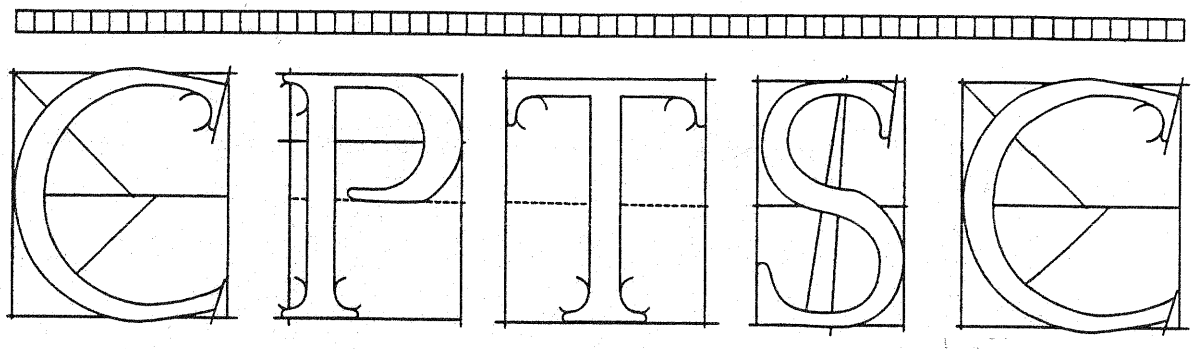

The Council for Programs in Technical and Scientific Communication

Proceedings
1995

Houghton, Michigan

Proceedings

The Council for Programs in Technical and Scientific Communication

22nd Annual Conference

Houghton, Michigan
September 28–30, 1995

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22nd Annual Meeting
The Council for Programs in Technical and Scientific Communication

Host: Humanities Department, Michigan Technological University
Location: MTU Memorial Union Building, Houghton, Michigan
Date: September 28–30, 1995

Meeting Theme:
"Going to Extremes at the End of the Earth"

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7:00 Opening Session, Ballroom A
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- pasty picnic lunch on Lake Superior
- the Calumet Theatre
- the "snow thermometer"
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Lest We Think the Revolution Is a Revolution: Images of Technology and the Nature of Change

Cynthia L. Selfe
Michigan Technological University

When technical communication teachers get together to talk about technology, they generally end up talking about change. It is common sense, after all, to link computers with change when microprocessors now double in speed every 18 months (Kurzweil, 1990, p. 8), when biomemory, superscalar architecture, and picoprocessors become feature stories for National Public Radio; and when media generations flash by in less time than it takes to uncrate a faculty workstation and get rid of the Styrofoam™ packing.

And, at some level, our profession has come to terms with technological change—we have adjusted diminishing supplies and equipment budgets to accommodate an ongoing program of purchases and upgrades; we have accepted computer studies as a new area of scholarly focus; we have integrated technology into our curricula, and modified our programs to include technology training and use.

Like most of Americans, however, even though we have made these adaptations, we remain undecided about technology and change. At one level, we believe in the pairing; we believe in the computer's power, and we believe strongly in the beneficial ways in which technology promises to improve our lives. At other levels, we fear the effects of technology and the potent changes that it introduces into familiar systems.

These contradictory impulses are what I want to talk about tonight, especially as they affect our jobs as communication specialists and educators. These attitudes shade subtly into one another at multiple levels of our collective social experience, and they are worth exploring for those of us associated with technical and scientific communication programs as educators and as communication specialists.

Change, Technology, and the Status Quo: Some Background

Because our culture subscribes to several powerful narratives that link technological progress closely with social progress, it is easy for us—for Americans, in particular—to believe that *technological* change leads to productive *social* change.

Indeed, the narratives linking technological change to social change are part of the reason that technical communication teachers—like many other educators—have come to embrace computer technology so enthusiastically over the past decade.

Quite simply put, like most Americans, we hope computers can help us make the world a better place in which to live. In our own profession, for example, we hope computers can help make us, and the students with whom we work, more productive in the classroom, more effective as professional communicators, and more responsibly involved as citizens of the world.

We are not alone in these stories that we tell ourselves—indeed, they are echoed for us constantly and in a variety of versions. Vice President Albert Gore told us in 1993 that the Global Information Infrastructure would increase opportunities for intercultural communication among the peoples of the world. Howard Rheingold, in *The Virtual Community* (1993), describes how computer networks can support more citizens in their efforts to communicate with government agencies, corporations, political groups, and information resources.

