APPLIED RESEARCH

SUMMARY

- **Reports results of a practitioner survey on the definition of technical communication and the role of technology in their work**
- **Argues that technical communication demonstrates a stable set of core values which suggest the field has a professional identity**

The Future Is the Past: Has Technical Communication Arrived as a Profession?

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INTRODUCTION

In the May 2001 *Technical communication,* Roger Grice and Robert Krull introduced a special issue on the future of technical communication by outlining some skills that participants at a 1997 conference at Rensselaer Polytechnic Institute had identified. From the list of things identified at that conference, Grice and Krull suggest that three categories run through all of the suggestions.

1. Technical communication will involve some kind of information design skill, whether it's testing, writing, visual design, or training.

2. Technical communication will involve shifting technological skills, including statistical testing, database design, Web design, and authoring languages.

3. Technical communication's future roles are already occupied by those from other professions.

They go on to detail the first two of these points more clearly in the introduction, suggesting that they want to focus their attention on the first two topics because the third might be too complicated for this special issue.

An important characteristic of technical communication as a field appears in their discussion. Namely, technical communication, they predicted, would be both a design field *and* a technological field that requires practitioners to possess a core set of information design skills—writing, editing, creating visuals—at the same time they possess the ability to rapidly "adopt and drop tools skills" (p. 136). Marj Davis' article, "Shaping the future of our profession"(2001) which appeared in Grice and Krull's special issue, agreed with the argument they outlined, suggesting that "the future of the technical communication profession is obviously tied intimately to the future of technologies. But unless technical communicators want to remain in a servant role, we must become more than tool jockeys" (p. 139). In other words, like Grice and Krull, Davis sees technical communication as a profession with a dual identity that involves some set of core skills that dovetail with technological skills.

Davis doesn't suggest what those core skills are, however, and Grice and Krull base their predictions on intuition and conversations that occurred four years prior to the publication of their special issue. Some questions emerge then. If we are going to postulate what the future of technical communication holds, shouldn't we understand what is going on now? What is actually happening in the profession? What are practitioners in the profession actually doing? How do practitioners actually define the field and their work? Likewise, shouldn't we have an historical perspective that allows us to see whether, in fact, the profession has changed in any significant way and then speculate on the future based on that historical understanding combined with some sense of current practice? Davis herself, quoting Michael Keene at length, suggests something similar, arguing that our knowledge domain is that of *practice*—we must look to the work of real people in context to understand what the profession finds valuable (p. 142).

The purpose of this current article, accepting Davis's challenge to look toward the real work of technical communication to understand the field, examines the dual aspects of technical communication outlined by Grice and Krull by investigating how practicing technical communicators imagine their work and the profession, specifically with respect to technology. In short, we wanted to interrogate the duality of "core information design skills" and "technology skills" proposed in 2001 by asking practitio-

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ners to reflect both on the definition of technical communication and the role technology plays in their work. We wanted to weigh claims that communication and rhetorical skills are important for success in the field against claims that knowledge of specific tools is likewise vitally important to success in the field (Hayhoe 2000).

Since the purpose of this special issue is to look forward to the future of technical communication, we complement our case studies of practicing technical communicators with a look at the history of technical communication. The combination of historical perspective and current practice enables us to see a broader perspective of the field and technology's role in it than just our limited study would and hopefully enables us to make better predictions about what the future of technical communication holds.

What we predict is that technical communication will be what it is and what it was. That is, technical communication historically has been characterized by a tension between employing sophisticated rhetorical and analytical skill to create effective communications at the same time those skills relied on technology for their implementation and demonstration. Current technical communication practice is no different. Since past practice demonstrated this tension, and because our study of current practice suggests that technical communicators are both communicators and technologists, it seems reasonable to suggest that the future holds more of the same.

Perhaps, as Marj Davis hopes, we have finally arrived at a point in the field where we can articulate a set of professional attitudes and practices that will help guide us toward the sense of group identity required for recognition as an authentic "profession." Perhaps, because technical communication is what it was, the field shows stability in values and practices that we as professionals need to embrace as our own, impart to new members of the community, and use to guide our future development as a profession.

