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Chapter 2 Exploring the Intersections of Information Literacy and Scholarly Communication [Two Frames of Reference for Undergraduate Instruction]

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> *You can know the name of a bird in all the languages of the world, but when you're finished, you'll know absolutely nothing whatever about the bird… So let's look at the bird and see what it's doing—that's what counts. I learned very early the difference between knowing the name of something and knowing something.*
>
> —*Richard Feynman, (2010)*

> *Unfortunately, students are too often asked to use the tools of a discipline without being able to adopt its culture. To learn to use tools as practitioners use them, a student, like an apprentice, must enter into that community and its culture.*
>
> —*John Seely Brown, Alan Collins, and Paul Duguid (1989, 33)*

Introduction

When librarians, regardless of their professional role, hear the phrase "scholarly communication," they likely think of topics such as peer review, the journal "crisis," open access, impact factors, licensing, copyright, authors' rights, and institutional repositories. On the surface,

these topics might seem far removed from what librarians think of as tenets of information literacy instruction, especially when they are working with undergraduates. Many librarians consider the one-shot instruction session as too brief to successfully engage students about the ins and outs of open access. They may regard undergraduates as the wrong audience for a discussion about the journal pricing crisis, the cost of procuring and producing information for academic consumption, and the troubling need to reduce or cancel campus subscriptions. Yet all of the scholarly communication phenomena listed above radiate from a more basic and central core that is highly relevant to the undergraduate experience in higher education: *how scholars communicate,* how they create, share, vet, discover, process, and access new knowledge. This is the basis of scholarly communication. The issues in librarianship commonly associated with that highly charged term deal with the practices and tools that support the communication processes of researchers. These are the same processes that students are asked to participate in when they must find scholarly literature and use it in their assignments in ways perceived as valuable and appropriate to the academic community.

If librarians are to help students become information literate within an academic context—one in which they must find, understand, and use scholarly sources—teaching students about how scholars communicate seems like a pretty fundamental undertaking and one that must be approached carefully. Perhaps not every topic associated with scholarly communication is relevant, but many of the central issues can be used in powerful and transformative ways within information literacy instruction. Librarians who teach undergraduates just need the right frames of reference and a common understanding of the "languages" that attach and derive from those frames of reference. Indeed, they are likely already to be using a few scholarly communication tactics and issues without labeling them as such. Often, however, librarians could go deeper—perhaps much deeper—in exploring scholarly communication issues with students in order to provide greater context for how to search and how to find by exploring "Why is it this way?"

In a recent publication, we outlined a suite of instructional strategies to incorporate scholarly communication and economic topics systematically into a one-shot library workshop (Warren and Duckett 2010). These strategies have been developed, tested, and refined through seven years of experience providing a seventy-five minute session equally divided between hands-on practice with using disciplinary databases and Google Scholar and a rich discussion of peer review, journal pricing, a research library's collections budget, open access, and more.[1]

Based on this experience, we developed a strong conviction that teaching students about scholarly communication has an *essential*

place within library instruction. The students' and instructors' reception to learning about these scholarly communication topics has been so overwhelmingly positive that this work has infiltrated instruction for other contexts, including a freshman composition program and a three-credit undergraduate honors seminar at the school where this instruction model originated (North Carolina State University). Parts of this instruction model have also been used with audiences as disparate as engineering and textiles management undergraduates and education and communication graduate students. Moreover, these ideas have been presented to other librarians at conferences as diverse as ASEE (American Society for Engineering Education), LOEX (Library Orientation Exchange), ACRL (Association of College and Research Libraries), and the Charleston Conference to positive response, so we believe we are onto something.

In this chapter we will explore the essential role of scholarly communication in information literacy instruction within higher education, especially as it pertains to undergraduate students, and provide two frames of reference that can be used for thinking about the information imparted. The first of these is a sociocultural perspective that focuses on exposing the dynamics at play in the creation of scholarship. The second is an economic perspective that brings the business side of scholarly information into instruction to shed light on today's complex information landscape. Obviously these two perspectives cannot be wholly divorced from each other, and though they can be used separately, they have natural intersections as well. We will share examples of instructional contexts and strategies for which these two perspectives make sense in information literacy instruction.

