Collective Action and the Commons: Rethinking the Funding of Scholarly Infrastructure

David W. Lewis

Commons & Collective Action: Exploring Non-market Approaches to Delivery Library (and Other) Services

University of Massachusetts

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Getting to the Open Scholarly Commons

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Goal: Open Scholarly Commons

All scholarship and all of the world’s cultural heritage is discoverable, openly available to everyone in the world, and preserved for future generations.
Goal: Open Scholarly Commons

All scholarship and all of the world’s cultural heritage is discoverable, **openly available to everyone in the world**, and preserved for future generations.
Technology Makes this Possible

Digital content on the Web is very different from paper-based content. It has the following characteristics:

- A copy can be instantaneously delivered anywhere in the world.
- A copy is the same as the original.
- A copy can be made at zero marginal cost.
Technology Makes this Possible

As Andrew McAfee and Erik Brynjolfsson say digital content is, “Free, perfect and instant.”

In the end, libraries can point out the fact that their future role actually points in two, apparently opposite, yet deeply complementary directions: on the one hand, they plunge deeply into the local production scenes since they aim at systematically sweeping, storing, preserving, and curating all that is produced in their hosting institution; at the same time, the libraries, with their sister institutions, are involved in the task of ensuring a vibrant knowledge-nurturing life for their documents: they will circulate, be discoverable, be interoperable, be evaluated, etc. With the first function, each library ensures it safe and strong function within its host institution; with the second function, the libraries connect to bring the knowledge infrastructure that we all really need.

Goal: Open Scholarly Commons

1. Infrastructure – systems and services that make contributed content discoverable, accessible, and that preserve it. Should be integrated and cover the whole scholarly workflow.

2. Contributed content – from institutions and individuals.

3. Build communities on the basis of the of this commons or use communities to facilitate this work.
Four principles of... the information system supporting research

- Source neutral
- User control
- Transparent
- Inter-operable

- Wikipedia
- Crossref
- Mendeley
- PubMed
- Symplectic
- ORCID
- Summon 2.0
- Altmetric
- Plum Analytics
- Scopus
- SSRN
- Mendeley
- DataSearch
- ScienceDirect
- Reaxys
- Scholix
- Bookmetrix
- CiteScore™
- Mendeley Data
- Pure
- SciVal
- Mendeley
- GitHub
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Four principles of...

- **Source neutral**
  - Mendeley
  - Mendeley Feed
  - Crossref
  - ORCiD

- **Interoperable**
  - Mendeley
  - Mendeley API
  - PubMed
  - arXiv.org

- **User control**
  - Summon 2.0
  - Mendeley
  - OpenAIRE

- **Pure**
  - Mendeley
  - Mendeley API

**Transparency**
- Wikipedia
- Crossref
- Symposium
- Plum Analytics
- SciVal
- CiteScore

- **SSRN**
  - User-level sharing options
  - Mendeley
  - Reaxys

- **ScienceDirect**
  - APIs

**GitHub**
- Mendeley Data
- Multiple system integration

**_elsevier**

...the information system
supporting research
Goal: Open Scholarly Commons

To make it a commons requires a system of governance and ongoing provision of resources form individuals and/or institutions.

Today we have an underfunded hodgepodge of disconnected projects. This is not adequate.
Frischmann: The Nature of Infrastructure

Infrastructure is a shared means to many ends.

Frischmann: The Nature of Infrastructure

Generalizations about infrastructure:

1. Governments has and continues to play a significant and widely accepted role in ensuring the provision of infrastructures.

2. Infrastructures generally are managed in an openly accessible manner whereby all members of a community who wish to use the resource may do so on an equal and non-discriminatory terms.

Generalizations about infrastructure:

3. Infrastructures generate significant spillovers (positive externalities) that result in large, but often unknowable, social gains.
Infrastructure in general is difficult because:

1. There is often a very high initial cost.

2. Many of the benefits of infrastructure accrue to individuals, firms, and to society at large, making the measurement of impact difficult. They often also accrue indirectly and long after the actual use.

Infrastructure in general is difficult because:

3. The economics of infrastructure, as a natural monopoly or a public good, means that the most benefit is generated when marginal cost is charged for use. Returns from margin cost pricing will not often cover the cost of the initial investment. This generally means some form of tax or philanthropy is required to fund the start-up costs for infrastructure and often its maintenance.

“Information resources suffer from a ‘free-rider dilemma,’ a production problem, also familiar to many infrastructure resources. Open access to some information resources may diminish incentives to invest in the creation and development of the resources because free-riding users consume the resources without paying an adequate contribution to investors, who are in turn unable to recoup their investments.”