A BRIEF HISTORY OF TECHNICAL COMMUNICATION

Technical communication has a long history, although for most of its history it existed without any proper name. Robert Connors argues, for example, that "For as long as men have used tools and have needed to communicate with each other about them, technical discourse has existed" (1999, p. 173). Evidence exists, in fact, that can trace scientific and technical writing back to ancient times where anonymous technical writers wrote on tablets in Babylon (Moran 1985). Moving forward in history to the Middle Ages, we also see that technical writing existed with Geoffrey Chaucer's the *Treatise on the astrolabe* in 1391, "generally considered the first technical tract in English" (Moran 1985, p. 27). This period also gave rise to letter writing—particularly business letters.

Immediately following the Middle Ages and advancing through the Renaissance—and especially the English Renaissance—we see perhaps one of the most significant advances in technology for communicating: the printing press and moveable type. With this new technological advancement came the need for new workers, including someone to look over documents before they were printed (O'Hara 2001). As Elizabeth Tebeaux explains, "Ultimately, the English Renaissance defined technical writing, which was clearly a by-product of print technology and literacy, but the seventeenth century marked the expansion, the development, the flowering of this tradition" (1999, p. 249).

During the 1800s in England, technical writing emerged in the forms of "books that provide instruction on performing work in a broad range of fields, such as medicine, agriculture, navigation, and military science" (Tebeaux 1999, p. 209). Tebeaux's study of these works of technical writing demonstrates many similarities with current practices. For example, these books used page layouts and formatting that included headings, subheadings, and graphical elements. In addition, these works also included drawings, tables, and a "plain style" of writing (Tebeaux 1999, p. 211). During this time, easier-to-use fountain pens aided writers by eliminating the need to exert as much energy as was necessary when using nib pens (Schriver 1997).

Although many scholars attribute technical writing's major birth in the United States to World War II, not all are convinced of this origin. Brockmann (1998) traces its beginnings to the 1850s, when mass production became possible through factories. He bases this argument on an analysis of sewing machine and mower-reaper instruction manuals from the time. These manuals, Brockmann argues, are similar in characteristics to more modern-day instruction manuals. Likewise, after the Civil War, the Morrill Act in 1862 prompted the foundation of land-grant colleges (Rutter 2004), and these colleges supported the development of engineering as a discipline (Connors 1999). During this time, engineering students were trained heavily in humanistic studies, but this emphasis in the humanities was short-lived because students' humanistic studies ultimately resulted in poor literacy among engineering graduates (Connors 1999).

By the early 1900s, however, with the recognition that humanistic training for engineers resulted in poor literacy among engineering graduates, changes emerged in technical writing. Since engineers and other scientists produced most of their writing and other communication out of a necessity to convey information to their audience (Longo 2000), technical communication began to emerge in higher education as a field of study. In 1911, Samuel Chandler Earle published *The theory and practice of technical writing*, the first real technical writing textbook. This text differed from others at the time, "sharing only a few elements with the general composition texts of the early 20th cen-

tury" (Connors p. 176). Earle used his experience at Tufts teaching "engineering English" (Connors p. 176) and attempted to address the new gap that was developing between engineering and English academic faculty.

In the 1920s, technical writing began to experience some acceptance as a subject, and it slowly began to grow. But it was not until World War II that technical writing experienced its greatest shift as a discipline. With World War II came the advent of a new kind of war, based heavily on technologies. People needed more technical documentation to use these technologies. Technical writing became more appreciated, as Connors explains: "technical writing was more than an adjunct function of some activity—it was a job in itself" (1999, p. 185). As a result, more technical writing courses emerged, although technical writing still experienced the same struggles as before: was it a subject for engineers who write and therefore focused on the "technical" aspect of the name, or was it a field of communication (Kynell 1996)?

By the mid 1960s colleges had begun offering specialized courses and programs in technical writing and technical writing-related subjects. At least four schools offered full-fledged programs: Colorado State University, Margaret Morrison Carnegie College, Rensselaer Polytechnic Institute, and Illinois Institute of Technology at Chicago. In addition, professional organizations such as the Association of Teachers of Technical Writing (ATTW) promoted more growth, and scholarly publications such as the *Journal of technical writing and communication* and *The technical writing teacher* helped give the field and discipline more prestige (Connors 1999).

During this same period of time, technical communication approached its next greatest technological crossroads: computing and the word processor. Word processors allowed for easier revision, boldface type, automatic centering and underlining, and justified alignment. As computing technologies progressed, writers had more document design capabilities—graphics could be more easily incorporated with text. With the development of improved document design software technologies, communicators were afforded better means of designing all types of documents and they simultaneously came to rely on technology more in the daily practice of their jobs (Schriver 1997). This reliance on technology continues to the present.

