14 The Write Brain: Professional Writing in the Post-Knowledge Economy

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The inclusion of computer technology in writing degrees is hardly new. Indeed it is the hallmark of technical writing degrees. While the history of technical writing follows the rise of our industrial economy, technical writing is a prototypical career of the *post-industrial,* knowledge economy. Technical writers—like the engineers, computer programmers, lawyers, accountants, and other experts whose knowledge they translate—have played an important role in the professional world of the last thirty years. However, today, the jobs of the knowledge economy, like industrial jobs before them, are moving overseas. While these jobs will not disappear overnight, in designing a professional writing curriculum, it is important to anticipate the changing requirements of our field as we move toward a "post-knowledge" economy. As I describe in this chapter, this future is one that will require not only solid technical skills but also strong creative and rhetorical abilities to empathize with, and design powerful experiences for, a variety of audiences/users. In this context, we have built our professional writing curriculum partly upon the traditions of technical writing, while also drawing from creative writing and journalism and more generally from the discipline of rhetoric and composition. We have also looked beyond our discipline for the teaching of media production, multimedia design, and information management.

In doing so however, we find ourselves pressured from two ends. We foresee a marketplace seeking a more sophisticated, creative, and technologically proficient writer, but we encounter incoming students with an increasing need for instruction in what we have traditionally viewed as fundamental skills in writing. In this situation, we cannot simply add new curriculum onto our existing professional writing curriculum. To do so would establish an expanding curriculum with escalating credit hours (something undesirable for our students and increasingly unmanageable for a small faculty). Instead, we find ourselves with the task of building a curriculum that blends the emerging expectations of professional writing with more traditional models of technical communication and advanced writing genres. Rather than thinking of creative

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writing, technical writing, other genres, or general composition as discrete subjects (or even majors), we have found it necessary to conceive professional writing at the intersection of these and other writing traditions with emerging rhetorical concerns in design, information, and multimedia production. In doing so, we find ourselves confronting some fundamental notions about writing and writing instruction, a confrontation I suppose should not be unexpected given the dramatic changes in media, information, and communication we are experiencing.

In discussing these challenges, I have divided this chapter into three main parts. In the first part, I address in greater detail this emerging post-knowledge economy, which Daniel Pink terms the "Conceptual Age." Pink employs the familiar shorthand of left- and right-brain functions to describe how we are moving from a left-brain oriented knowledge economy to a new economy that will place greater emphasis on the creativity and empathy associated with the right hemisphere of the brain. My interest here is in identifying how such a shift might inform the development of professional writing. In the second section, I turn specifically to the role of Web 2.0 technologies in our curriculum. Web 2.0 technologies, such as blogs, wikis, and social bookmarking sites, are an important part of the economy Pink and others describe. Here I discuss how industry concepts of Web 2.0 practices might apply to building a curriculum. Of course, one of the primary challenges to such an adoption is keeping faculty current with emerging technologies. I address this subject in the chapter's third section where I consider the viability of bottom-up approaches for adopting technologies in an academic context. While I am particularly focused here on current technologies, I also want to emphasize that our disciplinary goal should not solely be how to integrate these specific applications but also how to create curricular structures and practices that will allow us to deal on an ongoing basis with emerging technologies.

WRITING, KNOWLEDGE WORKERS, AND THE RIGHT-BRAIN

The metaphor of "left-brain" and "right-brain" functions, attitudes, and proclivities has become fairly common in our culture. While cognitive science does identify the different hemispheres of the brain as having different functions, in general our daily activities involve both sides to one degree or another. That said, the *metaphor* of left and right sheds light on how we view and value different cognitive functions within our culture. As Daniel Pink notes in *A Whole New Mind,* the post-industrial era has emphasized "left-brain" cognitive skills as the

foundation of our knowledge economy. This left-brain orientation is characteristically "sequential, literal, functional, textual, and analytic" (26). It typifies the type of work traditionally done by engineers and computer programmers but also by lawyers, accountants, radiologists, MBA's and many other professionals. Certainly technical writers would fall into this category. Pink's characterization of left-brain thinking would make a reasonable description of the values of technical communication. In comparison to other genres of writing, the emphasis of technical writing has always been on clear, structured, logical, and rational communication. In turn, technical writing courses and programs have emphasized the development of writing skills along those lines. The result, in general, is that graduates of technical writing programs develop a complex set of rational and analytic cognitive abilities, much like their knowledge worker colleagues in law, engineering, computer science, and so on.

