
Libraries & the Digital Commons: Eight Principles for an Emerging Ecosystem

Ellen Finnie Duranceau
Scholarly Publishing and Licensing Consultant
MIT Libraries

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The Commons: An Old Idea That Works

- The Commons
 - Shared public resource: free to individual users
 - Public Good: resource not depleted by additional individual use
 - Public Streets, Boston Common
- Internet access to research as new “Digital Commons”



Stewardship of Ecosystem: The Commons

- Biologist Garrett Hardin: 1968 *Science* article “The Tragedy of the Commons”
 - “Freedom in a Commons brings Ruin to us all”
- New thinking: Princeton Biologist Simon Levin
 - Erroneous ‘tragedy’ metaphor
 - Management of a shared resource can work if you have agreed-upon rules

Eight Principles To Manage a Commons

- Levin's *Fragile Dominion: Complexity and the Commons* (1999)
- Managing the planet as a commons -- biological ecosystem
- “Eight Commandments of Environmental Management” – essential management lessons for the biosphere
- Application to a socioeconomic ecosystem – scholarly communications

The Eight Principles

- Reduce Uncertainty
- Expect Surprise
- Maintain Heterogeneity
- Sustain Modularity
- Preserve Redundancy
- Tighten Feedback Loops
- Build Trust
- Do Unto Others as You Would Have Them Do Unto You



#1: Reduce Uncertainty Biological Commons

- Minimize reliance on one mode/one source
- ***Monitor, investigate, to obtain new information all the time***
- Spread risks by broadening scale/scope
- ***Diversification imperative for survival***

#1: Reduce Uncertainty

Libraries/ Digital Commons:

- Move beyond traditional services and systems
- OA repository
 - Develop infrastructure to capture and manage intellectual assets produced by the organization:
Natural role for libraries
 - MIT's Dspace (2002+)
- Support for Faculty in OA domain
 - Retaining rights
 - Using open access channels
 - Support for ingesting content into IR
- University presses a place to start conversation
 - OA publishing libraries/Univ Press

New library role: Supporting Faculty in publishing decisions

- MIT example: Funded by Provost, 50% time
- Resource for faculty
 - Rights in relation to work
 - Publisher copyright transfer agreements
 - Options and rights related to self-archiving
 - Options for OA publication
 - Funder policies in relation to OA options
- Supporting decisions about how and where to publish
- Implications of copyright assignment for activities/mission on campus
- Peter Suber: “Another great idea from MIT. Until OA is as familiar as email, every university should have something like this.”

#2: Expect Surprise Biological Commons

- Maintain flexibility in management structures
- Adjust rules and regimes on the basis of *monitoring and other sources of new data*
- *“When a good habitat is found, there obviously is merit in sticking with it. ...however ... staying for too long in one place, or with one strategy, reduces knowledge about what is going on elsewhere.”*
- *“Adaptive Probing:”*
 - Continual exploration of alternative management strategies needed “even when current strategies seem to be working adequately.”
- Build “flexible response systems so that the effects of unpredictable changes are reduced in their impact...find mechanisms to *build in resiliency* to reduce the likelihood of qualitative shifts in services.”

#2: Expect Surprise

Libraries / Digital Commons

- Data-driven roles and services
 - User surveys:
 - MIT 2005 user survey & 2006 photo diary study
 - <http://macfadden.mit.edu/webgroup/userneeds/index.html>
 - Support for understanding copyright and publishing options (awareness low/importance high)
- ‘Good habitat’: licensing & ERM systems
 - ‘Adaptive probing’ suggests need for article-level metadata about rights
 - How to fully take advantage of articles that are open, even hidden in hybrid journals?
 - Discussions with ERM system vendors
 - Implications for IRs
 - Role for libraries in tracking institution’s output
 - Partnership with Institutional Research

#3: Maintain Heterogeneity Biological Commons

- “The ***resiliency of any complex adaptive system is embodied in its diversity*** and in the capacity for adaptive change among system components.”
- “***...massive failures...are far more likely to occur in homogeneous environments.***”
- “...balance ... is to be found only at the broadest scales of space, time, and organizational complexity.”

