



Web 2.0 and the Open Source Movement: Liberating Text Books

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Abstract. The open source movement is a prominent aspect of the Web 2.0 phenomenon, driven as it is by the ability to network and collaborate easily, seamlessly and at low cost. This article considers open source production and distribution in the Web 2.0 environment from the perspective of stakeholders – all those who are part of, or who are impacted upon by an open source initiative. These include users, producers, collaborators, distributors and competitors. A simple framework is introduced for the analysis of stakeholder impact using a force field analysis, and this is illustrated by reference to the case of the Global Text Project. The Global Text Project is a venture designed to expand the opportunities for education, especially in developing countries, by the creation, publication and distribution of free (or close to free) textbooks. The force field analysis of the stakeholders to the project permits an identification of the actors who will respectively support and resist the initiative, and what their impact on it will be. Managerial implications are identified, and avenues for future research in this area are outlined.

Keywords: global text project, open source, Web 2.0.

1. The Idea: When Education is Prohibitively Expensive.... and Other Problems for the Open Source Movement

University textbooks, as most students will tell you, are not inexpensive. In North America, for example, it is not unusual to find that the price of a single textbook can be around \$150 at 2008 prices, and Europe is not that different. While many publishers attempt to contribute to education in developing countries by selling the same text at a far lower price, textbooks remain far beyond the reach of the great majority of potential students. The same \$150 text might sell for around \$50 in a country like Uganda. However, whereas Gross National Income per capita in the United States is \$41,400, the same figure for Uganda is USD \$250 (World Bank, 2007). While a \$150 textbook might be reasonably affordable in the USA, the same book at \$50 is beyond the reach of most Ugandans.

Calculating the return on investment in education has long fascinated economists. Most estimates show rates of returns on education that are favorably comparable to rates of return on investment in physical capital. Long ago, Becker (1964) estimated returns to white males in 1949 of 20 percent for high school graduates and 13 percent for college graduates, comparable to results found by Carnoy and Marenbach (1975) over a similar period. Using a different methodology, Ashenfelter and Rouse (1999) found that the return to an additional year of education had risen from 6.2% in 1979 to nearly 10% in 1993. There seems little doubt that investment in education is one of the surest ways for developing countries to break free from the awful trap of poverty. Yet, with textbooks at even the current, substantially discounted prices, the battle ahead would seem uphill all the way.

The advent of Web 2.0 may provide the long sought solution to the problem of expensive basic investments in education into material such as text books. “Web 2.0” is probably best viewed as a series of application progressions over Web 1.0, rather than as something new in and of itself. Web 2.0 is the internet’s “now” to Web 1.0 as the internet’s “then” – it is much more to do with what people are doing with the technology than the technology itself. Rather than merely retrieve information, users now create and consume it, and hence add value to the websites that permit them to do so. These websites usually provide a richer context to users, by means of user-friendly interfaces that encourage and facilitate participation. Tapscott and Williams (2007) contend that the economy of “the new web” depends on mass collaboration, with economic democracy as an outcome. The notion of individuals simultaneously creating value for themselves and others through profound network effects has not gone unnoticed by entrepreneurs – both for-profit business people, and social entrepreneurs, who see the technology as a way of being innovative and proactive.

One of the phenomena that have been spurred on by Web 2.0 is that of the open source movement. While open source preceded Web 2.0 by many decades, since the advent of Web 2.0, open source has been put into overdrive. In this paper, we give attention to the open source movement with particular reference to its effects on stakeholders. We illustrate this by means of the case of the Global Text Project (GTP), an open source movement dedicated to providing free textbooks. We begin by describing the open source movement in brief detail and identify the main stakeholders associated with any OS project, and then outline the GTP case. We then raise the issues the GTP case holds for a wide range of stakeholders, and conclude by identifying the managerial implications this holds for some of the stakeholders, and the avenues for future research the situation (and ones similar to it) present to academics and scholars.

2. The Open Source Movement

In its broadest meaning, Open Source (OS) offerings describe products, services and ideas where the intellectual input of the inventors and producers is non-proprietary in nature (see Pitt et al., 2006). In the case of computer software, OS typically describes software projects where the source code is freely distributed. There is no charge to download and install the code on one's personal or corporate computers. Another feature of OS is that some of the licenses under which it is released, such as GNU General Public License (GPL), require that modifications to the code also remain free and are placed in the public domain. Thus OS encourages customers to improve and extend the original product. The OS model is particularly effective at finding software logic errors and fostering innovation because customers can see the source code and contribute modifications.

