Open Access Advocacy through Gamification: A Case Study of the “Open Robarts” Alternate Reality Game

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Abstract
Open access has garnered widespread support in many academic research contexts but policy implementation continues to face challenges. This research explores the potential for open access advocacy through gamification. This work discusses a novel Alternate Reality Game launched by the University of Toronto Libraries in promotion of institutional policies and Global Open Access Week and found that gamification was a successful advocacy approach to the extent that it influenced awareness and stimulated discourse around open access, fostered wider and more diverse participation and collaboration, and raised awareness of structural and infrastructural mechanisms impacting open access.

Keywords: Open access; information policy; gamification; game-based learning; libraries


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1 Introduction
Skyrocketing subscription fees and restrictive copyright and licensing terms have plagued academic research libraries for more than a decade. One of the most widely reported controversies in this space occurred in 2010 after one of the largest proprietary publishers — Nature Publishing Group (“NPG”) — proposed a 400% increase in licensing fees for the University of California system. The California Digital Library (“CDL”) (which negotiates the system’s publisher agreements) responded to the proposed rate hike by threatening a system-wide boycott of the publisher’s journals (Howard, 2010). Shocking fee increases like those proposed by NPG are compounded by budgetary pressures at both the institutional level — many university libraries are facing budget cuts, rollbacks, and reconfigurations (Trail, 2013; Fleming, 2015; Frank, 2013) — and at the governmental level — the National Science Foundation and other key funding agencies are cutting back on grant expenditures (Bidwell, 2013; Steward & Budd, 2013; Bienen, 2013). The functionality, credibility, legitimacy, and sustainability of existing proprietary publishing models are being called into question.

Resolutions of these challenges continue to evolve and emerge. Sometimes, the solutions are localized and short-term, driven by a need to put out immediate fires rather than solve some of the more pressing, pervasive, and complex socio-structural challenges facing scholarly communication. In the CDL-NPG case, for example, these two powerhouses of the scholarly publishing world issued a joint statement a few months after the kerfuffle in which they resolved to move forward, amicably, with license negotiations such that the earlier-threatened boycott would not be necessary (University of California & Nature Publishing Group, 2010). This strategy appears to have been a stopgap to significant disruption and upheaval in scholarly publishing for the parties involved but we might fairly question whether or not these relatively opaque, piecemeal, uncoordinated efforts and agreements will support the kinds of transformations in scholarly communication that the academic research community seems to desire, particularly with respect to open access.
Open access describes content — in this case scholarly content — that is “digital, online, free of charge, and free of most copyright and licensing restrictions” (Suber, 2007). The move toward open access in scholarly communication reflects an international effort by a diverse group of stakeholders including scholars, librarians, publishers, technologists, and members of the public sector. For example, in 2002 and 2003, three major meetings convened by diverse stakeholders initiated and continued a discourse, and fostered collective action, around open access resulting in the “Budapest Open Access Initiative” (Chan et al, 2002), the so-called “Bethesda Statement” (2003), and the “Berlin Declaration” (2003). These documents signaled a sea change in approaches to scholarly communication but, as the years that followed attest, effecting positive transformation in scholarly communications requires more. This work argues that change in this space demands a multi-pronged approach that includes: (1) changes to the ways we conceptualize and think about scholarly communication and the scholarly endeavor, (2) changes to scholarly communication practices, and (3) changes to institutional mechanisms and structures influencing scholarly communication including policies and knowledge infrastructures that support open access. Thus, open access scholarly communication will require the co-evolution of ideas, practices, policies, and supporting technologies and infrastructures.

This research is motivated by an interest in understanding and influencing these co-evolutionary processes around open access in scholarly communication. In particular, we are interested in exploring the potential for novel, non-traditional, game-oriented approaches to open access advocacy in the context of academic research institutions. The following section discusses relevant literatures on open access policy, advocacy and gamification.