This brief history shows that technical communication has always resided with technology and that only fairly recently has it emerged as a field in which the *communication* aspect of the name received as much emphasis as the *technical* aspect of the name—or more. In other words, historically, people who wrote technical documents did so as an adjunct to their main jobs, to explain the "real" work that occurred in engineering or scientific settings. Most technical documents were not produced by "writers" but professionals who wrote as part of their jobs. As the amount of required documentation increased, engineers and scientists hired writers prepared for technical fields because they themselves didn't care for what they perceived as the mundane task of documenting their work. So in their earliest incarnations, professional technical communicators were "technicians" in the engineering sense of the word, people who are skilled at fixing things but who "cannot do the original design work to create a new product" (Davis 2001). They documented and edited the work of others rather than creating and designing information.

However, as technology became more and more readily available, consumers began demanding more professional and higher quality information products to accompany their purchases. This culminated, according to Karen Schriver (1997), after World War II, with the proliferation of new technologies that appeared after the war—and that continue to appear today: "Over the past several decades, the legacy of these developments has been a move toward specialization" (p. 52). In other words, the sheer pace of technological innovation enabled a profession—technical communication—to emerge since these new technical communicators were skilled at using the tools necessary to create the types of documents required by consumers, government regulators, doctors, lawyers, and a vast range of other audiences.

But these skilled tool users were more than technicians. They employed principles like audience analysis, writing conventions, gestalt psychology, and information management to theorize and plan effective documents. The tools, while necessary, were just tools used to implement more sophisticated designs. This seems perfectly in line with Grice and Krull's predictions: technical communicators need information design skills **and** tool skills.

So why then, do so many job advertisements for technical communicators specify that applicants must know RoboHelp or FrameMaker, and neglect to mention that applicants need rhetorical, language, interpersonal, and design training (Hayhoe 2000)? Is the field really still inhabited by "technicians" who fix others' work or document the processes invented by scientists and engineers? Historically it was, but what about now? If Grice and Krull were correct in their predictions, a survey of current practitioners should reveal that the technology is only part—perhaps half—of the equation.

A BRIEF SURVEY OF CURRENT TECHNICAL COMMUNICATION PRACTICE

To understand how current practice connects to the historical development of technical communication and move us one step closer to speculating on the future, we designed a study—a series of case studies actually—to examine how current technical communicators define the field, looking

specifically for the field's relationship to technology. We approached the study with two primary questions:

1. How do technical communicators define technical communication as a field?

2. What do technical communicators do in actual practice?

To answer each of these questions, we interviewed and observed 10 self-identified technical communicators in the southeastern U.S. who were recruited through the local Society for Technical Communication chapter and through personal networks. Each participant was observed for 2 hours at their workplace; during the observation, written notes recorded what the participants were doing. These notes were analyzed to determine what each participant actually did during the period of observation.

Each observation was followed by an interview that attempted to determine whether the tasks observed were "normal" and what other tasks were common. The interview also specifically asked each participant to define the field and asked them to speak about their engagement with technology on the job. Together, the observations and interviews sought to interrogate the dual aspect of technical communication proposed by Grice and Krull (2001): information design skills and technology skills.

The study participants represented a wide range of job titles, suggesting that many organizations still don't recognize technical communication as a field, even though all of the participants identified themselves as "technical communicators." This fact also suggests, as Grice and Krull predicted, that the profession blends with many other fields. Table 1 shows each participant by gender, experience, and job title.

The organizations employing the participants also varied, with only half of the participants working in the software industry. This fact suggests that technical communication is about more than documenting software. The range of companies is presented in Table 2.

The interview and observation data suggest that although technology is very important to technical communicators' daily responsibilities, they do not understand their work to be that of technicians or "tool jockeys." Instead, when speaking about technical communication as a profession, all of the participants defined themselves as "designers" of some nature, most often seeing themselves as some kind of "user advocate" who employs traditional skills of writing, editing, and communicating.