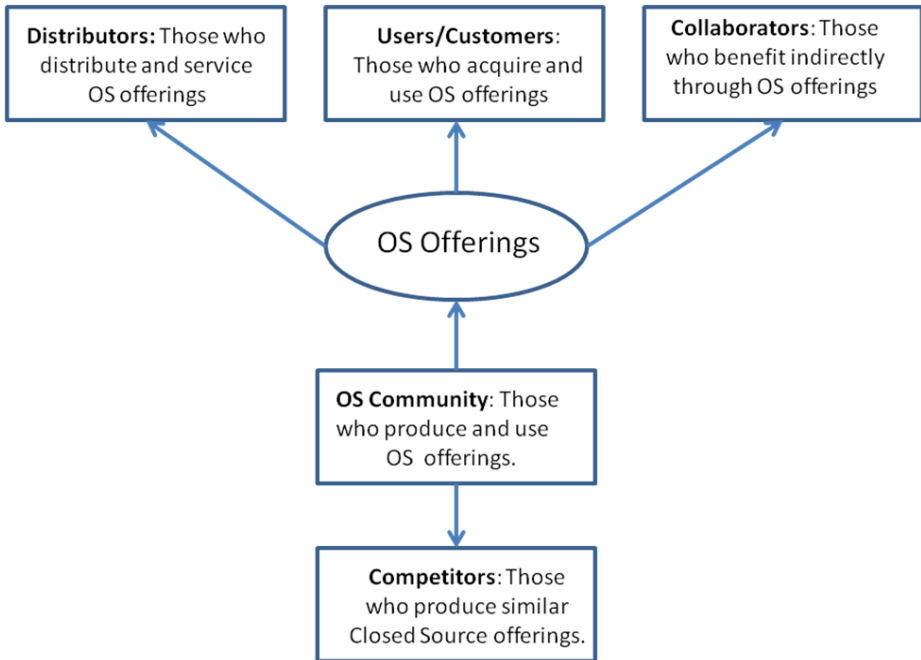
The term OS has gained common currency for broadly describing projects that have the same philosophical underpinnings of open source software but extend beyond software. Wikipedia is an example of a project in which thousands share their creative work to generate a free online encyclopedia. Strictly speaking Wikipedia is open content, but it is often lumped into the generally rubric of OS.

OS is not limited to soft, or digital products but can also include hard products (e.g., surfboards). It is important to note two fundamentals. First, the OS approach to offering development and distribution is by no means a recent phenomenon. Winchester (1999) describes the compilation of the first Oxford English Dictionary as a vast cooperative project between scholars and individuals throughout the English speaking world, beginning in 1857. None of the contributors was financially rewarded for their efforts, and even the editor, James Murray performed his work as part of other appointments and commitments. Second, the application of open source principles occurs in a far wider range of applications than computer software alone. It is widely touted as a way of revitalizing medical research, particularly in the field of "orphan" drugs, where markets are relatively small (because the incidence of certain diseases is very low) but suffering is acute (The Economist a, 2004). In the service and leisure industry protagonists attack entrenched providers of services such as the "branded yoga" of Bikram Choudhury (www.brkramyoga.com) by demanding and asserting that an age-old pursuit such as yoga be available to all, and establish an alliance dedicated to this called Open Source Yoga Unity (The Economist b, 2004). While open source offerings may seem most effective in non-tangible settings where the effects of intellectual capital are obvious, open source approaches have even been observed and explained in physical goods in consumer markets. For example, both Shah (2000) and von Hippel (2001) describe the development of innovations in skateboarding, windsurfing and snowboarding products, where an essentially similar methodology to that of open source software offerings is followed.

3. OS Offerings: What They Mean to Stakeholders

A diffuse postmodern phenomenon like OS offerings means different things to different stakeholders, and scholars should bear this in mind in considering approaches to researching OS issues. The major stakeholders and their interaction with OS offerings are summarized in Figure 1.

Figure 1: Stakeholders and their interaction



The first major stakeholder in the OS offering is its community, which will consist of producers as well as users, or indeed, the “prosumers” (Berry, 1980; Kotler, 1986; Sicca, 2000) of the OS offering. Its stake lies in producing the offering, improving, distributing it and using it. As producers, the incentives of this community have been explained by various theories (cf. Chakrabarti et al., 2007), while as consumers of the OS offering the OS brand presumably fulfils the basic reduction functions that most brands do – namely, reduction of search costs, reduction of perceived risk (the risk of making a bad decision), and reduction of psychological risk (the risk of injuring one’s reputation or social standing) (Berthon, Hulbert and Pitt, 1999).

Second, there are the conventional competitors of OS offerings, such as Microsoft in the case of Linux, and Encyclopedia Britannica and Microsoft’s Encarta in the case of Wikipedia. Whereas traditional competitors strive after

conventional financial returns, and are used to competing against similar rivals with comparable objectives, in the case of OS offerings they find themselves up against an amorphous producer(s), with very different objectives. These competitors have a vested interest not only in understanding how OS producers operate and function, but very specifically in how the OS offering will stack up as a rival.

Next, there are the distributors of OS offerings. In the software industry, the best known of these is RedHat in the case of the OS operating system Linux. These are typically for-profit firms that retail OS brands and also provide the necessary service such as installation, consulting, and training that may accompany them. They face a number of considerations, including the fact that supporting an OS offering may deny them access to traditional suppliers, and the uncertainty of vending an offering not supported by a conventional firm but a group of volunteers who don't necessarily have a profit motive.

Fourth, there are the collaborators of OS offerings, who may be governments, nonprofit institutions such as universities and funding agencies, and for-profit firms. These collaborators support OS offerings for a number of reasons. Some governments and nonprofit institutions may provide material support to OS offerings in order to reduce dependence on the conventionally branded alternative or simply to reduce the costs of a product, service or software. For-profit firms may support OS projects so that they can reduce their dependence on a traditional branded supplier, or as a way of restoring the balance of supplier power in a market. It is no secret that firms like IBM and Hewlett-Packard are major supporters of the Linux brand in order to reduce their dependence on, and the power of, Microsoft.

