STRATEGIES FOR PROMOTING KNOWLEDGE FORMATION AND DISSEMINATION IN BUSINESS SIMULATION AND EXPERIENTIAL LEARNING

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ABSTRACT

While ABSEL serves many needs in the personal and professional lives of its members, its primary mission is outward looking. We believe that it may be captured in three basic functions: The formation, transfer, and utilization of knowledge regarding the development and use of business simulation and experiential learning techniques to further the well-being of society as a whole. This paper focuses on the functions of knowledge formation and transfer, with specific attention to sub-category of knowledge dissemination. It focuses alternative strategies and how they impact on research motivation and on the efficiency of knowledge dissemination. It does this by drawing on the literature growing out of the "post-hoc versus ad-hoc review process" and the "open access" movement for knowledge dissemination.

INTRODUCTION

Among the most important institutions in the development of modern, technologically drive society are those that are entrusted with the formation, transfer, and utilization of scientific knowledge. In this context, "scientific knowledge" means knowledge based on the systematic study of observed phenomena with the objective of developing general principles that explain and reliably predict causal sequences of events. In the context of business simulation and experiential learning, this means the study of simulation games and experiential learning interventions in order to understand how they work and, ultimately, to enable us to formulate interventions that have positive and predictable results.

In the specific domain of business simulation and experiential learning, the scientific knowledge we seek focuses on management. Furthermore, to be useful, this knowledge must not only be formulated, but also, transferred and utilized by managers and the educators who seek to assist them. All three of these functions are crucial to management effectiveness and central to ABSEL's mission.

Finally, we need to disseminate the research we develop. Dissemination is a sub-category of knowledge transfer. Its relationship is much the same as media are to communication. Knowledge transfer in communications includes the study of how messages are encoded, decoded, and processed as well as how they are delivered to the desired recipients. In ABSEL, knowledge transfer research includes a corresponding study of how our research is delivered and diffused among the various classes of users. This is reflected in a large number of papers, including work such as Burns and Bansiewicz's (1994) classic bibliometric study of ABSEL research co-citations, Howard and Strang's (2001, 2003) subsequent series on ABSEL authorship and topical patterns, and Cannon and Smith's (2003, 2004) study of the sources of knowledge imported into ABSEL research from external sources.

In contrast to the more general research on knowledge transfer, little work appears in the Knowledge dissemination. Whereas, prior studies have focused on the study of how knowledge has diffused among ABSEL researchers, and from the larger research community to ABSEL researchers (Cannon and Smith 2003, 2004), our discussion is more normative in nature. It draws on a model of market efficiency to evaluate alternative publication strategies, couching the discussion in the larger literature regarding open-source versus the traditional proprietary system of journal publication.

BACKGROUND: AN OVERVIEW OF THE CURRENT KNOWLEDGE-DISSEMINATION SYSTEM

To place ABSEL in the large context of America's research establishment, and by extension, in the larger global system that has roughly come to mirror it, consider the role of basic research in society. In contrast to more

applied research, basic research involves the development of abstract, generalizable theory, and through it, understanding of all subjects relating to the way individuals, society, and their surrounding physical and biological environment function. Clearly, this understanding has value, but the chain between basic research and practical commercial applications often relegates it to a low priority in the budgets of profit-driven organizations.

From an economic perspective, this makes sense. The application of basic research is often so broad that it takes on the nature of a social good, one that society values, but no individual or firm has sufficient financial incentive to produce. To address this, we have chosen to house a basic research function in our high-level academic institutions. The research these institutions conduct is funded, in large part, by public funds, reflecting its value to society as a whole. Exhibit 1 provides a general map of the system. In the discussion that follows, we have italicized the terms mentioned in the Exhibit in order to facilitate matching the discussion with the map.

