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Recruiting Content for the Institutional Repository: The Barriers Exceed the Benefits

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Abstract

Focus groups conducted at Carnegie Mellon reveal that what motivates many faculty to self-archive on a website or disciplinary repository will not motivate them to deposit their work in the institutional repository. Recruiting a critical mass of content for the institutional repository is contingent on increasing awareness, aligning deposit with existing workflows, and providing value-added services that meet needs not currently being met by other tools. Faculty share concerns about quality and the payoff for time invested in publishing and disseminating their work, but disagree about metrics for assessing quality, the merit of disseminating work prior to peer review, and the importance of complying with publisher policies on open access. Bridging the differences among disciplinary cultures and belief systems presents a significant challenge to marketing the institutional repository and developing coherent guidelines for deposit.

1. Background

Providing free online access – a.k.a. open access – to scholarly research has been a high priority in the academy for over a decade. Initial efforts to provide free access focused on author self-archiving of journal articles on personal or group websites or disciplinary repositories. With MIT's launch of DSpace in 2002, universities began implementing so-called institutional repositories (IRs) to preserve and provide open access to the work of their community.

Like the open access movement, IRs are a response to changes in scholarly communications precipitated by technology, economics, and politics. Software enables authors to do much of the formatting and layout of text previously performed by publishers and to create multimedia works. The web enables them to disseminate their work quickly, broadly, and cheaply. At the same time, escalating journal prices have forced libraries to cancel subscriptions, creating access problems for some and raising awareness of the digital divide. IRs appeared to address these and other issues, including the limited availability of disciplinary repositories and the lack of long-term maintenance of material self-archived on websites.

Two early publications about IRs articulated different philosophies and motivations. Raym Crow's position paper for the Scholarly Publishing and Academic Resources Coalition (SPARC) focused on how eager faculty depositing manuscripts of journal articles would accelerate and

broaden access and ultimately reform scholarly publishing (2002). Clifford Lynch proposed a different view focused on IR services, cautioning that a narrow focus on journal literature and problems in scholarly publishing would undermine the IR's potential to preserve and provide access to a broad spectrum of intellectual assets (2003).

Studies of IR implementations over time revealed increased adoption by academic institutions worldwide and a practice more in keeping with Lynch's vision than Crow's (Lynch and Lippincott 2005; van Westrienen and Lynch 2005; Bailey et al 2006). There is no evidence that IRs are increasing access to scholarly journal literature through faculty initiative (McDowell 2007). In practice, most IR content is not journal articles and is not self-archived by the authors. Librarians and support staff are harvesting or otherwise mediating deposits, including technical reports, conference papers, student theses and dissertations, images, and non-scholarly publications (Ware 2004; Davis and Connolly 2007; McDowell 2007; Salo 2008). Often IR collections are created as one-time deposits or through periodic batch additions of material, rather than through a steady stream of submissions by engaged faculty (Davis and Connolly 2007). The result is patchy coverage not likely to reform scholarly publishing or to meet long-term preservation goals.

2. Motivators and Barriers to Faculty Participation

Commentators disagree about what constitutes the success of an IR. Many focus on inputs to the system – the volume of content (Shearer 2003; Bell, Foster, and Gibbons 2005), extent of participation (Blythe and Chachra 2005), provision of value-added services (JISC 2005; Foster and Gibbons 2005; Walters 2006; Chavez et al 2007), and resources to sustain the operation (Hank 2006; OCLC and CRL 2007). More recently attention has turned to outcomes, to the impact of the IR on campus life and institutional mission (Markey et al 2009; Bankier and Smith 2010). Nevertheless all agree that content recruitment is the core of the IR. A critical mass is needed to attract users and additional content.

Dorothea Salo's overview of the state of IRs in 2008 paints an abysmal picture of faculty disinterest, futile marketing efforts, implementations driven by political ideology rather than user needs, and IRs languishing from inadequate staffing and support services (2008). Studies consistently report that recruiting content is difficult. (Ware 2004; Rowlands and Nicholas 2005; Lynch and Lippincott 2005; Heery and Anderson 2005; Ware 2006; Davis and Connolly 2007; Salo 2008). A survey of ARL libraries identified content recruitment as the number one challenge in implementing an IR (Bailey et al 2006). Difficulties populating IRs and disciplinary repositories through voluntary submissions have led to proselytizing for mandates (Harnad 2006).