2 Related Literature

Policies, including open access policies, tend to be both prescriptive and proscriptive in the sense that they are goal-centered and articulate channels or paths of compliance and deviance. Open Access policies may be mandatory, encouraged, and/or voluntary and compliance and enforcement is often linked to funding. For example, researchers at the University of Toronto (and elsewhere in Canada) who receive federal grant funds through the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), or the Social Sciences and Humanities Research Council of Canada (SSHRC) are bound by the “Tri-Agency Open Access Policy on Publications” (Government of Canada, 2015). This particular policy requires grant recipients to make peer-reviewed publications arising from the Agency-supported research freely accessible within twelve months of publication (Government of Canada, 2015: §3.1).

Policies such as these are often seen as static and monolithic gatekeepers, permitting or promoting certain forms of practice on the one hand while restricting or closing off other forms of practice. More recently, researchers interested in the relationship between policy and sociotechnical transformation have argued that this is an unnecessarily limited (and limiting) perspective on the role and function of policy, particularly in complex environments like scholarly communication that involve the intersection of various, sometimes competing stakeholder interests. In previous work, I argued that the conceptual boundaries of policy should expand beyond a simple gatekeeping function to foreground it role as a potential source of embedded generativity in emerging scholarly communications environments (Centivany, 2016). Under this view, in addition to opening and closing spaces of practice and engagement, policy can also preserve open space for future unanticipated forms of collaboration, innovation, and practice to emerge. We can recognize the ways in which the Tri-Agency policy and others like it shape scholarly communication practices, shift the terrain of copyright and licensing, and even influence scholarly infrastructure development through things like institutional repositories. But we can also begin to consider the ways that such policies might safeguard and support generativity, enabling new, unanticipated forms of scholarly communications practice, design, and collaboration to emerge.
This research explores gamification as an approach to open access advocacy in line with previous research on the generative potential of policies such as the Tri-Agency Policy just described. Game-based learning can be manifested in a number of ways, including serious games, gameful design, pervasive games, and playful design, and—possibly the most widely discussed—gamification (Deterding et al., 2011). While scholarship and literature on gamification is still evolving, gamification has been defined as “the use of game design elements in non-game contexts” (Deterding et al, 2011). It is often confused with serious games, a concept and practice that has been around in literature since the 1970’s (Abt, 1970). As differentiated by Bittner and Shipper (2014: 391), “serious games are full games that can be developed for educational purposes...In contrast, gamification consists of gameful designs that are only partially based on elements of digital games...”. Serious games have seen a surge in popularity, as reported by IDATE Consulting & Research, with a projected “average annual growth rate of 47% between 2010 and 2015” (IDATE, 2010). IDATE attributes this surge to the ability of serious games to flesh out existing forms of information, communication, or training, enhance their interactivity, and their ability to immerse the player into an “environment where she will be more receptive to the message being transmitted.” This opens the potential of reaching audiences in ways that wouldn’t be possible without the added appeal of entertainment.

Generally speaking, whether through gamification, serious games, gameful play, or gameful design, which have each been differentiated and discussed in literature (Deterding, 2011), the idea of play outside of the singular purpose of entertainment is one that permeates a wide range of disciplines and fields. Some of the areas where play has been adopted as a strategy for engagement, advocacy, and learning include marketing and advertisement (Bittner & Shipper, 2014), education and libraries (Felker, 2014; Bohyun, 2015; Lynch et al., 2015; Johnson et al., 2010; Battles et al., 2011; Kim & Ko; 2013), policy and social betterment (Bulos et al., 2014; Mahnic, 2014; Silva et al., 2013; Landwehr et al., 2013), the workplace and professional development (Oprescu et al., 2014; Oravec, 2015; Bernier, 2015; Ruhl, 2015; YALSA, 2015), tourism and hospitality (Negrușa et al., 2015), and lifestyle (McGonigal, 2011; Berger & Schrader, 2016; Jones et al., 2014; Wang, 2015). The form in which gamification, gameful design, serious games, and gameful play manifest is also broad. Gamification, for one, can play out as adopting leaderboard scoring or points systems to daily tasks to increase motivation. For example, Barata et al. (2015) describe a gamified course in the School of Engineering at the University of Lisbon where students earned experience points (XP) for activities such as “attending classes, finding bugs in course materials or completing challenges and quests,” earning badges along the way. Similarly, libraries have used gamification in library programming such as in providing badges and prizes for summer reading challenges and engaging with the library (i.e. visiting the library, checking out books, and answering library orientation questions) (Kim, 2015). Scholars have noted that the use of gamification has the potential of driving attention to areas that see otherwise low participation (Heron et al., 2013).