Academic Information Literacy and Scholarly Communication

In higher education, library instruction is often focused on supporting students in understanding how to find, evaluate, access, and use scholarly information. In other words, the focus is on developing what Elmborg (2006) calls "academic information … the ability to read, interpret, and produce information valued in academia"(196). From the very beginning of their academic careers, students are initiated into these practices through their course readings and research assignments. Many students are required to find and use peer-reviewed, scholarly articles written for the academic community. They are expected to write and cite like historians, sociologists, or physicists—practices that are very far removed from how they communicate in their daily lives. Of course, academic information literacy does not represent the full spectrum of what it means to be information literate, but within higher education, a great deal of attention has been devoted to it as it

seems to remain a perpetual challenge for students. None of the new search tools or improved interfaces ever quite removes the barrier.

Placing boundaries around what we are describing as information literacy in the context of this article is important. Since the early 1990s, researchers have focused on literacy from a variety of disciplinary perspectives and now believe that there are many "literacies." These literacies span domains such as information literacy, digital literacy, media literacy, and visual and spatial literacy, among others, but many researchers also emphasize that literacies are given meaning within specific social groups. Many proponents of the new literacies argue that literacy is to a great extent a sociocultural rather than simply a mental or psychological phenomenon (i.e., developing a literacy is part of participating in a social or cultural group rather than something that simply transpires within an individual; see, for example, Gee 2010). Accordingly, we can view becoming academically information literate as a process of enculturation into academic and disciplinary practices, which is in line with many of the objectives of higher education.

Teaching students about the sociocultural dynamics at play in scholarship also finds support from a situative learning perspective and the concept of communities of practice, both of which hold that all learning is intimately tied to cultural and social contexts. Hence, we learn concepts and skills, not simply by doing, but specifically by doing in a way that is consistent with how the doing is done by real practitioners (in this case, faculty members). As Brown, Collins, and Duguid (1989) described in their seminal article, "Situated Cognition and the Culture of Learning," concepts are tools that are progressively learned through authentic activity. Chemical concepts cannot be truly learned by studying formulas in a textbook; they must be experienced through chemical manipulation as chemists use them in their practice. We learn the intricacies of language through its use in real social contexts rather than by studying grammar. Furthermore, they argue that learning is inevitably tied to enculturation because concepts and core skills—which they label tools—cannot be divorced from the communities of practice in which they function and have meaning. As they explain, "Because tools and the way they are used reflect the particular accumulated insights of communities, it is not possible to use a tool appropriately without understanding the community or culture in which it is used" (33).

In the context of academic writing and research, peer review (a core concept and value), journals, articles, and databases or indexes (all core tools), plus the more recent addition of repositories, should be brought into play in activities that help students better understand how the academic community produces and shares knowledge. It can

be argued that the frequent requirement for students to use scholarly literature is instructors' shorthand for "Don't use Google, use the library." It may be an effort to steer students towards what instructors perceive as higher quality information. At other times, this requirement represents an intentional desire to have students grapple with how disciplinary researchers communicate and have them emerge with an understanding that knowledge in the academy is being produced as the result of many conversations and discussions and often is not in a settled state such as textbooks present. In either case, the "peer-reviewed" requirement can leave students bewildered. As Brown, Collins, and Duguid (1989) warn, "Unfortunately, students are too often asked to use the tools of a discipline without being able to adopt its culture. To learn to use tools as practitioners use them, a student, like an apprentice, must enter into that community and its culture" (33). In the case of academic information literacy, without situating concepts, values, and tools within their academic cultural context, they too often remain arbitrary and disjointed for students. This is certainly the situation many librarians confront when trying to gauge why students have such difficulty in transferring practical searching and discovery skills across resources, much less understanding how a library works in a holistic way.

True enculturation takes time, but if students must find, read, understand, and use peer-reviewed literature in a rhetorical style mimicking scholars, they deserve to have these concepts, tools, and values explained to them in order to facilitate the process of becoming more academically information literate and hence better students.[2] Librarians are well-positioned to provide the bigger picture of how academic information is created, vetted, distributed, stored, and accessed. In academia we *are* usually the most knowledgeable experts on these topics and often the only ones who see the larger context. If the disciplinary information taught by faculty is the trees, the structures that delimit how that information is shared are the forest. This bigger picture of scholarly communication can be brought down into language students can understand and into contexts that help them make sense of the requirements imposed on their assignments.