Studies of motivators and barriers to depositing work in an IR are often indistinguishable from studies of motivators and barriers to voluntary self-archiving in general, regardless of venue. Most recently, Jihyun Kim identified four motivators and three barriers that have a statistically significant impact on the extent of self-archiving (2010). The most powerful motivator is altruism. The greater the belief in the principle of open access and the desire to help others build on research findings and provide access to scholars who would otherwise not have access, the

greater the extent of self-archiving. Altruism is driven by the academic obligation to disseminate work and the expectation that other researchers will reciprocate. The second and third most powerful motivators are related to the academic discipline. Having a self-archiving culture and the requisite technical skills increases the extent of self-archiving. Faculty in disciplines that commonly share grey literature or require some technical expertise are much more likely to self-archive. The fourth and final significant motivator is the belief that self-archiving has a positive or neutral impact on promotion, tenure, or funding. The stronger the belief that self-archiving does not impede academic reward, the greater the extent of self-archiving. While not statistically significant motivators themselves, Kim's study found that the following touted benefits of open access are frequently perceived as having an indirect but positive influence on academic reward:

- **Accessibility** – increased communication with peers, discovery using Internet search engines, long-term preservation
- **Publicity** – enlarged readership, increased potential impact, earlier dissemination of research findings
- **Professional recognition** – increased visibility; increased citations

Kim's study also identified three statistically significant barriers to self-archiving (2010). The biggest barrier is concern about copyright, a concern noted in the literature for many years (Lawal 2002; van Westrienen and Lynch 2005; Swan 2006). The greater the concerns about needing publisher permission or the fear of infringing copyright, the less likely faculty are to self-archive. In an earlier study Kim discovered that those who do not self-archive are more likely than those who do to perceive publishers as prohibiting self-archiving (Kim 2007). Along these same lines, Dorothea Salo cites inconsistent, confusing, and burdensome publisher policies that purport to embrace open access as a barrier to self-archiving (2008).

The second most powerful barrier to self-archiving that Kim discovered is age (2010). Younger faculty tend to self-archive a greater percentage of their research. Kim speculates that this is because younger faculty are more familiar than older faculty with disseminating their work on the Internet. Salo interprets the influence of age differently: "Young scholars may be attracted to self-archiving as a way to game a prestige system otherwise stacked against them, but older scholars are liable to resist the very idea of an open-access citation advantage" (2008, p. 101).

The third statistically significant barrier identified by Kim is the time and effort required to self-archive (2010). The greater the time and effort required, the less likely to self-archive. Less technical skill means more time and effort required. This barrier too has been cited by others (Swan 2006, Millard et al 2010). Some studies dismiss this concern as unfounded anxiety because self-archiving is quick and easy (Carr and Harnad 2005; Swan 2006). Others report usability problems in the design of submission systems (Kim and Kim 2008; Salo 2008). Even an average of ten minutes per article (Carr and Harnad 2005) can be daunting to a busy faculty member with a backlog of material to deposit. Furthermore, self-archiving is not a high priority even for those who self-archive; updating personal websites is often delayed (Kim 2010).

In addition to the statistically significant barriers to self-archiving reported by Kim, the literature identifies other barriers that have lingered for many years:

