Issues in Digital Preservation

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Presuppositions

- Digital preservation presupposes a digital copy
- A digital copy presupposes knowing copyright law and the copyright status of the work
  - Determining © status is no easy feat
  - See Peter Hirtle, “Copyright and the Public Domain in the United States”

http://copyright.cornell.edu/resources/publicdomain.cfm

Making a digital copy

- If out-of-copyright, can digitize without permission
- If in-copyright, can digitize
  - If © owner grants permission
    - Presupposes knowing identity and location of © owner and getting a response from © owner
  - Or if © law grants exemption allowing digital copy to be made without permission of © owner
  - Otherwise digitizing is © infringement
    - Sanctions apply, including statutory damages

Exemptions (for eligible libraries / archives)

- Preservation copies
  - 108(b) allows 3 copies of unpublished work in the library / archive collection
  - Copies can be deposited in other libraries / archives
  - Digital preservation copies cannot be used
- Replacement copies
  - 108(c) allows 3 copies of published work that is damaged, deteriorating, lost, stolen or in obsolete format
  - *If an unused copy is not available at a fair price*
  - Digital replacement copies must be used on-site

Section 108 Study Group

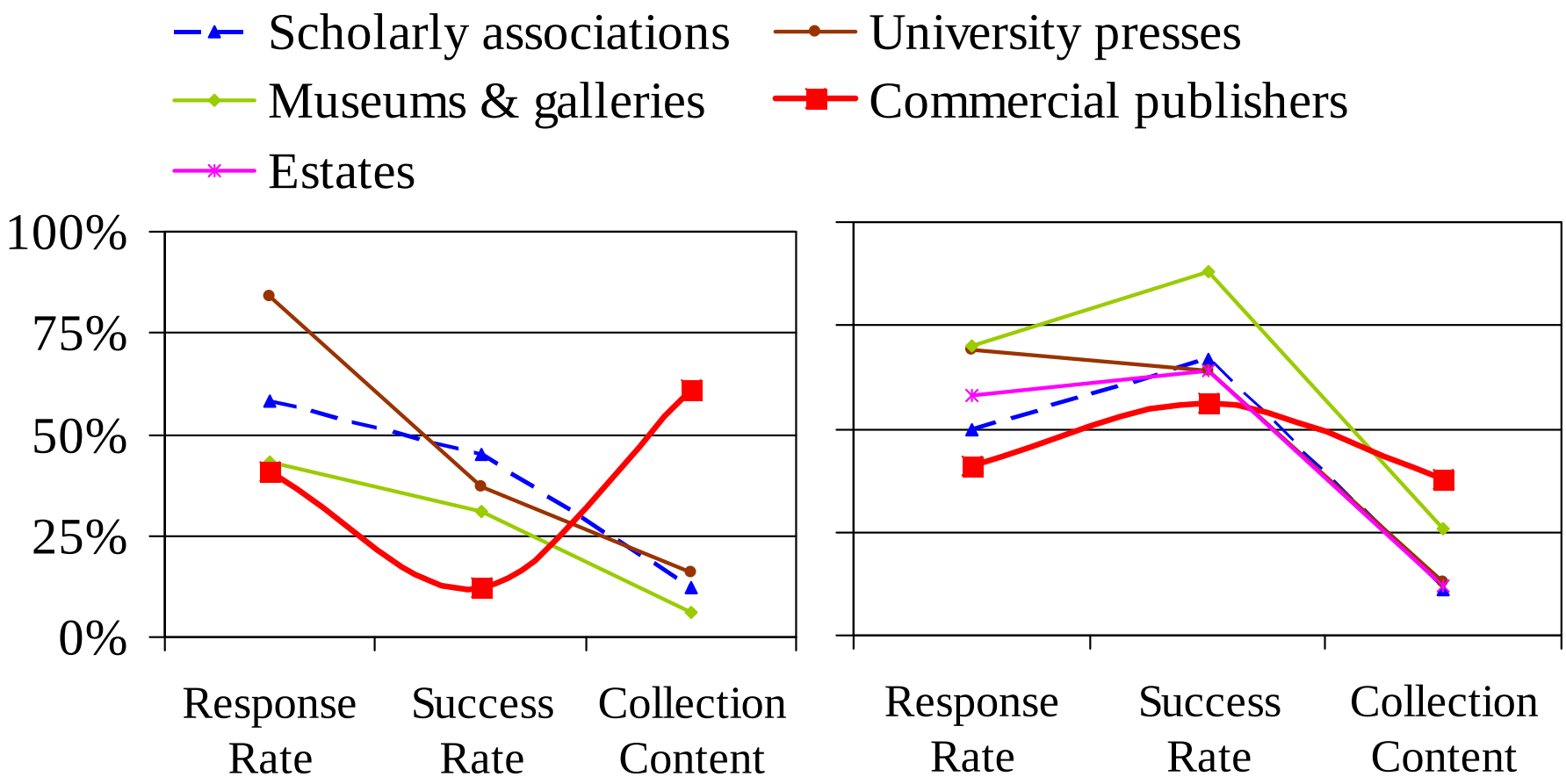
- March 2008 recommended allowing
  - Preservation copies of published work
  - Preservation copies of public online content
    - Immediate access on-site; embargo on remote access
  - Making replacement copies from preservation copies
  - Replacement copies of fragile work
  - Remote access to digital replacement copies
  - Outside contractors to digitize © material
    - If contracted by eligible library or archive, cannot retain copies or benefit commercially from the copies
- Recommendations not yet sent to Congress