While skilled knowledge workers remain very much in demand, Pink and many others have noted an increasing trend that will likely alter that demand in significant ways. The phenomenon of "outshoring," the exporting of knowledge worker jobs to Asia, has been extensively reported, if not over-hyped, in recent years. However, in the long term (though certainly within our students' professional lives), jobs in the knowledge economy will likely meet a fate similar to that which jobs in the industrial economy met a few decades ago. In addition to the exportation of jobs to Asia and elsewhere, the increasing sophistication and power of computers allows them to undertake many of the fundamental functions performed by knowledge workers. As Pink notes, "the Web is cracking the information monopoly that has long been the source of many lawyers' high income and professional mystique. Attorneys charge an average of $180 per hour. But many Web sites—for instance, Lawvantage.com and MyCounsel.com—now offer basic legal forms and other documents for as little as $14.95" (46). Obviously a web site isn't going to replace all lawyers, but clearly many, many lawyers, especially junior lawyers, earn a living performing relatively simple legal tasks or conducting research, which either can be done by a computer or more cheaply by a knowledge worker living in Asia. While I don't believe computers will be writing their own documentation any time soon, our ability to discover and share information over networks is altering the way technical communication is done.

Ultimately Pink's argument is not that left-brain thinking will not be valued in the future. Instead, as his book's title suggests, he simply sees a rising appreciation for right-brain thinking to the point where future careers in America will require a *whole* new mind, both left and right. In distinction from left-brain thinking, Pink describes right-brain thinking as "simultaneous, metaphorical, aesthetic, contextual, and synthetic" (26). In other words, "right-brain"

activities are those that allow us to "see the big picture," to incorporate intuitive or empathic understanding, to make connections between ideas that are logically unrelated, and to process the complexities of embodied experiences without relying upon abstractions. In terms of writing instruction, if the left-brain reflects the emphases of technical writing (and to a lesser degree, composition), then the right-brain connects to some of the traditional values of creative writing. One might be tempted to go so far as to suggest that rhetoric is left-brain and poetics is right-brain. However, while there may be some validity to that suggestion, at least in terms of how these issues have played out within disciplinary politics, I contend, following Pink at least this far, that successful writing requires a whole mind, particularly as we prepare students for the demands of careers in the post-knowledge economy.

Jon Udell, writing for the O'Reilly Network, picks up on this shift in the values relating to professional preparation and goes so far as to suggest that the future of first-year composition will be characterized by the production of multimedia documents, which he terms screencasts.[1] Udell sees screencasts as being rhetorically different from traditional genres of professional writing related to software development, which might be divided into technical or support documents and marketing or sales materials. The purpose of the screencast will be to connect end-users with the designers of new technologies and applications. Udell writes, "the rate-limiting factor for software adoption is increasingly not purchase, or installation, or training, but simply 'getting it'… We haven't always seen the role of the writer and the role of the developer as deeply connected but, as the context for understanding software shifts from computers and networks to people and groups, I think we'll find that they are" (2005). In short, as information technologies become increasingly about social uses (e.g. wikipedia, del.icio.us, flickr), there is an increasing need for writers who can communicate the social dynamics of a technology; that is, someone who will be able to work with developers in helping to articulate and communicate their vision. As Udell continues, "*The New York Times* recently asked: 'Is cinema studies the new MBA?' I'll go further and suggest that these methods ought to be part of the new freshman comp. Writing and editing will remain the foundation skills they always were, but we'll increasingly combine them with speech and video. The tools and techniques are new to many of us. But the underlying principles—consistency of tone, clarity of structure, economy of expression, iterative refinement—will be familiar to programmers and writers alike."

Udell's vision may still sound very much, in principle, like the traditional values of technical composition, plus the addition of new media, in that he makes reference to values like consistency, clarity, economy, and refinement. However, there is a deeper transformation taking place in the coming together

of media and the identification of a new purpose and new audience, specifically in Udell's suggestion that screencasts need to help their audience "get it," to see the social value of a new application. "Getting it" is not particularly a matter of rationally communicating the various features of an application (as technical documentation would) or even selling those features or some feeling a company hopes to associate with an application (as marketing or advertising media would). Instead, Udell describes an emerging genre that seeks to demonstrate to potential users the ways in which a new application might fit into lives and allow them to make better use of the increasing amount of media available to them. For example, it is not enough for the developers of blogging applications to provide technical documentation or to produce advertising for their service; they need to communicate to potential users how a blog will allow them to participate in a community of readers and writers. This participation gets more specific as one thinks about particular types of bloggers: educators using blogs in their classes, professional writers who want to make money from their blogs, companies using blogs for internal communication or to communicate with clients or to market products, and other individuals who simply wish to keep a diary or share a personal interest or viewpoint. Of course, the audiences become even more specific than that (e.g., addressing the use of blogs in first-year composition courses). A screencast for blogging in composition would include video, audio, and text that would demonstrate how you might easily set up a blog to share information with students, to have students comment on readings, or to distribute and comment on drafts of more formal writing assignments; it might also discuss how giving students the experience of producing their own blog creates an opportunity for investigating how discursive practices and a sense of audience develop in a new medium. Whatever the particular content of the screencast, the basic point is that it requires a new rhetorical, compositional approach in which writers and developers strive to help their potential users see how a new application fits into a larger picture of their information habits.