- **Don't know about it** – Many faculty are unaware of the open access movement or the existence of the IR (Lawal 2002; Bell, Foster, and Gibbons 2005; Swan 2006; Bailey et al 2006; Davis and Connolly 2007; Bankier and Smith 2010; Kim 2010).
- **Don't understand it** – Many faculty do not understand the benefits provided by open access or the IR (Lawal 2002; Swan and Brown 2004; Swan and Brown 2005; Rowlands and Nicholas 2005; Bell, Foster, and Gibbons 2005; Swan 2006; Davis and Connolly 2007; Bankier and Smith 2010). Some equate open access with no peer review and do not want their work associated with work of inconsistent or inferior quality (van Westrienen and Lynch 2005; Davis and Connolly 2007).
- **Not interested in it** – Faculty invest time in activities that add value to their research, authorship, or collaborations (Erikson, Rutherford, and Elliott 2008). Increased accessibility, publicity, and professional recognition – the benefits of open access advertised in marketing efforts — do not advance these priorities (Swan 2006; Bailey et al 2006; Salo 2008; Millard et al 2010). IR implementations do not serve faculty interests or meet their needs; outreach efforts do not speak their language or address their problems (Lawal 2002; Foster and Gibbons 2005; JISC 2005; Davis and Connolly 2007; Salo 2008). Furthermore, for those who already self-archive on a website or disciplinary repository, the IR is redundant (Davis and Connolly 2007; Tananbaum 2008).
- **Too risky to do it** -- Some faculty worry that open access will lead to plagiarism, being scooped, or not being able to publish if publishers perceive self-archiving as prior-publication (van Westrienen and Lynch 2005; Vincent 2007; Davis and Connolly 2007). Others see risks related to IR technology or to intervention by librarians lacking subject expertise (Lyon 2007).
- **Nobody else is doing it** – Faculty tend to do what others in their academic discipline do (Lawal 2002; Davis and Connolly 2007). Common practices generate peer pressure that affects decision making. Inertia is difficult to overcome (Swan 2006).
- **Don't have to do it** – Self-archiving mandates have been proposed and adopted to help overcome inertia, unfounded anxieties, and lack of interest (van Westrienen and Lynch 2005; Harnad 2006; Swan 2006). Research conducted years ago indicated that most authors would comply with a mandate (Swan 2005). Experience with the NIH public access policy shows an increase in compliance after deposit in PubMed Central became mandatory (Poynder 2009). However, studies show that mandates do not necessarily yield high levels of participation (Ferreira et al 2008; Erikson et al 2008). Kim's study found that external factors, e.g., coauthors, collaborators, funding bodies, university or department, do not significantly affect faculty self-archiving practice (2010).

Given the many intractable barriers, Salo says we must abandon the notion of voluntary faculty-initiated and faculty-performed self-archiving and find a viable model for populating the institutional repository (2008).

3. Self-Archiving at Carnegie Mellon University

Carnegie Mellon is a relatively small, private research university with a reputation for conducting interdisciplinary research and developing technological solutions to practical problems. The academic community is organized in departments and institutes grouped into seven colleges: College of Engineering, College of Fine Arts, College of Humanities and Social Sciences, H. John Heinz III College, Mellon College of Science, School of Computer Science, and Tepper School of Business.

A study conducted in 2007-08 discovered that 42 percent of Carnegie Mellon faculty had self-archived at least one item on a personal or group website (Troll Covey 2008). Practice varied significantly across disciplines, ranging from none of the faculty in Music and History to at least 90 percent of the faculty in Machine Learning, the Human Computer Interaction Institute, Language Technologies Institute, and Robotics Institute (all in the School of Computer Science). Roughly 40 percent of the publications cited on the websites had links to an open access copy. Practice varied significantly across publication types, ranging from 13 percent of the books (including dissertations and theses) to 58 percent of the technical reports.

Using the same data set, a follow-up study of journal articles cited on faculty and group websites found a significant gap between opportunity and practice (Troll Covey 2009). Roughly 32 percent of the cited articles had been self-archived. Analysis revealed that at least 77 percent of the cited articles could be self-archived in compliance with publisher policy, and that some of the self-archived articles breached publisher policy. The gap between opportunity and practice varied dramatically across departments, with lows of 33 percent in the Robotics Institute, 36 percent in Materials Science and Engineering, and 37 percent in Psychology, and highs of 100 percent in History and Drama.

While the faculty self-archiving study was underway, in November 2007 Carnegie Mellon Faculty Senate unanimously passed a resolution strongly encouraging faculty to provide open access to their work in keeping with publisher policy. The resolution strongly encouraged the University Libraries to provide tools to help faculty self-archive their work. In 2008-09 the Libraries implemented an open access repository named Research Showcase. The Dean of the Libraries sent a letter to the faculty in September 2009 introducing Research Showcase, describing the benefits it offered, and encouraging them to deposit their work. The letter explained that the Libraries were harvesting work self-archived on faculty websites if publisher policy allowed open access and provided the URL of the SHERPA / RoMEO database of publisher open access policies.

To date, Research Showcase contains 5,521 publications, most of which have been harvested by the Libraries. Deposits are mediated by the Research Showcase Outreach Coordinator. As expected, faculty are not flooding the University Libraries with requests to deposit their work. By 2010, library administrators wanted to update the data on campus self-archiving practice and to identify barriers and motivators to deposit in Research Showcase. To do this, they engaged the Director of Institutional Research and Analysis to survey faculty and graduate students and Denise Troll Covey to conduct focus groups with faculty. This article reports on the findings from the faculty focus groups. Findings from the surveys will be published in a separate article.