Acquiring © permission

- Permission to digitize and provide open access

Random sample feasibility study		*Rare books study*	
	Books	**© Owners**	**Books**
Total items	337	107	1106
1. Copyright protected	94%		27%
2. © owners contacted	88%	65%	
3. © owners responded	51%	76%	
4. Permission granted	43%	70%	66%
Overall success rate	22%	53%	48%
	1999-2001	2003	

Analysis by rights holder type



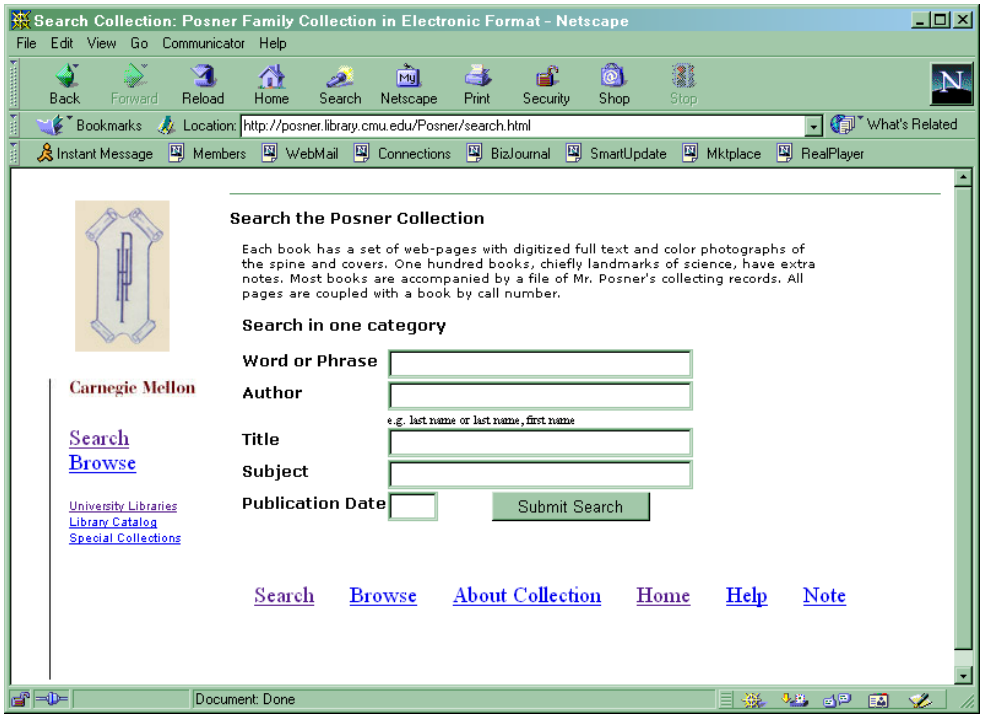
Random sample feasibility study

Rare books study

Rare book study permission costs

$78 per book/volume

$ 10,808	FTE labor
$ 379	Phone calls
$ 100	Paper & postage
$ 11,287	TOTAL



May 2003 – October 2003

Does not include legal fees, administrator time, or cost of Internet connectivity or database creation.

Metadata

- Needed for long-term semantic interoperability
  - Descriptive metadata
    - Bibliographic and copyright information
- Needed for long-term preservation
  - Technical metadata
    - How content is encoded and structured, e.g., software format and version
  - Administrative metadata
    - Aspects of the capture process, e.g., scanning date, scanner profile, lighting

Preserving digitized work

- Follow standards and best practices for scanning
  - Master files in open standard format, e.g., TIFF
  - Descriptive, technical and administrative metadata
- Use loss-less compression to store master files
- Keep redundant copies in different locations
- Check and maintain integrity of files
- Refresh files and media (tapes, discs) periodically
- Options as formats develop and change
  - Migration – can render / deliver work – ideal
  - Emulation – can mimic original rendering
  - Preservation of bits – cannot render

Preserving born digital work

- Capture descriptive metadata
- Convert to standard delivery format if necessary
- Keep redundant copies in different locations
- Check and maintain integrity of files
- Refresh files and media (tapes, discs) periodically
- Problems as formats develop and change
  - No master files in open standard format
    - PDF is proprietary
  - No technical or administrative metadata
    - What version of PDF? Created how?

Institutional repositories (IR)

- Collect, preserve and provide open access to
  - Technical reports and working papers
  - Conference papers and presentations
  - Dissertations and theses
  - Teaching materials