#3: Maintain Heterogeneity Libraries/ Digital Commons

Our environment will continue to be heterogeneous; we must match it

- No single model to support in near term
 - Green, gold, hybrid OA etc. will exist with traditional subscriptions and print for a while
 - Maintain advocacy for Fair Use principles; push back on DRM, restrictive licenses and purchase models; Promote OA channels through library tools
 - Begin analysis and dialog with campus administration
 - New financial models for access to research
 - Author-side payments, institutional memberships
 - Libraries can evaluate cost models for institution

#4: Sustain Modularity Biological Commons

- “in modular structures, there is buffering against cascades of disaster.”

#4: Sustain Modularity

Libraries/ Digital Commons

- Move away from monolithic, hierarchical organizational structure
- Support interoperable, modular design in all systems and staffing too
- Flexible new services:
 - Web 2.0 world
 - Social software, services/info where users are
 - Support new uses of research (data mining tools etc.)

#5: Preserve Redundancy Biological Commons

- “Redundancy is the immediate source of replacement of lost functions; ***heterogeneity provides the material for adaptive responses over longer time scales.***”
- “...heterogeneity...reduces the functional susceptibility to specific threats.”

#5: Preserve Redundancy

Libraries/ Digital Commons

- Maximize efficiency of digital realm to avoid excess redundancy; but retain sufficient redundancy
- Archiving models should have built-in redundancy
- Identify trusted archive for digital content
 - IR / Discipline archive
 - Portico
 - LOCKSS
 - Print sharing cooperatives
 - National agreements
 - Title-level metadata on trusted archive – in ERM

#6: Tighten Feedback Loops Biological Commons

- “...the benefits to individuals in restraining their own consumption or exploitation patterns are faint in the case of common resources. ***To encourage behavior in the common good, we must tighten cost and benefit feedback loops.***”
- ***Market must get the price right or privatization of a resource will go wrong.***
- “Tightening feedback loops leads to empowerment, giving people incentives for environmentally beneficial behavior.”
- “...***the market can work properly only when pricing reflects the true value of a good,*** including the social costs.”
- Privatization can create value that promotes preservation

#6: Tighten Feedback Loops

Libraries/ Digital Commons

- New pricing models: making the market work
- What is a reasonable value proposition libraries can propose to publishers?
 - Value-based pricing (University of CA)
 - Can libraries & their associations compute a cost/article model based on economic analysis?
 - Indexing, data mining of traditional subscription literature – develop pricing principles and models in anticipation of new services

#7: Build Trust

Biological Commons

- ***“Evolution works most effectively when individuals interact most with their near neighbors.”***
- Small communities can maintain trust
- ***Globally, need control mechanisms to maintain trust:*** treaties, international agreements, contacts: whether enforceable or implied
- ***“We must find ways for all people and nations to realize their own self-interest in the common good.”***

#7: Build Trust

Libraries/ Digital Commons

- Faculty relationships
 - Sensitivity to divided loyalties
 - Ongoing monitoring; volatile environment
 - Address misconceptions
 - Access already seamless
 - Already have all rights needed
 - Libraries can have significant educational role
 - Explain importance to research and education; frame in context of particular institution
 - Emphasize self interest (impact, citation frequency, readership)
- Track changes in faculty attitude
 - Message of Berkeley (King) study: faculty experimentation / in-progress communication of research
 - New kind of faculty advisory board needed
- At MIT:
 - Built upon standing committees : FCLS
 - Support faculty who find it difficult and frustrating to do the right thing
 - Shepherd faculty resolution on OA

#7: Build Trust / Fostering Relationships: Shepherding Faculty Resolution

- Draft resolution on open access:
 - Need faculty champion
 - Support faculty to faculty initiative
 - Provide logistics, materials, facts, data
 - Set up meetings
 - Help conversations happen
- At MIT:
 - FCLS / faculty initiative
 - January '07 open access session -- Arranged by libraries, faculty involvement
 - Academic departments (planned for spring '07)

#7: Build Trust/Fostering Relationships: Administration

- Faculty relationships necessary but not sufficient
- Also need Administration on board; resources flow from administration
- At MIT:
 - President
 - Provost
 - Vice President for Research
 - Office of Sponsored Programs
 - Committee on Intellectual Property
 - Faculty Committee on Library System (FCLS)
 - Intellectual Property Counsel
 - Visiting committee process : OA natural interest in raising visibility of institution's successes
- University presses (MIT press reports to MIT library director)