The primary research funding institution is *government*, apportioning funds on both the state and federal level. But this is supplemented by grants from *non-governmental organizations* (*NGO*s) and *industrial organizations* – generally large companies, acting either individually or as an industry. These funds, in turn, are administered primarily in two ways:

First, *academic research organizations*, most notably universities, have allocated increasing levels of resources to research. *Direct research funding* comes in the form of government subsidies (in the case of public universities) and various gifts and endowments in the case of *NGO*s and *industry*. Subsidiary *professional associations* (such as ABSEL) provide discipline-based organizations for channeling, organizing and disseminating this research. "*Think tanks*" are similar in many ways to the research arms of universities, and are often housed within universities in the form of sponsored "centers" or "institutes." Their

How the Societal Research Establishment Creates and Disseminates Basic Research
Exhibit 1
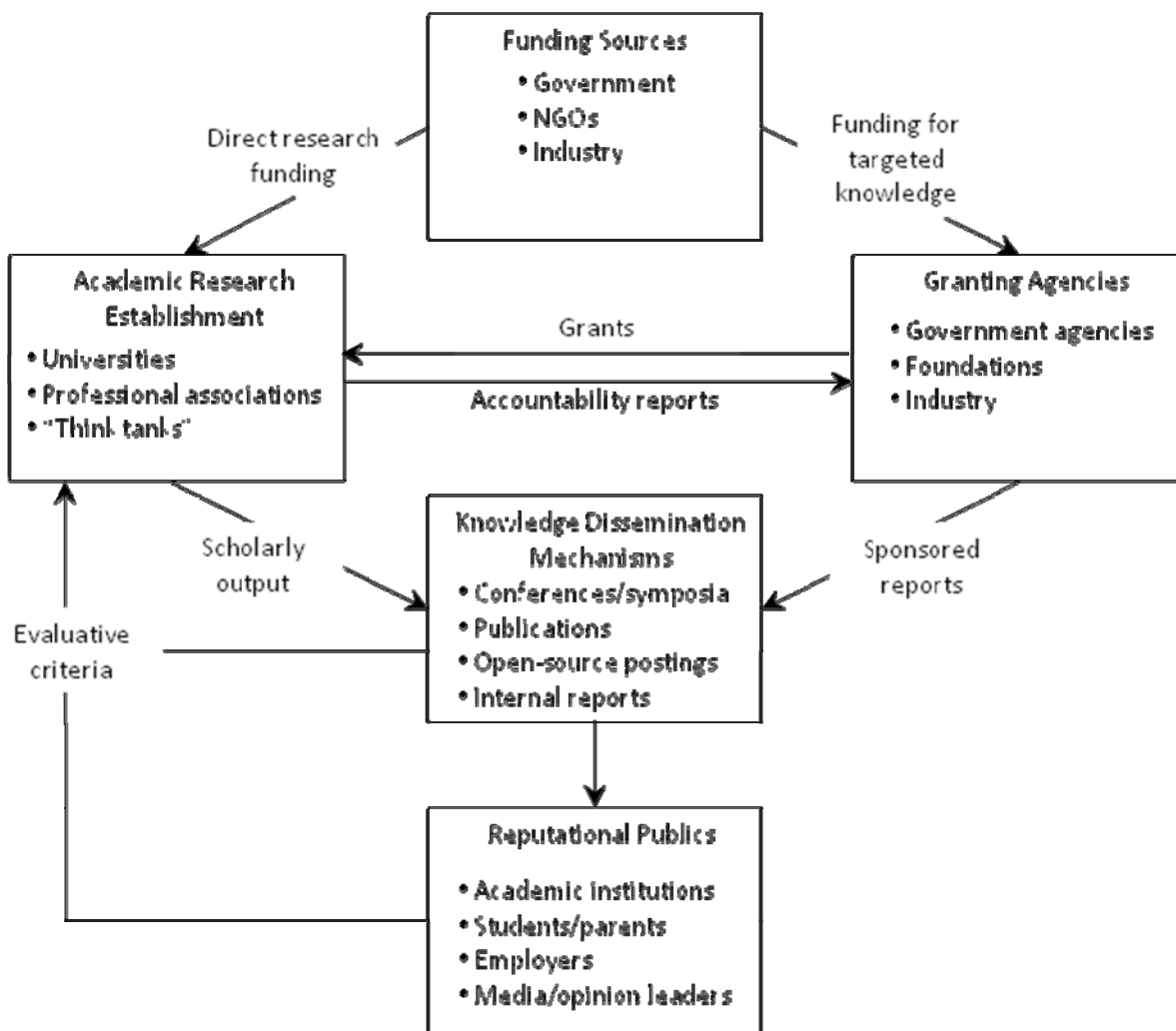
mission is generally to pursue a particular type of research or work on a particular type of research problem, as illustrated by Bernie Keys' Center for the Advancement of Business Simulations and Experiential Learning (CABSEL) at Georgia Southern University (Keys 1990).