  - Lectures (videos)
  - Journal articles
  - Books
- Exemptions in © law do not apply
  - Need permission of © owner

IR preservation policy

- Items will be retained indefinitely
  - Unusual file formats may not be readable or accessible over time
- Files will be backed up regularly

D-Scholarship@Pitt
Institutional Repository at the University of Pittsburgh

- Submission policy and procedures
  - Must deposit bibliographic metadata and full text
  - No embargo period allowed
  - Administrator vets submissions for
    - Eligibility of author / depositor
    - Compliance with scope and format of IR content
  - Authors / depositors are responsible for validity and authenticity of submissions and © violations

- Submission policy and procedures
  - Must deposit bibliographic metadata
  - Deposit of full text encouraged
    - Embargo period allowed
  - Administrator vets submissions for
    - Eligibility of author / depositor
    - Compliance with scope and format of IR content
    - Alignment with publisher policy
  - Authors / depositors are responsible for validity and authenticity of submissions
  - *Unclear who is responsible for © violations*

In theory

- Open access complies with © law
  - Green OA – retain the right to self-archive work on a website or repository
    - Slow voluntary participation ➔ OA mandates
  - Gold OA – publish in OA journal or hybrid journal and pay the requisite fee
    - Resistance: impact factor of OA journals, fees

In practice

- Much of what is available OA infringes ©

Green OA

- 63% of publishers allow open access
  - http://www.sherpa.ac.uk/romeo/
- Conditions and restrictions apply
  - Versions
    - Pre-print: Original Manuscript, Submitted Manuscript
    - Post-print: Accepted Manuscript, Version of Record
  - Embargoes
    - Typically 12 to 24 months after publication
    - Can be different for website and repository
    - Can be different for journal titles published by the same publisher

Restrictions on version per venue

	Original or Submitted Manuscript		Accepted Manuscript		Version of record	
Publisher policy	**Pubs**	**Titles**	**Pubs**	**Titles**	**Pubs**	**Titles**
Allowed on website	43%	83%	65%	90%	25%	17%
Allowed in IR	38%	75%	54%	80%	20%	14%
Prohibited on website	48%	14%	33%	9%	56%	75%
Prohibited in IR	52%	22%	44%	20%	61%	79%