4. Sample and Data Collection

The focus groups targeted full-time tenure- and research-track faculty in departments or colleges where in 2007-08 less than 40 percent of the faculty had self-archived any of their work on a personal or group website or where the gap between the opportunity and practice of self-archiving journal articles exceeded 50 percent. Teaching-track faculty were excluded from the study because they seldom publish, as were departments that seldom publish traditional scholarly work e.g., the Entertainment Technology Center, Music.

Invitations were sent to 166 randomly selected faculty in 22 departments and the two colleges (Heinz College and Tepper School of Business) that do not have departments. See table 1. The goal was to recruit at least one faculty member from each department and at least three faculty members each from Heinz and Tepper. Thirty-four faculty accepted the invitation for a response rate of 20 percent. However, six faculty who accepted the invitation did not attend the focus groups. Overall, 21 of the 24 targeted units (86 percent) accepted invitations and 18 (75 percent) of the invited disciplines participated.

Table 1: Focus group participants.

	College	Departments	Target	Invited	Accepted	Attended	%
CFA	College of Fine Arts	Architecture	1	6	2	2	21
		Art	1	5	2	2	
		Design	1	6	1	1	
		Drama	1	7	1	1	
CIT	Carnegie Institute of Technology (a.k.a. College of Engineering)	<i>Biomedical Engineering</i>	1	6	2		21
		<i>Chemical Engineering</i>	1	11			
		Civil and Environmental Eng.	1	5	2	2	
		Electrical and Computer Eng.	1	5	1	1	
		Engineering and Public Policy	1	5	2	2	
		<i>Materials Science and Engineering</i>	1	4	1		
		Mechanical Engineering	1	9	1	1	
HNZ	H. John Heinz III College	<i>[Public policy and information systems]</i>	3	14			0
HSS	College of Humanities and Social Sciences	English	1	5	1	1	25
		History	1	6	1	1	
		<i>Modern Languages</i>	1	5			
		Social and Decision Sciences	1	9	2	2	
		Statistics	1	6	3	3	
MCS	Mellon College of Science	<i>Biological Sciences</i>	1	9	1		11
		Chemistry	1	9	1	1	
		Mathematics	1	5	1	1	
		Physics	1	7	2	1	
SCS	School of Computer Science	Human Computer Interaction Inst.	1	6	2	2	14
		Institute for Software Research	1	6	2	2	
TSB	Tepper School of Business	[Business and economics]	3	10	3	2	7
		TOTAL	28	166	34	28	100

Tenure-track faculty far outnumber research-track faculty at Carnegie Mellon. Data are not available for 2010, but according to the *CMU Factbook*, fall semester 2009 there were 631 tenure-track faculty and 60 research-track faculty. Among the tenure-track faculty, 57 percent were full professors, 23 percent were associate professors, and 20 percent were assistant professors. Overall 23 percent were female.

All but one of the focus group participants were tenure-track faculty; 29 percent were female. Roughly 54 percent were full professors, 36 percent were associate professors, and 11 percent were assistant professors. The participants included more females and associate professors and fewer full and assistant professors than the actual population and should not be considered representative of the entire campus community. Rather, they reflect the diversity of departments in which faculty in 2007-08 were not enthusiastic self-archivers. The goal of the focus groups was not to make generalizations about participating disciplines, but to improve understanding of faculty priorities, practices, and concerns regarding scholarly communications in general and open access in particular. The focus group questions (included at the end of this article) were developed based on the literature review, in consultation with the Dean of University Libraries and the Scholarly Communications Committee.

Hour-long focus groups were scheduled on October 18, 25, 27 and November 2, 2010, at noon in the Dean's office. Lunch was provided. Each focus group had a mix of faculty from different departments and colleges. The discussions were digitally recorded and a librarian attended to take notes. The sessions were moderated and the data initially analyzed by the author. The findings were discussed with the Dean and the Scholarly Communications Committee.

Because the number of focus group participants per discipline was small, this article identifies participants only by college, as required by Carnegie Mellon's Institutional Review Board. To further protect identities, all participants are referenced using the masculine form when gender words cannot be avoided. Given the nature of focus group discussions, the scope of shared beliefs, practices, or perceptions probably exceeds what is reported here.