The reason that gamification, gameful design and game-based learning are so effective, as Berger and Schrader (2016) point out, is that using game design elements as a learning tool has the potential to trigger behavioral change and is rooted partly in behavioral theory, specifically in the concepts of intrinsic and extrinsic motivation. When engaging in a game, a player’s motivation is rooted in his or her satisfaction, or intrinsic motivation, and can also be rooted in the expectation of a particular outcome, such as rewards, prizes, and recognition on leaderboards (Bohyun et al., 2013; Bittner & Shipper, 2014). Barata et al. (2015) describe a gamified course that saw great success: “We found that students were both more participative and proactive as compared to previous non-gamified editions of the course,” finding the gamified course more “motivating and interesting.” Literature has shown that particular game categories, such as ARGs may actually reduce the intrinsic motivation to learn (Kim, 2015), and this is something that game designers should be aware of to ensure that the focus on reward is not at the forefront of the game, but rather to make a balanced game that appeals to both intrinsic and extrinsic motivations. While there are risks in adopting gamification and gameful design (Kapralos et al., 2013; Kim & Ko, 2013; Kim, 2015), it appears
that there is a growing consensus that the advantages of using game elements in initiatives or creating full games may outweigh the possible disadvantages. Literature shows that gaming attracts a wide audience, appealing to both males and females, the current generation is that of a gamer generation, and that gaming is still on the rise globally (Battles et al., 2011; Kapralos et al., 2013).

Alternate Reality Games (ARGs), a type of full-fledged game, have grown in popularity in various industries and fields as they offer new modes of integrating game design techniques and play with real-world experiences. These transmedia games combine real life and online play and require players to progress through a number of challenges or levels to reveal a plot and a problem that needs to be solved. Some highly successful and widely played ARGs include Halo’s I love Bees, Nine Inch Nail’s Year Zero, and The Beast, used to promote the release of the film A.I. Artificial Intelligence. As is historically seen through these examples and others, ARGs are often used to promote a particular event, such as the release of a video game, album, or film or promote a particular agenda. Another attribute of ARGs is that they are often played collaboratively. Many ARGs incorporate the use of online forums such as Unfiction or the Alternate Reality Gaming Network (ARGN) (Lynch et al., 2015). The collaborative nature of ARGs opens additional opportunities for firms or institutions to unite their user base and attract attention to their initiative.

In particular, ARGs have seen an increase in use by libraries seeking to capitalize on the ability of serious games to effectively integrate education and amusement (Abt, 1970). Academic libraries such as the University of Florida, University of Alabama, University of Michigan, and Penn State have produced such games to promote various initiatives and projects and have seen a range of success by doing so. Researchers note that it is difficult for these institutions to strike the right balance between designing an engaging experience and designing effective teaching and learning resources. As one researcher noted, “many previous academic and library games have fallen short of being the engaging experience the institutions had hoped” (Battles et al., 2011). For all that is required from game creators, if the game or gamified experience isn’t engaging to the user, users will not participate and the initiative will yield little return. At the same time, other projects underperform because too much attention is paid to game design and not enough attention is paid to learning outcomes. As Kim et al describe, the risk of failure is an evident risk in adopting gamification and gameful design and is sometimes “attributed to developers supplanting game design without adequate attention to proper instructional design” (Kim et al., 2013).