Nicholas Negroponte, in *Being Digital* (1995), sketches a picture of electronic landscapes that provide individuals new ways of making personal contributions to public deliberations and decision making. Dale Spender, while more careful in her perspective in *Nattering on the Net* (1995), speculates on what it will take to establish new kinds of electronic forums that will support women and other groups now often left out of—or kept out of—public discussions in other venues.

This optimism about technology often masks in a peculiar way, however, the potent forces of fear that I have already mentioned. *Moreover*, and perhaps *more importantly*, an exclusive focus on the positive changes associated with technology often serves to distract us from recognizing how existing social forces actually work to *resist* change in connection with technology, how they support the status quo when technology threatens to disrupt our world in any meaningful way, how our culture, and the social formations that make up this culture, reacts with a special kind of conservativism to technology, even as we laud the changes it promises to bring. The more things change, the French would say, the more they remain the same.

I'm going to try to illustrate the ways in which change is modulated and complicated by forces of stasis by showing you a few images that come from commercial advertisements about technology.

I'm fascinated by these advertisements because I think they reflect a portion of our collective cultural imagination about technology. Like most images, they tell rich and powerful stories about the social contexts in which they are produced. Like snapshots—of weddings and graduations, of Christmas and family reunions—they reveal *us* to ourselves. They are laden with cultural information, shot through with the values, ideological positions, and social understandings that comprise our shared experience. Indeed, it is because we recognize the common cultural symbols in these snapshots so clearly, because we commonly construct meaning with and through them, because they are so loaded with social significance to us, that such images are powerful communication devices.

These are also the reasons that the ads I'll show you can reveal to us the complications of our feelings toward technology and illustrate how these feelings are played out in the shared landscapes of our lived experience.

Narratives of the "Global Village" and the "Electronic Colony"

The first series of images I want to show has to do with one of the more popular narratives we tell ourselves about computers—that technology will help us create a global village in which the peoples of the world are all connected—communicating with one another and cooperating for the commonweal. According to this popular social narrative, the computer network that spans the globe will serve to erase meaningless geopolitical borders, eliminate racial and ethnic differences, re-establish a historical familial relationship which binds together the peoples of the world regardless of race, ethnicity, or location. As Nicholas Negroponte (1995) retells the story to us: ". . . a new generation is emerging from the digital landscape free from many of the old prejudices. . . . Digital technology can be a natural force, drawing people into greater world harmony" (p. 230) within a landscape where "we are bound to find new hope and dignity" (p. 231).

This story, as you can imagine, is appealing at a romantic level to many Americans. It is also, incidentally, quite terrifying. Becoming just another member of the tribe, just another citizen of the global village, suggests the possibility that Americans could be asked to relinquish their current privileged status in the world where, as Negroponte (1995, p. 230) also reminds us, 20% of the population currently consumes 80% of the resources. Being just one among many village members also suggests the possibility of losing the economic benefits that have accrued to us as citizens in one of the most highly technological nations of the world and the possibility of functioning within a new global context in which classism and racism is unacceptable because so many members of the connected human family are poor and of color.

In fact, we find ourselves, as a culture, ill equipped to cope with the changes that the "global village" story necessitates, unable, even, to *imagine*, collectively, ways of relating to the world outside our previous historical and cultural experiences. As a result, in the snapshots I'll show you, we revise the script of the narrative to fit within the historically determined contexts that *are* familiar and comfortable to us. In doing so, we also limit our cultural vision of the technological changes that are acceptable and possible for us as a culture.

The images that I will show reveal how our cultural imagination deals with the radical changes that the Global Village Narrative implies, by reconstituting technological change within the boundaries of these more historically and socially familiar contexts. In the global village narrative, for example, while we maintain the vision of linking peoples around the world, we imagine ourselves not as simple members of this electronically constituted village but rather as discoverers of the village, explorers of its remote corners, and even colonizers of its exotic peoples.

In the revised narrative, the global village retains its geographical reach, but it becomes a world in which different cultures, different peoples, exist to be discovered, explored, marveled at—in a sense, known and claimed by—those who can design and use technology. Inhabitants of this electronic global village, in turn, become foreigners, exotics, savages, objects to study and, sometimes, to control.

This revision is a familiar imaginative context for us—we have, after all, a history of experiencing the world as missionaries, as colonists, as tourists, as representatives of multinational companies. The revised story leaves no doubt about our own role—we are the smart ones who use technological expertise to connect the world's peoples, to supply them with technology and train them to use it. Nor does the revised story leave us in doubt about the roles of other peoples in the world—the recipients of technology and its benefits, those who *use* the technology that *we* control. This story is so familiar because it has happened before and in ways that we like to remember. We have a long and admirable history of exporting technological expertise to less fortunate neighbors—Lend-Lease, the Peace Corps, and the Space Program among other routes.