Finally there are the customers or users of OS offerings (and here we distinguish this group from prosumers). Whilst there may be an element of free riding among these users, many of these will be using the OS offering for good traditional branding reasons, which will include a reduction of search costs, perceived and psychological risk, as well as lower prices. While this grouping may welcome the free availability and free good provided by the OS offering, this is not to say they might not be susceptible to brand extensions and other manifestations of OS brand equity. Linux T-shirts and penguin mascots are as highly sought after by some members of this group as are shirts and other paraphernalia by fans of Manchester United and the Dallas Cowboys, which suggests that OS brands are firstly just as popular as commercial brands, and second, that they can be extended in commercially viable ways.

Next, we outline the case of the Global Text Project.

4. The Opportunity: New Horizons in Text Book Publishing and Distribution

In early 2006, Rick Watson, an Information Systems professor at the University of Georgia's Terry College of Business, was looking for a suitable textbook for a recently introduced graduate course in XML Data Management that he was scheduled to teach. He had taught the class twice before and had not found a suitable text. He spent long hours online searching for an appropriate book to prescribe, as well as perusing the catalogs of all the major academic publishers, but was unable to find anything that met his requirements. By the time the course began, he still hadn't found a text. Almost in desperation, in his first class he announced that the textbook for the course would be written by the course members, reviewed, and edited by the course members, and then used by the course members. Each student was required to write a chapter, teach the class the material in the chapter, and also develop an exercise to test the key concepts of the chapter. By the end of the course, the class would indeed have an appropriate text book: one that they had written themselves. The book was written using wiki software and made available as a Wikibook. Part of the final course grade for each student depended on the quality of their chapter, and on their contributions to improving the chapters of others. By the end of the course, the class had indeed produced a text book that met the course's needs quite admirably. The Global Text Project was born.

Professor Watson now had a ready-made text for the course when he taught it the following semester, and the next class of students was also encouraged to add to and improve their prescribed text. Needless to say, they were delighted that their course in XML Data Management came with a free textbook. However, the news of "his" text book had spread beyond his home institution, and he began to receive inquiries from faculty at other institutions who wanted to teach a similar course. He was asked things like, how could they get the book, and what would it cost? His reply was, "You can download it from our server, and its free. The only conditions are that you also help add to, and improve it".

At about the same time, Don McCubbrey, an Information Systems Clinical Professor in the Daniels College of Business at the University of Denver was teaching an IS class for MBAs without a textbook. He prepared a syllabus, and then assigned readings that were freely available to students either through articles available in databases subscribed to by the University library or available at no cost on academic and practitioner Internet sites. Students appreciated a classroom environment in which current issues were presented using content that was free. Don had co-authored textbooks too and was well aware of the process followed by most publishers to encourage authors to publish new editions to cut the feet out from under the used book market. He was also well aware of the XML text project Rick had underway. They talked at an ICIS Conference, and after a bit of brainstorming, decided to collaborate.

It was at this point that Rick Watson realized that they were on to something far larger than ad hoc text books for courses without suitable texts to prescribe. The market was far larger than that for relatively specialized courses, designed for comparatively affluent students at well-established schools in developed nations. If one considered general introductory courses across a wide range of subjects and disciplines, for students in developing countries who would otherwise not be able to afford an education, then the potential market was immense. He began to develop a vision for the project:

The project will create open content electronic textbooks that will be freely available from a website. Distribution will also be possible via paper, CD, or DVD. Our goal initially is to focus on content development and Web distribution, and we will work with relevant authorities to facilitate dissemination by other means when bandwidth is unavailable or inadequate. The goal is to make textbooks available to the many who cannot afford them.

Mass education has created tremendous opportunities and wealth for people in developed countries. It has enabled many to escape poverty, albeit a level of poverty that is not comparable to that of many in the developing nations. Mass education for the developing world is dependent among other things on finding low costs means of delivering free quality content to many. We believe we have the means for developing the necessary content and seek support to start an endeavor that can engage many for the benefit of many more. We will work through universities, world development agencies (e.g., World Bank, United Nations), and other appropriate bodies to promote adoption of the texts.

Furthermore, we will work on creating a community that contributes to enhancement of the texts. It is not enough, we believe, to have a simple transfer of knowledge. Rather, we want to engage those who use the books, both instructors and students, to engage actively in improving the quality of the book. For example, cases and exercises based on local events will help to make a text global. Many current texts usually draw heavily on North American situations. Our plan is to work closely with academic opinion leaders in target countries to foster adoption. We think that local champions will be key to spreading adoption. (From <http://globaltext.terry.uga.edu/>)

Rick Watson realized that the project could ultimately threaten existing models of textbook publishing, under which for-profit publishing firms commissioned books from authors, and then produced and distributed them. These firms commanded good margins on the books they published, some of which was passed on to the author(s) of a text in the form of royalties. While the nature of royalties usually depended on the contract the author(s) could negotiate with their publisher; typically this was in the range of 15% on gross wholesale sales of a book, and royalty checks were mailed to authors annually or semi-annually. For some academics this meant considerable earnings. The author of a successful textbook – for example one selling 20 000 copies a year – could receive an excellent income. If the wholesale price of the book was \$50 an author

might earn around \$150 000 in royalties in any given year. However, there is a flourishing market in second hand text books, so royalties tended to peak in the first year of a text's release, and then decline sharply. In order to overcome this, many authors and publishers regularly updated and changed texts, so that the second-hand market effect was not too strong.