5. Motivators and Barriers to Self-Archiving in General

All the focus group participants were aware of the practice of making scholarly work freely available on the web. Most (83 percent) had self-archived some of their work. Faculty from all participating colleges had self-archived on a personal or group website. A few had deposited work in a disciplinary repository (MCS, TSB), and two had work in Carnegie Mellon's institutional repository, Research Showcase (CFA, HSS).

The most frequently mentioned motivators and barriers to self-archiving were identified by Kim as statistically significant. The key motivators are disciplinary culture (all participating colleges), the belief that open access has an indirect but positive affect on academic reward (all participating colleges except MCS), and altruism (CIT, SCS). Technical skills were not mentioned as a motivator, perhaps because the participants took them for granted. Additional

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reasons given for self-archiving included complying with a funding agency mandate (HSS) and saving time. Self-archiving circumvents the lag time to publication (HSS, SCS, TBS) and takes less time than emailing copies on request (HSS).

The discussion revealed self-archiving becoming the norm in some disciplines (selected departments within HSS, MCS, and SCS), and different pressures being brought to bear in others. For example, there are varying degrees of pressure to self-archive articles in departments in CFA, CIT, and HSS; strong pressure to self-archive pre-prints in TSB; and increasing pressure to archive data along with the paper in CIT and TSB. There is resistance to self-archiving books or book chapters in HSS and SCS. In one department in MCS, “there is little or no pressure to self-archive, just pressure to publish.”

The barrier to self-archiving most frequently mentioned by focus group participants was concern about copyright and publisher policy (CFA, CIT, HSS, SCS). Those who do not self-archive explained that either they did not know the publisher’s policy, did not have time to check the policy, or knew the policy prohibited self-archiving (CIT, HSS, SCS). As Kim discovered, those who self-archive are much less concerned about copyright and publisher policy than those who do not. For self-archivers, disciplinary culture and the belief that publishers will not charge authors with copyright infringement trump copyright concerns (CFA, HSS). Some participants knew whether key publishers in their discipline allowed self-archiving (CIT, MCS, SCS, TSB). Some understood that publishers specify what version of a work may be self-archived, but did not know what version was allowed (HSS, SCS). For those who saw no need to comply with publisher policy, the version issue was moot. None of the participants was aware of the SHERPA/RoMEO database of publisher policies, despite it being mentioned in the Dean’s letter.

A second reason given for not self-archiving was the belief that access is not a problem in their discipline: “Having your work discoverable using Google Scholar is sufficient because most academic colleagues have institutional subscriptions to the journals” (HSS). “All people need on the web is the citation; if they want the paper they can get it” (MCS). Reflecting on Kim’s model, time and effort were not mentioned as a barrier to self-archiving, though perhaps they were an unspoken deterrent related to the belief that people could access their work through traditional channels, making it unnecessary for them to invest time and effort in self-archiving.

6. Motivators and Barriers to Depositing Work in Research Showcase

Depositing work in Research Showcase presented an entirely different picture of motivators and barriers. The barriers are numerous and motivators seemingly nonexistent.

Research Showcase is an institutional initiative encouraged by the Faculty Senate resolution on open access. Some focus group participants arrived late and missed the question, but almost half (46 percent) of those who answered had not heard of the Faculty Senate resolution on open access. Slightly more than half (53 percent) had not heard of Research Showcase. Among those

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who knew about Research Showcase, few knew the Libraries were harvesting work self-archived on faculty websites or that we would deposit work for them if they sent it to the Outreach Coordinator.

Lacking awareness, participants also lacked understanding. They asked many questions about scope, motivation, and operational details. For example, does the Faculty Senate resolution apply to patents, teaching materials, or only peer-reviewed journal articles (CIT)? Should articles published in open-access journals be deposited in Research Showcase (HSS)? Should only peer-reviewed work be deposited in Research Showcase or should pre-prints deposited in an open-access disciplinary repository also be deposited in Research Showcase (MCS)? Given that material in Research Showcase is organized in collections by department, how do the Libraries decide where to deposit interdisciplinary work (CIT)? Does Research Showcase support multimedia, video, images, or sound (CFA, SCS)? Can it bundle data or other supplementary information with papers (CIT, TSB)? Does Research Showcase have anything to do with keeping copies at Carnegie Mellon forever (HSS)? A couple participants were glad the Faculty Senate resolution only encouraged open access, believing that a self-archiving mandate would cost money or restrict academic freedom (CIT, SCS).