This shift away from instrumental reason is echoed elsewhere in the rethinking of professionalizing education. Richard Gabriel, a Distinguished Engineer at Sun Microsystems, has argued that software engineering programs should pattern themselves after MFA programs in creative writing. In particular, Gabriel references the system of mentoring, the community of writers, and the curriculum of ongoing practice, reflection, and revision in the context of workshops, conferences, and other coursework. He recognizes that "in software as in writing, there are people whose work is 'doing the thing'—writing and designing programs—and such people do this work every day. They hope to be good at it and to be able to improve over time. They have pride in what they do and

are satisfied or not with each project they do. To them what they do feels more than craft, includes engineering and science, but still feels like more." Gabriel is articulating the need for software engineering programs to develop a reflective and broader vision of the process of composition, one that does not focus solely on the grammar of coding or other practical issues but, as Udell is suggesting, aids software designers to develop an ability to "get it" and communicate their understanding to others. In many ways this is much like an MFA program that assists writers in developing a critical understanding of their own writing. That is, it is one thing to have some native sense of when one's writing is or isn't working; it is another matter to develop the critical ability to explain why a piece of writing does or doesn't "work."

Pink articulates this shift in education in terms of a demand for professionals with an understanding and appreciation of design. As he observes, "Getting admitted to Harvard Business School is a cinch. At least that's what several hundred people must think each year after they apply to the graduate program of the UCLA Department of Art—and don't get in…A master of fine arts, an MFA, is now one of the hottest credentials in a world where even General Motors is in the art business…the MFA is the new MBA" (54). As Pink explains, the growing interest in design comes in part from the incredible abundance and range of choice consumers encounter. Increasingly the primary difference between products is their design. While to a certain extent the process of design relies upon left-brain thinking and scientific knowledge, it is also clearly a right-brain activity dependent upon an appreciation for aesthetics and an intuitive understanding of user experience. In the world Pink, Gabriel, and Udell describe, it will not be sufficient for a professional writer to produce clear and rational prose. Instead, the demand will increasingly be for professional writers who can *also* contribute to user experiences through aesthetics, empathy, narration, and so on. In designing a product and the documentation that might accompany it, a writer must not only clearly communicate the product's functionality but also assist the user in imagining meaningful purposes and creating positive user experiences. This would be the case whether the writer is producing text and media that support or market a non-textual product or if the product is a piece of media itself.

There are many different ways to approach the issue of design. In emphasizing the MFA, Pink identifies the Art orientation, which would include graphic design and other commercial art. There is also product design, designing graphical user interfaces (GUIs), and architecture to name some obvious other examples. The difference is that design in an artistic sense can often be quite distanced from any functionality, particularly in comparison to the relation be-

tween design and function in the other examples I provided. Certainly, a graphic element may be called upon to communicate some information (for example a sign) but often the communicational goals of design elements are more vague (e.g., they might convey a mood). From the perspective of professional writing, design is both an aesthetic and rhetorical concern. Indeed, in the past, rhetoric has been characterized, often with pejorative intent, as "mere ornamentation." With the rise of right-brain thinking, that notion of rhetoric as ornament, as a design strategy, as the practice of shaping user/audience experience, comes into its own. Again, I would reiterate that we would not want to view rhetoric solely in these terms, but the perception of rhetoric as design clearly offers a way to connect rhetoric with the emerging economy. It also offers a way to connect rhetoric with more aesthetic and poetic writing practices *and* informs the intersection of conventional, print, writing instruction with instruction in new media composition.

Of course the right-brain isn't simply about design. Pink lists five other right-brain "senses:" story, symphony, empathy, play, and meaning. Without going into depth about each one, an important underlying ability here is to take information and experience and make connections that are not simply "logical" but that resonate in more immediate and intuitive ways with others. Like design, these all connect directly with rhetorical concerns. A technical document may provide a reader with all the facts, but a story may convey the same purpose in a more meaningful and memorable way. One can arrange information logically into various categories, but it may be more powerful to bring these elements together, to compose them symphonically. Likewise to connect empathically, to provide an openness that invites a playful engagement with possibilities, and to recognize the potential meaningfulness of a concept: these are all significant elements of a rhetorical sense of audience. In short, the right-brain cannot simply be about design without also considering what that design allows us to do, without imagining how a powerful user experience goes beyond the immediate aesthetics and into a more lasting meaning. As such, incorporating these concerns into a Professional Writing program has to be about more than issues of usability or designing media that attracts attention or looks "cool." There has to be a connection from design to communication practices that not only manages to convey information logically and rationally but also connects with audiences in deeper and more meaningful ways. Ideally, one moves from viewing writing as the production of discrete, limited bodies of information to recognizing composition as linking into, shaping, and participating with larger flows of media and experience. The abilities to see this space, to operate within it, and to bring others to it ultimately characterize the right-brain.