Rick Watson was himself the author of a number of successful texts, in the fields of e-commerce and database management. He was also a series editor on texts in the information systems area for the publisher, Wiley. To avoid any conflict of interest, he offered to step down from this role. However, Wiley declined this, and agreed that he could stay on as series editor while heading up the Global Text Project. "They felt they'd rather be closer to the phenomenon than simply ignore it altogether", says Watson. "In fact they have been very supportive and helpful."

5. Further Progress

Initial response to the project was even more enthusiastic than Rick Watson had hoped for. He was inundated with emails from all over the world, with inquiries as to how "free" books could be obtained, and also, with offers of help and assistance from academics in many countries. He immediately began to solicit help and contributions from his wide network of contacts in institutions on all the continents. What he found was that while few academics were prepared to write and then give away an entire text book for free, the great majority were quite happy to donate a single chapter, contribute to the review process, or act as editors or associate editors to a co-authored text book.

Rick Watson then made the following commitment: "As proof of the concept, we will produce two new books: a Business Fundamentals text and an introductory Information Systems text. In both cases, we will seek participation from the academic, business, and student communities in the development and continuous evolution of the text. These books should never be out-of-date because they will be subject to continuous improvement. Each class using one of the books will be asked to add value to the book. They should leave a better book for the next class. Both books will be initially written in English and then translated to Arabic, Chinese, and Spanish, an approach that has already been applied to some of the chapters of the first edition of the XML book (partially translated into Chinese)."

All of the books would be released under a Creative Commons Attribution 3.0 License. This license allows for the ready distribution of texts in a variety of formats. The chapters for all books are maintained in open document format with extensive use of style sheets so that they could quickly be converted into different media or formats. Within a short time, the books in Exhibit 1 had been produced

and were available to adopters. There were also more than 12 books in various stages of preparation and completion.

The Global Text Project is now a joint project of the Terry College of Business of the University of Georgia and the Daniels College of Business of the University of Denver. Don McCubbrey joined Rick as co-leader. Prior to becoming an Information Systems professor, Don had been a partner in a major consulting firm and had extensive international experience.

The project is housed in the Terry College of Business, which also handles administrative matters. The project has also gained widespread media attention, and has been mentioned and discussed on radio and television, as well as in well known publications such as the *Atlanta Journal Constitution*, *The Chronicle of Higher Education*, *Christian Science Monitor*, *Business Week*, *Der Spiegel*, and *New Scientist*. Don and Rick have also been invited by the Association to Advance Collegiate Schools of Business and the European Foundation for Management Development to give keynote addresses at their major conferences.

6. Partnerships

The Global Text Project made extensive efforts early on to engage in a number of alliances in various parts of the world, all directed at increasing access to educational material. The Global Text Project formed working partnerships with several of these, including:

- *Alternative Media Access Center*, an initiative of the University System of Georgia, is committed to removing barriers and providing access to knowledge for individuals with physical, sensory, and learning print-related disabilities.
- *Global Learning Portal* (www.glp.net), a network for educators to collaborate with colleagues, access resources, and to browse through education materials, studies and courses.
- *MERLOT Africa Network* (<http://man.merlot.org/>), a networked partnership between African and US educational institutions affiliated with the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) and leading global eLearning providers with development programs targeting Sub-Saharan Africa. Network members work in partnership to develop collaborative projects for development and innovations in the best practices in eLearning solutions. Partners meet twice annually during the MAN Forum, organized as part of eLearning Africa, held in different African

countries each year, and the MERLOT Africa Panels, during the annual MERLOT International Conference.

7. Funding

The Global Text Project achieved an important milestone when it obtained funding from the Jacobs Foundation in 2007. The Jacobs Foundation was established by Klaus J. Jacobs in December, 1988, in Zurich, Switzerland. In 2001, the founder surrendered his entire share of the Jacobs Holding AG to the Jacobs Foundation, with an effective value of 1.5 billion Swiss Francs. The mission of the Jacobs Foundation is to contribute to productive youth development by bringing together basic research, application and intervention projects and through dialogue and network building. It supports research and projects worldwide.

According to Rick Watson, it was imperative that adequate funding be obtained, and there will be an ongoing necessity to fund the Global Text Project. “Just because this initiative doesn’t have profit as a motive doesn’t mean that money isn’t critical”, he says, “in many ways this is like any start up business. We may not have the backing of banks, or venture capital angels, but that doesn’t mean we don’t look for money at every opportunity.” Like any start-up venture, the Global Text Project will face internal financial constraints and have different costs of debt and capital (Gompers and Sahlman, 2002). Similarly, like any start-up venture, the Global Text Project is an example of entrepreneurship, albeit in a social sense – what has recently been termed “social entrepreneurship” (Certo and Miller, 2008; Townsend and Hart, 2008). Entrepreneurship is not just something that small, start-up firms do, it is a form of organizational behavior that large and small institutions, for-profit and not-for-profit institutions should all attempt to instill as a way of pursuing opportunities, maintaining a state of excitement, and striving to grow. An open-source initiative represents one way of doing this.

