

Opening the Doors to Knowledge

Rebus' Collaborative Publishing Model for Open Textbooks

by

Apurva Ashok
BA (Hons), McGill University, 2016

*Project Submitted in Partial Fulfilment of the
Requirements for the Degree of
Master of Publishing*

*in the
Publishing Program
Faculty of Communication, Art and Technology*

© Apurva Ashok 2017
Simon Fraser University
Fall 2017

This work is licensed under the Creative Commons
Attribution 4.0 International
(<http://creativecommons.org/licenses/by/4.0/>)

Approval

Name: Apurva Ashok

Degree: Master of Publishing

Title of Project: Opening the Doors to Knowledge: Rebus' Collaborative Publishing Model for Textbooks

Supervisory Committee:

Hannah McGregor
Senior Supervisor
Assistant Professor
Publishing Program
Simon Fraser University

Juan Pablo Alperin
Supervisor
Assistant Professor
Publishing Program
Simon Fraser University

Hugh McGuire
Industry Supervisor
Co-Founder, The Rebus
Foundation
Montreal, QC

Date Approved: 20 December 2017

Contents

Abstract	iv
List of Figures	v
1. Introduction	1
<i>1.1 The History of Open Education and the Open Textbook</i>	2
<i>1.2 The Publishing Market for Textbooks</i>	3
<i>1.3 Rebus Community and Its Goals</i>	4
2. User Acquisitions and Editorial: A Perspective on the Rebus Community Forum	7
<i>2.1 The Forum and its Original Conception</i>	7
<i>2.2 Challenges in User Acquisitions and Editorial</i>	9
<i>2.3 The Limitations of the Forum</i>	11
<i>2.4 Directions for Improvement</i>	15
3. Curation and Testing: Content Management for Open Textbooks	17
<i>3.1 Peer Review Working Group: Revising the Review Process</i>	17
<i>3.2 Accessibility Working Group: Promoting Access</i>	19
4. Marketing: Getting Open Textbooks into the Classroom	22
<i>4.1 How Do We Get Them into the Classroom?</i>	22
<i>4.2 Updating Open Textbooks</i>	24
5. Conclusion: Open Textbooks and the Future of Textbook Publishing	27
<i>5.1 Summary: A Model for Educational Publishers?</i>	27
<i>5.2 Future of Books and Challenges: Development and Scalability of OERs</i>	28
<i>5.3 Federated Rebus: Looking to the Future</i>	29
Appendix	31
References	34

Abstract

Over the last thirty years, the cost of education has become prohibitively expensive, both in terms of tuition and with reference to rising textbook costs. In response, organizations such as the Rebus Foundation are working towards the development of scalable models of Open Textbook creation. This report outlines, examines, and critiques Rebus' efforts. It historicizes the Open Education Movement, and delineates Rebus' role within the current textbook publishing landscape. Concentrating on the Rebus Community Forum, it initially evaluates the organization's acquisitions and editorial practices with a focus on avenues for improvement. Moving along the Open Textbook production line, it examines issues related to peer review and accessibility, before understanding Rebus' attempts to market, promote, and update its Open Textbooks after publication. Collectively, these efforts attempt to transform educational publishing into a more equitable space.

List of Figures

Figure 1	Homepage of the Rebus Community forum.	8
Figure 2	Various projects listed in the Rebus Community forum, accessed by clicking “Projects: Active Open Textbook Projects” shown in Figure 1.	13
Figure 3	What users see when they click on the Human Geography Project listed in Figure 2.	13
Figure 4	The discussion thread for the Human Geography project, accessed by clicking on “Human Geography: Project Summary” in Figure 3.	14

1. Introduction

In the current economic climate, even entry-level jobs in North America require a university degree as a prerequisite. However, as higher education becomes increasingly essential even for basic work opportunities, its inaccessibility only grows. Average tuition for universities in North America has strongly outgrown both the inflation rate and government subsidies (Odland 2012; Campos 2015). These trends reflect the increasing unaffordability of higher education and the rising financial burden students are saddled with, if they can afford the education at all. At present, the difficulties of achieving an accessible and relevant education are also integrally related to issues in the educational publishing industry.

Problems endemic to the publishing industry consistently impair students' educational experiences. An oligopoly of five companies controls 80 percent of the textbook market (Senack and Donoghue 2016). Such immense market control renders textbooks price insensitive: publishers set exorbitant prices for textbooks and students must still buy them.¹ Simultaneously, publishers repeatedly produce newer editions of books, often with only minimal changes. The key consequence of doing so is that new students are forced to purchase the most up-to-date text at typically expensive prices because older editions become obsolete. Moreover, while each edition produces more revenue for the publisher, books may become outdated by the time they reach the shelves of a university bookstore (SPARC 2016). This inefficiency further disadvantages students at the time of purchase.

The Open Education movement provides an alternative to traditional textbook publishing and its shortcomings. This movement holds education fundamental to social advancement and asks that it be accessible for all (SPARC 2016). Educational resources championed by the movement include Open Textbooks, which are textbooks produced under a free and unrestricted license. Often web-native and largely distributed online, Open Textbooks cost significantly less than their traditional print counterparts. As an 'open' resource, these textbooks are available to students for free, meaning that students

1. The cost of textbooks rose 1041 percent between 1977 and 2015 (Popken 2015). Students' annual spending on textbooks and classroom materials has also increased significantly, with average costs being and upwards per item (NACS 2017).

incur little-to-no expenditure² when accessing them. Creators can update these textbooks without the constraints faced by traditional publishers, thus delivering books to students much faster. However, Open Textbooks have not been widely adopted as yet: the lack of standardization in their production has resulted in variable formats, expectations, and review processes, which in turn makes these texts harder to market and adopt in any systemized way.

This report examines the production cycle of fifteen Open Textbook projects in the Rebus Community. The first section historicizes the Open Education movement, defines the Open Textbook, and assesses the current textbook publishing landscape. It delineates Rebus' role within this landscape, and describes its objectives for open book publishing. Rebus' incarnation of Open Textbooks provides the basis for the rest of this report. The second section focuses on the Rebus Community Forum and evaluates its implications for acquisitions and editorial processes. Moving along the Open Textbook production line, the third section examines issues related to peer review and accessibility. The fourth section foregrounds the life of the Open Textbook after initial publication, focusing on the experience of Rebus and other organizations to examine the marketing, adoption, and updating of textbooks. Finally, the fifth section summarizes the report's findings and recommendations. It contextualizes these findings within reference to the textbook industry, adding detail to the discussion in the introduction. By honing in on key issues and suggesting methods for improvement, this report attempts to help us see how best to make textbook publishing a more equitable space through the use of Open Textbooks, and by re-asserting publishing as a service for the global community. Rebus' attempt to produce Open Textbooks is a small but essential part of making education accessible for all.

1.1 The History of Open Education and the Open Textbook

Fundamentally, the Open Education movement aims to create and disseminate “resources, tools and practices that are free of legal, financial and technical barriers and can be fully used, shared and adapted in the digital environment” (SPARC 2016). This movement began emerging when David Wiley conceptualized “open content” in 1998 (Wiley 2006). Wiley's concept was instrumental in expanding and popularizing the basic principles of open source software into the domains of education and content creation (Wiley 2006). Predicated upon the 5Rs—Retain, Revise, Reuse, Remix, and Redistribute—the Open Education movement redresses the tight content controls exerted on digital publishing by educational publishers, who act to the “detriment of teachers and learners” (Wake Hyde 2016).³ In so doing, the Open Education movement strives to make education “more affordable, accessible, and effective” (SPARC 2016).

2. Given that Open Textbooks are a digital resource, access to computers, laptops, and a stable internet connection are still barriers to access for many students who want to use such books.

3. A more detailed description of 5Rs is available in Wake Hyde's report, page 11 (Wake Hyde 2016).

Given its wide-ranging objectives, the Open Education movement has emerged as a set of interconnected and diverse activities. Thus, after Wiley, the history of Open Education may be traced through a series of divergent yet complementary events. In 2001, the Creative Commons licenses were established, allowing creators and users of open content a set of flexible yet all-encompassing licenses for their works (Wiley 2006). In the same year, MIT started the OpenCourseWare initiative, which makes course materials available to prospective students free of cost (Wiley 2006). The term “Open Educational Resources [OERs]” was formally put into use at a UNESCO forum in 2002 and, in 2005, UNESCO collaborated with the Hewlett Foundation to set up a global community Wiki page (Wiley 2006). By opening up production of and access to Open Textbooks to a larger user base, these initiatives uphold the pillars of the Open Education movement: access, affordability, and quality. The movement’s broad focus is both its strength and weakness, as shall become clear in the subsection on the Rebus Community.

An Open Textbook is “a textbook licensed under an open copyright license and made available online to be freely used by students, teachers, and members of the public” (BCcampus 2012). Given the numerous limitations of traditional textbooks, the development of Open Textbooks is a prerequisite towards truly accessible education. Unlike traditional print books, Open Textbooks are free of cost, and easily updated over time. Over the years, Open Textbooks have saved students \$174 million dollars relative to traditional textbooks (Merkley and Merkley 2017). They constitute a key response to the increasing inaccessibility of education, evident in news reports and also the viral #textbookbroke hashtag (Thomas 2016; Senack 2014). The further development of Open Textbooks is thus critical for making education more accessible education. An understanding of the present state of textbook publishing suggests the need to rethink its goals and aims.