This retelling or revising of the "global village" story—we can now call it the "electronic colonial" narrative—happens very naturally within the discursive venues available to our culture—on television, in our classrooms, in

books, and articles, and in corporate settings—often without anyone noticing because the elements of revised "electronic colonial" narrative are so much more familiar and acceptable to us than were those of the original Global Village story.

A few snapshots from our album reveals these themes. I find especially fascinating the use in these two ads, by Virgin Sound and Records, of the "one tribe" motto. In the first ad, we get a glimpse of both stories we have described. The text here narrates the global village story, "For the world to have a future, we must work together as one tribe" because encroaching civilization, diseases, and epidemics are threatening some of the world's people with "near extinction." Virgin, the ad tells us, has donated a portion of their profits from their CD atlas, entitled *One World*, to assist the Yanomani tribe in the Amazon Basin as they establish health care programs in their villages.

The second, revised story—the electronic colonial narrative—is revealed most clearly in the visual image represented in the ad, the picture of the Yanomani man. In accordance with the themes of the revised narrative, the Yanomani is shown in ritual dress with feathers and face paint, presented as a wondering savage, vulnerable to the crueler effects of civilization, and obviously unaware, in a critical or informed sense, of the power of the technology being used to his benefit. He is connected to us as "a member of the tribe" but he remains a world away from Americans, the people who are creating the CD technology and donating the money to health care projects.

The second ad, again for Virgin Sound and Records, announces two products and provides us another version of the revised electronic colonial story. In this story, Americans use technology to become world travelers, to learn about—and acquire knowledge of—other cultures, while remaining comfortably situated within their own living rooms and, thus, comfortably separated from the other inhabitants of the global village.

On the left side of the page, the *One Tribe* CD is described, in which "MTV star Pip Dann takes you on a journey exploring the people and cultures of our world, from the origins of the Maori islanders to the rituals of a Tibetan monk." As the ad says, "One Tribe takes you further than you can imagine—right from your own Home." On the right side of the page, the *One World Atlas* offers a "stunningly rich trek around the earth," a "wealth of maps and information all set to a culturally rich music track." The non-Americans featured in this ad are identified as exotic, albeit inviting, cohabitants of the global village. At the top left, we find representations of two girls, spliced together to present a bizarre tribal image; on the left margin scattered among postcards from exotic destinations and lists of foreign vocabulary words, we find two picturesque French men sporting the requisite berets and a veiled Middle Eastern woman with mysterious eyes.

To complement the textual representation of the electronic colony narrative, we find the picture in the bottom left of this ad—a white, blond woman sits in a well-appointed living room that is chock full of artifacts from around the world; several big-screen viewing areas in front of her featuring images of exotic peoples and far-off locations, a large computer with a world map on the screen, and a globe complete the representation.

And these are the tasteful and more subtle advertisements that I would associate with the electronic colony narrative. I can show you the other end of the spectrum in these next two images. The first, entitled "Unexpected" shows an Indian woman, bone picks through her nose, feathers attached to her ear, beads around her neck, nursing a baby on one breast and a monkey on the other. The ad, for a color scanner, begins with a dollar sign. The person in the image, the message suggests, is another inhabitant of the global village, but one important to Americans only as the unexpected exotic, an image that we can use to sell a piece of technology.

The next ad, for Polyglot International software, provides yet another version of the electronic colony story. In this image, we see a male, of undefined indigenous origins, with gold teeth, a broad smile, and a Carmen Miranda kind of bonnet made up of roses and topped by either a radio antenna or a birthday candle. The ad's designers have superimposed a set of aviator's goggles over the man's eyes, and, across these goggles, are printed a series of 1s and 0s, denoting binary code.

In this ad, the text provides the background story for the image: "You need a team of software experts [Polyglot International Software] who can help you culturally adapt every aspect of your software for global markets. What you need for what they want." The members of the global village, the ad implies, are indeed different from us, and strange, but we can, given the know-how that characterizes the American free enterprise system, identify what these people are seeking in terms of desirable software and provide it to them in a language that they can understand, even with a simplistic notion of our technology products.