Rarely do they mention tools when defining technical communication, and in many cases, the participants explicitly said that tools are not a significant consideration for them. The observations belie this perspective, of course, since nearly all the work each participant completed involved using computer technology and software of some sort. It appears, then, that the **values** of this limited sample positioned technical communication squarely in the camp of "communication," demonstrat-

TABLE 1: STUDY PARTICIPANTS

Participant	Gender	Job Title	Years in Field
1	F	Senior Technical Writer	8
2	M	Advisory Education Specialist	12
3	F	Documentation Services Manager	10
4	M	Senior Education Consultant	14
5	F	Web Content and Usability Specialist	15
6	F	Performance Support Designer	4
7	M	Advanced Communication Specialist	16
8	M	Technical Writer	14
9	M	Senior Graphic Designer	9
10	M	Entertainment News Producer and Online Editor	12

TABLE 2: BRIEF COMPANY PROFILES

Participant	Company
1	Software development company
2	Very large, international computer development and consulting company
3	Software development company
4	Very large, international computer development and consulting company
5	Government health agency
6	Financial services company
7	Government contract company
8	Software development company
9	International manufacturing company
10	Media organization

ing a concern for audience, for writing, for communicating, and for designing information with little regard for technology, or the "technical" aspect of the field. These current practitioners, it appears, care only about Grice and Krull's first category.

Below we present data to substantiate these suggestions, arranged according to the two primary questions of the study.

1. How do technical communicators define technical communication as a field?

Four interview questions attempted to answer this question, with two questions asking participants to broadly define the field and their work and two others asking them to relate technology to the field.

1. How would you define technical communication?

2. How would you define yourself as a technical communicator?

3. How would you describe the relationship of technology and technical communication?

4. Do you define your job in terms of the software tools that you use?

When answering questions 1 and 2, the participants listed several practices that define technical communication and themselves as technical communicators (the total times mentioned are recorded here, so the total is greater than 10). These practices are listed in Table 3.

When defining technical communication, the most common answer involved some version of audience analysis, with all of the participants mentioning it at least once. It was mentioned a total of 14 times in answer to these two questions. Participant 5, for example, defined technical communication as "The ability to take specialized information and make it available either to a general audience or to a specialized audience. . . . " Communicating was also a common practice, with this practice consisting of collaborating with peers, speaking with subject matter experts, or sending or responding to e-mail. The concept of "writing" likewise emerged frequently with participants making comments like participant 3: "I think a technical communicator is a writer." Several mentions of "design" also appeared, with comments involving visual design, information design, and instructional design. Participant 5, for example, said she was "an information designer and information architect. I do interface design." "Editing" was mentioned four times and "managing" three times.

Four references to "using technology" also occurred. However, these mentions were most often in reference to completing some other task or, in fact, defining technical communication as not just using technology. Participant 1, for example, stated, "I definitely think technology is helping me do what I do everyday," while participant 2 echoed this idea when he explained, "technology has made my job easier." Several participants made caveats, though, to what they perceive technology's role to be. Participant 3 stated, for example, "I think it's important to remember technical communication basics. I mean use the technology, but don't get too carried away with it just because you can do it."

Finally, when participants were asked specifically whether they defined their job in terms of the technology

TABLE 3: PRACTICES THAT DEFINE TECHNICAL COMMUNICATION

Audience Analysis	14
Communicating	10
Writing	7
Designing	6
Editing	4
Using technology	4
Managing	3

they use, 6 of the 10 participants stated outright that they do not feel software or technology defines their job. As participant 1 stated, "To me, my job isn't really defined by what tool I use. I can just as easily use [another software program]." Participant 7 explained, "No, I would define my job in terms of the services I provide." Three other participants implied that software tools do not define what they do, and only one participant said "yes, software does define my job." These results are displayed below in Table 4.

Based on the participants' responses, it appears that the majority perceive the field as one based on skills that involve designing information by conducting audience analysis, communicating, writing, designing, or editing. While there are mentions of technology use and one person did define technical communication in terms of the software used, overall, it does not seem to be a major component of how these practitioners define the field or their work. It seems that these technical communicators place far more value on communication than they do on the tools they use, and thus they appear to support the idea that the field is more about designing information, Grice and Krull's first category, than it is about technology, Grice and Krull's second category.

TABLE 4: DO PARTICIPANTS DEFINE THEIR JOBS IN TERMS OF SOFTWARE TOOLS

"No, not at all"	6
"No" implied	3
"Yes"	1

2. What do technical communicators do in actual practice?

Definitions are one thing; actual practice is often another. This second question investigated what technical communicators did in actual practice to allow us to compare the real work they do with what they perceive their work to be. The two interview questions listed below in conjunction with the observations addressed this topic:

1. During the observation time, I saw you do things like [X, Y, and Z]. Are these tasks that you typically perform here? If not, what types of tasks do you typically perform?