The ACRL's (2000) *Information Literacy Competency Standards for Higher Education* provide an oft-cited common framework for designing, implementing, and assessing instruction sessions and programs in higher education librarianship. Scholarly communication issues are right there among the standards, though the term is never used explicitly. Standard 5 describes that "the information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally." The performance indicators focus attention on a range

of issues important in scholarly communication—privacy, copyright, plagiarism, intellectual property, correct use of citation, and the ability to identify and discuss "issues related to free vs. fee-based access to information" (5.1–5.3). But in practice, how often do librarians bring scholarly communication topics into the library instruction classroom or even use that term in relation to their work? While the phrase "scholarly communication" may not resonate with students, citation, intellectual property, and plagiarism often do and may be incorporated into library instruction. Meanwhile, there are other "economic, legal, and social issues surrounding the use of information" that are less commonly woven into the lesson plan.

Bringing scholarly communication into library instruction means teaching students about information—what it is, how it comes to be, and the forces at play in scholarly publication. We believe that providing students with such context goes hand-in-hand with teaching the discovery, evaluation, and use of information for academic purposes. Over the past decade, librarians such as Elmborg (2006), Pawley (2003), Swanson (2004), and others (Accardi, Drabinsky, and Kumbier 2010) have collectively brought a critical approach to information literacy similar to that which has also penetrated literacy studies and education in general. At the heart of this movement is the belief that helping students become more information literate inevitably means teaching students about the social, economic, and political forces at work in the creation, evaluation, and interpretation of information. Such an emphasis is important in order to help students see information as more than simply an object out there to be discovered (Pawley 2003), which is too often the common perspective of librarians and library users alike. Information is created within social contexts and can be valued differently by various groups or individuals, including the student herself. Getting students to understand that they may actually develop a critical perspective on whatever field they are studying, and that doing so is often the mark of becoming a scholar, is a general challenge within higher education. Providing this social, political, and economic context to information literacy means telling students the "back stories" of information (Chung and Duckett 2009) in addition to teaching them to use search tools such as library catalogs, article databases, repositories, and Google Scholar.

Proponents of critical information literacy argue that standards such as the ACRL's (2000) *Information Literacy Competency Standards* may lead to an excessive focus on teaching skills related to finding, accessing, and evaluating information at the expense of teaching students about how information is intimately tied to the social contexts in which it is created and used. The ACRL standards may be useful in outlining the research process, but to echo Swanson

(2004), "Before we train students to use search tools, before we send them to books, periodicals, or Web sites, we need to teach them *about* information. What is it? How is it created? Where is it stored?" (259). Frequently in the library instruction setting in higher education, teaching about information is teaching about scholarly information and, therefore, about scholarly communication. "How" is important, but cannot be everything. "Why" has a place as well.

Two Frames of Reference

Becoming literate in the world of academia is no small feat, and too often an assumption is made that it just happens, as if by osmosis. Academic information functions in ways foreign to outsiders. The peer-review system, publication practices, and disciplinary rhetorical styles are complicated parts of academic culture that reveal subtle and not-so-subtle values and structural templates not only for understanding, but also for engaging with the world.

Understanding the social world of academic communication, discourse, and publication practices goes hand-in-hand with students developing the skills to discover, evaluate, and use scholarly information in their academic research projects. Thus academic information literacy sits on the bedrock of scholarly communication—it is completely based on how scholars create, share, and vet new knowledge, as well as their specific rhetorical and citation traditions. It requires knowledge and skill in how to discover and access scholarly information using a variety of search tools, or how to successfully engage with a library, itself a complex culture with its own internal norms and literacies. Teaching students about these social dynamics gives them greater context for understanding why instructors ask them to use peer-reviewed sources and how scholarly information comes to be. We call this social focus the *sociocultural frame of reference* for scaffolding library instruction. And again, at its heart is scholarly communication.