8. Quality Assurance

Issues surrounding quality are of major concern to the Global Text Project. Says Rick Watson: “There is a nagging doubt in many peoples’ minds about the quality of the material the Global Text Project will distribute. Some worry about whether authors will really give away their best work “for free”. Others think that the Global Text Project will simply publish anything that’s submitted. I think we are as concerned about standards as any for-profit publisher, perhaps more so. Many people are in fact prepared to give away their best work for free – perhaps as a way of giving back to society, perhaps as a way of making some impact, I’m not

sure. We don't simply publish anything that's submitted. Whatever is sent to us goes through a review and editing process.”

The Global Text Project established a Quality Assurance Board to oversee and advise on quality issues, with members from major academic institutions from different parts of the world (see Exhibit 2). The Quality Assurance Board oversees all aspects of the project related to quality. There are four broad phases to quality control:

1. Selection of books to include in the library
2. Development and enhancement of a book
3. Development and enhancement of a chapter
4. Translation of a book

Phases 2 and 3 (development and enhancement of a book, and development and enhancement of a chapter) are illustrated graphically in Exhibit 3. In order that each textbook has the necessary degree of consistency and quality to meet educational objectives, an editorial board is created for each book. The goal is to balance the community involvement (i.e. faculty, students, and practitioners) with the need for content currency and accuracy. Texts are managed as if they were peer-reviewed journals, with an editor-in-chief (EIC) for each book as well as chapter editors. Guidelines for the various roles are made available to prospective contributors.

The Global Text Project also intends to offer scholarships to students who make a valuable contribution to a book. For example, a student who contributes a particularly useful exercise or adds a good example to a chapter might receive \$100, which could be a significant reward in many developing countries. Students could also be used to localize a text. For example, a student in Kenya could add an example of a local small business' marketing success. This would give local readers more connection with the text and also readers in other countries would extend their knowledge of regional and cultural differences.

9. The Global Text Project Case: An OS Stakeholder Analysis

The Global Text Project case provides an effective and appropriate vehicle for a stakeholder analysis in an OS environment. All of the actors (and perhaps a few more) in Figure 1 are present to a greater or lesser extent in the Global Text Project case, and the framework in the figure can be used by any or more of the stakeholders to undertake a force field analysis of the implications of the Global Text Project phenomenon. A force field analysis (Lewin, 1951; see also Wilson and Thomson, 2006) provides a framework for looking at the factors (forces) that

influence a situation, especially a social situation, by examining forces that are either driving movement toward a goal (helping forces) or blocking movement toward a goal (hindering forces). A simple force field analysis for the Global Text Project is shown in summary in Table 1, and then discussed in more detail below:

Table 1: A Force Field Analysis of the Global Text Project

Forces That Are Driving the Movement	Global Text Project	Forces That Are Blocking the Movement
Distributors	→ ←	Distributors
Users/Customers	→	
Collaborators	→	
OS Community	→	
	←	Competitors

Distributors might be expected to both support and resist the Global Text Project. Currently, there are no dedicated distributors of OS textbooks as there are in the case of some OS software products, for example Red Hat, in the case of Linux. If the content is simply downloaded from the Global Text Project website, and then printed by students themselves if they so desire, then the issue of “distributor support” is not critical. If the distribution is done by universities themselves (for example, an instructor downloads the content, has it printed in hardcopy, and then arranges for it to be distributed, as might well happen in less developed countries, where students might not have ready access to either internet or own printers), then the distributor would support the Global Text Project. In some cases, a university’s bookstore might distribute hard copies of the OS content, and here the support/resist conundrum might depend on whether the bookstore is wholly owned by the university or the student body without a profit motive, or is an outsourced, for-profit operation. In the case of the former, support could be expected, whilst in the latter instance the operation would resist OS content.

Users/customers would most likely support the Global Text Project. In the case of students as users, the reasons would be reasonably clear cut – free, or extremely low cost textbooks would always be better than expensive alternatives. However, in the case of instructors, the case might not always be as clear cut, and it might even be feasible to add a blocking arrow to the force field analysis in Table 1. Most instructors would welcome a free or low cost text book that did an equally effective job as an expensive one, and also like the fact that the text could be customized and edited in real time. However, others might resist the Global Text Project in their particular subject area. While this might be because of doubts concerning the quality of OS textbooks, a more rational reason would be that as

authors, or potential authors of textbooks, they would see the Global Text Project as a threat to their future royalties.

Collaborators would naturally support the Global Text Project, and the more pressing issues from the perspectives of those who manage the project would be to identify and classify collaborators, and then develop strategies for engaging their maximum support. It would also be important to realize that different collaborators would have different objectives and priorities, and would support the project in a range of different ways. Philanthropists such as the Jacobs Foundation, have the broad objective of making a difference to society, but will also want to see the funds they provide used well. Philanthropists might also have different priorities with regard to proprietary issues – some might be quite satisfied to be one of a range of funders of a project, while others might want priority positioning and naming rights. Other collaborators might have different priorities – for example, the universities of Georgia and Denver might support the initiative because they see it as making an important contribution, but also because the novelty of the innovation adds prestige to their reputations, and the same might be true for other universities in the developed world who are part of the project. Universities in the developing world will collaborate because they benefit from it directly, but will also contribute not only because they view the project as beneficial, but because they can build networks and be associated with whatever prestige the project garners. Other collaborators such as the MERLOT project and the Global Learning Portal will support the Global Text Project because they benefit directly from it, and because it has similar objectives to their own. However, it is possible that in the future they might resist it, if they view it as a competitor for support and resources – a case of collaborators now becoming competitors in the future.