WEB 2.0 IN THE PROFESSIONAL WRITING CURRICULUM

Undoubtedly, these flows I am describing have become far more palpable with the emergence of the web and networked, multimedia communication. Certainly computers have heightened our sense of design (e.g., thirty years ago, few people had much sense of what font was). Much of the demand that Pink foresees stems from the need to create meaningful experiences of media. For some, this connection between computers and the right brain might be jarring. Computers have long been associated with left-brain careers. Ideologically and culturally we tend to associate classic right-brain types with a degree of Luddism: the poet, the painter, and so on. People who consider themselves to be weak at math or not particularly interested in science or other traditional left-brain areas also might express trepidation, antipathy, or at least disinterest in computers. In large part this has been because, at least historically, engineers and programmers have designed computers for other engineers and programmers, with little thought for other types of users. However, the rise of the Internet over the last ten years has produced two inter-related types of software that do not fit into the tradition image of the solitary computer and computer user: Social Software and, more recently, Web 2.0 applications. The integration of these technologies into Professional Writing serves several key ends. Most obviously, the students develop fluency with the contemporary operation of the Internet. More importantly, students find themselves confronted with a richer rhetorical environment. They must write to multiple audiences, organize continual flows of data, and compose with layers of media. These challenges ask students to combine left- and right-brain capabilities. They need to learn and use computer applications, organize information, and often communicate complex concepts; they also need to connect empathically with their audiences, integrate text with other media, and operate with an understanding of the larger picture.

While all these ends can be achieved without these technologies, Social Software and Web 2.0 applications help users share information easily and increase the value of the information they share by providing easy ways to organize and search that information.[2] Social Software references technologies that enable "many-to-many" communications, which therefore might include MUDS, MOOS, Internet Relay Chat (IRC), and Instant Messaging, as well as newer technologies, such as social bookmarking (e.g. del.icio.us), blogs, and wikis. These latter technologies also fall into the category of Web 2.0, which also includes applications that are less directly "social," such as Google Maps. The definition of Web 2.0 is half technical (referencing the use of newer approaches to the web such as APIs, AJAX, and RSS)[3] and half marketing (as companies scramble to associate themselves with the buzz). For Professional Writing, the

most interesting applications are clearly those that deal directly with the production of text and other media. However, others cannot simply be ignored. For example, Google Maps points to the developing phenomena of the geo-tagged web, an Internet mapped onto physical space through the use of GIS coordinates. This geospatial web has obvious uses for cars and pedestrians equipped with GIS devices, and certainly such a web will require text, a new kind of topography that will help users in understanding the value of such information and imagining how they will incorporate it into their lives. As Udell stresses, increasingly the success of technology relies not simply on rational functionality but the ability of consumers to "get it," to see the value of a product in their lives. And as Pink continues, getting it is part of the larger task of designing user experiences.

Much of the discussion of Web 2.0 deals with commercial concerns, essentially addressing how these emerging applications can be monetized or how they alter business practices or corporate culture. However, with some thought, many of these discussions apply to curriculum development. One of the key points regarding Web 2.0 has been the emphasis on trusting users, both end-users/customers and employees working to adopt new technologies into the workplace. An important part of this trust has been the value that users contribute to the experience of the application over time. This can be seen in popular Web 2.0 sites like del.icio.us, flickr.com, and Wikipedia. The more material that users contribute, the more ways they find to make use of application features, and the more data they provide for organizing the media on the site, the more valuable and useful the application becomes. This development of valuable information helps to create a new market for products on what Chris Anderson has termed "the long tail."[4] While the long tail suggests the possibility of building a new marketplace, it relies upon trusted users sharing information so that users can not only find the products they desire but other products in which they might be interested (Amazon attempts this when it shows users other products viewed or purchased by others). These three qualities—trusting users, developing the value of user contributions, and the long tail—provide some important insight into the role Web 2.0 can play in developing Professional Writing curriculum for the emerging economy.

As one can imagine, it can be difficult to trust users. A manager might have an impulse to control the way his or her employees make use of a new technology: it should be used only for serious business…no personal emails, for example. Similarly, a website might control how users make use of its features or information: that book belongs in science fiction, not mysteries. Clearly, faculty regularly struggle with controlling how students use technology in the classroom (witness the long list of rules that might accompany a syllabus for a

class in a computer lab). Other faculty might decry, "no internet sources" for research papers. Public schools limit access to blogs, Facebook, MySpace, and so on. Even faculty are warned against blogging by publications like the *Chronicle of Higher Education*.[5] Trusting faculty and students to use these technologies may be the most difficult step that colleges need to make. Obviously there have been and will be missteps along the way as users organically develop rhetorical practices appropriate for these spaces. This necessity for trust falls not only on institutions. Faculty must trust their colleagues and students, and students must trust their peers and instructors. The real curricular value of these technologies will only emerge as we use them to share information across courses rather than restricting it within the boundaries of a single semester.