Additionally, as part of information literacy instruction, librarians strive to help students understand why they should use the library's article databases, indexes, journals, catalog or journal locator, repository (if one exists), and other tools. Herein lies perhaps the most powerful reason to bring scholarly communication into information literacy instruction: to expose the business side of libraries and thereby emphasize how the library's resources *relate to* and *complement* the *free* search tools students use every day—Google and *Wikipedia*. It can help them understand the value of the information available through their library and why they must often go through the hassle of using the library's website instead of Google to find what they need for their

assignments. It also exposes how the for-free and for-fee parts of the Web are becoming more porous, but are certainly not yet homologous. This is exactly why sometimes one can see a message to buy an article from a publisher when using Google Scholar and not when going to the same journal via the library. More importantly, such instruction teaches students why this phenomenon occurs and what to do about it. Using this *economic frame of reference* (as simple as saying "Things cost money") can have powerful implications for teaching students the distinction between *discovery* of information (proof of publication) and *access* to information (how you get your hands on what you need). Indeed, arriving at an understanding of that simple dichotomy between discovery and access is a threshold concept for all of the work we have done in incorporating scholarly communication into information literacy.

Instructional Strategies in Practice

The Sociocultural Frame

Librarians often use the scholarly versus popular versus trade trichotomy in order to illustrate the key differences between these publication formats. Through such instruction, students may learn that peer-reviewed articles:

- are written by expert researchers
- are intended for a scholarly audience (faculty, graduate students)
- detail original research or build on other researchers' findings
- have been peer-reviewed
- contain disciplinary jargon
- provide references

These descriptions are used to help students view the scholarly article as something different from what they know from their more everyday conception of articles built from the use of magazines and newspapers. They are also used to help students distinguish a scholarly article from a popular article when they find one online.

The features highlighted in the typical scholarly/popular/trade trichotomy barely scratch the surface of scholarly communication. They touch only on rhetorical and structural issues inherent in a specific end product of scholarship—the author, audience, purpose, and writing features. Talking to students about the peer-review process, how it happens, and its role in research takes the student deeper. It begins to bring to light the person or persons involved in the process behind the end product: what each of their roles may be and why those roles exist, are valued, and came to be. The question here is how

often the process is actually explained in sufficient detail to make real comprehension take place. Some instructors, forgetting what it is like to be a novice, may assume students already understand the process. They might assume the students learned about peer review in previous courses. Librarians might assume instructors have described the process to their students. In our experience, however, it is not uncommon to talk with upper-level students who need to find peer-reviewed articles, yet have no clear idea what the term *peer review* actually means; they are often unsure or simply cannot describe it accurately.

As a result, at North Carolina State University (NCSU), librarians created a short video, "*Peer Review in Five Minutes*," which highlights the importance of peer review in the vetting of new knowledge and describes how the process takes place (NSCU Libraries 2009). It begins by framing the issue in relation to how knowing about peer review affects one as a student. It asks, "Have you gotten the peer-reviewed article assignment yet? If not, you will at some point in college. Why do profs ask you to find these articles? What's the big deal with peer review? What is peer review anyway? And why is it so important?" The video outlines how researchers share their ideas from inception to publication and describes how peer review can happen not only as part of the journal submission process, but also when researchers are sharing their work through conference papers and presentations. It touches on the competitiveness of publication and the high rejection rates for top-level journals. It mentions that researchers often have to make changes or improve the article based on feedback from the peer reviewers. These issues are brought up in order to enhance students' understanding that not all articles are created equal and that researchers undergo a lot of rigorous processes behind the scenes in order to get their work into highly coveted journals. (This insight is especially important for students who are strongly considering graduate school and an academic career.)

At NCSU, this video is incorporated into the standard instruction session for freshman writing courses immediately following a breakdown of the scholarly/popular/trade distinction. It is incorporated into the libraries' information literacy tutorial and elsewhere on the library website. It is also available via YouTube and is currently used by librarians, writing instructors, and other educators across the United States and beyond.[3]

With upper-level students, murkier terrain has been explored to highlight the social dynamics at play in the publication process. Part of a professional writing course for junior- and senior-level science majors begins by asking students what they know about the importance of journal articles in scientific research based on their previous encounters with them at college. Students will often highlight that the

journal article is a way for the scientists to package their research to share with others. Several students commonly volunteer that journals help with peer review, which ensures that the research quality is high. Experience bears out that upper-level students are interested in acquiring a deeper understanding of journal publishing. Instruction then reinforces that it is important for scientists to publish in the "right" journal through (1) the scope of readership, (2) exposure of his or her findings, (3) gaining tenure, (4) securing grants, and (5) general prestige for professional accomplishment. These sociocultural aspects of publication shed light on what researchers actually do and what they care about. Many of these students are considering careers as researchers or work with campus faculty in labs, so bringing this back story into instruction illuminates the "Why is it this way?" behind the articles. These issues also highlight why journal articles are treated with such special consideration in academia (especially in the STEM disciplines) and provide an important foundation for understanding the economic dynamics of publication, explored below.