1.2 The Publishing Market for Textbooks

The educational publishing industry consists primarily of an oligopoly that dominates 80% of the market. The Big Six international textbook publishers include Cengage Learning, Pearson, McGraw-Hill Education, Houghton Mifflin Harcourt, Wiley⁴, and Scholastic. These key players hold immense control over the industry and are entrenched in the educational system. For example, Pearson also produces standardized tests for students and teachers, ancillary digital materials, learning management systems, and—in some parts of the world— runs schools themselves (Kamenetz 2016). In thus expanding the services they provide and capturing the marketplace, educational publishers are making themselves inseparable from K-12 and post-secondary

4. Refers to John Wiley and Sons – a publishing company with no relation to David Wiley.

educational experiences. This integration makes it difficult for Open Textbooks to replace the textbooks provided by traditional publishers.

The market dominance of publishers has intensified through cultural and economic capital. Pearson is nearing one hundred years in the industry, while Wiley has been around since the early nineteenth century, and McGraw-Hill Education since the late nineteenth century. These companies are now synonymous with the term “textbook publisher” itself, and their names are upheld by faculty, students, and parents as providers of quality educational materials. A study by the Babson Survey Research group shows that a significant portion of faculty members rated peers’ recommendation of a text and familiarity with its publisher as either important or very important (Allen and Seaman 2016). This social validation makes it easier for these publishers to convince professors to adopt their books in the classroom—a capability enhanced by the significantly larger amounts of funding such organizations can devote to the marketing and dissemination of their products. The massive marketing budgets of traditional textbook companies, and their wide recognition by faculty and students alike, create a serious barrier to entry for Open Textbooks.

However, even as publishers expand into complementary services, their market dominance is waning. Revenue has moved away from printed textbooks in recent years, pushing educational publishers to expand their product lines. Earlier this year, Pearson representatives reported a 30% decline in revenues, resulting in a mass markdown of their e-books as well the laying off of 4,000 employees (Straumshiem 2017). Pearson attributed this shift to lower enrollment in community colleges and the growing popularity of textbook rentals (Pearson 2017).

This decline in revenue and college enrollment constitutes an early signal that students are not consuming according to older patterns: they have begun to forego education altogether, or are circumventing publishers by renting and pirating texts, and by enrolling in courses with OERs that do not need to be purchased (Barry 2017). This demand for educational alternatives signals the pressing need for investment in OERs, both for the benefit of students and for ensuring educational publishing does not forego service-oriented business models in search of higher profits. The Rebus Foundation is playing a significant role by building “a new, sustainable model for making OER[s]” that relies on a community driven approach (Rebus 2016).

1.3 Rebus Community and Its Goals

The Rebus Foundation was founded by Boris Anthony and Hugh McGuire in 2016. The two Canadians had previously worked in the world of publishing, technology, and user experience, before they combined forces to contribute to open book publishing. The Rebus Foundation is a non-profit organization funded through grants from charitable

foundations, including the William & Flora Hewlett Foundation and the Andrew W. Mellon Foundation. The Rebus Foundation “builds new models and technology for open book publishing and reading on the web, to encourage deeper engagement, and to enable people (and machines) to use and build on books and reading in new and meaningful ways” (Rebus 2016). Anthony and McGuire are driven by the idea that books are essential to our intellectual lives. Texts constitute significant cultural objects and must be made available to the maximum number of individuals through more efficient and equitable systems of production and distribution.

While books have been central to knowledge exchange and social advancement for centuries, recent technological and digital shifts – particularly the world wide web – have dramatically changed our means of creating, consuming, and sharing books. Rebus reexamines what web-native publishing models could look like, to the effect of creating engaged communities of readers, writers, and scholars. In its first year, the Rebus Foundation has focused on researching scholarly deep reading ecosystems through the Rebus Reader and Personal Library project funded by the Mellon Foundation. In addition, the Foundation is also creating a scalable model for producing Open Textbooks through the Hewlett-funded Rebus Community Forum, which is the focus of this report. The founders hope this model will aid all sorts of collaborative publishing projects, such scholarly monographs, journals, textbooks, and anthologies.

The Rebus Community seeks to decrease the cost and complexity of producing Open Textbooks, to increase the number of discoverable titles produced, and to set standards for the publishing process and output formats. The Community Forum is not meant to be the site where the actual editing, layout, or formatting of content takes place. Instead, the Rebus Community provides users with tools for layout and formatting through Pressbooks, an open source book production software⁵. It attempts to integrate Open Textbooks into the social, cultural, and educational landscape by developing transparent, community-driven processes for publishing open textbooks. In so doing, Rebus is building open collaboration as an essential component of these processes and tools and encouraging volunteers to participate in the creation and use of Open Textbooks.

The Rebus Community is presently creating and studying fifteen pilot Open Textbooks (see Appendix). They take on each project in collaboration with project leads from various post-secondary institutions to examine aspects of the Open Textbook creation process such as reviewing, acquisition, and the problems of large-scale collaboration. In this way, the Rebus Community is exploring numerous problem areas drawing on collaborators’ diverse experiences to enhance the Open Textbook creation process. This

5. Pressbooks is an Open Source book formatting and production software. It creates book files in web, PDF, EPUB, EPUB3, MOBI, ODT, XHTML, XML, and WXR formats. For more information on the Rebus Community Press, powered by Pressbooks, see section 3.6 of Wake Hyde’s report (Wake Hyde 2016).

report documents, evaluates, and reflects on Rebus' experiences in an effort to improve current approaches to Open Textbook creation.

2. User Acquisitions and Editorial: A Perspective on the Rebus Community Forum

This section begins by reviewing the initial stages of Rebus' publishing process: the acquisition of users and editing of materials. After individuals approach Rebus with a particular project, the organization creates a project thread and summary on the forum. It recruits participants for each project by sending calls through the forum, email, and social media. Rebus has created sign-up spreadsheets, which detail the participants who have agreed to work on a particular project. Individuals agree to participate by filling in their name and contact information on the sheet, or by replying via the forum or email. The workflow hereafter can be significantly varied given each project's specific needs and goals. Depending on the situation, Rebus may contact participants to confirm their specific role and the attendant deadlines. The editorial workflow is established with the project leads and editorial teams. All editing that follows occurs on Google Docs or other collaborative software.

Overall, the Rebus Community forum functions as a channel for acquiring Open Textbook projects. This section explores the original conception of the forum and follows with a discussion of current challenges and inefficiencies in light of Rebus' acquisitions and editorial goals.

2.1 The Forum and its Original Conception

The Rebus Community forum was conceived as a collaborative platform for fostering a global collegiate community of Open Textbook creators (Rebus 2016). It was conceived a public, web-based space to begin Rebus' work of developing processes for publishing Open Textbooks, and as a framework model for a more robust project management software that would provide publishing tools and resolve relevant issues in the production process. The forum was designed as a space to encourage discussion, and bring communities together for developing Open Textbooks. Both the forum and the project management software were conceived as betas, to be tested by an audience

composed of Open Textbook producers and adopters, that could be used to easily create and manage other kinds of OERs.

Once the forum's goals had been laid out, the team chose Node BB for integration into the project management software once the latter was built. Node BB is an Open Source community forum software that is easily integrated into existing websites. Next, a clean design was incorporated into the basic Node BB forum, to create an intuitively navigable discussion board. Several basic categories were created, including those for Projects and General Discussion (See Figure 1). The forum was originally available to select users via an email link, however, within a few weeks, it was opened to all individuals around the world. At the time of the writing of this report, the forum has 409 users, and includes six main categories: New To The Rebus Community, Active Open Textbook Projects, Working Groups, Rebus Community and OTN Office Hours, Help and Tech Support, and General Discussion.

Category	Description	Topics	Posts
New to the Rebus Community? Start here!	The Rebus Community is developing a new, collaborative process for publishing open textbooks. Join us!	96	264
Projects: Active Open Textbook Projects	Working on an Open Textbook project? Discuss with your team, or find collaborators ...	79	967
Projects: Working Groups	Want to help figure out the best practices for open textbook publishing? Join us here.	8	182
Rebus Community & OTN Office Hours	Once a month we discuss hot topics in open textbook creation in this event, in partnership with Open Textbook Network.	14	24
Help & Tech Support	Need help? Tech support for the Rebus Press? Other questions? Ask & Answer here.	13	47
General Discussion	Are you working with open textbooks? Have challenges? Ideas? Discuss them here.	11	47
Project Comments		1	3

Figure 1: Homepage of the Rebus Community forum.