The OS community (in the Global Text Project case this means academics and scholars) have already, and will continue to, demonstrate their support of the initiative. However, it might be useful for the project's managers to gain insights into the motivations of the various contributors. Some might be contributing for altruistic reasons; some because while they don't wish to contribute an entire book they view a single chapter contribution as a donation; yet others might see a contribution as a way of "getting back" at publishers who are seen as inefficient and over-priced.

Finally, a number of competitor groups will resist the Global Text Project. First and foremost are the publishers of textbooks, who will see it as a threat to their business and financial models. When an instructor prescribed a free textbook to a large class rather than one marketed by a publisher at \$150, a lot of revenue and profit is threatened. While the publisher referred to in the case indicates interest in the project, this may simply be because the phenomenon is still in its infancy, and not a major threat, yet. There may be similarities to the music industry here – recorded music publishers have dealt badly with the digital music phenomenon because all the evidence points to them not having understood it

very well. It took a computer company (Apple) to realize the full potential of the technological changes and proceed to extract revenues from it (in the form of iTunes). There are also lesser competitors already referred to – academics who publish texts that are prescribed and sell well, and view this as an important income stream; and for profit book stores and distributors (who may see themselves going the same way as high street music stores).

10. Research Avenues and Managerial Implications

The OS phenomenon in the age of Web 2.0 raises many issues for scholars and practitioners alike. The case of the Global Text Project highlights a number of areas that require further examination by researchers as well as several problems and opportunities that will face managers in today's OS environment and beyond.

It would of course be beneficial both to scholars and practitioners to gather information on the profiles of OS offering users, free riders, and contributors in order to better understand the underlying structures of the communities behind OS brands – and there is no doubt that the Global Text Project is a “brand” in the conventional marketing sense. Studies of branded communities behind more conventional brands (e.g., McAlexander, Schouten, and Koenig 2002; Muniz and O'Guinn 2001) could provide a solid backdrop against which such work could be conducted. In the case of OS offerings, the extensive open electronic forums supporting their development and use provide a rich data source. Thus, researchers can learn a great deal about OS phenomena without the need to collect data directly from producers and consumers.

More specifically, each of the stakeholder groups provides an excellent backdrop to further investigation by organizational scholars. With regard to users and customers, researchers will need to study their perceptions of OS offerings as alternatives to conventionally branded alternatives. Here questions arise such as, “Because OS offerings are free or cheap, are they seen as inferior to alternatives?”; “Does a lack of conventional supplier and distributor support deter customers and users from OS offerings in any way?”

In the case of producers of conventional offerings as competitors (and this might incorporate distributors as well), researchers will undoubtedly be interested in studying the competitive strategies these players adopt. It is unlikely that traditional providers will be able to compete against OS offerings in the same ways they have vied against similar rivals. OS producers have different incentives and very different cost structures, which means that they do not have the same profit motives and market share objectives as conventional operators, and can therefore, follow very different pricing and distribution strategies.

Without doubt, the motivations, coordination and production procedures of OS producers present the most interesting and challenging research opportunities to organizational scholars. In the case of the Global Text Project for example,

those who contribute do so under an intriguing and unique combination of private and collective investment, or what von Hippel and von Krogh (2003) have termed a “private-collective innovation model”. In essence, academic authors who contribute to the Global Text Project use their own resources to create and indeed “invest” in, academic works such as text books. While they could choose to exert proprietary rights over this work (and could conceivably sell it for private gain), they choose instead to make it available as a public good. In a sense they create the best of both worlds – private investment and public gain, but the intriguing question remains, why, and under what conditions, do they choose to do it? As Lerner and Tirole (2002) wrote of OS software, “Why should thousands of top-notch programmers contribute freely to the provision of a public good?”

While many OS projects, including the Global Text Project, have been hugely successful, there is no doubt that those who manage them also face unique problems and challenges. One of these is the problem of structure. OS projects frequently start their lives as informal unstructured endeavors (witness Professor Watson simply organizing the first efforts in his class of students), and then develop (and indeed require) more structure as they grow and gain momentum (Watson’s fledgling project soon acquired boards of advisors, quality assurance mechanisms and the like). While OS initiatives undoubtedly have benefits to their communities, the frequent lack of structure and systems within these projects is not without its drawbacks. More work is necessary to understand what paths these initiatives might take when they no longer meet the needs (especially emotional) of all their constituents. Over the years for example, the structure behind Linux has become more formal, and one might question what this means for those whose aspirations of freedom, creativity and serving it up to Microsoft are thwarted. In the organizational behavior literature for example, it has been noted that “team” cultures (where individuals thrive on working together as a team) inevitably become bureaucracies (with more formal rules) as organizations grow in size, and the requirements for control increase (Handy 1991). Already Microsoft is noting that their view of Linux is that it will “fragment over time” (Business Week Online, 2005) – whether true or not, the observation merits future study by researchers, and consideration by managers. The problem those who manage OS projects will face is deciding on just how much structure to impose – while some structure will undoubtedly be necessary, too much will create similar disincentives to conventional operation, which drove participants to the OS alternative in the first place.