For example, I am teaching a class on technical writing and my colleague is teaching one on the history of rhetoric. Both of us want to address the subject of ethos. Clearly we have different contexts and purposes for doing so. However, if we share bookmarks, then we double our resources. We might end up discussing the same web article for different purposes and from different perspectives. It's quite likely that we may share students; these students will have an opportunity to experience some of the key issues about audience and purpose that we regularly discuss in all our courses. That is, they will witness how the same article discussed with different groups of people, in different course contexts, and with different professors leads to significantly different outcomes. Perhaps we encourage and require our students to contribute as well. Over time we develop a healthy and dynamic list of web resources on ethos. Taking this one step further, perhaps we have a wiki for our program. All the courses contribute to it to some degree, and our students rely upon it as a reference as they move through the major. Naturally, my colleagues and I disagree with one another from time to time, and we try to work out these disagreements and represent them on the wiki. Our students also disagree with us and with one another. The wiki becomes a map of our dissensus. However, in order to do it, we have to trust one another and our students. Maybe our students start to use the wiki as a place to publish their poetry or to talk about other aspects of their college lives. The faculty could object because it was our intention to have the wiki be academic. Or, we could trust our student-users and recognize the importance of having our students see the wiki as a community space that they regularly use.

I have already slid from my point about trusting users into recognizing the value of the information they contribute. The real value to a Web 2.0-based curriculum only appears over time. After a few semesters, the shared links, wiki entries, and blog posts begin to accumulate. Material is revisited and revised as courses are offered for a second or third time. The advantage of using a folksonomic[6] approach, where users tag media with context-relevant descriptors, is

that one can chart shifts in interests and discourse over time in a program. For example, students tag websites that provide information about careers that interest them. This way one might track a growing interest in the publishing industry or attending graduate school or technical writing or wherever student interests might lead. This type of information can be invaluable in trying to understand our program, and it is produced organically and dynamically by the students rather than through some staid questionnaire. As valuable as this might be for faculty, it is potentially more valuable for students. As a student, one no longer needs to rely solely on individual memory and saved notebooks. The material record of a course is available and searchable. It collects not only one's own contributions but also those of other students and faculty. It also includes the contributions of students and faculty from other semesters. Needless to say, the material produced by students and faculty in one college then serves only as a launchpoint for the far vaster database of resources across the web for which the student has now developed a literacy for engaging.

As this information accumulates, some areas become well traveled. They are the foundational areas of the curriculum and the most popular topics among students and faculty. However, there are also less traveled areas, subjects that are only occasionally covered or reflect interests that are not widely shared among the students. These areas form a mini long tail or more accurately a portal into the long tail effect of the Internet. For example, I teach an upper-division course on contemporary poetics once every two years or so. It's a small course to begin with, and maybe one student in the course becomes especially interested in the language poets. She posts about some of the poets involved, discusses her impressions of their poems and manifestos, and provides links to various sites (e.g. Ron Silliman has a blog). Her work in itself may not amount to much, but it provides a starting point, a way into this world. While some of the links will degrade over time, the student's work retains value because of the long tail, because the information remains accessible for the small number of students over time who will take interest in it. Clearly these qualities scale very well. In fact, they become more pronounced with an increase in users (witness Wikipedia). While three tenured faculty, a few instructors, a couple dozen majors, and a hundred other students each semester will certainly make something of value this way, one imagines the value increases substantially as numbers increase. Certainly one could imagine a "national" or even international disciplinary wiki, but there is also something to be said for the value of local knowledge and practices, the record of a particular community, especially when that record integrates seamlessly into the larger network.

Throughout this integration of technology into the curriculum, it is important that courses not only use the technology but also foster rhetorical

awareness of its functionality and design. Some applications will work better than others and certainly different students will have different reactions. As the students shape their own user experiences and rely upon the larger network of information produced through the curriculum, they will have an opportunity to develop their design sensibilities and apply them to this environment as well as other areas of their lives. The Web 2.0 environment I am describing is not monolithic. It is not an all-in-one system like Blackboard or WebCT. Instead it is a constellation of applications produced by different companies and connected by common standards (e.g., RSS) and shared APIs. As a result, students get to encounter a variety of design approaches and give thought to the different ways these applications can be interconnected. For example, students need to consider how to bring together various streams of information on their blogs. Such sites are not only for their personal use but also are a means for producing an online identity for themselves. On this level, students need to consider the design and arrangement of information as a user experience.

