

Sustainability Funding for Scholarly Infrastructure Needs Infrastructure of Its Own

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For decades, research libraries have understood that the current system of scholarly communications—both content and infrastructure—would become unsustainable. Consolidation among large commercial publishing services has driven up prices faster than inflation or library allocations, and open source or community-based alternatives are often fragile by comparison: under-resourced, reliant on volunteer labor, and lacking in stable business models. Digital content and digital infrastructure are intertwined in the world of platforms and databases; but infrastructure is what makes scholarship possible to do, to disseminate, to engage, and to preserve.

A growing number of Association of Research Libraries (ARL) member libraries have recently launched “sustainable scholarship” initiatives and/or made commitments to values-based investing—supporting scholarly publishers and services that are aligned with library values of openness and equitable access. Goals of such efforts are to ensure ongoing access to and preservation of content, durable, affordable infrastructure, and to contain costs. Under a values-based investing framework, research libraries intend to divert a portion of their collections funds from the excesses of commercial publishing to sustain open or community-based scholarly infrastructures. They are doing so in alignment with the scholarly community and with local research priorities.

Research libraries describe sustainable scholarship initiatives as more “open, affordable, and transparent”¹ than the current system, which is dominated by an ever smaller number of large commercial publishing services including platforms, workflow tools, analytics, and computational environments. In libraries, supporting open and community-based infrastructures involves a complicated mix of both

collections budgets and staff expertise—as decision-makers, metadata specialists, acquisitions managers, advisors, developers, or through participation in the infrastructure services’ governance. In order to make informed decisions that help address the sustainability of such resources, libraries need better data about potential investments in order to assess them against agreed-upon criteria. They also need better data about contributions from their own organizations and those of their peers. Initiatives like Invest in Open Infrastructure (IOI), SCOSS (the Global Sustainability Coalition for Open Science Services), and the Open Access Community Investment Program (OACIP) are welcome and emergent, with intention and promise to address this critical data gap.

The Importance of Data

David W. Lewis’s 2017 article “The 2.5% Commitment”²—suggesting that academic libraries commit 2.5% of their total budgets to supporting the common infrastructure needed to power an open scholarly commons—marked a watershed moment in discussions of library collective action. The paper was widely discussed online and at professional conferences, and cited in the Association of College and Research Libraries (ACRL) “2018 Top Trends in Academic Libraries.”³ In “Top Trends,” ACRL’s Research Planning and Review Committee said that to meet the 2.5% objective (or any funding target), collections managers would need to “establish clear policies that outline parameters for the support and funding of specific open access initiatives and programs.” Lewis acknowledged the need for such policies. Among the first steps necessary to achieving widespread commitment, he suggested, were the establishment of criteria to identify worthy open scholarly infrastructure, and the creation of “a digital platform...to provide academic libraries a means of accounting for their contributions.” In other words, investing in open infrastructure would require an infrastructure of its own. Several large-scale national and international projects have emerged to understand and address this need, and in the process help research libraries

articulate selection criteria for investment. The success of these projects is crucial to the sustainable scholarship endeavor.

In 2019, a national forum funded by the US Institute of Museum and Library Services (IMLS), “OA in the Open,” focused on the information decision-makers needed to acquire—and under what conditions they would prioritize—open content or services. Forum participants from small and very large libraries alike found the landscape confusing with:

too many projects (some of which are very similar to each other) and too many different models and no clear way to determine worthy projects or initiatives. Librarians at large universities, even those with dedicated scholarly communication librarians, were as likely to cite being overwhelmed and under-informed as were those from smaller institutions.⁴

In addition to selection criteria for content and infrastructure, participants expressed desire for an information clearinghouse (like a digital platform) in order to determine where peer institutions were contributing.

Also in 2019, the Andrew W. Mellon Foundation–funded report *Mapping the Scholarly Communication Landscape* addressed the complexity and opaqueness of the open scholarly infrastructure environment by creating an instrument for collecting data about scholarly communication infrastructure providers (SCIP) for a proposed regular census. In 2020, the project produced case studies of several participating infrastructures, as well as a composite data set of more than 100 scholarly communication resource providers.⁵ Data from this project can be used to understand the landscape of open and community-based scholarly infrastructure providers with respect to their “forms, functions, structures, and models,” as well as their financial stability. In the meantime, SCOSS, the Global Coalition for Sustainability in Open Science Services, discussed later in this paper, has been functioning as a highly effective international crowdfunding broker, doing outreach and fundraising with libraries and consortia for

two or three key infrastructures at a time. Finally, individual libraries, consortia, and professional associations are articulating their own values frameworks to guide decision-making.

