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Open Source Software and Librarian Values¹

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Open-Source Software

The term “open-source software” (OSS) refers to computer applications and operating systems released under terms allowing users to use, modify, or redistribute the software in any way they see fit, without requiring users to pay the creators a fee.² It is known as “open source” because the source code—the programming instructions that make the software function—is made available for examination or alteration along with the ready-to-use software itself.

OSS is also known as “free software.” The English term “free” carries a dual meaning that OSS advocates carefully delineate: *free/libre*, meaning free as in liberty, provided with no or few restrictions on its use; and *free/gratis*, provided at no cost. (“Free’ as in ‘free speech,’ not as in ‘free beer.’”)³ *Free/libre* is generally considered the defining characteristic of open source, though both meanings typically do apply.

OSS may be developed by a single individual, a group (formally organized or ad hoc), or sponsored by a nonprofit or corporate entity. Because any interested party

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can view the source code, learn how the software is constructed, and contribute potential improvements, OSS development naturally lends itself to a collaborative development pattern. The OSS user community is made up of potential co-developers since anyone can contribute improvements, new features, and bug fixes. While many libraries and librarians have contributed to the development of OSS, these qualities have implications for libraries beyond the potential for direct participation in code development.

The decision to make a piece of software open source carries with it some implied stances on issues of freedom of information. Making the decision to share the source code for an application implies that the creator believes that sharing information is a worthwhile good. Sharing access to a program's code does not simply make it available for examination; it usually signifies that collaborative development is possible—that the software's community of users may participate in its development. These values of free access and collaboration align with many of the tenets central to the profession of librarianship and with academic librarianship in particular.

In practical terms, both the OSS community and the profession of librarianship value open standards for their ability to promote accessible information. OSS tends to be more compatible with open standards, providing better long-term accessibility and preservation of data. In fact, OSS itself is amenable to long-term preservation, since any interested party may save, examine, or archive the software's code. OSS is more likely to be developed for multiple platforms, allowing longer-term compatibility with new and future technology.

OSS represents a manifestation of the same cultural and economic factors behind other movements toward free information in academic librarianship, like open access (OA) journal publishing. Open-source code, like OA journals, is freely disseminated, easily archived on multiple sites, and its integrity and authenticity can be checked against versions from other archives to guard against alteration or deletion.⁴

Collaboration and Community

The work of libraries, and particularly that of the academic library as a facilitator and producer of scholarship, both serves and relies on collaboration and the work of a community. So does open source development. The community may be that of readers, authors, and researchers in the former case, or of software users and developers in the latter, but both the OSS model and the scholarly community depend on collaborative contribution. “People require unfettered access to information (read software) in order to build on the good work of others.”⁵ This sentiment applies to scholarship as easily as it does to software development.

Open-source developers often donate their time and energy to projects for no monetary gain, just as libraries provide information freely to their communities of users. In contrast with most commercial entities, sharing information is entirely within libraries' mission:

If a library shares its metadata with another library, then both libraries benefit by having more robust metadata, whereas if two soft drink producers share their trade secret formula, it has a very different relationship to their business model. Most libraries have a cooperative, non-competitive relationship with each other, and certainly not the same kind of competition typically found in commercial endeavors.... OSS offers a community-driven method of developing software that harnesses this cooperative spirit.⁶

Contributors see benefits in being part of a productive community, in learning from the work, and in appreciation for their valuable effort, demonstrating the values of building upon shared knowledge that may even have diffused into internet collaborative models from academic research culture.⁷ Many authors draw parallels between OSS and the anthropological concept of the "gift culture," in which individuals give gifts in order to benefit the community and to gain status and recognition as well as the satisfaction of philanthropy.⁸

Librarians may see a clear parallel to their own work, which is that sharing information with the community provides a worthwhile public good that feeds back to benefit the community as a whole.⁹ Contributing work to an OSS project results in better software, benefits to the user community, and possibly a learning experience as well as recognition for the contributor. Libraries' contributions to the scholarly community (in the form of research assistance, information access, and other services) result in the production of more scholarship and recognition of the library's value as an organ of the academic enterprise. In recognition of the "community gift" nature of open source, the Horowhenua Library Trust named their open-source integrated library system Koha, the Maori word for "gift."¹⁰

Like the scholarship valued by academic librarians, the OSS development process includes a form of collaborative peer review to ensure high-quality results. Rather than a few expert reviewers, the "peer reviewers" of OSS are potentially the entire user community: users report problems or suggest changes, and volunteer developers can spot errors in code or submit improvements. The two review processes share the same root idea, however; with sufficient examination by knowledgeable reviewers, problems can be identified and eliminated.¹¹ The

OSS community summarizes this philosophy with the aphorism, “given enough eyeballs, all bugs are shallow.”¹²

Privacy and Security

OSS supports libraries’ mission to provide information freely in an environment of privacy and freedom from judgment. The American Library Association’s Code of Ethics states that “we protect each library user’s right to privacy and confidentiality with respect to information sought or received and resources consulted, borrowed, acquired or transmitted.”¹³ The ALA Intellectual Freedom Manual expands on this principle in the more specific forum of access to digital information, services, and networks: “All library system and network policies, procedures, or regulations relating to digital information and services *should be scrutinized* for potential violation of user rights.”¹⁴

Commercial software, including many integrated library systems, is not nearly as subject to this scrutiny. Commercial software is generally a “black box” in that we can examine what goes in and what comes out, but not its internal operation or potential security flaws. Open-source software may be more secure since it allows libraries’ programmers and systems librarians to better identify security holes in the services we use. “Proprietary commercial systems may appear safer by virtue of the fact that their source code is not freely available; however, this is a fallacy. Open source systems, where the source code is freely available for inspection, do undergo extensive scrutiny from the community, which often helps in tracking down and fixing security vulnerabilities effectively.”¹⁵ In short, the services become more accountable because we can see how they work.¹⁶ The community-development model helps ensure that even libraries without programmers on staff can benefit. If one library can identify a security hole, *all* libraries that use the software can address the problem in the next update.