Overall, Web 2.0 technologies offer a powerful means to produce, distribute, and organize the knowledge of a disciplinary community. For Professional Writing, providing students with experience with new technologies is valuable in itself, as those skills prove marketable in the workplace. More importantly, however, this curricular shift leads to new classroom practices and epistemologies that will prepare students for the professional tasks of the emerging economy. In working with folksonomic tagging, students learn to recognize that their education does not fall neatly into discrete categories but rather is distributed across an open space where it is subject to *post-hoc* organization. Technical writing and fiction writing may represent different segments in the curriculum, but that does not mean that technical writers cannot benefit from understanding narration or characterization or from learning to create a sense of empathy. Likewise a fiction writer can come to see that his storytelling skills are not only applicable to writing short stories or novels but intersect a range of possible careers. By shifting the entire curriculum in this direction, we move away from the curious genre of the classroom academic, researched essay with its vague purpose and audience of one. Students continue to do research and continue to make arguments. They simply do so now in a shared communal space. Such a practice may not be appropriate for first-year composition students, who may have serious struggles with writing and may not want their work shared publicly, but for Professional Writing majors seeking careers as writers, the Web 2.0 environment provides a context where they can put their entire repertoire of skills to work.

THE FACULTY DEVELOPMENT BOTTLENECK

Of course the caveat here is that one must have faculty with the necessary skills and the commitment to keep up with emerging technologies. Doing so means not only keeping abreast of new developments and learning how to use them, it also requires thinking about their uses in the classroom and their integration into one's particular courses. In short, while faculty from a generation ago speak about working to "perfect" their courses (so that they could then be replicated year after year), here we face the prospect of regularly retooling. This demand changes expectations regarding faculty training and curriculum development. Even a few years ago we might have said that a professor could choose whether or not to learn how to use a course-management system like WebCT. A college might provide some incentive for faculty to learn the technology, but the premise was that faculty who did not learn new technologies could continue to teach their courses by traditional means as effectively as they had in the past. Now, however, by not integrating technology into courses, faculty fall short of addressing the ways in which emerging technologies are shifting the production of knowledge across the culture and in every discipline (especially as those disciplines function at the level our students will employ them as professionals with undergraduate degrees). In other words, the integration of technology is becoming an increasingly necessary element of higher education, and few colleges are likely prepared to face such a necessity.

Fortunately on the scale of individual professional writing programs, the problem is much more manageable, though certainly the characteristics of the challenges are largely shaped by local conditions. However, since professional writing programs have commonly formed in response to the demands of the workplace, most include at least one faculty member with a degree of specialization in new media. In our situation, our program and faculty are relatively small. As such it's possible for me to support my colleagues, to call their attention to new developments, and to troubleshoot with them or their students in our computer lab. We can easily meet and discuss ideas for our courses, where infusing technology is only one of many issues we might raise. Of course the college also provides technical support and training, but the advantage of our working together is that I can discuss technology with them from a shared disciplinary perspective and with a common understanding of our students and our program's goals. While this works on a small scale, there is no way I could perform this same function for the dozen other faculty who teach literature or English education in my department, even if there was an interest on their part in my doing so. That said, there are several qualities of

our approach that reflect a more general strategy for professional development and the infusion of technology into curriculum.

Again, here it is useful to turn to the broader professional discussion regarding the integration of emerging technologies into the workplace, academic or otherwise. The strategies for doing so largely reflect the central tenets of Web 2.0 development, such as trusting users, which I mentioned earlier. Within an institutional hierarchy there are essentially two modes for implementing any kind of policy change: top-down and bottom-up. Top-down approaches are common in corporate structures and occur in certain contexts within academia (perhaps increasingly so). However, faculty are generally resistant to administrative decrees, *especially* in the area of curriculum. Nevertheless, the model is not untypical in relation to implementing technologies on campus. In the past, implementing new technologies has required significant capital investment to purchase new software and hardware, to update existing networks and machines to ensure compatibility, and to train and/or hire support staff. In this context, colleges have sought to regulate the use of new technologies. In large part this comes out of an underlying mistrust of faculty and students. In terms of faculty, there is a (perhaps not inaccurate) perception that professors need to be trained and constrained otherwise they might become frustrated with the learning curve of new technologies or somehow "break" them, causing support nightmares. The mistrust of students is even greater; students might use emerging technologies for any number of activities (Napster, for example). So when my college implemented WebCT, it required faculty to go through a multi-day training course (even those of us who had already used a CMS at other institutions). Even then, faculty could not create their own courses or add student users to their existing courses. Our ability to make use of the system was kept at the absolute minimum necessary to run a course online. Naturally student users had even less control.

Of course the purpose of an application like WebCT is course *management:* the management of individual courses by faculty, *and* the management of the collective course offerings on an administrative level. It's a piece of software that embodies the top-down thinking of a pre-Web 2.0 environment and knowledge industry. On the other hand, Web 2.0 technologies are largely native to a bottom-up approach. Unlike their predecessors, they are inexpensive. In fact, many are free to users or at least offer a free level of membership. They are designed to be "light" and compatible with standard, if up to date, web browsers. As such they require little capital outlay from an institution in order to be implemented. As I've already mentioned, the primary challenge and expense here is faculty development. Fortunately, the bottom-up approach offers a different model of development that rests upon trusting users to develop powerful

uses for new technologies. This approach works equally well for getting both faculty and students involved.