Currently, Rebus is using the forum primarily to track and manage its fifteen pilot projects, and to acquire project leads, authors, editors, proofreaders, reviewers, and adopters for various projects. Importantly, projects reach Rebus and are posted on the forum at different stages: the *Introduction to Philosophy* project, for example, was conceived on the forum from scratch, with participants building the Table of Contents through a series of discussions. In contrast, the *History of Applied Science and Technology* project was posted on the forum after volumes one to three had already been fleshed out by

the project lead and her team. Other projects, like *Financial Strategy for Public Managers* arrived focusing on finding reviewers and getting the book ready for adoption. Given the diversity of issues these projects bring, Rebus' goal with each is to learn what is necessary to complete specific tasks in the publishing process, and how best this process may be replicated by other individuals in the future. The knowledge Rebus gains from these processes is serving as the framework through which the project management software will be built.

The Rebus Community forum brings together the project leads, authors, editors, proofreaders, and formatters of all projects onto a single platform. Ideally, the forum centralizes communication, and makes discussions between all these participants available to the public. Given that Rebus aims to open up knowledge of Open Textbook production, this centralization and transparency is essential for enabling both current and new producers to understand, build upon, and improve the varying strategies for creating Open Textbooks. These wide-ranging projects thus afford Rebus the opportunity to learn from a diverse range of experiences, presenting various issues that it seeks to resolve at a scalable level. As the next subsection shall demonstrate, challenges in Acquisitions and Editorial prove particularly salient to Rebus' mission.

2.2 Challenges in User Acquisitions and Editorial

The primary hurdle to Rebus' acquisitions process is its small Rebus Community user base. In the future, as Rebus grows, the full power of its collaborative vision will be apparent. Moreover, not all users on the forum are active, and those who are active are experts in very specific fields whose skills and knowledge may not readily transfer to other projects. For instance, during a nine-month period, the *History of Applied Science and Technology* project has seen only seven users engaging the forum and offering contributions to the project. Similarly, the *Financial Strategy for Public Managers* project received no responses to its request for reviewers, and neither has the newly posted *Human Geography* project. In contrast, the *Introduction to Philosophy*, *Science of Human Nutrition*, and *Literature Reviews for Education and Nursing* projects have received tremendous response, with the general discussion page for *Introduction to Philosophy* being viewed over 57,200 times by users and containing over 230 posts. Consequently, Rebus' current user base is small and too specialized to tackle the wide array of projects in its stable. As a result, it is necessary to rely on other sources for recruiting contributors to most collaborative projects, with each method producing its own specific challenges.

Cold calling via email is one way of contacting prospective collaborators. Unlike the forum where projects rely on the current user base to signal their interest in participating, cold calling allows project leads and Rebus' management team to directly reach out to subject matter experts for under-discussed projects. Cold calling begins by tailoring copy to each individual, describing the Rebus Community's mission, the

current project, and the role the individual would play. Depending on the traction projects have received on the forum, cold-calling is often the main way to recruit collaborators onto a project.

Most projects, including *History of Applied Science and Technology*, *Media Innovation and Entrepreneurship*, *The Open Anthology of Earlier American Literature*, and *Human Geography* require numerous cold calls. These cold calls take time, with low opening and conversion rates. Moreover, this issue was compounded by the fact that, initially, there was no record-keeping to track the individuals who had already been contacted to work on a particular project. However, as of summer 2017, Rebus has begun tracking each call, and the type of response per project. This, too, is only partially successful, as there are currently multiple spreadsheets for different projects, which means that time may be lost in contacting the same people multiple times. Rebus would benefit from a centralized system for tracking the collaborators whose help it solicits, and the projects for which their assistance is sought.

Resolving these logistical issues is imperative for Rebus to understand pain points in an open, collaborative textbook publishing process. Tracking cold calls represents only a portion of the problem. There is still the issue of responses, which can broadly be categorized into the following types:

- Non-responders: A majority of emails sent do not receive a response, or are met with an auto-response email.
- Busy with other commitments: A small portion of responses is from people unable to participate due to other commitments. Rebus' team considers this the 'polite no.'
- Interested, but not right now/not my area of expertise: These parties are interested in the project, but cannot commit to tasks at the current moment, or mention that their specialization lies in a different topic.
- Yes, absolutely: A small portion of the cold calls is responded to with an overwhelming "Yes, I would love to be involved!"

For volume two of the *History of Applied Science and Technology*, Rebus sent out 83 emails to faculty around the world, asking them to join the project as authors of short 1000-word sections. We received a total of 16 responses (19.2%) and 67 non-responses (including 6 auto-responses, for a total of 80.8%). Three individuals declined to contribute, while six asked only to be notified of the project, three are still debating a contribution, and four agreed to submit a short section. These varying responses raise concerns regarding faculty and university staff's knowledge about Open Textbooks and their willingness to actively participate in an Open Textbook project. Emails asking faculty to peer review or adopt a book have similar statistics. Based on the high number of refusals and non-responses, it may be possible that faculty do not take Open Textbook creation seriously

or find it worth their while. This issue thus connects problems in acquisitions to those in marketing, which is treated more fully later in this report.

Cold calling is currently a tedious process whose outcomes often rest on contingencies including people's availability, interest, and even their desire to work towards OERs. Moreover, even when a cold call is successful, there are still significant issues that may affect the project team. Rebus is still not sure as to whether it prefers users to enter data on the forum page first, where discussion is limited, or whether it wants to direct them straight to the spreadsheet page. At present, cold calls generally result in users being pushed straight to the sign up sheets. Consequently, Rebus's ability to learn from the discussions that occur is hampered—an issue that may be resolved by standardizing the sign up process.

Apart from issues of transparency, advertising the usefulness of the forum is also an issue. Given the lack of discussion on certain projects, the project management team is continuously thinking of ways to initiate discussions, but these often rely on project leads and participants to keep the conversation going on an unfamiliar platform. In cold call emails, the decision to direct users directly to sign-up sheets rather than to the forum was reinforced by the lack of clear incentives to join the forum. The project management team at Rebus had multiple conversations regarding the best method to market the forum as either “a directory/resource for OER creation” or “a platform for discussions on Open Textbook creation” and faced difficulty in picking one purpose over the other. At present, the forum is still in its early stages and is by design doing the work of the project management software. As a more customized project software is developed and deployed, it is uncertain what role, if any, the forum software will play for faculty and staff, and how this can be better communicated to potential users.

2.3 The Limitations of the Forum

Despite these issues and limited resources, Rebus has been successful in developing and learning from projects. *Financial Planning for Public Managers* and *Media Innovation Entrepreneurship* are being used in classrooms, and instructors at various institutions are implementing an in-course assignment to expand the *Antología abierta de literatura hispánica*. However, Rebus' efforts are hampered by the forum's inefficacies. Given the forum's role in centralizing communication, promoting transparency, and maintaining records, resolving these issues will be key to ensuring Rebus' continued growth and the advancement of its Open Textbook projects.

The forum's current structure has several limitations, including issues surrounding threading project discussions. For instance, the *Introduction to Philosophy* project initially included only one thread with a main project summary post. Users could reply to this main post, but there was no mechanism to create a separate post or start a new

thread. As more people responded, the thread grew longer, less manageable, and more confusing for users already involved in the discussion. For new users looking to join the project, the existing conversation proved overwhelming. Conversely, with *Media Innovation and Entrepreneurship*, many individual threads were created for both general and chapter-specific discussions, but there was little discussion on either. For new users coming to this project on the forum, such lack of conversation can convey a general disinterest in the project, and can dissuade them from joining the forum even when substantial collaborative work on the project is occurring outside it. As such, the lack of a moderated and standardized approach to forum, category, and thread management has given Rebus the insight necessary to revise and improve its processes for potential collaborators.

A corollary of such varying categories and threads is that navigation becomes quite difficult. Discussions about projects are nestled in the forum. To reach these discussions, users must navigate through top-layer categories, such as Projects, Working Groups, and Help and Tech Support (Figure 1). Next, they must access the project thread, such as [GEO] Human Geography: Principles and Applications [lead: Paul Hackett, USask], and, finally, can click on the sub-thread (General discussion and project summary) to comment on an ongoing conversation (Figures 2, 3, and 4). As mentioned earlier, users who see a thread with little-to-no conversation taking place may hesitate to join the discussion. This lack of conversation may, in part, be due to the difficulty of reaching specific discussion threads. Consequently, the amount of conversation on the threads needs to be finely balanced so that it may act as social proof for new users, and provide valuable exchanges and intelligible discussion for current users.

The screenshot shows the REBUS Community forum interface. At the top, there is a navigation bar with the REBUS logo, 'REBUS Community', and links for FAQ, Licensing, Contact, and News. A search bar and notification icons are on the right. Below the navigation bar, the breadcrumb trail reads 'Home / Projects: Active Open Textbook Projects'. The main content area displays a list of projects, each with a colored icon, a title, lead information, and statistics for topics and posts. A vertical bar on the right of each row indicates the number of new posts. A list of links is visible on the far right.