No one objected to the repository or to the Libraries harvesting work they had already self-archived, but many perceived manually harvesting that work and, going forward, expecting faculty to provide metadata and copies for deposit as too slow and labor intensive. A couple participants recommended automating the harvesting so the Libraries could acquire newly self-archived material without the faculty having to do anything (MCS, SCS). Providing access to the most recent version of a work is important, but expecting faculty to submit updated versions of previously harvested or deposited papers is unacceptable because of the time and effort involved (TSB).

Another barrier was associating interdisciplinary work with the wrong collection (CIT). Currently the Outreach Coordinator deposits all material in the collection affiliated with the faculty member's home department. Many Carnegie Mellon faculty have appointments in more than one department or collaborate with faculty in other departments. Depositing all of their work in their home department's collection is inappropriate.

The name "Research Showcase" also presents a barrier. A faculty member with work in Research Showcase did not realize it was a repository. Another participant commented that the name suggests temporary publicity for recent work or work that merits special attention, not a permanent home for all work. Participants disagreed about whether "repository" should be included in the name or promotional materials. To some, "repository" implies that work goes in, but does not come out, a picture not likely to encourage deposits.

Participants who already self-archive were dubious about depositing their work in Research Showcase. "Civic pride," as one participant called it, usage reports, and long-term access were insufficient motivation. All agreed that a permanent home with persistent URLs would be an improvement over ephemeral web pages or disciplinary repositories dependent on external

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funding, but this was not a big enough win for them to take on new work. They mentioned two strategies that might motivate them. First, if Research Showcase provided a service or benefit they earnestly want but don't currently have. Second, if deposit was aligned with existing workflows such that it could be accomplished with little investment of time and effort.

Lack of value-added services presented a significant barrier to deposit. For example, personal or group web pages are very important to faculty. Participants observed that the personal web page provided by Research Showcase – the Selected Works page – is not an acceptable replacement for a website affiliated with their discipline or interdisciplinary group and over which they have greater control. If their website and Research Showcase could be integrated so that updating one automatically updated the other, or if Research Showcase could generate the list of citations (with links to the full-text) needed for their annual reports or websites, they might be persuaded to deposit work in Research Showcase.

On the brighter side, the Research Showcase software (BePress) and the University Libraries' Outreach Coordinator provide value-added services that might motivate some faculty to deposit their work. Participants noted the following as potential motivators:

- Bundling papers and supplemental materials
- Enabling them to dispense with maintaining their own database of papers by replicating their database's search functionality
- Checking publisher policy
- Depositing material for those who want their work to be available open access, but are deterred by lack of technical skill or knowledge of publisher policy

Faculty in all four focus groups raised the idea of coordinating deposit in Research Showcase with the annual reporting process. All Carnegie Mellon faculty are required to submit to their department head each year a list of publications, presentations, work in press, submitted work, working papers, etc. Participants said the Libraries should receive copies of the annual reports, which would provide an inventory of new material for possible deposit in Research Showcase. One participant suggested replacing the report template with a standardized form to enable the Libraries to automatically extract the metadata (CIT).

Participants brainstormed how faculty could grant permission to deposit their work in Research Showcase and how the Libraries could acquire copies of the work. Ideas for granting permission included the Libraries requesting permission from the faculty – one email request per year – after receiving the annual report or revising the report template to enable faculty to grant permission when preparing the report. Ideas for acquiring copies included requiring faculty to attach or include links to a digital copy in the annual report for items they wanted deposited in Research Showcase. The suggestions for acquiring copies did not grapple with the issue of publisher policy and allowed version.

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7. Overarching Concerns

Throughout the discussion, participants revealed two common concerns: time and quality. These themes surfaced in response to many focus group questions.

7.1. Concerns about Time

Saving time and investing it wisely are high priorities for faculty. Time was a factor in two reasons given for self-archiving: self-archiving circumvents the lag time to formal publication and takes less time than sending copies on request. Time was also a factor in why some faculty do not self-archive: checking publisher policy takes too long.

For faculty in all participating colleges, the time required to send metadata and a digital copy to the Outreach Coordinator was a significant barrier to deposit in Research Showcase. Participants also expressed concern about the time editors and reviewers spend on peer review (CIT, HSS, MCS, SCS, TSB), and the time authors spend complying with arbitrary journal submission guidelines and requests for picayune revisions that do not significantly improve the work and can lead to another round of review and revision (CFA, CIT, HSS, MCS, TSB). These time sinks contribute to the lag time to publication. In their publish-or-perish world, the payoff in journal publication is clear. The payoff for time to deposit in Research Showcase is not.