The Economic Frame

As mentioned earlier, in a recent publication we outlined a suite of instructional strategies to incorporate scholarly communication topics systematically into a one-shot library workshop in order to expose the business side of libraries (Warren and Duckett 2010). The setting for this instruction is a seventy-five minute library workshop for a professional writing course at NCSU called English (ENG) 333: Communication for Science and Research. The course is a requirement for several science majors as well as a popular elective. Each semester librarians work with four to six sections of twenty-two students. The library session is equally split between a rich discussion of scholarly communication topics and teaching search strategies and techniques for using disciplinary databases and Google Scholar. Again and again while teaching this course, we have been struck by the deep engagement of these students during the library workshop. The session begins by laying down the sociocultural foundation for understanding journal articles and their prominence in scholarly communication among scientists. Then it moves into building an understanding of the business side of academic information—that journal publishers sell subscriptions to their products, and that is why you can sometimes *find*, but not *access*, scholarly articles via Google Search. From there the following points are systematically covered:

- In every field of research there are top-tier, middle-tier, and lower-tier journals that vary in how competitive it is to get published in them—just as colleges vary in how competitive they are in admissions.

- Many journals cost money (though not all do), usually much more than individuals can afford to pay.
- Journals in the science, medical, and technology fields typically cost more than journals in the social sciences and humanities, but no researcher, regardless of the field, can personally buy all the information she would ever need to use.
- Libraries act as gateways to information and sophisticated search tools like article databases (most of which cost a lot of money) for their campus communities.

The librarian then leads the students through a game-like exercise in which they guess the cost of a high-price journal such as *Brain Research* or *Tetrahedron*. When a range of guesses have been put forward, the librarian tallies up the number of students who vote for each suggested price. She prompts the students to justify their votes before revealing the current subscription price for the journal, to students' shock and sometimes outrage. Then a simple breakdown of the library's collection budget is presented, and students are asked to grapple with complex questions such as why a journal publisher can commonly charge four-figure and sometimes even five-figure prices per year for a journal and why a library is willing to pay that price—and why some journals are so much more expensive than others. The facts that journals get the bulk of most libraries' collection spending and that the aggregate figure spent *annually* is in the millions (at least for research libraries) never cease to amaze. It is not uncommon for students to express pride that their library buys so much for them and to acknowledge that they should take greater advantage of everything available to them.

Having laid a foundation for understanding the business side of information with this simple exercise, the discussion moves on to how search technologies are shaped by these economic dynamics. Using the metaphor of the Deep or Invisible Web, the librarian explores the distinctions between Google (open Web), library subscription-based resources (primarily "Deep"), and Google Scholar (where the open Web and "deeper" Web converge). These distinctions help students understand why Google cannot always provide access to scholarly articles, why you need a library to have access to portions of JSTOR or to any of Academic Search Premier, and why you sometimes see a message to buy an article when using Google Scholar. It also affords the opportunity to discuss broader—and generally troubling to students—societal implications for the cost of information through questions such as:

- What happens when you are no longer affiliated with the university?
- How can the costs of information affect access to publications at institutions without as much money as ours? How about researchers not affiliated with a university and its resources?

- How might these economic factors impact research at universities in developing countries?

Highlighting the economic forces at work in scholarly publication often allows the librarian to bring the students back around to the sociocultural aspects, thereby tying both perspectives together. She can discuss the open access movement and highlight how researchers are standing up for change. Current events impacting scholarly communication can be used to emphasize the issues at stake. For example, in spring and summer 2012 the following events provided invaluable opportunities for teaching scholarly communication in ways undergraduates could appreciate:

- the Cost of Knowledge website (http://thecostofknowledge.com), where researchers took a stand against Elsevier by publicly declaring their personal boycott of publishing, peer-reviewing, and serving on the publisher's editorial boards
- the public petition to have the Obama Administration implement policies to "require free access over the Internet to scientific journal articles arising from taxpayer-funded research" (John W. 2012)
- the debate over the Research Works Act as well as Stop Online Piracy Act (SOPA) and PROTECT IP Act (Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property Act, or PIPA), the latter of which had been publicly brought to students' attention by *Wikipedia*'s and Google's educational efforts

The second half of the seventy-five minute session is dedicated to navigating the library's website, exploring search strategies for using disciplinary databases, and exposing students to the advanced search features and setting configurations in Google Scholar. Having built a foundation for "Why it is this way," the librarian now shows how to use search tools to the students' advantage, tailoring the presentation and activities to the course assignment.