An integral component of conducting a successful serious ARG or other game-based learning initiative—one that will communicate or advocate for a particular issue or agenda—is the debriefing phase. That is, after the game is finished, game designers explain the purpose of the game and ensure that that the learning objective was successful reached by users. Lynch et al. state, “the incorporation of appropriate assessment, reflective of the subject matter of the ARG...allows players to gain an indication of their knowledge of the subject matter, test their proficiency of the material, and motivates them to enhance their learning” (2013). As the authors note, assessment and debriefing also helps with the retention of information. Without such a phase, game designers run the risk of having this users walk away from the game without a clear indication of the purpose of the game or of the intended purpose.

While clear risks exist in adopting a gamification approach to initiatives, literature is clear that the potential good that can come from this and gameful design runs high as it can take often overlooked or boring subject matter and create an effective and meaningful learning experience (Berger & Schrader, 2016). Seeing the appeal of this method, libraries have used gamification in library initiatives, including for the purposes of library instruction, library orientation, information literacy, to reduce library anxiety, and to create a collaborative and participatory culture (Kim 2015; Battles et al., 2011; Johnson et al., 2010).
3 Methods

We explore gamification’s potential to influence and enhance advocacy around open access policy objectives by conducting a qualitative study of a recent case: a collaborative ARG developed at the University of Toronto Libraries in 2015 in connection with Canada’s Tri-Agency Open Access Policy and Global Open Access Week. Data for this research consists of interviews of game developers and administrators, material artifacts made in preparation for the game, news reports and media, and participant observations collected and recorded through interviews, notes from debriefing sessions, and relevant social media discourse on sites such as Twitter.

Our goal was to trace the ARG from its initial concept, through its collaborative development process, through the active engagement and play period, through its close and debriefing reflection processes. By tracing the emergence, evolution, and impact of the ARG, we are better able to consider the potential benefits and possible shortcomings of employing gamification as a strategy for advocacy around open access.

The “Open Robarts” ARG was available for play between Monday October 19th and Friday October 23rd, 2015. During these five days, the Open Robarts website attracted 2,677 visitors from all over the world and 10,552 page views. Players interacted with the game through page comments, direct emails to game masters and through various social media channels. The game play produced 47 online winners and 20 in-person winners. At the request of senior administrators at the University of Toronto, the game was held open for continuing play through October 30th, 2015.

4 “Open Robarts”

In light of the Tri-Agency Open Access Policy, the Scholarly Communications and Copyright Office (SCCO) at the University of Toronto Libraries undertook a novel approach to open access advocacy in conjunction with Global Open Access Week, 2015. In previous years, the Libraries had approached Open Access Week programming by hosting informative webinars, lectures, webcasts, and other library-centric events that often yielded a low return in attendance and quantifiable impact. Additionally, the events in previous years mainly attracted librarians (who tend to be familiar with if not already advocates for open access) rather than other stakeholders in the open access debate such as students, faculty and members of the community. More recently, as capacity and resources to support open access initiatives increased, the Libraries targeted a broader and more inclusive constituency in an effort to reach a broader audience and make a more significant impact in the community with respect to scholarly publishing and advocacy. In this thread of creative programming, the SCCO developed the ARG Open Robarts with the goal of spreading information and advocacy on open access to a wider audience. By applying game design to library programming and joining forces with local artists, the response to Global Open Access week via the University of Toronto Libraries’ was unprecedented. The ARG reached an international audience and resulting in record breaking engagement.