#7: Build Trust/Fostering Relationships

- Libraries not traditionally in close relationship with those who support faculty seeking and managing research funds
- At MIT:
 - Natural partnership with senior academic officer with responsibility for research
 - Office of Sponsored Programs extremely responsive
 - Poised to join OA movement for published results
 - Surprised published results not yet required to be shared; materials, data, already require sharing in contracts

New and Renewed Partnerships

- Research policy faculty oversight
- Contract programs administration
- Senior academic leadership
- Faculty and administrative committee structure
- Graduate students and post-docs
- Institutional Research
- University Presses
- Libraries cannot do this alone
 - Help tell the story
 - Logical place to provide support; relationships with faculty across breadth of teaching and research at an institution
 - Help create the climate where it is easier for faculty to do the thing they want to do anyway
- Partnerships make change possible: example of stewarding change with MIT amendment

Stewardship case study:

MIT amendment to publisher copyright agreements

The context:

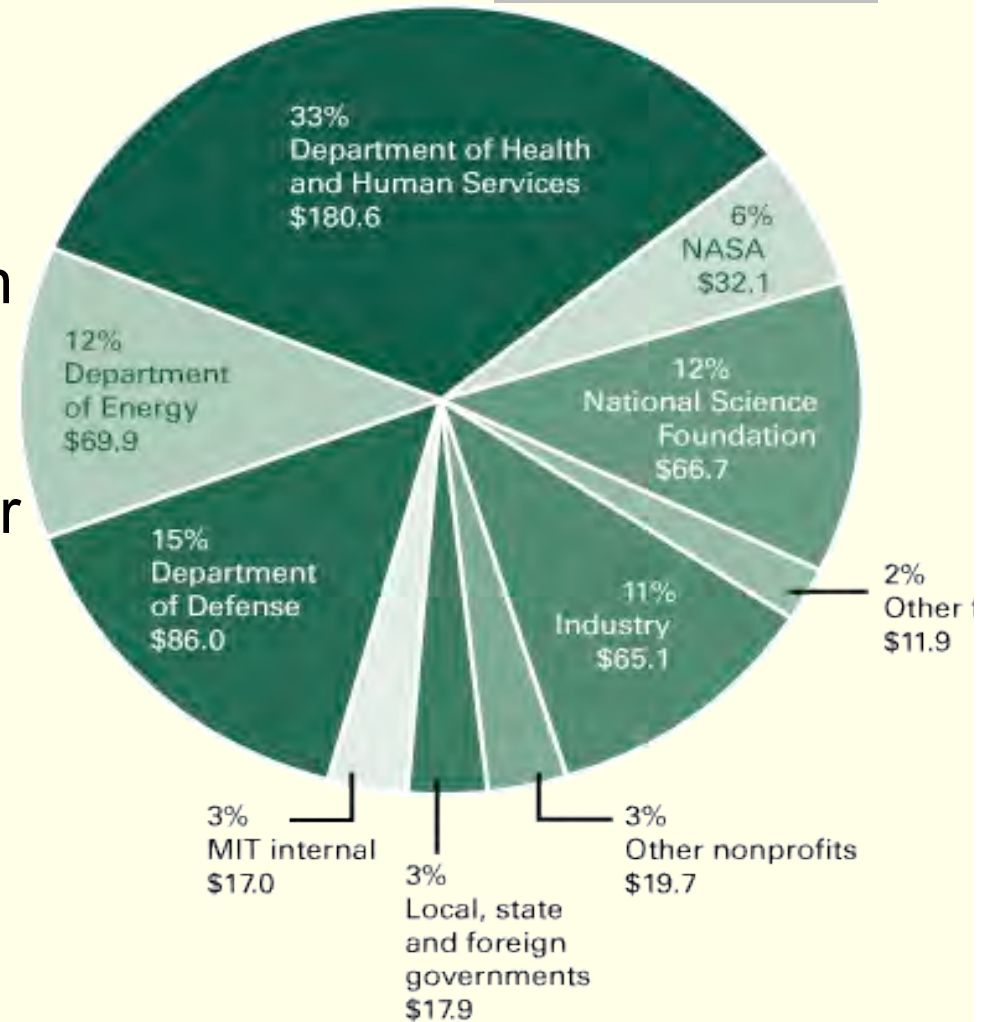
- Culture at MIT includes biases toward openness and impact
 - Free Software Movement, W3C
 - OpenCourseWare, DSpace
- Site license terms that would dictate who could use information
- Pricing structures that built barriers to purchase, access
- Copyright law changes together with PR campaigns to undermine fair use traditions
- Increased constraints on author rights
- Growing pressure : Digital rights management

MIT Amendment: Context

NIH Policy 2005

- “Why wouldn’t we take reasonable and appropriate steps to help faculty comply with a request from a funding agency that supplies one third of our research dollars?”