Going beyond this, more advanced relevant economic concepts such as inelastic markets and fungible commodities could be introduced to advanced students in a seminar setting and have occasionally been discussed. Librarians at NCSU have also begun to leverage the economic frame of reference, albeit in a more limited way, at the other end of the spectrum when introducing the library to freshmen through ENG 101: Academic Writing and Research, the central course in the Freshman Writing Program. Instruction sessions incorporate information about the library's collection budget as well as the costs of scholarly journals (using the sticker shock of *Brain Research's* $23,000+ price tag) to help students understand as early as possible how the library (any library, really) plays a fundamental business role

in access to information and to present the library's online collection in relation to Google or the free Web. A core message is, "Scholarly information is generally expensive, and the library has to buy much of it for you. Now we will teach you to use the library's website to access it, or at least that portion of it that you cannot otherwise reach via the free Web."

The Scholarly Communication–Information Literacy Dichotomy

Having shared both the sociocultural frame of reference and the economic frame of reference and noted how they could all come together, it may be worth exploring the limits of overlap between scholarly communication and information literacy and determining what is out of scope—or is it? Indeed, while we have argued all along that there is overlap, we do not believe that every concern that occupies the scholarly communication world in fact is highly relevant to undergraduate instruction or, if shared in such a setting, would successfully impact pedagogy and lead to improved learning outcomes. For instance, we have definitely never broached topics in the classroom such as the h-index or other trends in bibliometrics, data preservation, open peer review, etc., that certainly pertain to scholarly communication. So what makes sense and what doesn't?

It may be instructive to first to look at how some other librarians view this dichotomy. A poster presented at the 2011 ACRL Conference by Catherine Palmer, Head of Education and Outreach, and Julia Gelfand, Applied Sciences & Engineering Librarian, both from the University of California, Irvine, is highly useful (Palmer and Gelfand 2011). The poster uses a Venn diagram model to look at what topics belong squarely to information literacy, what topics belong to scholarly communication, and which overlap. For instance, on the scholarly communication side of the diagram, one sees topics such as tenure, authors' rights, and accreditation. Within the information literacy circle, we see topics such as plagiarism, citation, attribution, lifelong learning, etc. The overlap includes resource sharing, economic benefit, open access, and knowledge generation. Though what is placed inside or outside the shared overlap is debatable, we believe that Palmer and Gelfand are essentially correct in constructing the relationship between these two spheres of academic librarianship as a Venn diagram. Our contention is that set boundaries are not rigidly fixed, however. As the students engaged become more advanced (honors students, seniors intending to go to graduate school, graduate students, or those in graduate seminars, for instance), the pool of "nonapplicable" scholarly communication topics should shrink. But for regular undergraduate sessions, topics like authors' rights, accreditation, data storage plans,

and the preservation functions of repositories are indeed a stretch. We would be hard-pressed to claim they have a primary place in instruction. The things we should focus on, such as understanding why going through the library as a portal is so important, why one might see messages to buy articles when using Google Scholar, and why repositories and open access journals represent a portion of knowledge but that such openness is still a minority position, are topics we have mostly already mentioned and developed instructional strategies around. If time and student interest permit exploration beyond that, it is good and welcome, but not as crucial.

What Palmer and Gelfand's Venn diagram image of scholarly communication and information literacy elegantly illustrates is that scholarly communication, when more deeply explored, is a subtle field itself and has passed well beyond its early stage of just being about a journal crisis or the high prices of bundled Big Deal packages. Let us be emphatic here: scholarly communication is *not* simply about libraries having larger budgets and journals being expensive (though students do need to understand that first to understand anything else that follows). Rather it could be said to be the exploration and perhaps embracement of a series of positions relating to "rights" that pertain to information. Those rights can and generally are legally defined in contracts, but can be disputed, and what libraries do vis-à-vis online resources might be better understood as paying for rights, which allows a select campus population certain *uses* of information, not the information itself. *Access* is perhaps the fundamental use, but there are others, too.