7.2. Concerns about Quality

Faculty seek academic reward for their contribution to the discipline. Promotion, tenure, and funding hinge on assessments of the quality of their work. Participants expressed concern about both the quality of work and the means for assessing the quality of work. Quality considerations informed decisions about what to self-archive, perceptions of potential harms related to self-archiving, perspectives on what content should be included in Research Showcase, and reservations about assessment methods.

Among the participants who self-archive, half of them talked about what they self-archive. Of these, 50 percent self-archived only material assessed as high quality, e.g., only peer-reviewed work (SCS, HSS), “only my best work” (HSS), or “only published or very polished work” (TSB). Another 30 percent mentioned self-archiving pre-prints or working papers, possibly in addition to peer-reviewed work (MCS, TSB). The remaining 20 percent had self-archived only teaching materials (MCS) or low resolution images (CFA).

Participants noted possible negative effects of self-archiving on promotion and tenure. “Self-archiving poor or unfinished work could harm you” (CIT, TSB). “If you post before peer review, you make yourself vulnerable; the risk can be mitigated by posting only peer-reviewed work” (SCS). “Because some publishers will not publish work that is available open access, the better approach is to publish in established venues, then self-archive” (SCS).

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When discussing the institutional repository, participants disagreed about whether only peer-reviewed work should be deposited in Research Showcase and whether the metadata should indicate the version deposited. At least one professor thought alerting readers was critical when the version was not the published PDF (SCS), while others observed that author manuscripts do not contain the errors introduced by copyeditors (CFA, CIT).

Concerns about quality also surfaced when discussing assessments of quality. Participants questioned the competence of some peer reviewers and editors (CIT, HSS, MCS, SCS, TSB) and perceived the peer review process and overall quality of open access journals as inferior to traditional journals (CIT, HSS, SCS). Most also questioned the merit of numeric metrics for assessing quality. Journal impact factors can be manipulated by publishers (CIT). Citation counts and download statistics can be manipulated by the author or his friends (CFA, CIT, HSS, MCS, SCS, TSB). A participant with work in Research Showcase believed the monthly report of downloads was inaccurate because it was so high (CFA). Participants agreed that promotion and tenure committees at Carnegie Mellon officially disparage numeric metrics as assessments of quality, but some reported being pressured to consult and to get citation counts (SCS, TSB).

8. Conclusions

The focus group discussions suggest that faculty in departments that were not enthusiastic about self-archiving in 2007-08 have become more engaged in the practice and that they prefer self-archiving on websites. A survey conducted in 2010 confirms these findings. Lack of awareness and understanding of Research Showcase and the functionality of the software are significant barriers to faculty participation in the institutional repository.

Aggressive marketing is warranted. The University Libraries need to develop a comprehensive campaign and targeted sales pitch. The campaign must leverage every opportunity and contact, from informal encounters with faculty and their support staff to formal presentations at department meetings and articles and advertisements in campus publications. The sales pitch must be succinct and engaging, focused on maximum gains for minimal investment. Focus group participants recommended condensing the pitch to fit on a postcard mailed to all faculty.

Three groups of potential depositors to Research Showcase surfaced during the focus groups. The three groups present different marketing challenges:

- Those who already self-archive on a website or disciplinary repository, for whom Research Showcase is redundant.
- Those who have no interest in self-archiving, for whom Research Showcase is irrelevant.
- Those who want to self-archive but are deterred by copyright concerns or perhaps lack of technical skill, for whom Research Showcase provides a venue and support.

For most Carnegie Mellon faculty, Research Showcase is redundant and therefore a hard sell. For those who already self-archive, only value-added services and minimal time investment will motivate participation. Unfortunately, many of the services that might motivate deposits by

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advancing faculty priorities are not provided by the Research Showcase (BePress) software. The software does not simplify website maintenance or provide a viable alternative to personal or group websites. It does not provide version control to manage work in progress or generate lists of citations with links to online copies. Though the software can bundle supplemental textual information (e.g., appendices) with papers, it does not support data deposits in a manner that would assist faculty in complying with the new NSF data management requirement (HSS, MCS). Lacking support for multimedia, video, and sound, it disenfranchises many faculty in the performing arts (CFA) and those publishing in new online journals that integrate video (SCS). Contingent on the vendor's development plans, finding a better tool may be necessary. Support for non-textual materials, faculty workflows, and personal websites could motivate faculty to deposit their work in the repository and are therefore important features to target in a replacement tool.