The idea of creating an alternate reality game was first conceived by the Head of Scholarly Communications and Copyright at the University of Toronto in the spring of 2015 in response to the Tri-Agency OA Policy’s directive to raise awareness and support for open access initiatives. An alternate reality game had immediate appeal as “a new, innovative way to accomplish this goal.” Upon discovering a web comic (Fig. 1) that drew upon the unique architecture of the Brutalist buildings around Toronto, including Robarts Library (Fig. 2), the concept of the game began to emerge.
The web comic painted the narrative of a world where these Brutalist structures were constructed to trap an ominous monster that had been unearthed when the Yonge subway line was being constructed (Oxley & Foo, 2015). Robarts Library, along with the other Brutalist buildings in Toronto held this evil at bay, acting as spirit traps. The SCCO office reached out to the creators of the web comic with a proposed collaboration: the creation of an alternate reality game inspired by the ideas and design elements of the web comic that engage a broad audience (within UofT, the gaming world, media communities, as well as general Toronto and architectural enthusiasts) around the topic of open access.

The local artists collaborated with SCCO staff to create a custom plot and game that would speak to the week’s theme, Open for Collaboration. Recognizing that ARGs are highly collaborative are often require players to solve puzzles with other participants due to their challenging, transmedia, and multi-locational nature, game organizer chose a particular subreddit for ARGs\(^1\), as a primary venue for posting content on the game. Encouraging collaboration on this existing public forum supported game play at the University of Toronto and amongst a broader public.

Collaboration within the Libraries and amongst staff and administration was also crucial. The idea for the ARG was pitched at the Senior Staff Meeting and to the Chief Librarian on July 7th, who saw the value of undertaking such a project given that funding was available. As a number of library departments would be involved in the execution of the game, buy-in from senior staff in the various library departments was paramount. Management at the Thomas Fisher Rare Book Library, Course Reserves, Information Technology Services, and Media Commons were individually approached with specific requests to contribute to and participate in the game. Additionally, individual potential contributors were contacted within the library system who held backgrounds in theater and the arts who could bring a level of credibility to the various roles in the game, as the seamless integration of fictional plot and the real world was recognized as a crucial component of a successful ARG.

Design for the Open Robarts ARG was handled primarily by the contracted artists with input and guidance on open access themes, functionality of the game in the physical and organizational space of the library, and other local information provided by SCCO staff. The creation of the game spanned a number

\(^{1}\)https://www.reddit.com/r/ARG/
of months, from the initial meetings in July 2015 up to the week’s events in October. Communication was an important component of the various planning stages of the game, as this allowed for library staff to provide feedback and suggestions to game creators and to ensure expectation management on all parties’ parts. Game creators then provided library staff with a game play flowchart (fig. 3), character profiles, staff scripts and other resources prior to the game’s roll out to ensure that participants were familiar with the storyline and expectations.

Figure 3. Flowchart of the ARG

The ARG plotline centered on a conspiracy theory that the staff at Robarts Library are involved in “strange things” prompting a group of concerned citizens to investigate the mysterious happenings at the library. The group isn’t able to search onsite themselves as they have been banned from the premises for being disruptive; as a result they have recruited participants (game players) to investigate on their behalf. As players become more involved in the game they discover that indeed there actually are somethings amiss at Robarts Library. In particular, they discover that the “Vayika,” an ancient world-spanning organization dedicated to preserving and spreading knowledge is operating within University of Toronto and has representatives in the library’s staff. The Vayika have planted clues for the investigators as a means of recruiting new members to help defend against those who seek knowledge as a means of power and control. Winners of the game can choose to join the Vayika and become protectors of knowledge, join the “Kambre” as part of the conspiracy theorist group, or join the “Danand,” a group that seeks to maintain the status quo.
Open Robarts consisted of eight levels. The first level of the game was the so-called “Rabbit Hole” — the initial spark that intrigues or captures the players’ interests and draws them into playing — and it introduced potential players to the game in one of three ways: (1) the Open Access Week page (https://onesearch.library.utoronto.ca/oaweek) hosted on the University of Toronto Libraries website contained an animated “hacked” GIF that linked to the Open Robarts conspiracy theorists’ website; (2) pamphlets were being handed out to students throughout the week that could be folded to reveal a website and password (fig. 4); and (3) posters around campus for the game that included a website and password for students’ access.