That crucial distinction is one that has not really been explored in any meaningful way within the classes we worked with. However, we believe that the emphasis on rights is at the heart of contemporary scholarly communication and perhaps could serve as a template for encouraging librarians engaged in information literacy to become more knowledgeable about scholarly communication. Earlier we summarized some of the theoretical underpinnings of information literacy pedagogy, but there are legal, political, and economic theories that contribute to, delineate positions on, and generally inform scholarly communication as well. If a librarian who teaches considers himself a neophyte in the world of scholarly communication, reading three seminal books can rather quickly provide a comprehensive and often startlingly illuminating basis of understanding:

1. *The Access Principle* by John Willinsky (2009)
2. *Understanding Knowledge as a Commons* by Charlotte Hess and Elinor Ostrom (2011)
3. *The Wealth of Networks* by Yochai Benkler (2007)

The first argues strongly for open access for scholarly material.

The second and third describe economic, political, and legal perspectives that encourage or hinder the creation of knowledge and why it might be socially beneficial if knowledge were construed as a common good rather than a privately held and sold commodity, as well as what impact the online world has on this. Hess is a librarian, but Willinsky has a long career as an education professor studying the intersections of technology and literacy; the recently deceased Ostrom was a political scientist who won the Nobel Prize for Economics for her work on commonly held goods, and Benkler is a noted legal scholar. Therefore, their frames of reference may seem quite far removed from libraries in general, yet what they have to say does in fact resonate in the more workaday world of procuring, providing, and teaching about information in libraries. Regardless of whether one agrees or disagrees with any of their conclusions (and the above explanation is a gross oversimplification of complex ideas), exploring scholarly communication at this level is probably not appropriate for younger undergraduate students in library instruction sessions due to their lack of context, but makes sense for librarians.

The reference to disagreements within some of the legal, political, and economic discussions taking place (mostly outside the library sphere too!) brings us to another fundamental distinction between scholarly communication and information literacy. Information literacy is grounded in the present tense; even what we do in exploring ideas and not just focusing on skills is still intended to grant students a deeper contextual understanding of the library and scholarly communication world as it *presently* works so that they become more proficient at their academic tasks in the here and now. Students, after all, have rather imminent deadlines for writing and are rarely looking too far ahead.

On the other hand, the professional practice of scholarly communication and much of the deeper theoretical writing, such as the three works mentioned earlier, is generally *future*-oriented. That is, it is intended to bring about a transformation of the manner in which scholars communicate, not just explain how it happens in the present day. It often embodies an advocacy orientation, is not neutral in assumption of values, and strongly critiques market-based solutions to dissemination of academic information. In fact, for some proponents of open access, scholarly communication actually assumes a singularly teleological interpretation, which means they believe that a particular outcome *must* result, often because of changes in technology. Usually this translates to everything freely available to all online—"Information *wants* to be free." The future of scholarly communication is predetermined in such a worldview. Another, perhaps simpler analogy might be that information literacy is like a descriptive dictionary, while scholarly communication is a prescriptive one.

Regardless, by reaching this analogy, have we entered a philosophical realm too removed from the initial, practical concern for instruction that we should never lose sight of: improving student understanding and use of the library *today* in order to facilitate academic performance? We certainly note these deeper distinctions for the sake of librarians rather than students. If librarians bring scholarly communication into the classroom, then being aware of the implications of that act and thinking hard about the cultural differences between scholarly communication and information literacy as both have historically been practiced becomes necessary for the self-aware instructor. And yet, even given that caveat lector about a dive off the cliff into esoteric concerns in the classroom, we cannot forget that ideas have power and thus perhaps not so much of contemporary scholarly communication lies outside of the concerns of information literacy after all.

What all this points to is that scholarly communication itself, as practiced within libraries, is a literacy as well, one defined, as mentioned earlier, by its proponents and practitioners. Once enough vocabulary and pertinent rhetorical narratives are mastered, any librarian can become part of that community. However, scholarly communication is a bit trickier to define as a community because there are multiple parties who have competing, or at least nonparallel, goals. While we have mostly discussed librarians and researchers, there are publishers, funders, vendors, etc. that also have ideas about scholarly communication and how it should play out. For a librarian deciding to include scholarly communication in the classroom, an important question is whether it is necessary to adopt the advocacy voice. Or is describing the situation enough? Should arguments from multiple perspectives be shared? This ethical quandary harkens back to what the librarian is trying to achieve—instruction that improves contemporary student performance by providing contextual understanding of today's academic information ecosystem or exploring, and possibly championing, certain desired transitional or perhaps even transformative changes in how that ecosystem functions. Can both be handled at once? At the very least, a librarian should be aware of whether she is making polemical assertions in a classroom as opposed to just raising issues. It may be a fine line, but without a doubt, that threshold does exist. Therefore, we might ask: Does it make sense to pursue these topics along advocacy lines, especially with those students destined for graduate studies?