As Suw Charman, a social software consultant and author of the well-regarded blog *Strange Attractor,* describes, a grassroots approach to technology implementation begins with identifying key user groups and specific individuals within those groups. Focusing on my primary concern, a professional writing program, the key user groups, at least for us, would be faculty, instructors, and students. I separate tenured faculty from instructors because the faculty have a wider range of responsibilities in relation to the program. Beginning on the group level, Charman lists a few important questions: "What needs do these people share? What are their day-to-day aims? What projects are they working on together? What information flows between them, and how?" Without going into specific responses here, clearly the traditional sharing of aims, projects, and information takes place course-centrically between students and the course instructor and perhaps among the students as well. Information flow among instructors and faculty is more idiosyncratic, except in the case of formal, departmental class observations and personnel review. As I have already suggested, the idea here is to shift these relations and practices, but Charman's point is that one must begin by responding to users' existing practices and needs.

Once these questions have been answered, one needs to identify key individuals among the groups who are well-connected and potentially interested in the technology. Principally the idea is that one would take advantage of existing social networks (which are notably different from institutional, hierarchical relationships). Convincing the right individual to adopt a technology will lead to others following his or her lead, even among largely independent-minded faculty. Again, Charman posts some questions that are relevant here: "What specific problems does social software solve? What are the benefits for this person? How can the software be simply integrated into their existing working processes? How does social software lower their work load, or the cognitive load associated with doing specific tasks?" On the student level, one might identify a student who is well-known and perhaps popular among her peers, someone with an ability to motivate and convince others. In our case, that individual might be the editor of our literary magazine or the president of our program's student group, the Cortland Writers' Association. These students have problems communicating with other students in the program and organizing various activities that social software might solve. Using social software allows them to separate the business of these activities from their personal email or mobile phones and reduces their responsibility for keeping contact information. For example, when editing the literary magazine, one of the more onerous tasks is keeping track of the submissions, which submissions have been rejected or accepted, which need

to be evaluated, which need to be edited, and so on. A project management application, like 37signal's Basecamp, would greatly reduce both work load and cognitive load.

Charman's idea is to turn these individuals into "evangelists" for the application's use and eventually into trainers. This might work out a little differently on the student level. However, to continue my example, if the student editor of the literary magazine started using Basecamp and convinced other students to use it as well, they would quickly discover whether or not the application did make their lives easier. If so, they might start experimenting with using it for other purposes. With this bottom-up approach, it is important at this point that someone from the top does not come down and restrict these uses. If the students use the application to plan a party, or for other non-academic social purposes, this should be encouraged or at least not discouraged. Simultaneously, one would seek to foster adoption among instructors and faculty, perhaps pointing out how project management software might help with managing longer, multi-assignment, projects in the classroom. It might also benefit full-time faculty with other service obligations like tracking curriculum development or assessment. Thus, when Basecamp is introduced into a classroom a number of the students might already know the application and have positive associations with it. These students can help the instructor by supporting the other students. Likewise, more experienced users among the instructors and faculty can serve as an informal resource for their colleagues.

Of course, such work can only go so far without some top-down support. Student use must be supported by instructors and faculty, both by incorporating the application into coursework and encouraging non-academic uses the students discover. Likewise, instructors and faculty need support from administrators. They need the work they do to learn new technologies and incorporate them into teaching to be recognized and rewarded in their personnel evaluations. They need the service they provide as trainers and as support resources to be factored into their workload. As Charman point out, it's also important that the adoption of a new technology be reflected in the institutional hierarchy and its daily workings. It's difficult to encourage students to use electronic communication if the teacher always responds on paper. Likewise, faculty will find it difficult to value a new mode of information sharing, like a wiki for example, if the department chair keeps sending out paper memos or even emails. Furthermore, these initial users-turned-trainers will eventually need assistance from the college's formal technical support personnel. As adoption of an application grows, the college's support professionals will be more generally available to answer questions from students in their dorm rooms and faculty at home. In other words, at some point, a bottom-up approach will stall out unless

it is affirmed by some clear signal coming down the institutional structure. Ross Mayfield refers to this coming together of the bottom and top as the creation of a "middlespace."

While faculty development and the challenges of adopting new technologies may seem tangential to the curricular goals of Professional Writing, these issues actually fit in quite well. Indeed, as Jon Udell's articulation of screencasting describes, one of the growing needs in his industry is for writers who can not only perform the "technical writer" task of describing an application's various functions but also can succeed at the more creative challenge of reaching potential users and helping them to envision how a new application might fit into their social practices. This rhetorical goal, put more generally, is part of the skill set Daniel Pink identifies for workers in the post-knowledge economy: the ability to empathize with users and design powerful user experiences. The task of fostering the adoption of emerging technologies within an undergraduate program becomes one instance of the rhetorical work graduates will later find themselves doing.

