):

Its waves threaten no danger, but neither is it despicable for its size. It flows into your precincts, channeled artificially where it is wanted, adequate to

water your gardens and turn your mills. It is there when you want it and flows on when no longer needed; it exists to serve you, never too boisterous and bothersome nor yet again ever deficient. The sea lies all about you as well, accessible for fishing with fishponds to keep the caught fish alive. We have constructed them as pleasant receptacles, with the Lord's help, where a multitude of fish swim close by the cloister, in circumstances so like mountain caves that the fish never sense themselves constrained in any way, since they are free to seek their food and hide away in dark recesses. We have also had baths built to refresh weary bodies, where sparkling water for drinking and washing flows by.

As indicated elsewhere in his famed *Institutiones* (circa 562), Cassiodorus sought to extend the *Opus Deum*, or “work of god.” He devolved scribal/library duties into high forms of devotion. Such labors demanded an elite corps of literate monks. The *Institutiones* announced a special calling: “in his hand preaches to men, with his fingers loosens their tongues, . . . with pen and ink fights against the unlawful temptations of the devil.”

**Retrenchment spreads.** In keeping with the later medieval adage *Clastrum sine armario, castrum sine armamentario* (a monastery without a book locker is like a fort without an armory), Cassiodorus's model set the stage for almost a millennium. But the dictum was also indicative of losses. Massive reading rooms and colonnaded galleries were not needed. New publications were not considered. Rather than the Alexandrian model of tens of thousands of volumes, the library in the Dark Ages would be proud of a few hundred in a large container or two. A survivalist mindset narrowed what amounted to librarianship toward:

- **Preservation and copy cycles.** Approaches regularized the reproduction of key religious treatises and a selection of classical literature on expensive parchment or vellum.
- **Illuminations.** A new skill set added artistic flourishes. Illustrations facilitated praise of the Lord, assisted illiterate penitents in their devotions, and—incidentally—added value to what were already extremely expensive artifacts.
- **Codices.** This essentially Christian format supplanted the rolled papyrus volumes that had dominated classical libraries. Scribal librarians produced illuminated, handwritten manuscripts, which tended toward large formats.

- **Loans.** The monasteries instituted interlibrary loan among themselves. Patron borrowing was expected and remains one of the few lasting legacies of the Dark Ages.
- **Reading controls.** As indicated below in the sixth-century Monastic Rules of Cassiodorus's contemporary Benedict of Nursia (circa 530), practices were deliberately ordered to the overriding purpose of the monastery and entertained discipline:

Above all, let one or two of the seniors be appointed to go about the monastery during the time that the brethren devote to reading and take notice, lest perhaps a slothful brother be found who gives himself up to idleness or vain talk, and does not attend to his reading, and is unprofitable, not only to himself, but disturbs also others. If such a one be found (which God forbid), let him be punished once and again. If he does not amend, let him come under the correction of the Rule in such a way that others may fear. And let not brother join brother at undue times.

## A SAGA IN FIVE STAGES

Though reminiscences to the Dark Ages may surface periodically, planning is best prefaced through forays into the next phase in library history—the story of the university library. The lineage proves surprisingly uneven, but of singular importance. Repeated struggle for identity and recognition followed in fits and starts along a rough set of trend lines: from religious setting and content toward the secular; from the care and handling of high-priced treasures to ever more affordable commodities; in broad reflection of swings in the political economy and government interests; and through a series of reinventions in response to advances in communications technology and university pedagogies.

### STAGE I. SORBONNE AND THE BIRTH OF THE UNIVERSITY LIBRARY

Western civilization began slowly to crawl its way back after the dawn of a new millennium. Security and with it European populations began to expand in the years after 1000 CE. Educational enterprises blossomed outside monastic respites. Cathedral schools began to sprout as a feature of renewing urban

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