These three ads—like the travelogue images we look at in National Geographic, like the tourist brochures we pore over in the travel agency, like the slides we view after a friend's trip abroad—are representations of exotic places and exotic peoples now available to Americans as new global markets, multiplied, as Fredric Jameson and Jean Baudrillard would say, to the point of dizzying accessibility and specificity. And it is the wondering native, the silly Indian, the veiled woman that is the object of our collective technological, cultural, and capitalist gaze. Americans, in

these three ads, you'll notice, go virtually unrepresented. We are the canny and sophisticated minds behind the text, behind the image, behind the technology. We are the designers, the providers, the village benefactors. We are cybertourists and cybercapitalists who both understand and represent the world as our private standing reserve.

This next ongoing series from IBM called "Solutions for a small planet" also tells us the electronic colony story, illustrating how generous Americans can be in providing other needier countries with useful technology, and providing the story a potent cumulative power. The small map located in the upper left-hand corner of each ad helps orient viewers to the particular area of the world that IBM and American influence have reached.

In the first ad, for example, with the tone of an old master, IBM provides the 3-D rendering technology needed to rebuild the Frauenkirche, a church destroyed during the allied firebombing of Dresden in 1945. The ad notes that this technology, along with the experience of a talented stone mason or two, allows the reconstruction to proceed, linking the power of a twenty-first century tool with the imagination of eighteenth-century craftspeople.

In the next IBM ad, set this time in Casablanca, American technology helps Dr. Jean-Jacques Hublin "turn time back 400,000 years, uncovering clues to the origin of mankind." And, in the final sample of the series, this set in South Africa, IBM helps the smiling driver of a South African Breweries truck "slake the thirst of far flung customers . . . . so precisely that no one's ever short a drop."

If the previous series reduces the world to a series of tourist destinations, this series reduces the world's problems to a set of embarrassingly quick fixes. American technology and technological know-how, these images imply, can repair cultural damage caused by the firebombing of Dresden, re-create the painstaking artistic achievement of a destroyed seventeenth-century cathedral, recapture the losses of history, and serve as a corrective for decades of apartheid. These implications, of course, are not only absurd, they are humiliatingly small-minded. Nothing can provide redress for the millions of human lives, the art, the history, the beauty lost in Dresden; nothing can totally ameliorate the pain and the lingering inequities of South African apartheid. As much as Americans might like to think it, technology is not the solution for all of the world's problems—and, indeed, it might well be a contributing cause to many of them.

Nor do our collective cultural imaginations stop at images of individual *countries* colonized by American technologies. Some ads, like this next one, tell the electronic colony story primarily through images, representing the globe itself as an object to be owned, used, manipulated, colonized. The first, an ad for Pipeline, a software interface to the Internet, shows a titan's arm wrapped around the globe as if it were a basketball. The accompanying text reads ". . . a click of the mouse lets you handle the entire Internet. . . . See how easy it is to have the world at your finger tips."

The next image in this series, provided to us by IBM once again, features the OS/2 Warp system. The ad shows the globe and a series of Warp users—an astronomy student, a stockbroker, an up and coming artist—who all have access to the resources of world via the Internet. Although the communications in this ad seem to be spanning the globe, a closer glance indicates that the focus remains on America, where *all* the users are located and from whence *all* the communications emanate. Although Canada, Mexico, Central America, and part of South America are shown in this image, they are silent in terms of technological communications.

The final image in this series, which at first glance seems to show the dawning of a new technological era that sets the stage for the global village narrative, is an ad for an AT&T product—Personal Computing and Communication, the Globalyst. This product is designed to link the computers of a single corporation to the Internet and thence to the world. The text of the ad gives a different slant to the electronic colony story. It notes that the PC&C application is so powerful that it is America's "Secret Weapon against the Other Guys." This weapon, the ad claims further, "is as far beyond the PC that you're using now as the cruise missile is beyond the cannon ball," and it provides a global "solution" to America's desire to create a "unified, seamless" world.

Technology, in these ads, is an American tool. And what we use this tool for reveals all too clearly our values as *homo faber*—the tool maker. In these images, I'm afraid, we see reflected *not* those fundamental and much needed changes we talked about pursuing earlier; *not* improvements in the world situation, nor the elimination of hunger or pain or suffering or war; *not*, in other words, an improved life for our fellow inhabitants in the global village or an improved understanding of their cultures and concerns, but, rather, the all too familiar stories of how to multiply our own personal markets, how to increase our own cultural profits at the expense of others, how to take more effective advantage of ignorance and difference whenever we spot them, how to reduce the cultures of other people to inexcusable simplifications, and how to enact the most total and unified domination over other members of our own species that we possibly can imagine.