Project Title	Lead	Topics	Posts
[PHIL] Introduction to Philosophy	Christina Hendricks, UBC	12	411
[JMC] Media Innovation & Entrepreneurship	Dr. Michelle Ferrier, Ohio University	19	136
[ARCH] Introduction to North American Archaeology	Lead editor: Katie Kirakosian, UMass Amherst	22	62
[LIT] The Open Anthology of Earlier American Literature	Lead: Tim Robbins, Graceland University	2	75
[MUS] Sight-Reading for Guitar: The Keep Going Method Book and Video Series	Lead: Chelsea Green, American University in Cairo	1	4
[GEO] Human Geography: Principles and Applications	Lead: Paul Hackett, USask	1	1
[EDU/NUR] Literature Reviews for Education and Nursing Graduate Students	Lead: Linda Frederiksen, Washington State University Vancouver	1	38
[LIT] Antología Abierta de Literatura Hispánica	Lead: Julie Ward, University of Oklahoma	1	25
[EDU] Guide: Making Open Textbooks With Students Lead Us			37

Figure 2: Various projects listed in the Rebus Community forum, accessed by clicking “Projects: Active Open Textbook Projects” shown in Figure 1.

The screenshot shows the details of the 'Human Geography: Principles and Applications' project page. The breadcrumb trail is 'Home / Projects: Active Open Textbook Projects / [GEO] Human Geography: Principles and Applications [lead: Paul Hackett, USask]'. At the top, there is a 'New Topic' button and a 'Watching' dropdown menu. The main content area features a post titled 'Human Geography: Project Summary' by user 'apurva', posted 3 months ago. The post has 1 topic and 364 views. A 'No one has replied' message is shown to the right of the post. At the bottom, there is a footer with the REBUS Community Forum logo and a Creative Commons license icon.

Figure 3: What users see when they click on the Human Geography Project listed in Figure 2.

The screenshot shows the REBUS Community forum interface. At the top, there is a navigation bar with the REBUS logo, the text 'REBUS Community', and links for 'FAQ', 'Licensing', 'Contact', and 'News'. Below the navigation bar, the breadcrumb trail reads: 'Home / Projects: Active Open Textbook Projects / [GEO] Human Geography: Principles and Applications [lead: Paul Hackett, USask] / Human Geography: Project Summary'. The main heading is 'Human Geography: Project Summary'. Below the heading, there is a profile picture of a user named 'apurva' with the role 'ADMINISTRATORS' and a post date of '3 months ago'. The post content is organized into sections: 'BASIC INFORMATION' which lists the title, lead authors, project manager, project support, license, target audience, subject, and target release date; 'BOOK DESCRIPTION' which provides a detailed overview of the book's content and goals; and 'PROJECT DESCRIPTION' which outlines the project's aim and objectives.

Figure 4: The discussion thread for the Human Geography project, accessed by clicking on “Human Geography: Project Summary” in Figure 3.

Another challenge hindering widespread adoption of the forum is users’ preference for in-person or video call discussions. The *Media Entrepreneurship and Innovation* project, for example, involved at least three calls with authors, and many more with the two project leads over the course of four months. Despite the large amount of work put in to drive conversation, there was little-to-no discussion on the forum. Authors found the video calls easier for clarifying concerns they had while writing, and for quick updating the team on the status of their task. In order for Rebus to keep track of such projects is to integrate video calls within the setup of the forum. One way to do this is asking collaborators to post minutes from video call meetings to the forum, instead of sharing these by email.

Moreover, the forum is ideal only as a general discussion space and is not appropriate for editing content. Since the forum is built on a third-party software meant to facilitate discussion, users who are authoring or editing chapters for an Open Textbook will use collaborative editing platforms like Google Docs to share and edit drafts of their work. Moreover, unlike the forum, Google Docs integrates seamlessly with Google accounts, which many project participants already have, thus omitting the need to sign up on a new platform. Many people are more familiar with Google’s services and enjoy its collaborative features such as comments, tracked changes, and editing in suggestion mode. The forum does not have any mechanism to import large text files or edit them within the platform, which means people prefer Google services.

Finally, given that Rebus' mandate to develop scalable models for book publishing relies partly on tracking the projects being carried out under its auspices, it is important to note that even continuous activity of users on the forum does not mean Rebus can track progress effectively. Thus far, the only metrics being stored weekly is the number of new members. This number only indicates whether a person has signed up to the forum, and does not track whether the user has expressed interest in any projects, or volunteered to complete a particular task. Since much project work happens outside the forum, this metric does not accurately indicate a project's progress. Moreover, the forum's analytic capabilities are also quite limited. Administrators can only see page views on the forum as a whole, and have not set up integration with Google Analytics to better track traffic to and on the forum.

2.4 Directions for Improvement

When Rebus pitches projects to prospective collaborators, many individuals wind up not joining the forum even while agreeing to collaborate. Part of this low conversion rate results from the forum's inefficacies and from the difficulty of conveying its utility for collective collaboration. In considering possible improvements to the forum, this section seeks to identify suggestions that will make the forum indispensable, and which will feed into the overall product development of Rebus' tools in the future.

In order for Rebus to develop a standardized model for Open Textbooks, it needs to be able to quantify and track participation and interest in projects as well as in the Rebus Community more generally. Setting up a Google Analytics property for the forum will allow Rebus to track traffic to the site and set up campaigns to monitor which channels are effective drivers to the forum. Ineffective channels or social media platforms can then receive more marketing or, conversely, Rebus can direct their efforts to proven platforms. Google Analytics will also make it possible to trace which projects receive the most interest and from which demographics and psychographics, even allowing Rebus to target specific countries moving forward.

At the project level, it would be best to ask project leads to prepare a spreadsheet or template with metrics that people can update. Christina Hendricks, the project lead for *Introduction to Philosophy*, has recently asked Rebus to provide her with a tracking sheet to better manage the project. While this sheet does not contain metrics, it provides a clear and concise overview of the project, similar to a progress report. Participants also have access to the sheet, in case they want to see the status of various sections of a book.

Automating Rebus' record-keeping in the project management software could also prove helpful; however, this proves difficult at present, as many collaborators do not work on the forum. Consequently, automation would produce inaccurate results and could be incorporated effectively only when the majority of project work takes place

through the forum. These problems reveal how the issues confronting Rebus' collaborative publishing project are complex and multi-layered, and need to be addressed with due diligence and forethought as development proceeds.

The forum is currently undergoing a redesign and a large portion of the project management is being shifted to a beta test of the Projects software. While the redesign addresses issues of appeal and excitement in the forum's aesthetic, the Projects software will resolve the issue of hierarchy of categories in the forum. All the projects currently managed on the forum will be slowly imported to the new software, with project specific discussion linked to the project object/topic in the new software. Such changes will not interrupt the discussions on the forum, but will integrate them into the projects software. In so doing, the software will provide links to and promote discussion on the forum. This move will be beneficial to the tracking of projects, as analytics can be built into the new management software. Additionally, this lets Rebus direct prospective participants straight to the project management software instead of the forum. Current developments of this sort, when conducted in conjunction with the suggestions made above, will allow Rebus to greatly improve its data collection on current projects, moving the company nearer to its goal of producing scalable models for Open Textbooks and other OERs.

3. Curation and Testing: Content Management for Open Textbooks

For Open Textbooks to be widely adopted in academia, issues pertaining to peer review, curation, and testing must be addressed. The curation and testing of Open Textbooks is essential to Rebus' goal of producing scalable models for OER publishing. Rebus has partnered with the Open Textbook Network to discuss pertinent problems, especially those around content management, in terms of peer review and accessibility. While Rebus' work with the Forum is concentrated in one space and the organization has engaged deeply with it thus far, the work on Peer Review, Curation, and Testing is currently in its nascent stages. As Rebus is still in the early stages of discovering the nuances of these processes, the following section provides an outline of Rebus' current workflow and the direction it is taking, rather than a systematized critique of its limitations and the directions for improvement.

3.1 Peer Review Working Group: Revising the Review Process

A key challenge in the adoption of Open Textbooks in universities is that faculty are often skeptical of the “quality, comprehensiveness, clarity and currency of open textbooks” as these are perceived to be low-cost, low-quality alternatives to high-cost, high-quality printed textbooks (CARL 2014). The absence of appropriate marketing of the peer review process in the production of Open Textbooks legitimizes these attitudes.

Peer review is valuable for indicating the quality of educational content, and is integral to the production of textbooks, scholarly monographs, and journals. Its presence signals to the prospective user of a text that it has passed through rigorous quality control, and that its content is suitable for discussion and use in the classroom. In the age of content abundance, when the barriers to content production are minimal, peer review performs an important role in signaling the trustworthiness of a particular book. Indeed, many instructors reject Open Textbooks “because they question the quality of freely available resources, especially when such sources aren't connected to a reputable publishing house, institution, or author” (Pitt 2015). While traditional publishing houses

are assumed to have vetted the content and quality of textbooks through open or closed peer review, the same does not hold true for Open Textbook creators. Thus, marking the scholarly legitimacy of Open Textbooks is, for Rebus, an essential step in the process of distributing such texts.