Journals in which Carnegie Mellon faculty publish

Total publishers = 282 Total titles = 2,833

Examples Green OA maintenance

- Original or Submitted Manuscript
  - Allowed after acceptance for peer review
  - Allowed, but must be removed after acceptance for publication
  - Allowed, but must be removed after publication
  - Allowed on website, but must remove during peer review
  - Allowed on website after publication
  - Allowed on website, prohibited in IR
  - Allowed in IR, prohibited on website
  - Allowed in IR, but must be removed when submitted for publication
- Accepted Manuscript
  - Allowed after publication
  - Allowed after embargo
  - Allowed on website after publication; allowed in IR after embargo
  - Allowed on website after publication; prohibited in IR
  - Allowed on website after acceptance for publication; prohibited in IR
  - Allowed on website after embargo; prohibited in IR
  - Allowed in IR; prohibited on website
  - Allowed in IR after embargo; prohibited on website

Example policy details

- Publisher © and source must be acknowledged
- Must link to publisher version with statement that this is the definitive version and DOI
- Must state that version is the author’s version

Participation at Carnegie Mellon

77% of articles cited on faculty websites could be OA

32% of articles are OA

College	Articles		Faculty	
	Total	**OA**	Total	**OA**
Business and economics	1,415	16%	90	46%
Computer science	2,340	55%	205	67%
Engineering	4,713	24%	179	30%
Fine arts	200	17%	184	3%
Humanities & social studies	2,419	40%	148	34%
Public policy & management	380	26%	54	17%
Science	3,414	41%	158	31%
TOTAL	14,881	32%	1,018	34%

Study conducted 2007-08

Alignment with publisher policy

38% of OA articles infringe publisher ©

18% of infringing articles policy prohibits OA

College / Policy alignment	Not known	Aligned	Not aligned	Prohibited	
				OA	Pub PDF
Business and economics	15%	67%	18%	7%	93%
Computer science	16%	53%	31%	5%	70%
Engineering	9%	56%	35%	25%	61%
Fine arts	18%	24%	58%		100%
Humanities & social studies	16%	21%	63%	9%	90%
Public policy & management	26%	29%	45%	22%	76%
Science	6%	65%	29%	47%	53%
TOTAL	12%	50%	38%	18%	73%

Alignment with publisher policy

- Infringement would be much higher than 38% if assessed compliance with all policy details
- Could not assess compliance
  - Distinguish author manuscript versions
  - Determine if embargo was respected
  - Track maintenance
- Assessed alignment based on whether policy
  - Allowed open access
  - Prohibited, allowed or required the publisher PDF

My position: exercise and foster

- Civil disobedience
  - In a democracy, when conscience and law clash we are morally justified, if not duty bound, to follow our conscience, not wait for the law to change

    Henry David Thoreau, *On the Duty of Civil Disobedience*, 1849
- Moral courage
  - When opposed and success entails risk, we must act to preserve the values of honesty, fairness, respect, responsibility and compassion

    R. Kidder and M. Bracy, *Moral Courage, a White Paper,* 2001

Outreach to faculty

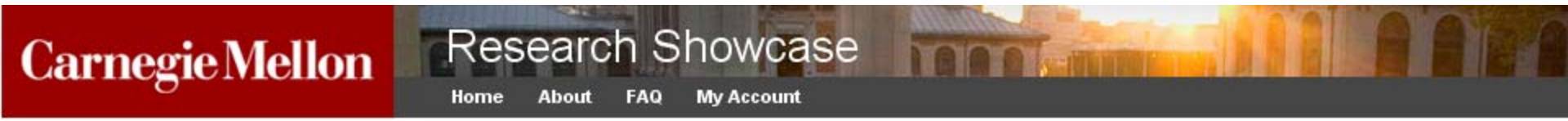
Silent phase: Nov 2008

Public push: June 2009

1,940 papers to date

22,794 downloads to date

- Benefits of OA: increased access and citation
  - Importance of retaining right to self-archive
  - Faculty Senate 2007 open access resolution
- Benefits of IR: OA; statistics; indexed by Google, professional maintenance; Selected Works gallery
- Library deposits work self-archived on websites or sent as attachments in email
- Library converts work to standard format
- Library provides how-to documentation