Second, *granting agencies* provide a mechanism for administering research funds allocated by *funding sources*. These can be generally categorized as *governmental agencies*, *foundations*, and *industry groups*. In contrast to *direct research funding*, we have characterized this second path as *funding for targeted knowledge*. Granting *agencies* generally disperse funds through specific *grants*, formulated to address a particular research issue. In return, they receive the results of their sponsored research through what we have termed *accountability reports*, documenting the research process and reporting its results.

Most relevant to this paper are the *knowledge dissemination mechanisms* used to enter *scholarly output* and *sponsored reports* into the public record. This is the ultimate payout for the societal research establishment, providing an ever-increasing body of knowledge on which other researchers can build, moving the frontiers of societal knowledge. *Conferences/symposia* and *publications* (proceedings, journals, books, monographs) are the most obvious mechanisms. However, with the advent of the Internet, *open-source postings* (Internet postings with no requirement to compensate the source) are becoming more popular. *Internal reports* are also common, limiting distribution to members of a particular organization, a given set of subscribers, or purchasers of individual reports. discussion is the academic research establishment, especially universities and professional associations (of which ABSEL is one). Furthermore, ABSEL research tends to be supported by general academic research budgets, not by funds from granting agencies.

Reputational publics (*academic institutions*, *students/parents*, *employers*, and *media/opinion leaders*) provide the fuel for driving the actual research process. While a *university*'s research mission is usually established by policy, its pursuit is driven by the reputation created through high-profile research. The same is true for *professional associations* and "*think tanks*." Even more important, it is true for the individuals or groups who actual do the research. In the end, the nature, quality, and quantity of research that gets done tends to depend on *evaluative criteria* by which research is judged and rewarded.

This is not to say that researchers are only motivated by external rewards. Indeed, much of the reward is often in doing the research itself. However, few individuals will persist as productive researchers without some positive reinforcement. This is even more true of the institutions within the academic *research establishment*, where funding ultimately depends on the perceived quality of the work they do.

The foregoing discussion was designed to set the stage for a more specific discussion of knowledge dissemination in the field of business simulations and experiential learning. The general pattern is not hard to apply. The value of research in simulation and gaming would seem to be important in the larger fabric of societal knowledge. However, Exhibit 1 would suggest that its future will depend on the relative value placed on this research by society, which is to say, by the *evaluative criteria* used to determine how it is rewarded.

IMPEDIMENTS TO EFFICIENT KNOWLEDGE FORMATION AND DISSEMINATION

Drawing on our discussion of Exhibit 1, we see that the motivation to do good research (in our case, focusing on simulation and experiential learning) is inextricably connected to the process of knowledge dissemination. The dissemination of research drives reputation, and the desire for reputation drives motivation to produce. The traditional approach is to disseminate research through publication in peer-reviewed journals and to evaluate productivity by the prestigious of the journals in which one publishes.

While the basic concept of peer reviewed publication is generally considered valid, many have begin to argue that the manner in which it is currently implemented is not very efficient. Our purpose in this section will be to discuss two major areas of controversy, presenting an alternative view to the current system. These are captured in the "post-hoc versus ad-hoc review" and "open access" (The Right to Research Coalition, n.d.) controversies. We will then discuss how they link together in a larger strategy for knowledge formation and dissemination.

## THE POST-HOC VERSUS AD-HOC REVIEW CONTROVERSY

The first major controversy revolves around the current process by which research is screened to determine whether merits publication. Articles are submitted, reviewed, revised, and either published or rejected. As we have seen, the system is energized by the fact that scholars are rewarded for producing knowledge. Production is measured by the quantity and quality of the scholars' published research. Exhibit 2 portrays the process.