2. What is the role of technology in your job? Why?

The observation portion of the study was crucial to understanding how central a role technology plays in the daily lives of technical communicators. Based on this small sample, we observed that, in general terms, the bulk of the work these technical communicators performed involved manipulating technology. Specifically, two of the participants wrote or developed content from scratch using programs such as Microsoft Word. Two of the participants participated in project management activities including sending e-mails to coworkers requesting their specialized services (programming and graphic design) on a major project; updating the project schedule on an intranet; and requesting updates from coworkers about project progress by e-mail. Also, all 10 of the participants engaged in some type of editing—both online and on paper. Some edited Web site content, some edited images, some edited text, and one edited HTML code.

TABLE 5: PRACTICES USED DURING OBSERVATION

Communicating/interacting with co-workers	10
Editing	10
Reviewing documents or other deliverables	7
Conducting research	6
Managing projects	2
Writing	2

In addition, all 10 participants interacted with their coworkers in some manner during the observation session, most in person, speaking face-to-face. Others interacted by e-mail or used an online instant messaging system. Seven participants reviewed documents to learn new information, including examining Web site traffic statistics, previewing updates to Web sites or documents, and reviewing printed versions of PowerPoint presentations. Six participants participated in some type of research; participants 1 and 3 read use cases; participant 6 searched online for additional clipart; and participant 8 used online forums to request help with a software tool.

A summary of the activities observed and the number of participants who engaged in each activity appears in Table 5.

The first interview question ("During the observation time, I saw you do things like [X, Y, and Z]. Are these tasks that you typically perform here? If not, what types of tasks do you typically perform?") asked the technical communicators to reflect on their daily work. The question also sought to gain more insight on the participants' daily activities than two hours of observation could provide. The

TABLE 6: PARTICIPANTS' RECORD OF THE TASKS THEY TYPICALLY DO

Writing	6
Managing	3
Designing	2
Communicating	1

responses to the question demonstrate an interesting comparison to the activities observed. Table 6 represents the participants' responses to the interview question and shows a somewhat different picture of everyday practice than the observations did.

Writing was most frequently mentioned, with 6 of the 10 participants suggesting that the bulk of their work is writing. Participant 1, for example, stated, ". . . I think the majority of what I do everyday is actually writing the documentation." Three of the 10 participants also mentioned managing or management in their explanations of their day. Participant 4, for example, explained, "I do some project management." Only two participants mentioned design or designing, and only one mentioned communication or communicating. She stated, "I do communications, I work with people, help them do communications . . . . " Curiously, none of the participants mentioned editing, reviewing, or researching as part of their daily tasks, even though these tasks were repeatedly observed.

Significantly, when reflecting on their actual work, 6 of the 10 participants mentioned specific software tools when describing what they do. Participants 2, 4, 5, and 9 mentioned DreamWeaver. Examples of other software tools that participants mentioned were Visio, PowerPoint, Word, and RoboHelp. Four of the participants also mentioned working online or on the Web. Four of the 10 participants mentioned e-mail as they explained tasks that they typically performed, with Participant 3 explaining, for example, that "I get a lot of e-mails."

In addition to the observations and the question asking participants to reflect on their daily work, we asked one interview question that specifically addressed technology: "What is the role of technology in your job? Why?" Even though virtually none of the participants had defined their jobs in terms technology previously in the interview, nine participants were emphatic about the importance of technology to their jobs. Sample responses include:

> *I don't think I could do my job without technology. (Participant 1)*
>
> *It is crucial for what we do from day to day. (Participant 2)*
>
> *I could not get by without it. (Participant 6)*
>
> *Major, I couldn't do my job without it. (Participant 9)*

Six of the 10 mentioned a specific software tool by name when answering this question. Participant 2 explained, ". . . it's crucial, DreamWeaver, to build . . . ," and participant 3 stated, "we're heavily using applications, Excel or Microsoft Project." Three participants described that they use technology to communicate. "I mean the nature of my job is that I am using technology to communicate," participant 9 said.