My Selected Works page

Selected Works of Denise Troll Covey

Carnegie Mellon

Author Home | Browse Subjects | Browse Article Types | Series Home

Articles

PDF **Self-Archiving Journal Articles: A Case Study of Faculty Practice and Missed Opportunity**, *portal: Libraries and the Academy* (2009)

PDF **Using Data to Persuade: State Your Case and Prove It**, *Library Administration and Management Journal* (2005)

PDF **The Need to Improve Remote Access to Online Library Resources: Filling the Gap betweeen Commercial Vendor and Academic User Practice**, *portal: Libraries and the Academy* (2003)

PDF **Copyright Permission: Turning to Dust or Digital**, *International Journal of the Book* (2003)

PDF **Academic Library Assessment: New Duties and Dilemmas**, *New Library World* (2002)

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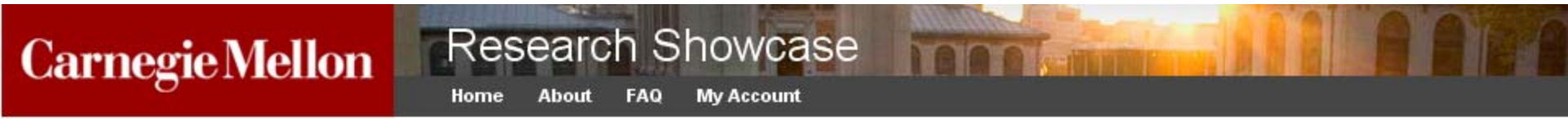
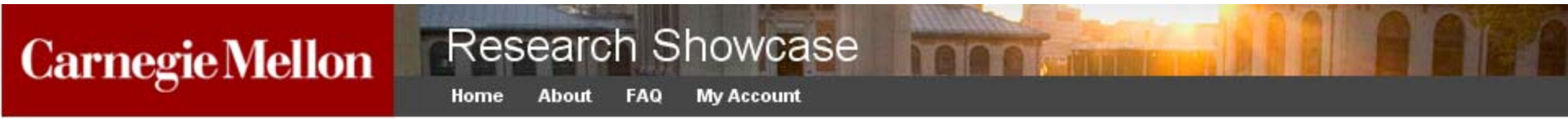
Contact Information

Organizational support for IR



- Research Showcase Coordinator
  - Reports to Head of Archives and DL Initiatives
- Scholarly Communications Committee
  - Scholarly Communications Forum
- Libraries Council
- Faculty Senate Library Advisory Committee
- Liaison librarians

Resistance to IR



- Some liaison librarians
  - Complain that IR doesn't support appropriate formats
  - Won't invest time in learning how IR works
  - Not prepared to answer questions from faculty
- Some faculty
  - Afraid of not getting published if pre-print is in IR
    - Dean talked to the publisher: no basis for fear
  - Don't like citation format of harvested work – so we fixed it
  - Don't understand, need or want OA – need to educate
  - Don't have time to OA – so library does it for them

Why so few contributions?

- Mismatch of vocabulary, incentives and workflows
  - E.g., faculty are loyal to discipline, not institution
- Lack of awareness
- Lack of reward
- Lack of time
- Attitude of peers
- Copyright

Rochester IMLS research (2005)

Rights and Rewards in Blended IRs (2006)