Rebus is trying to develop a set of standardized approaches for peer reviewing Open Textbooks, and is using various models on existing projects. Peer review has taken place on four texts thus far: *Financial Strategy for Public Managers*, *Literature Review for Education and Nursing Students*, *The Science of Human Nutrition*, and *Media Innovation and Entrepreneurship*. With *Financial Strategy*, both chapter and full-text reviews were conducted. Authors could recommend potential reviewers, but remained unaware of the specific chapters each individual reviewed (similar to double non-blind review¹). Reviewers for *Literature Review* were solicited on the forum and by cold-calling subject librarians. The author was unaware of reviewers' identities but the reviewers knew the author (single-blind review²). Each chapter was reviewed by a single subject-matter expert, with one exception that was reviewed by two people. With both *Human Nutrition* and *Media Innovation*, project leads contacted potential reviewers through their own networks, and filtered this feedback before passing it along to authors.

As is evident from the above description, the process of reviewing Open Textbooks is varied and inconsistent. This inconsistency is not specific to Rebus or Open Textbooks, but typifies peer review in the textbook industry, and in academia more broadly (McLaughlin 2016; Tennant et. al 2017). Organizations conduct peer review in several different ways, and no standard exists in terms of the academic rank and number of reviewers involved, or with regard to the level of blindness³. These range from “commission[ing] reviews from a mixture of lecturers and student reviewers” to “expansive peer review” practices with a dozen or more reviewers, to post-publication “peer validation” by tenured or tenure-track faculty (Watson 2016, Fenton 2016, Talbert 2012). Rebus is discovering that the process varies according to book in question: it is currently documenting notable kinds of peer review to inform collaborators, Open Textbook creators, and the general public of the relevant best practices.

Rebus has set up a peer review working group, comprised of five sub-groups, each dealing with particular aspects of the peer review process. The first sub-group is the Open Textbook Review Board, which helps find reviewers for Open Textbooks. The second sub-group works to define the purpose and structure of the different kinds of review that could be valuable to an Open Textbook. They also aim to guide the development of dedicated tools and resources for each kind of review. Sub-group three means to conduct an environmental scan of peer review tools, processes, and to inform the development of

1. Double non-blind review is a form of review where reviewers know the names of the authors and the authors know who are the reviewers.
2. Single-blind review is the form of review where “[r]eviewers know the names of the authors but the authors do not know who are the reviewers” (McGill Library 2017).
3. While double-blind peer review is significantly more common for scholarly journals, this does not hold true for textbooks or monographs, where single-blind review proves more common (McLaughlin 2016).

new review processes. In relation to this, the fourth sub-group discusses the creation of standard markers for Open Textbook review to clearly identify the kinds of review any given textbook has undergone. Finally, the fifth sub-group examines ideas for recognizing and rewarding reviewer contributions.

The Peer Review Working Group is currently developing these processes for Open Textbooks. In documenting and educating the public about several key forms of peer review, Rebus is developing new practices and norms of communication. These new norms attempt to convey the quality and legitimacy of Rebus' Open Textbooks. For example, the review markers produced will, ideally, be placed on book covers. Their presence will guarantee the quality of the peer-reviewed Open Textbook to end-users, making it more marketable to students and faculty at universities. These efforts are necessary for making Open Textbooks, both Rebus' and otherwise, viable as educational resources.

3.2 Accessibility Working Group: Promoting Access

For Rebus, accessibility entails “making it easy for people with disabilities (say people with visual impairments, people with learning disabilities, among others) to access content” (Mays 2017). In the publishing industry, accessibility often becomes an afterthought, incorporated into books only after publication. This approach limits a book's reach, and many individuals cannot use it on initial release. Instead, institutions must remediate⁴ these books to make them accessible to all students. This process is labour intensive, requiring significant time and resources. At the University of Washington, a staff member revealed that student or temporary workers spent 1800 hours remediating textbooks this year, totaling an expenditure of almost \$27,000 (Rebus and OTN 2017). They found that non-STEM books were more quickly remediated, at a rate of 100 pages an hour, while STEM books took much longer, at a rate of 10 pages an hour (Rebus and OTN 2017). This difference is likely due to the presence of tables, images, charts, and non-plain text content in these books. Most troubling, however, is that once the book is made accessible at an institution, copyright and funding restrictions can prevent it from being shared with other institutions. So, each institution must spend time, labour, and capital to duplicate remediation for its students, even if the work has already been done elsewhere. Such practices waste resources—a problem easily avoided through openly available texts that incorporate accessibility into their production.

Given its commitment to producing books that all students may use right from publication, Rebus has created a Working Group to incorporate accessibility upstream in the authoring process, rather than downstream after the book has been produced. This would enable textbooks to be read by students with impairments or disabilities without

4. Remediation refers to the process of correcting or improving Open Textbooks so that they are accessible to students with disabilities.

any wait time. This process would also minimize or eliminate the cost of institutions remediating these textbooks. Rebus intends to make sure that authors making Open Textbooks through the organization are aware of good accessibility practices from the start of this process, and wishes to help them easily implement these practices. For instance, author guides will include a section on accessibility and will encourage authors to provide alternative text for images, charts, and tables. Rebus also intends to provide a standard accessibility audit process for after an Open Textbook is created and to create a mechanism to “fix” accessibility problems found in this process. Lastly, Rebus thinks it is useful to have an “accessibility stamp of approval” for projects that have successfully passed the accessibility audit, to indicate the book’s accessibility to potential adopters.

As Rebus incorporates accessibility fully into its production processes, particular issues need to be resolved. Primarily, Rebus needs to account for the fact that, as with most scholarly publishing, all of its authors and contributors are volunteers, and only some have grant funding from other institutions. In order to make its production processes truly open, Rebus needs to consider ways of making collaboration viable for individuals not already employed by research institutions, and who do not have a reasonable basic salary to supplement their volunteer work. Moreover, there is also an issue regarding the use of images and other non-textual elements in these books. Whenever non-textual elements are added they need to be remediated at later stages in the project. These remediations are often carried out by non-subject experts at individual universities, who take longer to complete the process and cannot match experts in the suitability and specificity of the information they provide—a fact Rebus has learned through its work on the *Media Innovation and Entrepreneurship* textbook. Resolving this issue requires improved coordination between authors and Rebus with regard to how accessibility is to be incorporated into the text.

Spreadsheets and tabular information present a similar issue. While working on *Financial Strategy for Public Managers*, Rebus received images of spreadsheets from authors. According to the Accessibility Working Group, however, all tabular information must be presented using tabular markup (in HTML) and displaying such information as an image constitutes bad practice. Moreover, when a table is presented as an image, it needs to be accompanied with alternative text that describes the image in detail. Given that Rebus did not make such requirements clear to authors initially, this presented substantial challenges during the later parts of the production cycle. Standardization and proper communication of accessibility requirements should thus be an important goal for Rebus’ Accessibility Working Group.

Moving forward, Rebus should make the importance of accessibility clear to authors by incorporating best practices into author guides, thus resolving issues of inaccessibility early on. These best practices would ask authors to use images only when needed, to provide alternative text for images, and to avoid displaying information through colour

alone. By holding authors responsible for these core aspects of accessibility, Rebus can increase awareness of the challenges of remediating books for all users and also reduce the amount of remediation required. Rebus should also prepare guides for editors, who can suggest changes with accessibility in mind. Lastly, Rebus' Open Textbook project leads should be aware of the time needed to make books accessible, and should budget this into the overall project timeline accordingly. Collectively, these approaches will lead to a much more integrated approach to accessibility in Open Textbooks, saving Rebus both time and money.

4. Marketing: Getting Open Textbooks into the Classroom

The effort spent peer reviewing and rendering Open Textbooks accessible will not be well expended unless these texts find their way into the university classroom. It is therefore important to discuss strategies and challenges for disseminating Open Textbooks, so they can help to create a more equitable education system. Similar to the work on curation and testing, Rebus' marketing efforts are in their early stages and present a diverse set of issues. Consequently, this section focuses on the range of issues Rebus is experiencing in marketing, promoting, and updating community-supported Open Textbooks.

4.1 How Do We Get Them into the Classroom?

Marketing is the primary problem in introducing Open Textbooks into university classrooms. At present, there is not enough awareness of open educational resources. According to a 2014 survey conducted in the United States, only one-third of the 2,144 faculty polled (15.2%) were aware of Open Textbooks and 33.1% found OERs more difficult to find than traditional resources (Allen and Seaman 2014). Open Textbooks, particularly Rebus' iteration, have numerous benefits for professors. Usually, professors have to plan their courses based on information already contained in a traditional textbook, which can restrict the scope of material they cover, or alternatively, must assign students more than one book per course. With Open Textbooks, however, professors have more flexibility in designing courses without burdening students further financially.

Given the status quo, Rebus is currently prioritizing making instructors aware of the resources it offers. In so doing, Rebus relies upon principles of the AIDA funnel: Awareness, Interest, Desire, and Action (Barry 1987). Guided by these principles, it aims to make instructors aware of its products, with the final goal being that they desire it enough to act and adopt Rebus books (Barry 1987).