In many ways, the development of an OS initiative like the Global Text Project follows the classic five stages, and in many ways the phases, of small business growth identified by Churchill and Lewis (1983). In terms of the phases, the Global Text Project has already gone through the phase of growth by creativity (Watson’s “big idea” got it off to a good start), then growth through direction (the path the project was to take was decided upon, and implemented), then growth through delegation (Watson was able to identify a number of parties

willing to assist and help), and is probably now in a stage of growth through coordination (working with other organizations and institutions). In time the project will enter the phase of growth through collaboration. Of course, these phases are not without their crises – which parallel them: crises of leadership, autonomy, control, and red tape, in that order.

Churchill and Lewis (1983) also identify five growth stages for startup organizations, and the Global Text Project can also be distinguished as moving through these stages. Stage 1 is existence: in simple terms, can the fledgling organization find customers? In the first stage of the project, Watson wondered whether there would be life for it after his first course. The second stage of the process is survival – at this stage of the project, Watson had the customers, but was worried whether there would at least be sufficient income and resources from donors and supporters to keep the project going in order to be able to serve its customers. The third stage of the growth process, and most likely the one in which the Global text Project currently finds itself, is that of success – it has both customers and resources, and the main decision facing Watson and McCubbrey is whether, and how to exploit the organization's accomplishments and expand, or to keep it stable and successful. Further stages identified by Churchill and Lewis (1983) are take-off and resource maturity, and there will inevitably come a day when those who lead and manage the project will encounter the decisions required by those phases.

Those who manage OS initiatives also need to think about approaches to the not-inconsiderable opportunities that present themselves in the form of their customers/users, beyond the core OS offerings themselves. These markets can represent sizable prospects in terms of databases and indeed future sales from which real revenues can be garnered. For example, Linux's portly penguin mascot has become a brand icon nearly as well known as Ronald McDonald or the Pillsbury Doughboy (Pitt et al, 2006), and those who use the OS software happily part with cash for a range of tangible products sporting Tux the penguin.

Collaborators also represent important stakeholders to those who manage OS projects. Their support can sometimes be indispensable (as in the case of the universities behind the Global Text Project), sometimes very valuable (as in the case of funders such as the Jacobs Foundation), and always nice to have (as in the case of the Global Learning Project and MERLOT). However, frequently these collaborators will have different and potentially conflicting agendas, and managers will need to prioritize and balance these.

In this article we have addressed the OS phenomenon as an important feature of the Web 2.0 environment. Whereas open source can be approached from a number of perspectives, including economics, sociology, law, and organizational science, the simple line that we have taken focuses on identifying the stakeholders to an OS project. We have used the Global Text Project as a case study to both examine and illustrate the issues involved in conceptualizing and managing an OS initiative. While the Global Text Project is rather unique, the principles

surrounding it are generalizable from an OS perspective, and the research avenues and managerial implications it raises are germane to a wide-ranging study of the OS phenomenon.

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Exhibit 1: Books Available under the Global Text Project (see <http://globaltext.terry.uga.edu/>)

- Basic Political Concepts (Paul deLespinasse) (This short text introduces the basic ideas of political science.)
- Electronic Commerce: The Strategic Perspective (2nd edition, release 1) (Editor-in-Chief: Dr. Saurabh Gupta of the University of North Florida)
- Information Systems (1st edition, release 6) An introductory text for Information Systems.

Scanned Books

These editions have been scanned and converted to text using Optical Character Recognition. We are in the process of converting them into the Global Text Project standard format. When this is complete, a new edition will be posted to this page.

- Core Concepts of Marketing (14MB) by John Burnett This text introduces students to the marketing strategies and tools that practitioners use to market their products.
- Global Business Strategy: A Systems Approach (18MB) by Asterios G. Kefalas A systems approach to understand globalization and managing a global organization.
- The New Software Engineering (47MB) by Sue Conger Blends theory and project management skills with systems design and analysis methodologies so students can learn how to become successful software engineers.

As well as promoting the development of new textbooks, Global Text is a portal for existing books and other educational resources that have been contributed and are freely available. The plan is to move some of these books, with the permission of the authors, into the Global Text library as resources become available.

Other Open Texts

Computing

- An introduction to programming and programming concepts, using VB.NET A complete, modular course geared to undergrads who will not be making a career as programmers, but will have to write small scripts and also communicate effectively with programmers. Contributed by Larry Press (California State University, Dominguez Hills).
- Discovering information systems by Jean-Paul Van Belle, Jane Nash, and Mike Eccles (University of Cape Town) (released under the creative commons by-nc-nd license)
- History of Programming Languages by Dennie Van Tassel (Gavilan College)
- Network applications, technology and implications This resource consists of 235 modules: Network applications (26 modules), Introduction to Web development (48), Image processing (15), Audio processing and VOIP (17), TCP/IP network technology (45), Wireless networking technology, theory and applications (48), Home, organizational, mobile and backbone connectivity (29), and History (7). Contributed by Larry Press (California State University, Dominguez Hills).
- Office XP for business by Jean-Paul Van Belle (University of Cape Town) (released under the creative commons by-nc-nd license)
- XML - Managing Data Exchange by Richard T. Watson et al. (This is the book that spawned the Global Text Project. It was initially written by a class a University of Georgia and revised by another class)

Education

Education for an Information Age by Bernard John Poole (University of Pittsburgh at Johnstown), Elizabeth Sky-McIlvain (Least Tern), and Lorrie Jackson (Lausanne Collegiate School)

Social & Cultural Foundations of American Education by Dwight W. Allen, Patrick M. O'Shea, and Peter Baker

Health

Physical Health Hazards by Paul Héroux (McGill University). The materials for the course are in PHH6.zip (720 Mb). PHH6Vid6.zip (1 Gb) contains video material that illustrates the course, but it is not absolutely essential. For students who have a slow Internet connection or who wish a permanent and portable archive of the material, a DVD containing the material in both files above can be obtained (\$5 , \$15 by mail) by contacting Paul Héroux.