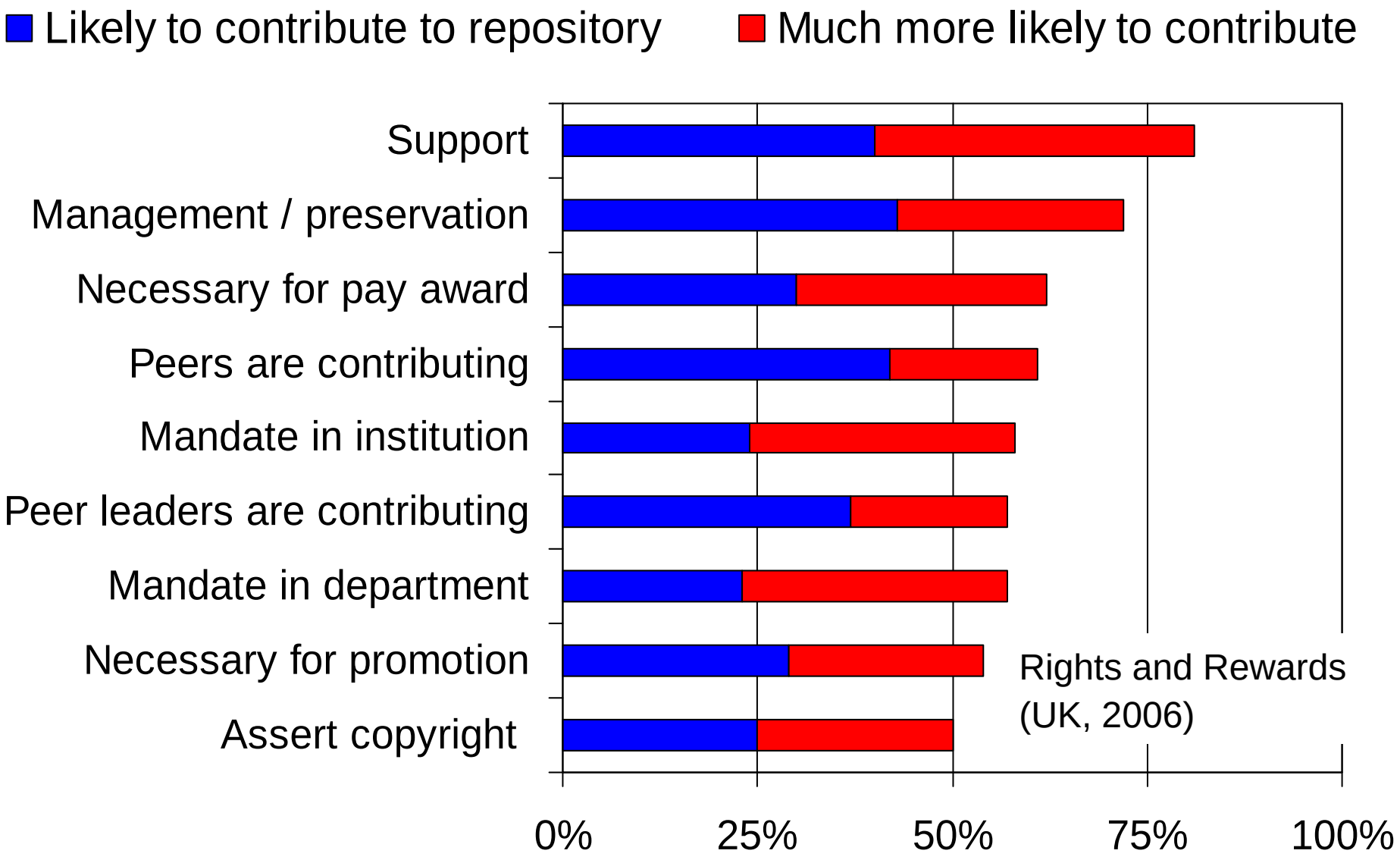
Many authors

- Don’t understand © or open access
  - Don’t want to lose control of their work
- Don’t know who owns © to their work
  - Don’t understand, read or keep © agreements
- Don’t have time or confidence to negotiate © transfer
- Are concerned won’t get published if self-archive
- Are concerned self-archiving breaks © agreements
- Ignore © agreements and self-archive

RoMEO Studies 1 (2003)
Rights and Rewards in Blended IRs (2006)