Based on the observations and the participants' responses in this second part of our study, tool use, as Grice and Krull predicted, is fundamental to the practice of technical communication. The vast majority of the work observed occurred on computers even though the participants didn't see what they do specifically as using technology. This small sample viewed their work as communicating, managing, editing, designing, but when they were pressed on the issue of the role of technology in their jobs, the participants were nearly unanimous—and emphatically so—in their conclusions that they could not do their jobs without technology. So, while it seems that these technical communicators place far more value on the communicative aspects of their jobs than on the tools they use, Grice and Krull's prediction that technical communicators would have to adopt and drop tools appears to hold true. In fact, it might be because technical communicators *don't* place value on the tools that they can easily adopt and drop tools. As Participant 5 explained, ". . . the technology is the stuff that you work with and it should be subordinate to what your goal is."

PREDICTIONS

But what is the goal of technical communication? And if there is a goal, shouldn't this goal guide future practice? When combining the historical perspective and the results from this brief study, we believe that the field now recognizes a set of goals that it has possessed openly for 60 years and less obviously for centuries: *we create information products to communicate effectively with audiences about technology using whatever tools best fit the situation.* The participants in this study consistently defined the goals of the field as communicating, writing, editing, and designing information for specific audiences. This is also the work that they did. The tinkerer who scratched a stick in the dirt in Babylon had the same goals. That person wanted people to understand some technology and to use it. The difference between then and now, however, is that a professional field emerged to meet these goals because of the

array of new products and services introduced during the 20th century—products and services that currently proliferate at an even faster rate than in the Cold War days. Engineers and scientists began to focus their attention on innovation and thereby opened a gap that was filled by professional communicators. They couldn't continue "scratching in the dirt"; they had to rely on professionals who knew best how to craft communications that informed others about innovations.

Perhaps we are at a point in the evolution of the field where we no longer have to predict the future because we know what it is that we do. Perhaps, as is required for a field to rise to professional status like that of doctors or lawyers, we need to recognize that our field has finally developed "a set of professional attitudes" that impart a "professional conscience . . . and develop a feeling of group solidarity" (Davis 2001, p. 139). We have achieved, in other words, what Grice and Krull predicted: a sense of ourselves as designers who research audiences, test, train, write, author, edit, and communicate with those audiences by employing tools. Our history suggests that this is what we did; our current practice suggests that this is what we continue to do now; we contend that this is what we will also do in the future.

If technical communication has finally arrived as a profession, and the values and work types have stabilized, what predictions can we make about technology in the future?

1. We can predict that the field will continue to subordinate technology to information design skills.

2. We can predict that we will continue to practice and to teach those information design skills.

3. We can predict that technical communicators will continue to be heavy users of technology.

4. We can predict that because our values place the audience first, we will begin participating more frequently in the development cycles of technology.

1. Technical communicators will continue to subordinate technology to information design skills.

As we suggested in the report of our study, technical communicators see themselves more than anything else as user advocates, as communicators, as writers, as information designers, and to a far lesser degree as editors, technology users, and managers. The history of the field also supports this perspective because the goal of scratching in the dirt was communication among individuals. Technology doesn't define who we are. Our self definitions come from values and beliefs—a "set of professional attitudes" or "professional conscience," to adopt Vern Bullough's terms (quoted in Davis 2001, p. 139)—and the field's values focus on being a conduit through which effective communication flows.

We facilitate and help drive innovation by making sure that users can actually do something with a product by designing, in whatever medium using whatever tool, the most effective and ethical piece of communication for that audience and purpose. That, we would argue, is fundamentally what the profession *is*. As a result, the technology is simply a vehicle for helping us to accomplish our communicative tasks. The technology is how we manifest our identity; it's not the identity itself.

2. Technical communicators will continue to practice and teach information design skills.

Since our values as technical communicators privilege information design skills, we will continue to practice our profession as design. Ironically, information design skills are more practical than technological skills because they equip us with abilities that can transcend individual communication situations. If we view what we do as practicing information design, then we will not be bound by particular tools because design principles like grouping, arrangement, or creating hierarchies don't change. Whether we use FrameMaker, Word, InDesign or a pencil and paper to implement sound communication principles is less significant than the principles themselves.