“Though all of the members of the group therefore have a common interest in obtaining the collective benefit, they have no common interest in paying the cost of the providing that collective good. Each would prefer that others pay the entire cost, and ordinarily would get any benefit provided whether he had borne part of the cost or not.”

Olson: Difficulties of Collective Action

“The larger a group is, the further it will fall short of obtaining an optimal supply of any collective good, and the less likely that it will act to obtain even a minimal amount of such a good. In short the larger the group, the less it will further its common interest.”

Coordinating Costs

“Costs of organizing are an increasing function of the number of individuals in the group.”

Olson: Difficulties of Collective Action

How can groups produce collective action?

1. Coercion (taxes)
2. Outside inducements (club goods)
3. Oligopoly-sized groups

“Although it is likely that university libraries could develop a more efficient system of scholarly communication if they were to redeploy their collective subscription budgets, each individual library – when it decides how to spend its own little piece of that huge pie – has little incentive to redirect its own expenditures... Unfortunately, if every librarian waits for every other librarian to make the investments necessary to develop a sustainable system of Gold OA publishing, it may never happen.”

– John Wenzler

“The difficult truth that Olson articulates is that there is no mechanism that will lead directly to a large community supporting the provision of a large-scale public-good infrastructure. Any successful sustainability model will depend on some mixture of these three approaches for resourcing… If our challenge in delivering on the openness and transparency agenda is how to support the conversion of successful medium-scale club-like infrastructures into open systems that provide collective goods, then we need to solve the political and economic problems of transitioning from the club state to a model that successfully provides a mix of these models.”

– Cameron Neylon

Olson: Difficulties of Collective Action

How can groups produce collective action? Neylon’s Response:

1. Coercion indirect cost taken by institutions and top-slicing of funder budgets to provide infrastructure and services.

2. Outside inducements – It requires the creation of a good or service that is non-rivalrous but excludable. Crossref is an example. Contributors gain the exclusive right to mint DOIs and the broader community gain an open database of scholarly content.

For scholarly infrastructure creating club goods can be problematic. “Digital resources are not natively excludable; a technical barrier has to be put in place”

3. Reducing the size of the group to the extent that all of the members can agree that contributions are in their interest. Such oligopolies for scholarly infrastructure are likely to be either groups of large funders or governments. Neylon cites *Europe PubMed Central* as an example. HathiTrust is a good example. Neylon notes that oligopoly among funders can look like taxation to the individual researcher. Thus we see the “academic freedom” response to *Plan S*.
Ostrom: To Solve Appropriation and Provision Problems

Individuals must learn:

1. About the structure of the physical systems on which they jointly rely.
2. Their own appropriation and use patterns
3. The norms of behavior that are followed in a community.

Ostrom: To Solve Appropriation and Provision Problems

Individuals must learn:

4. The incentives they will encourage or discourage as they change rules.
5. About how all of these factors will cumulatively effect their net benefits and costs over time.
6. What types of transaction costs will be involved

Ostrom: Success in Creating a CPR

1. Parties share a common judgement that they will be harmed if they do not adopt an alternative arrangement.
2. Parties will be affected in similar ways by the proposed arrangement.
3. Parties highly value the activities from the common pool resources (CPR), they have low discount rates.

Ostrom: Success in Creating a CPR

4. Parties face relatively low information, transformation, and enforcement costs.

5. Parties share norms of reciprocity and trust that can be used as initial social capital.

6. The group is relatively small and stable

The 2.5% Commitment:

Every academic library should commit to invest 2.5% of its total budget to support the common infrastructure needed to create the open scholarly commons.

See: David W. Lewis, “The 2.5% Commitment,” https://scholarworks.iupui.edu/handle/1805/14063
Fundamental Truth #1:

There is no sustainable path to an open scholarly commons without sustained and substantial investment from academic libraries.

Fundamental Truth #2:

If we do not create the open scholarly commons, Elsevier, Springer, and Wiley will own the scholarly record and continue to exploit the academy.

What should be a public good will be used for private gain.
Why 2.5%?

2.5% of $7 billion (annual U.S. academic library expenditures) = $175 million
60% of $175 million = $105 million

The *Financial Times* reported that Elsevier paid $115 million to acquire Bepress.


Why 2.5% Commitment?

Individuals must learn:

1. About the structure of the physical systems on which they jointly rely.
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Mapping the Digital Scholarly Communications Infrastructure

1. Census of Infrastructure Providers
2. Survey of Academic Libraries
3. Library Leaders Focus Groups
4. Case Studies of Infrastructure Providers

https://scholarlycommons.net/map-plan/
Questions/Comments

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