THE POST-HOC REVIEW MODEL

We will refer to the current process as the *ad-hoc*, or *exclusionary, review model* because it uses the peer review process to evaluate research prior to publication, excluding manuscripts that are found to be of an inferior quality. In order for journals or other publication outlets to become more prestigious, and hence, to benefit from scholars' need for the rewards of prestigious publications, they seek to become ever more exclusionary.

Again, Exhibit 2 portrays the process. Scholars engage in knowledge formation (box A). They submit their research to publishers (box B), who, in turn, submit it to an

The Current Process of Knowledge Dissemination –
The Ad Hoc (Exclusionary) Review Model
Exhibit 2
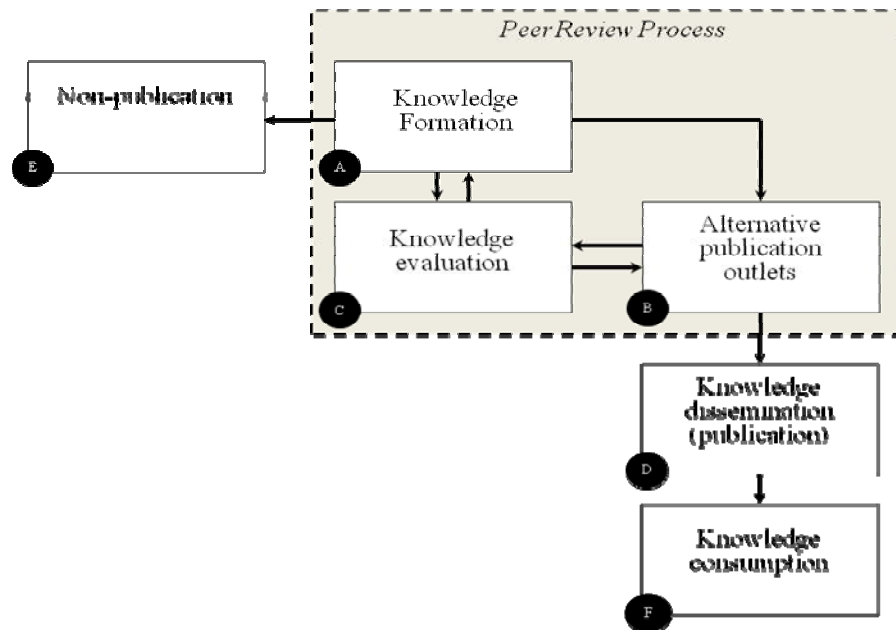
evaluative review process (box C). Scholars might revise their research various times, as suggested by the double arrows between boxes A and C. In the end, the research is disseminated through publication (box D), where it is consumed by other scholars (box F).

Exhibit 2 also portrays the more common pattern, where research fails in the initial review process. It is then sent off to another publisher (box B) to try the process again. And so it cycles until it finally finds a published home.

In many cases, scholars become discouraged and simply do not publish their work (box E), thus excluding it from scholarly access. This, of course, may be due to flaws in the research. But rarely is a piece of research totally flawed. Rather than seeking out any value that might exist, the discouraged researcher simply shelves the project. This is especially true in academic research institutions, where tenured faculty may express their discouragement by simply ceasing to publish.

Notwithstanding the pervasive nature of the *exclusionary review process*, our evaluation of Exhibit 2 suggests three major problems:

1. *Reduced research productivity*. The central feature of *the exclusionary review model* is the ad-hoc review process. Unfortunately, the process is far from perfect. A significant amount of useful knowledge gets excluded, simply because of poor reviews. Typical peer reviews involve two or three reviewers, plus an editor. While peer comments can be useful in pointing out problems missed by the author(s) of a study, as an

evaluative process, they tend to be highly unreliable. Reviewers often disagree, and the fact that there are only two or three of them offers little chance for using statistics to extract truth from random error. The result is that good research will be lost. This loss reduces the efficiency of our research, wasting enormous amounts of money. The loss is compounded enormously by the impact discouragement has on researcher motivation.