Figure 4. Folded pamphlet leading to the Open Robarts website

As Open Access Week progressed, new opportunities arose for players to discover and participate in the game such as coming across social media posts by game winners that included the Open Robarts conspiracy theorists’ websites (BGA, 2015; Morgan, 2015; Jennings, 2015; Fiddes, 2015), discussions about the game—generally or about particular levels—on open forums such as Reddit ("OPEN ROBARTS,” 2015; directbacon, 2015; kaarichi, 2015; openrobarthelp, 2015; directbacon, 2015; theconcreteturkey, 2015) and Unfiction (mikedmann, 2015), as well as reading a number of news stories and promotional posts about the game (University of Toronto Libraries, 2015; Ravikantharaja & Khan, 2015; Doctorow, 2015).

Advanced levels of Open Robarts included password protected websites, scrambled puzzles revealing clues, a video pointing to library resources (Bacorn, 2015), as well as instructions for interacting with TSpace, The University of Toronto’s institutional repository. Through the game play, players would interact with a real life examples of how open access and OA policy is used and applied at academic institutions. If players experienced difficulty in reaching this stage, gamemasters would be available via email and at various locations throughout the library to offer assistance and guidance.

Just as with the University of Alabama Libraries’ ARG in 2009 (Battles et al., 2011), the incorporation of library resources was essential in the game design of Open Robarts. One anonymized participating student, after completing the Open Robarts ARG, remarked in an email conversation with gamemasters:

*I ventured to the course reserves for the first time in my life this week! I discovered new areas U of T (namely, I exited the library the wrong way, and wondered where I was for several minutes before realizing that, no, I hadn’t entered a new dimension). This was a really great adventure; I
got to meet new librarians and see new parts of the library system. Thank you for all your hard work.”

Like this student, players interacted with library staff in a number of in-person capacities including visiting the Thomas Fisher Rare Book Library to align a bookmark inscription from a previous level with an “ancient tablet” (fig. 5) to reveal a password-protected online artifact that further revealed the plot and later to be inducted into the Vayika secret society. In addition, the game induced participants to visit the Course Reserves desk to obtain said bookmark and the Media Commons where players would find a handmade DVD case (fig. 6) in the shape of Robarts Library revealing a clue to a subsequent level. Game winners would receive a 3D printer file of one of the groups’ sigils as a reward (fig. 7).

Social media was a major component of the Open Robarts ARG. The use of social media ensured that the message of Open Access Week would go beyond those physically located on campus with access to the library. It also served as a way to spread the word within the University of Toronto community so that participating students and faculty could look for clues when on campus. Social media also allowed game creators to populate the game’s world with content to create believable characters and a robust world. A Twitter account (@Robarts, n.d.), Instagram account (||Robarts||, n.d.), as well as a Reddit username (directbacon, n.d.) were created for the conspiracy theorist group and key character, Emmet Bacorn, and acted as guides for players to navigate their way through the levels of the game. Prior to the game’s launch on October 19th, the accounts were used as a method of piquing curiosity of potential players as well as creating a dynamic and dense world. When the game came to an end, social media also served as a way to debrief players and explicitly reveal the purpose and agenda of the ARG—that of open access advocacy.

5 Discussion

Policies, such as Canada’s Tri-Agency Open Access Policy, are often understood as advocating a particular set of goals and outcomes. Policies may appear as monolithic and static in their objectives and approaches. We push back against this perspective and use the Open Robarts example to illustrate how this view may be unnecessarily limiting. Much like the Brutalist architecture that inspired the artists in this case, the patent and obvious objectives of a given policy can overwhelm or shadow its important but perhaps latent or less visible goals and opportunities hidden beneath the surface.
For example, a relatively straightforward and typical library response to the Tri-Agency policy concerning Open Access might have been to create lectures, FAQs, and other educational programming primarily intended to influence publishing practices by directly communicating a new set of priorities and expectations. In contrast, the SCCO focused on the generative potential embedded in the policy to reimagine what open access advocacy could look like. In this case, open access advocacy was gamified through the creation of a collaborative interactive ARG.

