Chapter 57
Analyzing the Competitive Dynamics in Open-Source Publishing Using Game Theory

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ABSTRACT

Using a game theory model to analyze whether a content developer should pursue publishing with an open-source or proprietary publisher, this work describes a strategy for those content developers working in higher education in terms of an articulated strategy for publishing. This research also suggests the high costs of publishing for content developers and proposes ways for open-source publishers to attract and maintain talent for open-source publishing in socio-technical spaces. This chapter offers fresh insights on the uses of game theory to model stakeholder motivations and payoffs, and from there articulate basic strategies; in line with game theory, this model also suggests directions and hypotheses for future research in open-source academic publishing.

INTRODUCTION

The longevity and success of an OSS (open source software) project is strongly dependent on the community that provides an infrastructure for developers, users, and potential developers to collaborate with each other. -Bianca Shibuya and Tetsuo Tamai, "Understanding the Process of Participating in Open Source Communities" (2009, p. 1)

In a time of economic scarcity and constrained budgets, those in higher education still have to seek ways to achieve high quality teaching and learning. One tactic involves the uses of open-source digital resources that are available free-of-charge and often editable/revisable. This open-source social movement has resulted in a variety of digital contents that are licensed for free and open-use by others. The freedoms spelled out in the open-source movement related to software include four basic levels of freedom (to summarize):

1. The freedom to run a program for any purpose
2. The freedom to study how a program works and to adapt it to local needs
3. The freedom to distribute copies of a program to help out others

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4. The freedom to improve the program and to release the improvements to the public, to the benefit of the whole community (Stallman, 1986)

Over time, various types of open-source licensing schemes have been defined for the piecemeal releases of aspects of copyright related to open-source contents, including Creative Commons licensure. These have defined the terms of individual or group use, user-development, content revision, terms-of-future-sharing (especially of revisions), and transfer. Most of these have limited or absolutely restricted any commercial usage.

In higher education, some of the open-source resources deployed include the following: open courseware (whole course curriculums); open-source technologies (wikis, blogs, repositories, learning/course management systems, hard-drive erasers, video processing software, and others); open-source e-books and flexbooks (open-source e-books); open-source repositories, referatories, and open-access (works marked with proper meta data and made machine-findable for easy federated searches across databases)/open-source (open use within certain strictures) digital libraries (with curated collections); databases; electronic portfolios (eportfolios); and image-, video- and audio-sharing sites. Ideally, open-source may offer one channel for cost savings; however, this assumes that there are healthy and functioning virtual communities gathered around shared open-source endeavors. Brown and Adler (2008) argue that open education–through the sharing of open courseware and open-source digital learning objects and publications–will enable people who do not have direct access to a formal education to actually acquire one, particularly since demographically speaking, some 100 million youth will need to be educated but have nowhere to go for studies. The more informal learning route through open education may ensure that they have the education and skills to enable them to compete and function in the world.

There are histories of virtual communities forming around large collaborative projects in software development (for Linux, Apache, Mozilla Firefox, and others), but those open-source coordinated developer communities do not yet seem to exist broadly in open-source academic publishing except in pockets. The closest sorts of equivalent communities exist in some open-source periodical and book publishing endeavors, with editorial leadership and the shepherding of projects through to the publication phases. In terms of digital learning objects, there are open-courseware methods of collecting pre-existent courses; repositories and referatories for accepting collections of digital resources; and open-source encyclopedias for free-will contributions. However, these projects do not structure or commission the work. They often merely receive and house the open-source objects. There is no direct collaborative way for people to understand where the needs are in terms of open-source development.

In that light, it would be helpful to model open-source academic publishing and how it competes in the commercial and proprietary publishing environment. The modeling of this environment may lead to some ideas on how to originate, develop, evolve, and grow such socio-technical communities for the development of quality open-source resources for academic purposes.

Software developer Raymond, in "The Cathedral and the Bazaar," described two software development models, with the "cathedral" representing elitist and exclusivist development and hidden software codes, vs. the "bazaar," representing egalitarian and inclusivist approaches to development and open/transparent software codes. Originally, the debate was between the efficacy of a closed vs. open innovation model, or a private investor vs. social production model. One of Raymond's core observations is that with a sufficient number of people analyzing a thing, all basic "bugs" or problems can be solved. These two approaches represent two different models of harnessing human innovation. The first approach is

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