2. *Journal proliferation*. Failures in the review process notwithstanding, if authors are persistent enough, a good study will go through enough reviews that it will generally be published. However, the process scatters articles across an ever-growing number of journals. This creates two problems: First, it makes the research harder to find. This may be offset with electronic search engines. However, this leads to the second problem, which is the cost of scholars and/or libraries purchasing an increasing number of subscriptions in order to make the research available. This is a major driver of the burgeoning cost of research.

3. *The problem of global evaluation*. In the end, the current system of review must classify research as either publishable or not publishable. In fact, no study lends itself neatly to this kind of global evaluation. No study is perfect; nor are many so universally flawed as to have no value. The process of manuscript revision addresses this problem. But it is very inefficient. Why spend time revising the methodology of a relatively insignificant empirical study when the real contribution is in the literature review? Or conversely,

the literature review when the real value is in the study? Nevertheless, the *exclusionary review model* seeks global perfection prior to publication. If a manuscript is not published, any positive aspects of the paper are lost, or relegated to a lesser journal.

THE AD-HOC REVIEW MODEL

Having established the nature of the problematic *ad-hoc, exclusionary, review model* of scholarly communication, we must naturally ask ourselves what alternatives are available. In fact, we see another model rapidly emerge in the scholarly community, largely because of the ease with which scholarly research can be made available through the Internet (Harnad, 1999a, 1998a, 1996; Brooks, 1999).

According to O'Donnell (1995), electronic publishing was competing with traditional publishing as early as 1995. At that time, he made the following prediction:

> *Extrapolating from the success of journals that are currently published electronically, it is clear that electronic media will capture a large share of scholarly*

A Dramatization of the Two Key Issues: Open-Access and Post-Hoc Review
Exhibit 3
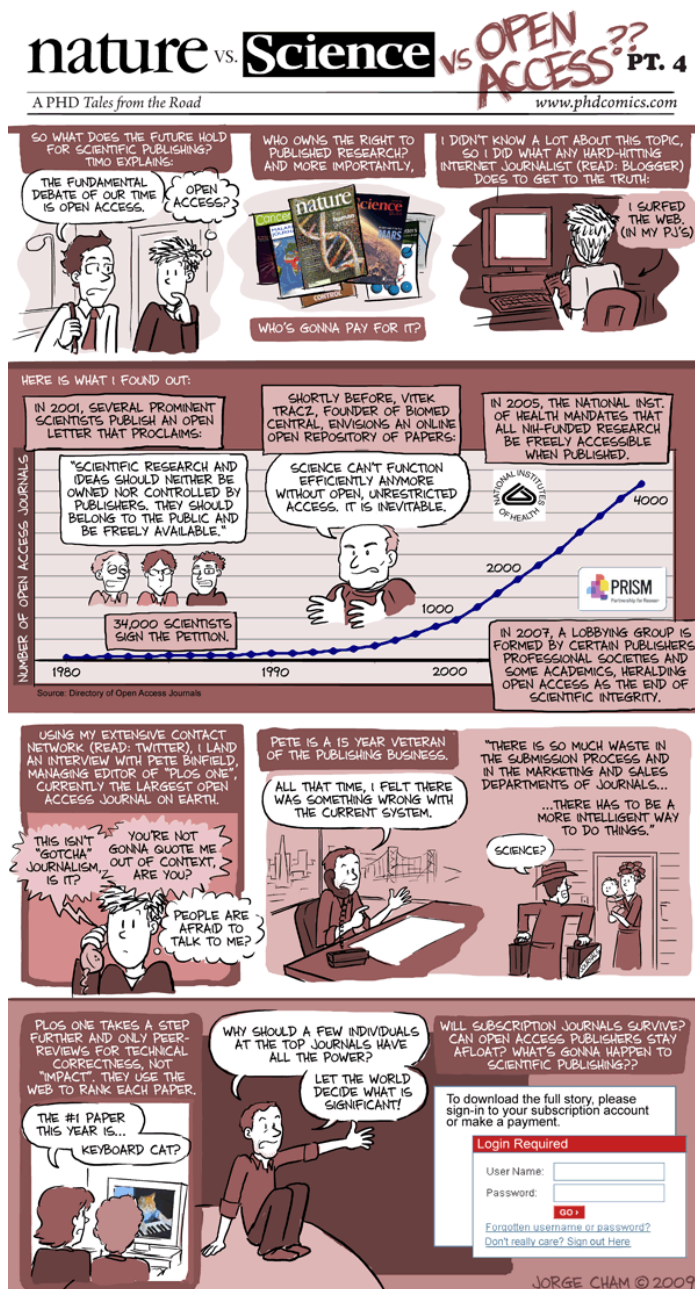
publication in the next five years, and that printed media will not be competitive in journal publication beyond a few more decades. (p. 183)