MOVING FORWARD

The Web 2.0 technologies I've been describing here are the current emerging technologies. Indeed blogs and wikis have been around for several years. EDUCAUSE and the New Media Consortium produce an annual "Horizon Report," which identifies emerging technologies. In that report, they identify the technologies I have been discussing as those that are currently being implemented or will be implemented in higher education in the next year or so. Beyond that, they point to the growing functionality of mobile phones and the influence of educational gaming in the next two to three years; and the implementation of what they term "augmented reality," "enhanced visualization," and "context-aware environments and devices" in the next three to five years. Most of these latter technologies are already seeing use in the sciences, medicine, and engineering. The role they will play in Professional Writing curricula is obviously uncertain. This does not mean that current technologies will fade away, though it is likely they will change. It is not too difficult to imagine how a podcast or wiki might evolve to work with a mobile phone or in a "context-aware" environment. And with a little imagination, one can see how these folksonomic information structures might operate using a game-like interface or via three-dimensional, virtual modeling. Regardless, inasmuch as these emerging technologies compose, design, communicate, and organize information for user experiences, they will have rhetorical elements that our discipline will be able to address. And

insomuch as these technologies become part of the marketplace, there will be careers for professional writers who can use these technologies, evaluate them for others, and support their use.

In short, while the current wave of technologies from blogs and wikis to social bookmarks clearly has an intimate relationship to writers, we should expect that evaluating and adopting new technologies into Professional Writing will be a regular feature of our careers for the foreseeable future. As such, it is imperative when designing a new curriculum that one attempt to incorporate structures that will accommodate such a practice.

NOTES

[1] A screencast is generally a video capture of a computer desktop complemented by a voiceover. In a screencast a particular application is demonstrated on the video capture of the desktop as the user explains the various steps he or she is taking. A screencast might also be a Powerpoint or Flash-driven set of slides, again accompanied by audio. Like audio and video podcasts, screencasts can be published in a blog format or distributed via RSS.

[2] For more on Web 2.0 read Tim O'Reilly's "What is Web 2.0?" O'Reilly provides an excellent analysis of the primary features of Web 2.0 technologies. Christopher Allen provides a useful chronology of the concept of Social Software, and Clay Shirky's "Social Software and the Politics of Groups" provides further insight into the concept (Shirky is generally credited with conceptualizing contemporary Social Software). Both Web 2.0 and Social Software are elements in a lengthier objective that is termed the "Semantic Web." This concept was coined by Tim Berners-Lee (who also developed the http protocol that essentially created the web in the late eighties).

[3] What are API, AJAX, and RSS?

API stands for "application programming interface." It is the interface that allows one program to request information from another. For example, using the Wikipedia API, someone could develop a web-based application that called up and displayed information from the encyclopedia. While some APIs are closely-guarded and proprietary, many Web 2.0 applications openly share their APIs with the belief that the more other sites make use of their service the more valuable their service will become.

AJAX stands for "Asynchronous Javascript And XML" and references a programming strategy for the web. Without going into great technical detail, AJAX allows for a more seamless experience of the web, where the browser needs to make fewer requests of the web server. Google Maps (http://maps.google.

com) is an example of AJAX at work. On a site like Google Maps, users can drag across maps, zoom in and out, and switch map views from road maps to satellite pictures without the page having to reload.

RSS stands for "Really Simple Syndication" and is an XML file format that allows for the distribution of the content of websites. When one subscribes to a podcast or to a blog and receives that information through a blog aggregator either online (like Bloglines) or on the desktop (like podcasts in iTunes), one is connecting to an RSS file (also called a "feed") that is generated automatically by blogs when bloggers publish their posts. RSS is not limited to blogging however. Any dynamic or regularly updated website or database could generate an RSS feed.Wikipedia provides more detail on each of these terms.

[4] The principle of the long tail identifies the opening of new markets for products outside the mainstream. For example, a local department store can only carry a limited variety of CDs. However beyond these most popular products there exists a long tail of products that appeal to smaller groups of people. While a brick-and-mortar store must cater to a local population, through the web, companies can appeal to a smaller, vertical market.

[5] One of the many examples of this warning against academics is the pseudonymous "Ivan Tribble," who has published several screeds against blogging, including "Bloggers Need Not Apply." Oddly, there seems to be little awareness on "Tribble's" part of how much his own anonymous column resembles the negative characteristics "he" sees in others blogs.

[6] Folksonomy (as opposed to taxonomy) is the practice of tagging websites (and other media) with one's own keywords and then sharing keywords with others. This makes use of a primary advantage of electronic over print information. Books in a library can be organized in only one way (i.e. a book can be in only one place), electronic data can be organized differently by each user. Library systems are *ad hoc;* the system predates the books that become organized. Folksonomic systems are *post hoc;* they describe media after its publication. For more on folksonomy, read Clay Shirky's "Ontology is Overrated: Categories, Links, and Tags."

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