Linking UK Repositories (2006)
Carnegie Mellon study (2006)

Incentives


Likely to contribute to repository
Much more likely to contribute
Support
Management / preservation
Necessary for pay award
Peers are contributing
Mandate in institution
Peer leaders are contributing
Mandate in department
Necessary for promotion
Assert copyright
Rights and Rewards
(UK, 2006)
0%
25%
50%
75%
100%

Trusted digital repositories

- Mission: provide long-term access
- Approach: framework of attributes + responsibilities
  - Identify reliable, sustainable repository infrastructures
  - Form basis for development of trusted services

RLG-OCLC Report (May 2002)

http://www.oclc.org/research/activities/past/rlg/trustedrep/repositories.pdf

RLG - OCLC recommendations

1. Develop framework and process to certify trusted digital repositories
   - Criteria that must be met
   - Mechanisms for periodic assessment
2. Research and create tools to identify the attributes of digital materials that must be preserved
   - Technical metadata needed
   - Tools to capture significant properties at creation

RLG - OCLC recommendations

3. Research and develop models for cooperative networks and services
   - Intellectual versus technical aspects
   - Examples of service-level agreements
4. Design and develop unique, persistent identifiers
   - Design identifier systems for long-term maintenance, storage and access

RLG - OCLC recommendations

5. Investigate and disseminate information about relationship between digital preservation and ©
   - Understand how current © law inhibits preservation and how technical strategies impinge on ©
   - Develop tools to identify roles and responsibilities of
     - Content creators
     - Organizations that preserve content
   - Develop models to
     - Acquire copyright permission
     - Contract agreements (© owners and libraries / archives)

RLG - OCLC recommendations

6. Determine best technical strategies to provide continued access – understand
   - Technical + © implications of migration / emulation
   - How technical strategies affect need for metadata
7. Define minimal metadata required for long-term management of digital materials and develop tools to generate or extract as much as possible
   - Technical, administrative and descriptive metadata

Audit and certification criteria

- Organizational infrastructure
- Digital object management
- Technologies, technical infrastructure, security

CRL Report (February 2007)

http://www.crl.edu/sites/default/files/attachments/pages/trac_0.pdf

1. Develop framework and process to certify trusted digital repositories
   - Criteria that must be met
   - Mechanisms for periodic assessment

RLG-OCLC recommendations (May 2002)

Organizational infrastructure

- A1. Governance and organizational viability
- A2. Organizational structure and staffing
- A3. Procedural accountability and policy framework
- A4. Financial sustainability
- A5. Contracts, licenses, and liabilities

Digital object management

- B1: Initial phase of ingest (acquisition)
- B2: Final phase of ingest
- B3: Preservation strategies and mechanisms
- B4: Minimal conditions for performing preservation
- B5: Minimal-level metadata
- B6: Ability to produce and disseminate accurate, authentic versions of digital objects

Technologies, technical infrastructure and security

- C1: General system infrastructure requirements
- C2: Appropriate hardware and software and mechanisms to evaluate when changes are needed
- C3: Security
  - Technology (e.g., servers, firewalls, routers)
  - Fire protection
  - Flood detection