Perhaps it does if we remember that the kernel of these complex discussions is premised on certain quite simple concepts that almost anyone can relate to (even though disagreement prevails regarding how they should play out, or what the best outcomes might be): shar-

ing, ownership, use (and reuse), credit for creation, payment, career advancement, sustainability, etc.

Conclusion

Thus while not every topic associated with scholarly communication may be equally relevant to information literacy, many of the central issues can be used in powerful and transformative ways within instruction. In the introduction to this chapter, we described how teaching students about scholarly communication is fundamental to helping them become academically information literate and stated that with the right frames of reference and language librarians can find natural intersections between scholarly communication and information literacy. By then introducing the sociocultural and economic frames of reference, we provided two mutually reinforcing lenses that allow librarians to appropriately and effectively filter scholarly communication issues into information literacy instruction. We also provided working examples of how these frames of reference improve learning by giving students the necessary concepts they need rather than just how-to skills and how they can easily be implemented in the one-shot instructional setting. We also argued that, like any other literacy, information literacy requires not just a grammar that says what order to put the words in, but a deeper conceptual understanding of the world that the words are expressing.

The limits of how scholarly communication and information literacy overlap and some broader questions that arise from pairing these two seemingly disparate areas of practice were also explored. While a dichotomy exists, we believe there is value in instruction librarians reflecting on scholarly communication and the broader conversations taking place around it to see how readily they can adapt those topics into their own pedagogy. They may discover innovative means for doing so that we have not yet identified or even considered.

Finally, remember that right there among the ACRL *Information Literacy Competency Standards* is Standard 5, which says that "the information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally" (ACRL 2000). Given that standard, is it so far-fetched in the advanced undergraduate classroom to discuss ideas of information as a commonly held good or explore the legal ramifications of rights to information? Why not ask students to consider these questions of political economy as they apply to information consumed in the classroom and produced on the campus? Why not teach students that the modern library is engaged in a challenging real-time experiment about rights rather than the simple procurement of stuff—and that the outcome is far from predetermined? All of these

are merely extensions of the simpler topics (peer review, finding scholarly articles, etc.) that they are already tasked with learning. Trust the student to rise to the challenge.

Perhaps the surest way to gauge whether scholarly communication makes a difference to library instructional sessions is to just ask students. For instance, following the library workshop in ENG 333, the instructor engages students with discussion board questions within the course learning management site. The following sample of student comments sheds light on their level of engagement and how they think about what they learned and provides ample proof that students are indeed willing to confront salient hot-button issues in scholarly communication.

- "How is it possible that much of the research published in these journals was published by taxpayers' money through federal grants yet publishers make it almost impossible for those same taxpayers to have access to the research they helped fund?"
- "With today's ability to rapidly and efficiently share information electronically through e-mail, websites, etc. and with companies like Google having the infrastructure necessary to, if they so please, set up a secure, all-encompassing location to publish science on the web, I don't see how scientific journals are going to survive without changing the way they do business." (both NCSU ENG 333 students, spring 2012)

Questioning is surely the beginning of knowledge, and this level of understanding can best be achieved by merging and meshing information literacy and scholarly communication. Librarians not only can, but should, build on the best theory and practice that each sphere has produced and use the results to the fullest advantage of the student learner.

Notes

1. Warren originally began teaching this workshop in 2002. He left North Carolina State University in 2008 for a collections position at the Syracuse University Library. From 2004 to the present, Duckett has been teaching the workshop. From 2004 to 2008, the authors always team-taught the instruction sessions.
2. The core assumption here, an axiom for instruction librarians, is that information literacy can improve learning outcomes.
3. "Peer Review in Five Minutes" (NCSU Libraries 2009) and other "big picture" videos can be accessed at the NCSU Libraries YouTube channel: http://www.youtube.com/user/libncsu/videos.

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