Information Neutrality

Librarians have historically opposed restrictions on information use, such as censorship. Technological barriers are no less a significant challenge to libraries’ provision of free information than social barriers. Issues like digital rights management and net neutrality have become libraries’ fights as well.¹⁷ The fight against information restrictions of all kinds—technological as well as societal—lies at the heart of librarians’ professional values and could be framed as information neutrality.

Alfino and Pierce break down libraries’ mission of neutrality into three components: neutrality of library materials (collections), neutrality of the

information services provided, and professional and personal neutrality of the librarian. Their analysis of national library association codes from several countries concluded that “the stated ethical goal of the profession is the neutral, unbiased provision of library service to all patrons.”¹⁸

Technological tools for providing information, like software, logically fall into the services category in line with Ranganathan’s law of library science “books are for use.”¹⁹ When we choose technology for libraries, we should keep this mission of information neutrality in mind and make decisions on the basis of providing the most neutral and transparent service possible.

Open source tends to be antithetical to restrictive information barriers like digital rights management (DRM)—restrictions that librarians have begun to oppose more strongly on both ethical and economic grounds.²⁰ OSS runs on more devices (allowing users and librarians a voice in their choice of hardware), is more transparent in its function, is less susceptible to information restriction, and in general is ethically and philosophically compatible with libraries’ mission of information neutrality:

It has been suggested that libraries are almost ethically required to use, develop and support open source software. The parallels between the rules of librarianship and open source are easy to spot just by comparing the open source definition (and/or the free software definition) to the rules set forth by nearly all library associations. Both organizations center their rules on freedom of use and free access to information.²¹

Preservation and Standards

Libraries value open information and open data standards for several reasons. Information in open formats can be more readily preserved in the long term. Open information tends to be “portable”—able to be used in multiple applications—since it can be used more easily in ways unforeseen by the creator or by the library. (PDF documents, for example, can be opened, read, marked up, stored, and otherwise used in many different applications.) Libraries are concerned about how they will preserve information and make it available, not just today but in a decade or a century.

Information stored according to open standards is more reliable and stable and less susceptible to digital obsolescence. Even should an open data format become obsolete, the availability of the data standard would allow the easy and legal creation of a conversion process. In short, open standards are more independent

of specific software and hardware, more likely to be useful long-term, and more easily transferrable among different systems.²²

Open source is typically designed with open standards in mind. Creators of commercial software have a vested interest in preventing their data from being easily used in other programs because the availability of other options represents a threat to their profit: “Open standards are transparent descriptions of data and behavior that form the basis of interoperability.... In practice, interoperability means that users are not locked to any one software system—they can substitute one standards-compliant system for another. Open standards can be implemented by commercial systems and open-source systems alike.” However, “if [OSS] does not correspond to open standards, it could be modified to be standards-compliant. Commercial systems that support open standards rarely provide access to their source code, so external developers cannot change the software as desired.”²³

This limitation can apply even to non-profit library projects, like homegrown integrated library systems (ILSs), once common.

[Homegrown ILSes] did what the library needed, but staff changes in the library made it clear that homegrown systems were too much trouble. The problem was that libraries built systems that only they knew how to run and update; if libraries had thought to release their code on the internet and work with other libraries, the open source integrated library system would probably be the standard today.²⁴

While the homegrown ILS is still an anomaly, open-source ILSes like Koha and Evergreen have become much more mainstream than was once the case.²⁵

OSS tends to be more compatible with standard formats, and less so with proprietary and DRM-locked content. Like libraries, open source developers find it advantageous to be able to share data with other programs. A spokesperson for the open-source bibliographic software Zotero expressed their commitment to open data: “our commitment to open standards means that it is easy to move your information to whatever else comes along; you can import and export information in just about every bibliographic metadata format.”²⁶

This attitude toward open data is typical in open-source projects. For one thing, it simply makes development easier if developers build on existing standards rather than creating a new proprietary data format. This tendency renders information from OSS programs more preservation-friendly since data content can typically be migrated to other software. Even if no native converter is available, one could potentially be created since source code is available. In short, using OSS

helps free libraries' data from becoming locked into a particular program forever.²⁷ Transparency and interoperability reduce risk.²⁸

Even abandoned OSS projects may be preserved and revitalized for the good of the library community. Because OSS is freely available, defunct programs can still be retrieved and revived, whether simply to access old data or to restart development.²⁹ Emory University's open-source reserves system ReservesDirect ceased development in 2009 but the source code remains available.³⁰ Another library could download the code, contribute development resources, and release a new version.

Conclusion

Open source developers and university libraries share the same fundamental goal, which is to share information freely and for the common good:

Librarians espouse many of the same ideals that drive the free software community. They collaborate and communicate; they work hard to share the results of their work with one another. They understand freedom and feel that it's an important value. That more librarians aren't actively using and evangelizing free software is an indictment against [developers] for not letting [librarians] in on our secret.³¹

The practical benefits of using OSS in libraries are many—improved security, the strength of collaborative effort, the support for barrier-free information, and the reinforcement for preservation-friendly data. Because librarians share so many of the values of the OSS community, cultural institutions like libraries should feel an obligation to promote open source in the library community.

Notes

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