Example: Organizational infrastructure

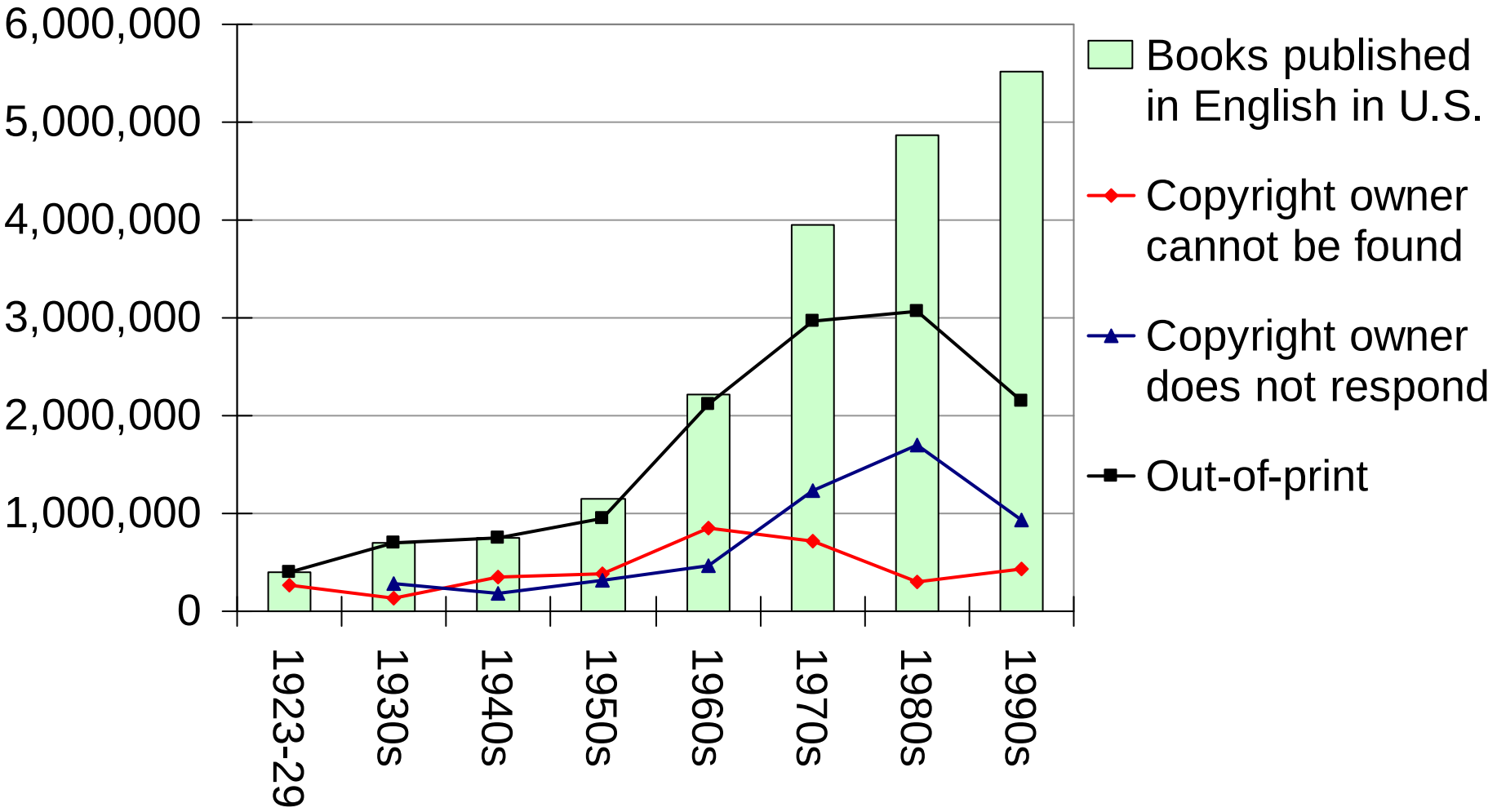
- A1. Governance and organizational viability
  - Succession / contingency plans or escrow arrangements
- A3. Procedural accountability and policy framework
  - Publicly accessible definitions and policies dictating how preservation service requirements will be met
  - Documented history of changes in operations, procedures, software and hardware
  - Commitment to transparency and accountability
- A4. Financial sustainability
  - Short- and long-term business planning processes
  - Commitment to monitor and bridge gaps in funding

Google is not a trusted repository

- Proposed settlement is a catastrophic mistake that will create an environment that asphyxiates culture
  - Giving Google exclusive license to orphan books
  - Regulating and obsessively controlling access to books at the level of a page or a quote
- Cannot rely on favors granted by private companies to define access to our culture

Lawrence Lessig
Joi Ito CC license

Estimate 3.5 M orphan books,13 M out-of-print books, and 5 M books presumed © owner does not respond



Based on random sample feasibility study

Thank you!

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