The Narratives of "Equal Opportunity" and the "Difference"

A second favorite cultural story that we tell in connection with computers focuses on equity, opportunity, and access—all characteristics ascribed to the electronic landscape we have constructed on the Internet and to computer use, in general.

This landscape, Americans like to believe, is open to everybody—male and female, regardless of color, class or connection. It is, in fact, at some level, a romantic recreation of the American story and the American landscape themselves—a narrative of opportunity in an exciting land claimed from the wilderness, founded on the values of hard work and fair play. It is a land available to *all* citizens who place a value on innovation, individualism, and competition, especially when tempered by a neighborly concern for less fortunate others that is the hallmark of our democracy. If you recognize this story, it is because it has been told so many times. It is the same story that Alexis de Tocqueville (1835) told us in *Democracy in America* and one that we've been telling ourselves ever since—in *Horatio Alger* and *Huck Finn*, in Nancy Drew, and in *Ozzie and Harriet*.

This next series of snapshots play on this narrative, emphasizing, in particular, our fascination with—and strong faith in—these traditional American values; in this case, specifically as they have the enduring power to inform and temper technological innovations. The first three are ads for Bob, Microsoft's friendly operating system. These images are all ripe with references to the fifties, a time when America was entering the very beginning of its accelerated push toward technological growth and innovation. Although Sputnik, launched by the Russians on the 4th of October in 1957, weighed heavily on our collective minds, the fifties were chock full of optimism. We were still fresh from our successes in World War II, invigorated by the promise of the space program, tantalized by the bright future that the new world order seemed to hold for those who were innovative and farsighted, ready to help the world realize the promise of democracy and technology through the collective effort of the Peace Corps.

This cultural memory is a potent one for Americans, and these ads resonate with the values that we remember as characterizing that golden time—recalling the fundamental American value on friendliness, especially when one sits in a position of privilege in the back of a large and expensive pink convertible; on helpfulness, as embodied in the actions of a solicitous neighborhood police officer representing the efficient functioning our of country's bureaucracy; and on the down-home, no-nonsense comfort associated with a good dog, a good pipe, a warm fire, a comfortable pair of shoes, and the other Very American comforts accruing from a good salary and hard work in a culture where effort is rewarded with capital gain, regardless of race, color, creed, or class.

Indeed, we tell ourselves this clearly American tale—which I'll refer to as the "Equal Opportunity" narrative—often and in many different versions. The next two images also play on it, for instance. The first, for Cisco Systems, uses a picture that could have come right out of a Dick and Jane reader. It shows another very American scene, also harkening back to the magic time of the fifties. This time, the focus is on landscape inhabited by smiling people who point to airplanes as evidence of the technological progress that can characterize the land of opportunity when circumstances are right. The text notes, "With wide-eyed optimism, you thought technology was going to let you set information free. You were going to put power into the hands of the people." The ad goes on to explain that technology uninfluenced by traditional American values can run amuck, especially in a postmodern world characterized by "conflicting standards," "rival companies," "incompatibilities," and inefficient work habits.

This image tells a bit more of our "Land of Opportunity" narrative. It speaks for a piece of software by c/net called *The Ultimate Internet Tour*, showing what looks like a frame from an old home movie. From a wide angle shot of a fifties suburban tract home development, we get a magnified perspective on a typical American family—three smiling kids, two smiling, upwardly mobile parents posing in front of a spanking new, functionally designed, split-level home, with all the optimism characteristic of the Eisenhower era. The message, which urges readers to "keep up with the Joneses, the Gates and your kids," suggests that citizens of the twenty-first century can achieve the same kind of happy security and personal well-being that was enjoyed by citizens of the fifties—by purchasing a software package rather than a new home.

Unfortunately, if Americans have no collective imaginary context for, or historical experience of, a real global village, nor do they have any real experience with an *undifferentiated* land of opportunity. Our cultural experience, indeed, tells us something very different—that America is the land of opportunity only for *some* people. The history of slavery in this country, the history of deaf education, women's suffrage, immigration, and labor unions remind us of this fact; as do our current experiences with poverty, the differential school graduation rate for blacks and whites and hispanics, the fact that we have never had a woman President, and the presence of border guards and the razor-wire fences over the Rio Grande. All these things remind us that opportunity is a commodity generally limited to privileged groups within this country.