Rebus is beginning to develop its model for marketing: they currently have published only one textbook while others are at in classroom beta testing. Marketing these books is thus still unknown territory. Moreover, Rebus has a very small marketing budget, which

inhibits the kind of advertising it can commit to. However, Rebus has done significant work despite this lack of funding by leveraging networks of contributors including authors, editors, and reviewers to adopt the book or to reach out to others to do the same. Since the proven efficacy and trusted quality of a resource are the highest criteria for faculty to adopt Open Textbooks, this type of word-of-mouth approach has worked well for Rebus thus far (Allen and Seaman 2014).

Having books peer reviewed significantly encourages adoption, as this indicates the reliability of the textbook as a resource. Karen Lauritsen from the Open Textbook Network noted that approximately 40% of reviewers end up adopting the text post the review, likely because they have been convinced of the quality of the resource (Rebus 2017). As Rebus brings community-driven Open Textbooks to market more aggressively in future, it would be to its advantage to send books to scholarly journals to make them available for review. Doing so would further convey that its Open Textbooks are comparable alternatives to the traditional printed textbook.

Another means of marketing is to get students and faculty directly involved in the production process. Some projects in Rebus' stable rely on the collective efforts of students and faculty to expand existing texts through a semester long classroom assignment that involves students in the production process. For instance, Rebus has found nine instructors to run a critical edition assignment to expand the *Antología abierta de literatura hispánica*. Timothy Robbins, project lead and professor at Graceland University, is also running an assignment to expand the *Open Anthology of Earlier American Literature* in his course (Fall 2017 semester). In both projects, students work with professors to expand these open anthology resources.

Finding professors willing to run these types of assignments to create and expand these works is challenging, as it too requires the project management team to cold call instructors or heads of departments. The task, being larger and requiring more involvement on the part of the professor, also generates more negative responses. Nonetheless, assignments like these are valuable because they allow Rebus to gather information on students' perceptions about Open Textbooks in general, and may also shed some insight on how the resource can be improved. Given the lack of other means for enrolling project participants, cold calling proves a necessary bane at present.

Another challenge pertains to the timing of the production cycle. Part of this challenge is that instructors need to read the book in advance to determine whether it is suitable for their course. Unfortunately, due to Rebus' small size, and because of other delays, the books have not been ready in time for recent semesters. In the future, Rebus should carefully factor time for potential adopters to read its book, meaning they must be available at least two months before the semester begins. When sending advance copies out to professors, Rebus should emphasize that the book has been peer-reviewed and

passed an accessibility audit, to signal that it is either on-par with, or better than, traditional textbooks. The messaging with this advanced copy should also list some of the benefits of using Rebus' Open Textbooks, including easy modularity, regular updates, and reduced cost for students.

Finally, there are also immense challenges in reaching professors who, unlike other consumers, are not always reachable via a single social media platform. While Rebus conducts campaigns mainly on Twitter and Facebook, these posts are not boosted and seldom reach their target market. In addition, most professors rely on top publishers in the market for their textbooks and know whom to contact for books in their fields. Word of mouth and peer-to-peer referrals are thus important channels for communication regarding Open Textbook adoption. As stated earlier, proven efficacy is important for professors who are considering Open Textbooks for their classrooms. Given that professors are less likely to use Open Textbooks if their colleagues are not using them, hearing about Rebus' Open Textbooks from a peer will be more impactful than hearing this through the organization's social media accounts (Allen and Seaman 2016). Thus, building an organic approach to Open Textbook promotion and adoption, where collaborators become champions of books, is critical for a book's long-term success.

4.2 Updating Open Textbooks

A corollary of the marketing process for Rebus' Open Textbooks is the need to update them. A significant challenge for traditional textbooks is that they become partially obsolete quickly, as publishers produce new editions every few years. This process proves particularly baneful for students as they are often unable to use older editions or, conversely—if they have already taken the course—cannot sell their old textbooks for a fair price. Given such issues, it is imperative to find more user-oriented means for updating their textbooks—a goal that Rebus is currently working towards.

In collaborative events between Rebus and the Open Textbook Network, participants discussed issues with and improvements for updating Open Textbooks. Several key ideas were exchanged at this event. Alina Slavik from OpenStax,¹ for example, described using an errata tool to collect feedback and suggestions for correcting their texts (Rebus and OTN 2017). These changes would be added to a public list of errata that would show individuals how various errors had been dealt with. Slavik also noted that release notes containing a list of changes accompany each new PDF edition of OpenStax (Rebus and OTN 2017). It was also made clear that the subject type of a textbook is a good indicator of how often the text may need updating: a Philosophy textbook, for instance, may require less frequent updates than a Health Science textbook (Rebus and OTN 2017). Kristen Munger, from SUNY Oswego, suggested involving the author in updates, possibly over a span of five years after the book's release (Rebus and OTN 2017). This is a unique way to

1. OpenStax is a nonprofit based at Rice University, producing OERs in order to improve student access to education.

keep authors engaged with books post the content creation stages, although whether this task becomes an additional burden on the author or a reasonable ask remains to be seen.

Another method of securing feedback to update textbooks is by polling faculty and staff. At BCcampus, regular polls are conducted to find gaps and areas of improvement in certain books (Rebus and OTN 2017). Rebus has implemented other mechanisms for obtaining feedback from faculty using the book itself. For instance, with *Media Innovation and Entrepreneurship*, project lead Elizabeth Mays (a Rebus staff member and editor of this Open Textbook) is using five channels to receive feedback: the Rebus Community forum, email, Google Forms, Hypothesis annotation software directly on the book, and fortnightly “Community of Practice²” calls with various beta testers of the book. Mays encourages students and instructors to leave their comments or suggestions for the second edition in any of these channels, and even hopes to implement some changes before the book’s official release in January 2018.

Building on previous discussions, Rebus has recognized key advantages of the updating processes integral to its incarnation of Open Textbooks. Significantly, Rebus’ Open Textbooks can be regularly revised and updated using book formatting software on the web such as Pressbooks. Any errors that are also flagged once the textbook has been adopted or adapted can be helpful when updating the book. These Open Textbook provide a lot of flexibility to preserve their lifespan, in that they can be updated more easily than a print book (where more errors or updates must be identified to warrant the printing of a new edition or version).

Importantly, Rebus’ Open Textbooks are modular, meaning that the content in books can be modified based on the user’s needs. For instance, while the *Human Geography* textbook is a Canada-specific practical geography book, authors Paul Hackett and Arthur Gill Green are writing the content such that geography instructors around the world can replace Canadian examples with those pertinent to their local regions. This kind of modularity, working together with the books’ open license, makes it possible for instructors to edit these books—a task previously conducted only by the publishers of the book. Rebus licenses books with CC-BY³ to enable these activities, allowing any individual to take the text and create a new version of the book as needed, provided that they attribute the original authors.

However, versioning also introduces related challenges. While versioning is ideally captured automatically in a book’s metadata, it needs to be carefully transferred along

2. The Community of Practice comprises faculty who are using the Media Innovation and Entrepreneurship textbook in their course in Fall 2017. During fortnightly calls, the faculty discuss various chapters of the textbook—whether any information is missing, how the chapter could be improved, how their students responded to these chapters, and whether they employed certain pedagogical methods to teach this chapter that others could replicate.
3. “All books created with support from the Rebus Open Textbook Community are published under a Creative Commons CC-BY license, which states that anyone may use the content for any purpose, as long as they provide proper attribution to the original creators of the content. CC-BY is the ‘most open’ of the Creative Commons licenses, and allows others to: reuse, adapt, remix and redistribute the licensed content, so long as it is attributed to its original author(s), even for commercial purposes” (Rebus 2016).

with book files into repositories and libraries (by ensuring that the metadata schemas are compatible), as well as displayed to users on the front end. Users should be able to identify new editions of a modular and updated Open Textbook, trace the original version of the book, and compare differences between the two to decide which is better suited for their use. As some users will adapt and update the books individually, libraries and other institutions may keep static copies of the original textbook to maintain a standard version that can provide a common basis for citation. Currently, Rebus is working to resolve these questions and others like them by working with Pressbooks to implement best practices for handling book-object metadata and tracing lineage across the various editions of a book.

Despite the difficulties of resolving issues in the updating and versioning of these types of Open Textbooks, their incredibly benefits spur the Open Education community towards finding solutions. The most important benefit is that changes made on the books are instantaneous, and students can view them immediately. Updating an Open Textbook requires fewer resources than updating a traditional print textbook, which must run through the full print cycle to reach the student consumer. With Open Textbooks, broken hyperlinks, grammatical, or larger content errors can be easily fixed. Rebus is developing workable mechanisms to refine and perfect this system, so that it may become a model for Open Textbook publishing in every sense of the word.

5. Conclusion: Open Textbooks and the Future of Textbook Publishing

5.1 Summary: A Model for Educational Publishers?

As this report has described, the Rebus Foundation is building an Open Textbook publishing model that will supply people with the tools to publish and disseminate knowledge instead of restricting publishing resources to a limited group of players. By standardizing the structures for Open Textbook production, Rebus opens the possibility for current and prospective publishers to reproduce and improve upon its models. Rebus' collaborative platform gives them the ability to build on, expand, or adapt works as they need, at both the individual and institutional level. These processes make content more usable for the end user, and expand the range of uses it can be put to. Rebus' communal ethos seeks to reinvigorate educational publishing as a service that reflects the values of the community it wishes to serve.