According to Wood (1998), "the introduction and wide acceptance of the Internet, and in particular the World Wide Web by researchers ... has provided exciting new opportunities for experimenting with the process of scholarly communication" (p. 173). Tomlins (1998) goes even further, suggesting that editors have "an absolute obligation to respond to the development of electronic publication" (p. 136).

So, what is the response? Exhibit 3 dramatizes the key issues now being discussed in the academic research establishment. They involve a combination of the *post-hoc review model* and the Internet-driven *open-access* movement in academic publication. These are portrayed in Exhibit 4 The model provides an extreme case, which we will consider as a contrast to the *ad-hoc review model*. In fact, the two models are not mutually exclusive. We will address this in our discussion of *hybrid models* below.

The *post-hoc review* model features three major differences from traditional scholarly publication: First is the s*eparation of the publication and review process*. The exclusionary nature of the traditional publishing process results from linking scholarly publication to the review process. Nothing gets published unless it passes the review process. This need not be the case. As Exhibit 4 suggests, the Internet provides a particularly convenient medium for publication (box B) because it has a very low cost and high accessibility. The process of knowledge evaluation (box C) derives from actual users of the research (box D) rather than from assigned reviewers. The most obvious form of evaluation is individual publication citation analysis, now readily available through Google Scholar (scholar.google.com) and add on programs such as "Perish or Perish" (http://www.harzing.com/pop.htm). But the actual content of the citations also provides important evaluative information. Authors may gain helpful evaluative insight directly from writing that builds on their work, or indirectly from feedback provided by the researchers who are using the cited work.

Second is *free Internet open access to scholarly publications*. By separating the publication and review process, scholars are at liberty to post their work themselves (box B of Exhibit 4). There are a host of ways to do this, from individual Internet posting to research data bases hosted by universities or professional societies. But the fact that the Internet provides virtually free and instantaneous access to scholars all over the world offers enormous possibilities for scholarly research productivity. Academic scholars write for the public domain, and the *post-hoc review model* provides a mechanism for true public dissemination.

An Alternative Process – The Post-Hoc Review Model
Exhibit 4
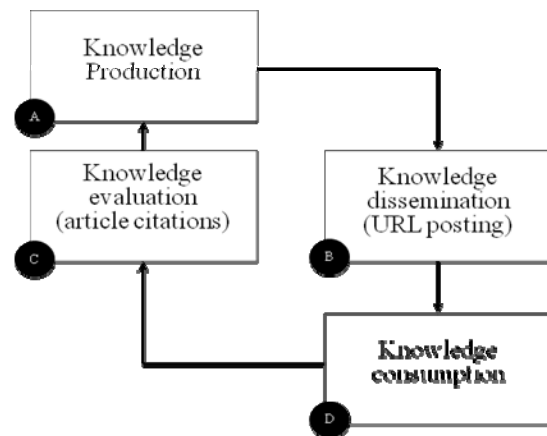
HYBRID REVIEW MODELS

Performing and distributing knowledge evaluations is clearly the biggest issue with *the post-hoc review model*. If publication is not controlled by the review process (as in *the exclusionary review model*), scholars could quickly become overwhelmed with a flood of studies, most of which have relatively little scholarly merit. Sorting through them would become all but impossible. Furthermore, scholarly productivity is traditionally measured by publication in established academic journals. The promotion and tenure at research universities has a similar need for independent evaluations of research quality.

The problem is not a new one. In fact, the same issues are being raised in the field of journalism, where news reporting faces a similar conflict between *the exclusionary review model* and *the post-hoc review model* of knowledge dissemination resulting from the proliferation of independent news reporting on the Internet. Traditional news media are decrying Internet publishers for lack of standards and assurance of veracity in their publishing -- in a word, its "quality."