- Ann Wolpert,
Director Of
Libraries



Standard Copyright Agreement Amendment for MIT Faculty

- IP Counsel drafted under auspices of Committee on Intellectual Property, chaired by VP for Research
- Voluntary
- Support of Provost and President
- IP support for individual authors
- Broad rollout:
 - Library and faculty newsletter articles
 - Department meetings
 - President's Council
- Simple instructions
 - Attach to standard agreement
 - Note that agreement subject to amendment

Key Provisions: MIT Amendment

- **Nonexclusive right to use their own work in noncommercial and professional activities**

The Author shall, without limitation, have the non-exclusive right to use, reproduce, distribute, create derivative works including update, perform, and display publicly, the Article in electronic, digital or print form in connection with the Author's teaching, conference presentations, lectures, other scholarly works, and for all of Author's academic and professional activities

- **Published version in OA repository**

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Libraries' Stewardship: MIT Amendment

- Framing the issue for the institution
 - Who will control research results and the research record: educators and researchers or third-party interests?
 - Focus on faculty productivity
 - They can't control current and future use of their own work
 - The agreements they sign are undecipherable
- Letter to publishers / focal point for ongoing communication
- Liaison as needed for IP counsel support to authors
 - Questions to libraries first; referred to IP as needed
- Director of Libraries: at center of IP on campus
 - Senior academic officer with responsibility for advice on copyrighted material and
 - Member, President's Committee on Intellectual Property
- New practical support: scholarly publishing & licensing consultant

Several Amendments to Choose From

- Science Commons launching author addendum generator
- Part of scholar's copyright project
- Will produce version of amendment selected
 - PDF, journal title, author, publisher filled in
- MIT's amendment likely to be included in the future
- Preview at: <http://scholars.sciencecommons.org>
- Comparison of amendments:
 - **Peter Hirtle article in D-Lib:**
<http://www.dlib.org/dlib/november06/hirtle/11hirtle.html>
- Use of amendment important; not every institution needs to make their own

Scholar's Copyright



Please enter the information requested below and choose a version of the Science Commons Author's Addendum to generate an addendum. For more information on how to select and use an addendum, refer to [the FAQ](#).

Manuscript Title	<input type="text"/>
Journal	<input type="text"/>
Author Information	<input type="text"/>
Publisher	<input type="text"/>
Agreement Type	<input type="text" value="OpenAccess-Publish"/> <input type="text" value="OpenAccess-Publish"/> <input type="text" value="OpenAccess-Delay"/> <input type="text" value="OpenAccess-Creative Commons"/>

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#8: Do Unto Others As You Would Have Them Do Unto You

Biological Commons:

- “Societies can only survive when there is action for the collective good, whether maintained by reciprocal altruism, binding agreements, systems of law, or international compacts.”

Libraries/ Digital Commons:

- We're all in this together: it's an ecosystem
- “Inspiration, Education, Cooperation” lead to effective stewardship of the commons
 - Ann Prince, “The Planet as Commons” in *Sanctuary: The Journal of the Massachusetts Audubon Society*

Sustainable Stewardship of Common Resources: Ecological or Socioeconomic

Simon Levin:

“Sound and responsible environmental management demands equitable and sustainable stewardship of common resources.Through this program of action, we can ***harness the forces of evolution and self-organization for the common good. To do otherwise would be both to miss our opportunity and to run counter to natural forces of irresistible power.***”

In or about
the year of our Lord
One thousand six hundred
thirty and four
the then present inhabitants
of sd Town of Boston of Whom
the Honble John Winthrop Esqr
Govnr of the Colony was chiefe
did treate and agree With
Mr William Blackstone
for the purchase of his
Estate and rights in any
Lands lving within said
neck of Land called
Boston
after Which purchase the
Town laid out a plan for
a trayning field which ever
since and now is used for
the feeding of cattell



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