At the heart of Rebus' functioning is its forum, which allows users to come together over a diverse range of OER projects. Rebus looks to further improvement as, in the future, the forum will be accompanied by project management software with enhanced capabilities. This software will enable easier handling of OER projects, with a sophisticated mechanism for recruiting volunteers and keeping track of tasks. The forum and the software will act as a directory for people to find collaborators to help them with various aspects of their projects.

Standardizing both the peer review and accessibility processes will be useful for both faculty that is considering adopting the book and for students who would like to use the book. Peer review is an important element in allowing these books to enter more mainstream avenues as it convinces these adopters of the books' value. Additionally, accessibility audits can indicate whether these books are compliant with present standards, allowing all students to be able to read or use the book from the moment of publication without any additional measures being necessary.

Currently, marketing these textbooks is the most pressing challenge. At present, Rebus

needs to inform people about the existence of Open Textbooks, while simultaneously educating them by defining the product and the benefits these may bring. Even once this is done, however, non-tenured faculty may not feel comfortable contributing to such texts. Budgetary constraints for marketing make it yet more difficult for adoption to occur, especially given that other publishers have substantially more funding and pre-established channels to reach relevant consumers. Consequently, Rebus has to adopt alternative methods for reaching end consumers and encouraging adoption. In particular, Rebus relies on leveraging its networks for word of mouth marketing. For other adopters, Rebus may find it prudent to emphasize the updatability and modularity of Open Textbooks as benefits that distinguish these books from traditional print textbooks. The search for these alternative methods is critical to Rebus' long-term success.

5.2 Future of Books and Challenges: Development and Scalability of OERs

With the growth of the Open Textbook movement, a central challenge for Rebus will be growing to scale. While funding presents the most obvious challenge, there are also more technical issues hampering Rebus' ability to scale. Most significantly, Rebus is not a publisher in the traditional sense, and this may generate issues moving forward. For example, Rebus does not handle the distribution of most of the texts it produces. Consequently, individuals and groups working with the company have to be self-reliant and pro-active in order to disseminate the text. This fact further adds to the efforts required of Rebus' voluntary collaborators, and may at present be discouraging newer users from partnering with the organization.

In contrast, Rebus' new project management software will significantly aid the scalability project. Because it is based on Rebus' real-world experience with Open Textbooks, and built with flexibility in mind, the project management software's functionality supports collaboration across a wide variety of texts, from textbooks to scholarly monographs. In this way, Rebus is already equipped for some of the challenges that it will face in the near future as it continues to grow.

However, an issue in Rebus' operation model is that while Rebus enables the collaborative creation of content, it does not own any of the content that is produced through it. This tension in terms of ownership produces legal ramifications, as Rebus may be held responsible for texts produced even if it had no direct input in their production. Such risks are also compounded when, in certain situations, Rebus needs to identify as the publisher of a text. These situations emerge when one or several of Rebus' collaborators apply for funding or grants, for example. In these cases, and particularly as it grows, Rebus must be careful to tread the fine line between collaborator and publisher, especially given the insistence from sections of the educational publishing community that it is not the latter.

Finally, the question of long-term organization and planning proves salient for Rebus' attempts to scale. At present, given its promotion of completely open and free content, Rebus does not earn any revenue from its efforts or royalties from books it helps produce, and neither does it ask for any financial contribution from collaborators. Consequently, the organization relies on the inflow of funding from external granting agencies. Rebus is currently investigating means for making its work financially self-sustaining and capable of remunerating its employees. While the former problem is difficult to resolve at present, one possible solution to the latter may be to partner with large funding organizations (such as the McConnell Foundation and the Northern Nursing Education Network) towards the funding of Open Textbook projects. These partnerships could range from single books to series dedicated to specific topics, and the funding would be used to remunerate collaborators and for marketing. Rebus' ability to simultaneously promote open knowledge, remunerate its collaborators, and sustain itself financially is essential to the health and long-term existence of the company.

5.3 Federated Rebus: Looking to the Future

As part of its long-term plan, Rebus seeks to bring collaborators to together and to become part of yet larger programs for collaboration at a global scale. Rebus is currently working with large state and provincial educational systems to build Federated Rebus Communities, which collectively seek to “publish core open textbooks, freely available on the web, in all subjects in all languages in the world” (Rebus 2017). The project's aim to publish “in all subjects and in all languages” expresses Rebus' aspirational ethos, one that is necessary to counteract the status quo in which Open Textbooks are being published “without a global systematic approach, and with minimal collaboration among institutions, state/provincial systems, authors and publishers” (Rebus 2017).

The solution for Rebus lies in producing a systematic and global approach to textbook publishing. This approach aims to encourage collaboration across vast systems and numerous institutions, while focusing on one subject area at a time. Federated Rebus aims to integrate adoption and long-term content stability into the publishing process, and is part of Rebus' desire to make Open Textbook publishing a truly sustainable field. The persistence of this endeavour relies on achieving financial sustainability and scalability across all subject verticals, both aspects that Rebus is currently looking into.

At the present moment, the future for Federated Rebus seems bright. Several notable collaborators, including the eCampus Ontario and Open SUNY, are currently working with Rebus to develop a model that could be funded by government initiatives promoting OERs. Given these developments, the Rebus Community is slowly but certainly growing and achieving scale. In the years to follow, Rebus' growth will certainly create further opportunities and challenges, all of which will collectively be conducive for understanding and developing Open Textbook publishing. These large-scale

aspirations are integrally related to Rebus' day-to-day functioning. Small improvements—such as creating quality markers for books and ensuring they are accessible from the moment of production—will help Rebus carve out a permanent place for Open Textbooks within the educational publishing landscape. By making the tools through which knowledge is produced freely available and by forming communities around content creation, dissemination, and engagement, Rebus strives to hold open the doors to knowledge.

Appendix

1) Pilot projects supported by the Rebus Community:

- *Introduction to Philosophy*: Led by Christina Hendricks (University of British Columbia), this project involves creating an open philosophy textbook for introductory courses. This project has been developed on the forum from the very first stages of its conception.
- *The Open Anthology of Earlier American Literature*: This project is expanding work produced by Robin de Rosa (Plymouth State University) and her students. Unfortunately, de Rosa has switched departments and no longer has the capacity to see this project through to completion. Rebus is working with the new lead editor Timothy Robbins (Graceland University) “to include more texts and eventually serve as a competitor to the well-known Norton, Heath, and Bedford anthologies” (Wake Hyde 2016).
- *Antología abierta de literatura hispánica*: This project is looking for instructors to implement an assignment similar to the one run by project lead Julie Ward (University of Oklahoma) to produce critical-editions of Hispanic literature texts. These student-created introductions and critical editions will be added to expand the Antología, which currently contains a critical edition from Ward’s students.
- *Financial Strategy for Public Managers*: This textbook had already been written by Justin Marlowe and Sharon Kioko (University of Washington) in early 2017. The authors approached Rebus to help with the peer review process, and to assist with print-on-demand to get the book into courses in the Fall 2017 semester.
- *Media Innovation and Entrepreneurship*: Michelle Ferrier (Ohio State University) and Elizabeth Mays (Arizona State University) are the lead editors of this textbook, which is designed for media innovation and entrepreneurial journalism courses. The project has received Rebus Community support from conception to review and adoption.
- *History of Applied Science and Technology*: This project features editors from the University of North Dakota (UND) and University of Maryland University College

(UMUC), and is also supported by The Digital Press at UND. Project lead Danielle Skjelver (UMUC) required Rebus' help with author recruitment for each of the book's three volumes.

- *The Science of Human Nutrition*: This project is managed by Billy Meinke (University of Hawaii at Manoa). The book is being created for high-enrollment courses in Food Science and Nutrition Programs. Rebus is supporting the book's editing, review, and adoption.
- *Literature Reviews for Education and Nursing Students*: Linda Frederiksen (Washington State University) authored this text for graduate students in nursing and education programs. Rebus supported the peer review of this book.
- *Ancillary Materials for Principles of Social Psychology*: This project, initiated by Rajiv Jhangiani (Kwantlen Polytechnic University), aims to create ancillary resources to supplement *Principles of Social Psychology*, an existing open textbook on Social Psychology. These materials include question banks, an activity manual, and powerpoint slides. Rebus is supporting this project in recruiting volunteers to create these materials.
- *Principles and Applications of Human Geography*: Project leads Paul Hackett (University of Saskatchewan) and Arthur Gill Green (University of British Columbia and Okanagan College) hope this book will serve as an alternative, and eventually replacement, to existing human geography textbooks. Rebus is assisting with project management support.
- *Global Religions*: Lead author Kris Olds (University of Wisconsin, Madison) is hoping to create a contemporary approach to teaching geography. This book will stray away from the traditional encyclopedia format. It is currently stalled.
- *Foundations of Biology*: This project is led by a team of authors from Greenfield Community College, and hopes to combine *OpenStax Biology* and *OpenStax Concepts of Biology* into an appropriate text for students in mid-level undergraduate courses. This project is stalled.
- *Planning and Implementing a Digital Humanities Project*: Lead author Sarah Ketchley (University of Washington) hopes this book will define vocabulary around the Digital Humanities, as well as provide clear guides for faculty and students looking to get involved in such a project. The project is currently stalled.
- *Sight-reading for Guitar*: This book will explain the 'Keep Going Back' method to teach guitar players from all musical backgrounds how to sight-read. Lead author Chelsea C. Green (American University in Cairo) hopes this book can be used by individual guitarists, or music teachers. Rebus is assisting with formatting, review, and adoption.
- *Introduction to North American Archaeology*: Titled *From the Ground Up*, this book will be the first open textbook in North American Archaeology. Led by Katie Kirakosian

(University of Massachusetts, Amherst), this book will offer a broad overview of the diverse groups that have called North America “home” for over 10,000 years. Rebus is providing project management support.