In a larger sense, the problem is one that has always characterized a free marketplace of ideas. How do you keep people from being overwhelmed by the vast quantities of information available, most of which is of low quality and little use? People typically cope with the problem by looking to trusted experts/opinion leaders to indicate which ideas are worth paying attention to. However, the argument for a free marketplace is that a deviant voice may still speak out and be listened to by some, even when the established opinion leaders oppose it.

In the scholarly community, one may argue that opinion leaders are even more entrenched than they are in society as a whole. The most prestigious journals rely on them as editors and reviewers to determine what should or should not be published. And the argument for a free marketplace of ideas is no less compelling. History is rife with stories of

the difficulties deviant scholars have had bringing their ideas to light.

The post-hoc review model can be applied without a review function. However, it will have a difficult time taking hold unless some major "journals" or other evaluative mechanisms come on the scene to evaluate scholarly output. This is not just for the sake of knowledge consumers, but also for the people who evaluate faculty candidates for promotion and tenure.

Notwithstanding its problems, the *ad-hoc review model* has a number of advantages. Screening papers prior to publication does eliminate many flawed papers, thereby increasing the overall quality of published papers. This, in turn, reduces clutter, facilitating the identification of quality research. What's more, the feedback from reviewers increases the quality of the papers that are actually published, again raising the overall quality of research available.

By contrast, post-*hoc review* suffers on each of these points. The literature will become more cluttered, and authors will not benefit from the helpful comments of reviewers during the revision process of their papers. Useful post-hoc comments may come too late, leaving authors to publish embarrassing errors that may be difficult to expunge from the literature. At the same time, we have seen that the review process inevitably screens out useful as well as inappropriate research contributions, and it discourages authors from contributing. Both of these serve to reduce the overall quantify of high-quality research.

One way to address this problem is to develop a hybrid model, in which elements of the *ad*-hoc and *post*-hoc models operate simultaneously. We refer to these as *hybrid models,* recognizing that they may take many different forms, combing the various elements of the two review models in different forms and combinations. For instance, many scholars are already beginning to place their work on web sites, noting that a version of the paper was published in a particular journal. Or they publish working versions, noting that it is a work in progress and will be updated as the work progresses. Often, they will solicit comments from readers that might help improve their work.

Exhibit 5 portrays a general hybrid model that captures the most obvious alternatives. The process accommodates the traditional *ad-hoc review process* as portrayed in Exhibit 2. It also accommodates the *post-hoc review process* as portrayed in Exhibit 4 by adding on-line posting before and/or after journal publication, eliciting users feedback and article citation statistics.

Note that the hybrid evaluation process closely parallels the process used by ABSEL through its Bernie Keys Library (BKL) publication. While its conferences papers are subject to peer review, this represents a very rough evaluation, designed to screen out only the most deficient papers. Those that remain are posted in the BKL, which, in turn, is widely disseminated, including free on-line posting. The online posting makes the papers available for cataloguing through Google Scholar. The BKL copyright agreement specifically grants permission for subsequent publication, thus allowing updated versions to be published in journals such as *Simulation & Gaming*.

A little creative thinking might suggest additional hybrid arrangements. For instance, in place of conventional journals, we might evoke a *post-hoc review process* to publish evaluative reviews of Internet-posted articles. A