Frameworks of Principles and Values for Sustainable Scholarship

Many ARL member libraries and consortia, in partnership with both faculty and administrators, have pledged to align their spending with statements of values and principles that have implications for open and/or community-based infrastructures. Members of the ARL community have created high-level decision-making frameworks that can form the basis of local policy and criteria for infrastructure investments against which they can assess investment opportunities. These frameworks⁶ are based on alignment with institutional mission to provide wide and equitable access to scholarship, and generally promote the following criteria for scholarly communication services: (1) fair and sustainable pricing, (2) community input or governance in the infrastructure, and (3) transparency of financial operations and costs. The Confederation of Open Access Repositories (COAR) and SPARC's "Good Practice Principles for Scholarly Communication Services,"⁷ endorsed by ARL, also include easy migration (no lock-in), and open standards.

Data within Organizations

In order for libraries to advance sustainable scholarship initiatives through their own values frameworks and in partnership with scholars, the library community needs mechanisms for information-sharing within and across organizations. If the data were easy to collect, individual institutions, consortia, or membership organizations could recognize and measure financial contributions to open scholarship, which in turn would help make such contributions normative, as proponents of the 2.5% commitment had envisioned. But contributions

across an entire library budget—people, collections, technology, and services—are diffuse and difficult to capture. While the academic library community has grappled with “The 2.5% Commitment” over the past five years and wondered whether it was the right target, the community also struggled with how to measure contributions to open services.

In 2020, the Canadian Association of Research Libraries (CARL) undertook a study of its members’ contributions to open initiatives, including services, staff, and infrastructure.⁸ The study’s findings are instructive for library leaders and for the community:

Staff: By far, the largest category of investment is in local staff, with an average of 74% of the libraries’ open investments going toward salaries. On average, respondent libraries have about 7 FTEs working in open activities, scattered across a number of areas: digitized content, scholarly communications, open repositories, and research data management (including staff contributing to the national Portage project).

Content: The second largest category of spending on open were funds directed to publishers through several means: consortial licences via the Canadian Research Knowledge Network (CRKN) or, in Ontario, the regional association Ontario Council of University Libraries (OCUL) via Scholars Portal, institutional membership with open access publishers, and payment of article processing charges (APCs). This amounted to an average of 14% of total open spending, or approximately \$3.2 million CAD in total, 80% of which was directed toward licences with open access publishers or platforms.

Infrastructure: The rest of the open investments, approximately 12%, were spent on a wide variety of other types of open services, platforms and infrastructures.⁹

Just as the academic library community desires a digital platform or clearinghouse to help understand how much support open and community-based infrastructures are receiving and from whom, individual academic libraries need tools to help measure and report their own contributions across their organizations. Questions about open access collections and staff time are now part of CARL's member statistics program for the first time, which will be an important international contribution. In the absence of widely adopted tools for such disclosure in the US, some libraries, such as The University of Arizona Libraries, maintain public web pages listing their contributions to open content and open infrastructure and services.¹⁰ These interim reporting mechanisms could provide the basis for more standardized data collection that libraries can use to assess their own contributions relative to peers.

Data across Organizations

LYRASILS is making progress on the clearinghouse concept through a pilot program called the Open Access Community Investment Program (OACIP). Among OACIP's objectives are to "centralize the administration and funding of open access initiatives or programs at multiple scales and make transparent to the community at large who is participating in each investment community."¹¹ According to Sharla Lair, LYRASILS senior strategist of open access and scholarly communication initiatives, "OACIP is a funding infrastructure that supports a multi-stakeholder funding community. What does this mean? Academic libraries (of all sizes), public libraries, museums, archives, funding agencies, provost offices, & departments can collectively fund these programs."¹²

Invest in Open Infrastructure (IOI) has developed a rigorous research agenda based on investigating critical gaps, funding structures, and vulnerabilities and risks related to the development and maintenance of open infrastructure. In its recently released strategic plan, IOI commits to "increase our collective understanding of the funding and infrastructure landscape...[and] provide strategic support &

investment guidance for those looking to adopt, build, and sustain open infrastructure.”¹³ IOI has also published key findings from the Future of Open Scholarship project to better understand key decision points, costs, and funding models to maintain, sustain, and scale open infrastructure projects.¹⁴