In the meantime, the University Libraries will pursue aligning deposit in Research Showcase with the annual reporting process, develop a workflow to ensure that interdisciplinary work is deposited in the appropriate collection, and explore whether the list of citations and links generated by Selected Works meets faculty needs. If it does, this will accelerate efforts to automate the generation of Selected Works pages from deposits in Research Showcase.

For those who have no interest in self-archiving, effective marketing strategies might include appealing to their academic obligation to disseminate their work and drawing their attention to self-archiving by their colleagues. If they use open access copies self-archived by colleagues, entreaties to reciprocate might influence their behavior. Peer pressure can turn the Faculty Senate resolution's strong encouragement to self-archive into an expectation to self-archive. For this group and for those who want to self-archive but have not yet, offering to check publisher policy or deposit work for them might motivate some. Reducing the time involved by aligning deposit with the annual reporting process will likely have broader appeal. The value-added services that would attract deposits from those who already self-archive might also attract deposits from those who are not currently self-archiving for whatever reason.

The disparity in faculty concern about publisher open access policies has serious implications for populating the institutional repository. Concern ranges from nonexistent to overwhelming. Some faculty self-archive regardless of publisher policy. Others do not self-archive for fear of breaching publisher policy; the time required to consult or comply with the policy deter them. For those who worry about publisher policy, the University Libraries checking and insuring compliance is a value-added service, removing a barrier to deposit. But for those who believe disciplinary culture and author power trump publisher policy, this is not a value-added service. If the Libraries harvest or otherwise deposit only work that fully complies with publisher policy, only a portion of the work self-archived by many faculty will be captured; the alternative is to badger them with requests for the appropriate version. This will not stir enthusiasm or motivate participation in Research Showcase. Developing a content recruitment strategy that appeals to faculty with different disciplinary cultures and beliefs about intellectual property will require flexibility, compromise, and risk tolerance.

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In addition, the Libraries need to help faculty address their concerns about quality. The Scholarly Communications Committee will explore including metadata in Research Showcase to indicate the version deposited and status of peer review. The Committee will continue efforts to dispel the notion that open access means no peer review or inferior quality work. In the broader context, future events in the Scholarly Communications Forum sponsored by the University Libraries and the Office of Legal Counsel will provide a venue for faculty to explore problematic practices in scholarly publishing, new metrics for assessing quality, and the gap at Carnegie Mellon between the official stance of promotion and tenure committees and the unofficial practices and pressures regarding citation counts. The Scholarly Communications Committee has asked the Faculty Senate to help convene a group of faculty to develop a strategic plan for the Libraries' scholarly communications initiatives, including strategies and tactics for bridging disciplinary differences and engaging faculty participation in the institutional repository.

After the focus groups were conducted, two new developments occurred that have potential to recruit content for Research Showcase. The Dean of the College of Engineering requested a report of downloads of all material deposited by faculty in the College; he wants to include the data in the annual report to the Provost. The Bipedal Locomotion Group in the Mechanical Engineering department requested the creation of an access-restricted collection in Research Showcase to facilitate collaborative work in progress. The Research Showcase Outreach Coordinator is working with the vendor to fulfill these requests. The Scholarly Communications Committee intends to leverage the success of these initiatives in future marketing efforts.

Focus Group Questions

1. Are you aware of the Faculty Senate 2007 resolution on open access? What do you think?
2. Do you make your work available open access? If yes, why and how? If not, why not?
3. Do you feel pressure from peers in your discipline or department to self-archive? Is self-archiving part of your academic culture?
4. Do you think self-archiving has any positive or negative influence on your promotion or tenure? Explain.
5. Are you aware of the University's open access repository Research Showcase? If so, what do you think of it? If not, what's the best way for the Libraries or the University to inform you of new resources, services, or Faculty Senate resolutions?
6. What might motivate you to deposit your work in Research Showcase? Do you know that many publishers allow you to self-archive your work? Do you know that the University Libraries will deposit your work for you?
7. If you could change one thing in current scholarly communications practice in your discipline, what would it be?

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