The relationship between policy and sociotechnical transformation is too often conceived of as linear, monolithic, and static. Open Access policies are not simply gatekeepers or express directives. In addition, they are wellsprings of generativity through which preserve open space for future unanticipated forms of collaboration, innovation, and practice to emerge. The Tri-Agency policy and others like it shape scholarly communication practices, shift the terrain of copyright and licensing, and even influence scholarly infrastructure development through things like institutional repositories.

The Open Robarts case demonstrated how the generative potential of open access policies can be tapped into in a number of key ways. First, it expanded the sphere of influence beyond the traditional audience of libraries and faculty. Open Robarts drew participation from students, faculty, librarians, staff, local artists and, through social media and news media coverage, a diverse international community. In addition, gamification in this instance changed the ways these groups participated in and interacted with open access. They were not passive recipients of information on changing rules and procedures but rather active participants searching for answers and interacting with new collaborators in often unfamiliar environments. In this way, Open Robarts influenced the way participants conceptualize and think about scholarly communication and the scholarly endeavor.

In addition, the ARG employed innovative strategies for collaboration and outreach beyond the University itself. The SCCO made extensive use of social media throughout all levels of the game play and post-game debriefing. This had immediate impacts on game play and communication with participants. A more nuanced influence of the use of social media was that it reflects changing scholarly communication practices. The output of scholarship is no longer limited to traditional books and articles but is also beginning to include blogs, twitter, Facebook, and a variety of other social media platforms and environments. In this way the SCCO’s ARG reflects the shifting boundaries of scholarly communication practices.

Finally, Open Robarts performed an important education and outreach function. By leading participants into contact with the open access policy and TSpace, the University of Toronto’s institutional repository, the game influenced awareness of the institutional mechanisms and structures effecting scholarly communication, including changing policies regarding open access and knowledge infrastructures that support open access. In interviews with members of the SCCO, it was clear that they believe more could have been done with respect to post-game debriefing to ensure that the important educational components of the game were lost in the play. Future forays into policy advocacy through gamification should ensure that adequate resources and time are allotted to post-game discussions, feedback, and debriefing.

6 Conclusion

Developments in information and communication technologies are fundamentally altering the possible space of scholarly communications. In particular, networked digital technologies have raised serious questions about the continuing relevance, functionality, and legitimacy of traditional proprietary publishing models that rely, in large part, on extracting expensive subscription fees from research libraries. But technological change is but one piece of what are much larger transformations brewing in scholarly communications. Social practice, infrastructure, and laws and policies are also essential parts of the larger change process.
Open access is one theme or focus of change in scholarly communications. Many universities, funding agencies, and governments have created policies that mandate or encourage open access. These policies have been implemented with varying levels of adoption and success. In this research we argue that positive transformation in scholarly communications, including in the open access context, requires a multi-pronged approach to change that takes into consideration: (1) changes to the ways we conceptualize and think about scholarly communication and the scholarly endeavor, (2) changes to scholarly communication practices, and (3) changes to institutional mechanisms and structures effecting scholarly communication, including policies and knowledge infrastructures that support open access. In other words, a shift toward open access in scholarly communications will depend upon the successful co-evolution of ideas, practices, policies, and supporting technologies.

This research explored the potential for novel, non-traditional, game-oriented approaches to open access advocacy in the context of academic research institutions. In line with research stressing the generative potential of policies touching on new technologies and emerging practices, we found that gamification may be an effective advocacy strategy approach to open access advocacy. Open access scholarly communication will require the co-evolution of ideas, practices, policies, and supporting technologies and Open Robarts offers one example of how gamification might influence that process.

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