A Hybrid Review Process
Exhibit 5
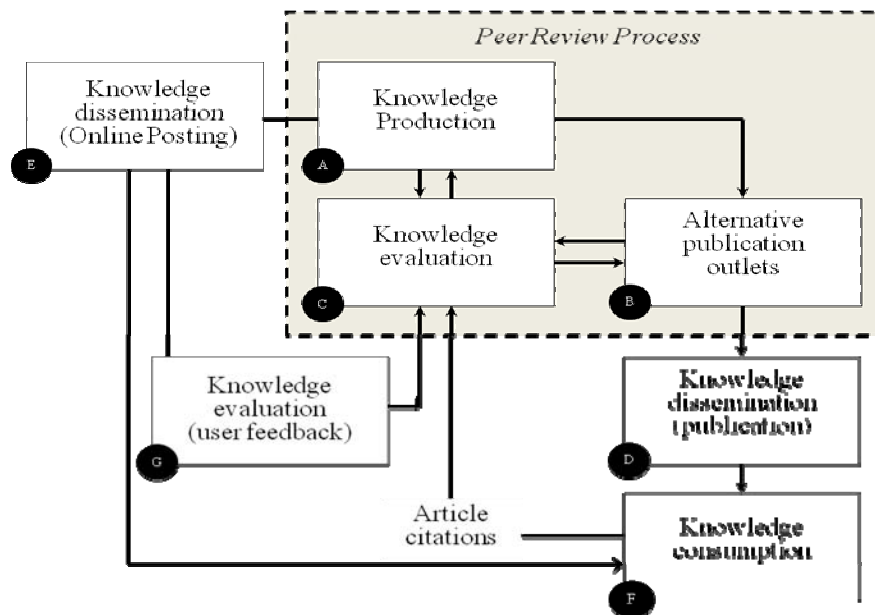
variation on this might be journals featuring high-quality articles selected from those available online. In essence, these would be similar to what we know today as "readings" books, perhaps with improved papers based on additional peer-review feedback. These variations are all easy to implement within the existing BKL framework.

SUMMARY AND CONCLUSIONS: THE ECONOMICS OF KNOWLEDGE DISSEMINATION

As a concluding note, let us return to the notion of our *societal research establishment*. Drawing on the basic classical liberal economics, we would expect research efficiency to be a function of four basic principles:

1. *Researcher self-interest.* Presumably, those involved in the research establishment will work toward rational solutions to research efficiency. However, on the individual level, we see researchers sacrificing long-term rewards for the much lower immediate benefits of poor quality, but more readily conducted research. On the institutional level, we see enormous resistance to even the most persuasive arguments for the increased research productivity fostered by post-hoc evaluation, online publishing, and open access. We have certainly observed this in ABSEL discussions, where Board members have proposed more restrictive ad-hoc review and fee-based restricted access for the BKL.
2. *Easy access to the means of disseminating and accessing research.* A free market of ideas depends on the means for making the ideas available to all those who might to use them. Again, our two key suggestions are *post-hoc review* and *open access*. *Post-hoc review* ensures that valuable research is not blocked by faulty reviews or the discouragement coming from a flawed review process. *Open access* removes the friction created by restricted, costly access to publication data bases. Again, these are issues that have been hotly discussed by ABSEL.
3. *Information regarding the nature and quality of research.* Making research available is of little use if users do not have the information needed to find the research they need. This creates enormous pressure for creating effective search tools. The most exciting of these are Google for research identification and Google Scholar for research evaluation. Nevertheless, we have identified a number of other potential tools, such as "evaluative journals," featuring post-hoc review to identify particularly useful articles in various areas of research.
4. *Lack of externalities.* Externalities occur when the costs or benefits of one person's decision create satisfaction or dissatisfaction for another. This drives to the root of our societal research establishment. Basic research benefits all of society, whether they pay for it or not. To address this, the Government has invested heavily in promoting basic research, most notably through

subsidies for academic researchers. This provides a powerful argument in favor of *open access*. Why should we charge money for access to the research that was subsidized by our universities, and ultimately by the Government, to address its social benefits.

Cast in this light, we begin the see the dilemma created by the system described in Exhibit 1. The traditional methods of knowledge dissemination are journals, with the most selective and prestigious journals providing the greatest rewards to researchers who publish in them. In order to increase the prestige, the journals are becoming ever more selective; as they become more prestigious, researchers become more highly motivated to publish in them. The cycle increases quality, but, following the logic of this paper, it has a negative effect on productivity.

From a practice perspective, new evaluative criteria, such as individual article citation rates from Google Scholar (Harzing 2008)), provide a powerful tool for changing the system. However, we must understand and use the tools for them to be effective. This suggests a productive area of research for ABSEL scholars – how to develop, use, and promote metrics that will enable us to restructure the system of research evaluation and researcher reward systems.

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