Academic programs will continue to teach technical communication this way as well. In a recent *Technical communication quarterly* article, for example, Allen and Benninghoff (2004) report the findings of a study they conducted concerning "the core concepts emphasized and most commonly taught procedures, skills and tools" of technical and professional writing programs in the U.S. Four of the five core topics they identified are, in fact, information design skills, and none are technological skills, as the list below shows (p. 170):

- Rhetorical analysis (62%)
- Document design (48%)
- Genre writing (45%)
- Working with a team (43%)
- Editing for clarity and conciseness (38%)

They outline a host of other topics that are emphasized in academic programs, ranging from usability testing (11%) to delivering presentations (2%), and show that technical communication students are prepared as *information designers* to do the work of technical communication, not as technologists. Given the conjunction between the preparation of students and the values of current professionals, it seems reasonable to predict that the future holds more of the same.

3. Technical communicators will continue to be heavy users of technology.

Technical communicators do, nevertheless, rely heavily on technology to perform their work, and this trend will continue into the future. This prediction seems obvious because pro-

ducing communication products, collaborating with peers, managing projects, and increasingly, editing all rely on technology. During our observations, for example, all participants used computers, along with numerous software packages. Many collaborated online with coworkers and as Highby and Cain (2003) suggest, the ability to get along with others and work collaboratively in a technologically mediated way will be significant in the future as companies move toward geographically distributed project teams.

Also, technology has become the primary means of crafting effective communication products. While many of us jot a few handwritten notes throughout the day and edit printed documents, the bulk of our final deliverables are computer-generated, and increasingly they exist only electronically.

Because technology pervades our work, it is clear that technology will continue to play a major role in technical communication in the future. Software tools will continue to improve, and new technological innovations will have an impact on how we collaborate or create communication products. Future technical communicators will need to continue being open to learning technological tools and adapting their skills according to the best tool available to create effective products. As Dowdney (1998) suggests, adapting to change (online), particularly in regard to changing technologies, will be a necessity for future technical communicators who wish to actualize their value of being a user advocate.

4. Technical communicators will participate more frequently in the development cycles of technology.

As technical communicators begin to articulate and understand our own professional identity and accept that we have become a profession, others outside of the field will begin to recognize that as well. We won't be standing up as Bill Hart-Davidson does in "The core competencies of technical communication" (2001) and asking "why not us?" (p. 146) because we will be recognized as the ones who approach technology from a user's perspective and who possess expertise in "communicating." If there's one thing that the stunning speed of technological innovation has made clear, it's that communication is no longer just an adjunct to business. It *is* business. Entire companies—and successful ones like Google—exist largely to do exactly what technical communicators value: using tools to design and present information in such a way that a specific audience can use it.

In his article about the core competencies in technical communication Hart-Davidson picks up this theme and argues that technical communicators are "gardeners," those who use their skills to help grow a business. His point is worth quoting at length because it shows how the values technical communicators hold can translate into more frequent participation in the design of technology:

> *Gardeners are people who can translate concepts and mechanisms back and forth between the domain of the work and the technology itself. They occupy a special niche in information ecologies because they bridge the specifics of the domain with its unique problems and challenges and the capabilities of the tools used in the domain. (Nardi and O'Day, quoted in Hart-Davidson 2001, p. 154)*

This quotation replays exactly what has been the theme of this entire article: technical communicators work at the intersection of technology and people, migrating back and forth between technology and communication as they design products for specific audiences. Because they are "translators" or gardeners, technical communicators will become more involved in the creation of technologies, especially as those technologies begin to adapt to people rather than requiring people to adapt to the technology as has historically been the case.

CONCLUSION

Technical communication has quite possibly arrived as a profession, and going forward, the field's relationship with technology won't change because our values haven't changed. Certainly the technologies we use to instantiate our values will change just as they moved from clay tablets to moveable type, to pens, to typewriters, to word processors, to the computers we use today. But our primary professional identity of producing communication for specific audiences isn't going to change. It has been constant for a very long time. Technology for technical communicators is simply what we use to get our jobs done. Is it important? Absolutely. Is it going to change? Absolutely.

But in spite of all the technological change that will happen in the years ahead, technical communication has quite possibly arrived at a point where we are able to articulate a set of professional attitudes and practices that give us a sense of group identity. We approach technology from a human perspective and believe that technology should adapt to people, not the other way around. We design our communication products accordingly, using whatever media, software, technology, or tool is most appropriate to achieve this end.

People, we would argue, are the ultimate end, not the technology. Not only is this a value set in technical communication, it's also the way we work. We use tools not as an end but as a means to help people. As we think about the future of technical communication and specifically its relationship to technology, why not look to what we've done for a very long time and what we do now, and embrace a stable vision of the profession as one in which we use tools to design effective communication products for specific users? **TC**

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