Principles of Toxicology by Paul Héroux (McGill University)

Humanities

Principles Of Orchestration by Nikolay Rimsky-Korsakov and augmented by Garritan Interactive. The original Principles of Orchestration was published about a hundred years ago in Russian. Garritan has taken the original English translation, and incorporated multimedia. As the English translation is in the public domain, it could become the foundation for a Global Text.

Natural Sciences

A First Course in Linear Algebra by Robert A. Beezer (University of Puget Sound)

An Introduction to Energy Sources by B Viswanathan (Director, National Centre for Catalysis Research, Indian Institute of Technology Madras)

An Introduction to Formal Logic by P.D. Magnus (University of Albany, SUNY)

An Introduction to Physical Oceanography by Matthias Tomczak (Flinders University of South Australia)

Classical Mechanics by Jeremy Heyl (University of British Columbia)

Computational and algorithmic linear algebra and n-dimensional geometry by Katta Murty (University of Michigan)

Frontiers in Chemistry by B Viswanathan (Director, National Centre for Catalysis Research, Indian Institute of Technology Madras)

Introduction to Physical Oceanography by Robert R. Stewart (Texas A&M University) Also available in pdf.

Linear Complementarity, Linear and Nonlinear Programming by Katta Murty (University of Michigan)

Nanomaterials — A Sojourn by B Viswanathan (Director, National Centre for Catalysis Research, Indian Institute of Technology Madras)

Oceanography in the 21st Century: Our Ocean Planet by Robert R. Stewart (Texas A&M University)

Optimization Models for Decision Making: Volume 1 by Katta Murty (University of Michigan)

Regional Oceanography: An Introduction by Matthias Tomczak (Flinders University of South Australia) & J. Stuart Godfrey (CSIRO)

Synthetic Strategies Chemistry by B Viswanathan (Director, National Centre for Catalysis Research, Indian Institute of Technology Madras)

Social Sciences

Freedom from Want: The Human Right to Adequate Food by George E. Kent (University of Hawai'i)

Introduction to Economic Analysis by R. Preston McAfee (California Institute of Technology)

Introduction to Text Linguistics by Robert de Beaugrande (Univerza na Primorskem in Koper, Slovenia)

New Introduction to the Study of Text and Discourse by Robert de Beaugrande (Univerza na Primorskem in Koper, Slovenia)

The Metaconstitutional Manifesto: A Bourgeois Vision of the Classless Society by Paul deLespinasse

Thinking About Politics: American Government in Associational Perspective by Paul deLespinasse

Wrong Turn: A Sympathetic Critique of the Civil Rights Movement by Paul deLespinasse

Exhibit 2: The Global Text Project Quality Assurance Board

The Quality Assurance Board (QAB) oversees the quality of the plans, processes, and products of the Global Text Project.

Person	Affiliation
Raffaella Bianchi	Consultant, Italy
Michael Dowling	University of Regensburg, Germany
Michael Page	Rotterdam School of Management, Erasmus University, The Netherlands
Ursula Staudinger	Jacob Bremen University, Germany
John Taylor "Ike" Williams	Fish & Richardson, PC (one of the largest law firms in the US specializing in intellectual property)

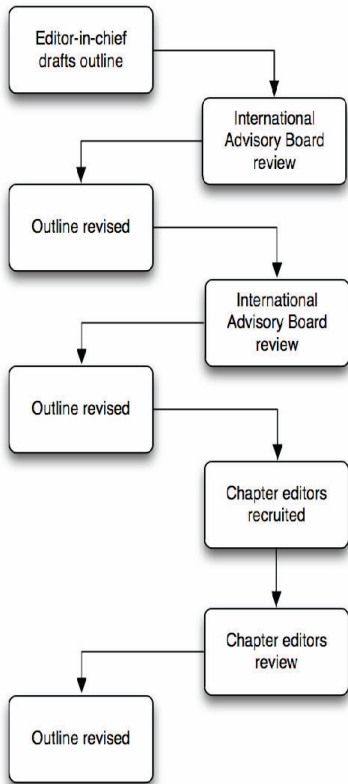
Advisors

Dr. Thomas D. Clark, Jr. is President of Strategy Associates, LLC and Former Dean of the Ourso College of Business at Louisiana State University.

Stephen W. Goodroe is the former Vice President-Global Customer Marketing for The Procter & Gamble Company. He is an executive-in-residence at the University of Georgia's Terry College of Business.

Exhibit 3: Aspects of the Quality Assurance Procedure

Development and enhancement of a book



Development and enhancement of a chapter