Partnership with the Scholarly Community

The critical motivation for research libraries to contribute sustainability funding to scholarly infrastructures is that the infrastructures are in use by the research community. Participants in the IMLS-funded “OA in the Open” forum in 2019 indicated that open infrastructure—such as publishing platforms or repositories—was easier to support than open content because infrastructure was viewed as a local priority, used by local constituents. Open content on the other hand (free to all) was harder to justify except as an explicit collective contribution to the commons,¹⁵ or what Raym Crow characterizes as altruism.¹⁶ Library support for locally used infrastructure can include hosting of institution-led society journals on open platforms (such as the University of Pittsburgh Library System E-Journal Publishing Program¹⁷), the development of overlay journals based on preprint services (such as Queen’s University Library’s *Advances in Combinatorics*¹⁸), or the embrace of locally led preprint services themselves (such as the recent acquisition of SocArXiv by the University of Maryland Libraries¹⁹).

Another way that research libraries contribute to a more sustainable ecosystem of scholarly infrastructure is through teaching and supporting open source or non-proprietary tools, software, and platforms. By training graduate students and faculty in open statistical software packages and the Open Science Framework, for example, or publishing platforms like Omeka and Scalar, libraries contribute to a virtuous circle of open scholarly practices by influencing scholars to adopt such tools. COVID-related shifts to a digital-first environment

further underscored the importance of open infrastructure and services. In the early months of the COVID pandemic, demand for training surged, especially among graduate students who didn't have access to their labs or other means of doing their research. Duke University Libraries noticed a marked increase in viewing of their recorded training workshops. Libraries at Penn State, the University of Florida, and The Ohio State University all reported and responded to the increased demand for such training.²⁰

Adriene Lim, dean of libraries at the University of Maryland, expressed her decision to support SocArXiv in terms of scholarly partnership and public engagement:

SocArXiv fits into the UMD Libraries' strategies related to enhancing open access and supporting academy-owned infrastructure for scholarly communication....[and] we're proud to be the institutional home and sustain this valuable resource for the entire research community.²¹

The University of Maryland Libraries noted that:

The Libraries also manages the [Digital Repository at the University of Maryland](#) (DRUM), which hosts material from UMD researchers, including theses and dissertations as well as research articles. In the future, SocArXiv hopes to integrate submission of Maryland researchers' content with DRUM, extending the reach of UMD's research output, as well as leveraging other benefits offered by SocArXiv.²²

SCOSS: A Partnership between Infrastructure Services, National Funding Agencies, and Libraries

The Global Coalition for Sustainability in Open Science Services (SCOSS) formed in 2017 to:

help essential, noncommercial services for open science in need of immediate financial support. In other words, SCOSS formed to

address the imbalance of community overreliance on particular resources, with community underinvestment in their sustainability. SCOSS functions as a global crowdfunding call for vetted services. Open access and open science infrastructure providers apply for consideration and are evaluated by an expert advisory panel appointed by the SCOSS Board. If selected, SCOSS works with the provider to establish a three-year funding target meant to transition the service to stable funding. Then SCOSS leverages the participation of key organizations—primarily national consortia—to promote the funding call in their respective regions. SCOSS also strongly encourages the community governance of these structures.²³

SCOSS thus functions as a partnership among scholarly infrastructure providers, national funding agencies, and libraries by identifying worthy services that researchers use, and marshalling national funding and individual or consortial research library funding to transition these services to sustainable financial footing.²⁴ In a 2021 survey of SCOSS-contributing institutions, the top reason for contributing funds to a service was that people in their institutions were using it.²⁵ The second reason cited for support was that national consortia had both promoted the service and handled the administrative work of invoicing on behalf of their member libraries, another burdensome aspect of supporting the nascent open ecosystem. Perhaps due to the absence of a central licensing consortium in the United States, the US has lagged behind the rest of the world in contributing to SCOSS funding, despite demonstrable use of the services.²⁶ This is an area requiring further advocacy and visibility to remedy.

Conclusion

SCOSS, OACIP, the SCIP census, and IOI are all promising initiatives to address the library community's need for data, criteria, and transparency that would enable the operationalization of maintenance

funding for community-based infrastructure necessary for sustainable scholarship. Research libraries can work with these new projects to supply and help standardize data about which scholarly infrastructures are used by their local communities and how their organizations are contributing to the infrastructures' sustainability.

Endnotes

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