The Rebus Community also worked to create *A Guide to Making Open Textbooks with Students*, which involved soliciting contributions from faculty and students.

References

Allen, I. Elaine, and Jeff Seaman. "Opening the curriculum." 2014. Babson Survey Research Group. Accessed September 25, 2017. <https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/openingthecurriculum2014infographic.pdf>

Allen, I. Elaine, and Jeff Seaman. "Opening the textbook: Educational resources in US higher education, 2015-16." 2016. Babson Survey Research Group. Harvard. Accessed October 23, 2017. <https://www.onlinelearningsurvey.com/reports/openingthetextbook2016.pdf>

Barry, Natassja. "Wake Up and Smell the Torrents: Why Higher Education Textbook Publishing May Be in Trouble." February 11, 2017. Accessed February 25, 2017. <https://tkbr.publishing.sfu.ca/pub800/2017/02/why-higher-education-textbook-publishing-may-be-in-trouble/>

Barry, Thomas E. "The Development of the Hierarchy of Effects: An Historical Perspective." *Current Issues & Research In Advertising* 10, no. 2: 251. 1987. Business Source Complete, EBSCOhost. Accessed September 27, 2017.

BCcampus. "Open Education." 2012. Accessed August 24, 2017. <https://open.bccampus.ca/>

BCcampus. "Open Textbooks 101." 2017. Accessed November 15, 2017. <https://open.bccampus.ca/open-textbook-stats/>

Campos, Paul. "The Real Cost of College." *The Atlantic*. May 13, 2015. Accessed August 19, 2017. <https://www.theatlantic.com/education/archive/2015/05/the-real-cost-of-college/393086/>

Canadian Association of Research Libraries (CARL). "Open textbooks: opportunities for research libraries." Working paper presented to the CARL Committee on Research Dissemination. September 8, 2014. Accessed September 20, 2017. http://www.carl-abrc.ca/doc/open_educational_resources.pdf

Fenton, William. "Free Textbooks From Rice OpenStax: Too Good to Be True?" PC

Mag. July 25, 2016. Accessed November 18, 2017. <https://www.pcmag.com/commentary/346309/free-textbooks-from-rice-openstax-too-good-to-be-true>

Kamenetz, Anya. "Pearson's Quest to Cover the Planet in Company-run Schools." *Wired*. December 4, 2016. Accessed September 1, 2017. <https://www.wired.com/2016/04/apec-schools/>

Mays, Elizabeth. "What is Accessibility?" *Rebus*. January 17, 2017. Accessed September 23, 2017. <https://about.rebus.community/2017/01/what-is-accessibility/>

McGill Library. "Scholarly Journal Publishing Guide: Types of Review." *McGill Library Guides*. 2017. Accessed October 22, 2017. libraryguides.mcgill.ca/c.php?g=452153&p=3558936#s-lg-box-10989789

McLaughlin, Brenna. "Best Practices for Peer Review." Peer Review Section 1: The AE's Choices about Why, When, and How to Conduct Peer Review. 2016. Accessed November 18, 2017. <http://www.aaupnet.org/policy-areas/peer-review/1453-peer-review-section-1#q6>

Merkley, Ryan, and Kelsey Merkley. "Creative Commons; ABC Copyright Conference 2017." 2017. Accessed September 13, 2017. <http://hdl.handle.net/1974/15973>

National Association of College Stores (NACS). "Higher Education Retail Market Facts & Figures." NACS. 2017. Accessed September 10, 2017. <https://www.nacs.org/research/HigherEdRetailMarketFactsFigures.aspx>

Odland, Steve. "College Costs Out of Control." *Forbes*. March 24, 2012. Accessed August 19, 2017. <https://www.forbes.com/sites/steveodland/2012/03/24/college-costs-are-soaring/#1bb2158b1f86>

Pearson. "Pearson January trading update." January 18, 2017. Accessed August 29, 2017. <https://www.pearson.com/corporate/news/media/news-announcements/2017/01/pearson-january-trading-update.html>

Pitt, Rebecca. "Mainstreaming open textbooks: Educator perspectives on the impact of OpenStax college open textbooks." *The International Review of Research in Open And Distributed Learning* 16, no. 4. 2015. Accessed September 20, 2017. <http://files.eric.ed.gov/fulltext/EJ1082205.pdf>

Popken, Ben. "College Textbook Prices Have Risen 1,041 Percent Since 1977." *NBC News*. August 6, 2015. Accessed September 10, 2017. <https://www.nbcnews.com/feature/freshman-year/college-textbook-prices-have-risen-812-percent-1978-n399926>

Rebus. "About Rebus Foundation." 2016. Accessed July 24, 2017. <https://rebus.foundation/>

Rebus. “Community Management Brief (internal).” Last modified October 6, 2016.

Rebus. “Licensing Policy.” 2016. Accessed October 23, 2017. <https://about.rebus.community/licensing/>

Rebus. “Making Open Textbooks at Scale: A Proposal for a Systematic Approach (internal)” Last modified October 3, 2017.

Rebus and the Open Textbook Network (OTN). “Office Hours: Accessibility in Open Textbooks.” June 9, 2017. Accessed June 11, 2017. https://youtu.be/8n_iXNWPZKk

Rebus and the Open Textbook Network (OTN). “Office Hours: Updating Open Textbooks.” June 9, 2017. Accessed June 11, 2017. <https://youtu.be/9JzYZCCuLg4>

Senack, Ethan. “#TextbookBroke: Campaign for Affordable Textbooks.” Student Government Resource Center. 2014. Accessed August 18, 2017. <http://studentgovresources.org/textbookbroke-campaign-for-affordable-textbooks/>

Senack, Ethan and Donoghue, Robert. “Covering the Cost: Why we can no longer afford to ignore high textbook prices.” Student PIRGs. February, 2016. Accessed September 14, 2017. <http://www.studentpirgs.org/sites/student/files/reports/National%20-%20COVERING%20THE%20COST.pdf>

SPARC. “Why it Matters: Open Education.” SPARC. 2016. Accessed August 5, 2017. <https://sparcopen.org/open-education/>

Straumshiem, Carl. “Is ‘Inclusive Access’ the Future for Publishers?” *Inside Higher Ed*. January 31, 2017. Accessed August 29, 2017. <https://www.insidehighered.com/news/2017/01/31/textbook-publishers-contemplate-inclusive-access-business-model-future>

Talbert, Robert. “What constitutes peer review for textbooks — and who cares?” *The Chronicle*. May 17, 2012. Accessed November 19, 2017. <http://www.chronicle.com/blognetwork/castingoutnines/2012/05/17/what-constitutes-peer-review-for-textbooks-and-who-cares/>

Tennant, Jonathan P., Jonathan M. Dugan, Daniel Graziotin, Damien C. Jacques, François Waldner, Daniel Mietchen, Yehia Elkhatib et al. “A multi-disciplinary perspective on emergent and future innovations in peer review.” *F1000Research* 6 (2017). Accessed December 16, 2017. <https://f1000research.com/articles/6-1151/v1>

Thomas, Megan. “B.C. students say they are #textbookbroke.” *CBC News*. September 2, 2016. Accessed August 18, 2017. <http://www.cbc.ca/news/canada/british-columbia/b-c-students-say-they-are-textbookbroke-1.3751573>

Wake Hyde, Zoe. “Openly Embracing Change: How the Rebus Foundation is Building

a New Model of Publishing.” MPub Project Report, Simon Fraser University, December 2016. Accessed July 2, 2017. <http://summit.sfu.ca/item/16835>

Watson, James. “Book Peer Review: What It Means and Why It’s Important.” Wiley Exchanges. September 22, 2016. Accessed November 19, 2017. <https://hub.wiley.com/community/exchanges/discover/blog/2016/09/21/book-peer-review-what-it-means-and-why-it-s-important?referrer=exchanges>

Wiley, David. “The Current State of Open Educational Resources. Paper for Expert Meeting on Open Educational Resources.” 2006. Accessed September 14, 2017. <https://www.oecd.org/edu/ceri/36224377.pdf>