Thus, the revised story in the case of these last six ads is present *not* in what they show, but what they *fail to show.*

These ads are what my grandmother would call "mighty white." There is a remarkable absence in all the images of people of color, and poor people, and people who are out of work, and single-parent families, and non-heterosexuals, and foreigners. If citizens of all kinds are to have access to technology and the opportunities it provides, we do not see such a narrative imagined here; if technology is to improve the lives of all Americans regardless of race and class, our collective ability to envision such a world is not evident in these images.

Nor, in this next sequence of snapshots, do we see gender roles much affected by the narrative of opportunity. Indeed, as a collection that contrasts images of men and images of women in connection with technology, they tell a tale of opportunity differentials rather than equal opportunity. As Dale Spender indicates in her latest book, traditionally constituted gender roles—and the power differentials that accrue from, and are reproduced by, these roles—remain as active and potent in cyberspace as they are anywhere else.

I'll briefly flash through a couple of images that show how we collectively imagine gender roles in connection with technology. It will not take you long to get the idea. First, a few images of women. This, from a popular 'zine, a comic book entitled *Terminal Drift*, shows a female cyborg who, like William Gibson's Johnny Mnemonic, stores and transports information in built-in bionic memory banks. The chief characteristics of this character—frankly, one of the more interesting woman featured in the series—is a too-short crop top and a coin-operated chastity belt. The words "null" and "void" are written across her brow; one voluptuous thigh is marked with the word "EXTRA."

The next two snapshots show women in different, but nonetheless traditionally determined roles. In the ad for Mokia monitors, a sophisticated woman draped with jewels, decked out in a chic black dress, washed in sepia tones and softened by a grainy texture, gazes into a computer monitor. Although the text accompanying this image ostensibly outlines the capabilities and design of the monitor, the language itself leaves no doubt of picture's focus or intent. As it notes, the "European" sensibility for "passion" and "beauty" is quickly "winning the hearts and eyes of Americans" by seductive means.

In the next image, we meet Celeste Craig of Pontiac, Illinois, also awash in sepia tones. Celeste is finally achieving her dream of "going to college by staying home." The invention of a sophisticated distance education computer network, we learn, has allowed Celeste to undertake a course of study from her home in Pontiac, Illinois. This opportunity is important to Celeste Craig because it is the only way that she can both attend school and continue to fulfill her parenting role as a single mother.

In these ads, we see reflected the roles that our culture can imagine women playing in relation to technology. And they are familiar roles—the seductress, the beauty, the mother—all relationships ratified by our historical experience, easily accessible to our collective imagination, and informed by traditional social values. These roles exist, and are reproduced, within a set of overdetermined social formations that makes radical change hard to imagine and even harder to enact—even, or especially, when technology is involved.

What images do we see of men in connection with technology? And what stories of opportunity do these images provide?

We can start with the Enlightened and Sensitive Biker, who relates his story to us: "I'm in dis bar arguin' with dis jerk about Schubert. I sez to him, 'The essential Schubertian style is in the unfolding of long melodies both brusque and leisurely'. . . 'Well, in a high girlie voice, the jerk tells me, 'By classical standards, it's fairly loose construction.' To which I replies, 'Dis is Schubert, tough guy. . .' And then I decked him." As the accompanying text notes, the biker attributes his intellectual understanding of Schubert not to his own efforts but, rather, to a Microsoft Multimedia software program that focuses on classical music.

In the print media, motorcycles seem to provide a popular link between technology and male interests—with images of power and speed predominating. This second ad features an Easy Rider image—a man, as the text describes, popping a "wheelie on the Internet." His blazing hot machine equipped with custom chrome pipes travels at such a speed, we note, that he leaves behind a pair of red, three-inch stiletto heels and, presumably, the woman who occupied them.

Should we seek a more contemporary image of males, the next snapshot might suit. A young man sports a pair of virtual glasses, described in the ad as "the world's first head-mounted turbocharger." Speed and power, again, are characteristic elements in this image as suggested by the lightening bolts, the blood-red wash on the face, and the grimace of a young man deep in the throes of a virtual engagement.

And if these last two are overly tame for you, the cyberculture offers this final image of men—this by the company who markets a game called X-band. The text next to the demonic figure cloaked in threatening shadows reads "X-Brand is like computer dating. We automatically connect you with someone who wants to take you out."

The implied role for men in this particular image is as retrograde as that for women. And in this whole gendered series, the contrast of men's roles and women's roles, men's relationships to technology and women's relationships to

technology, indicate that, as a culture, it is difficult, perhaps even impossible, for us collectively to imagine an electronic landscape in which individuals enjoy new kinds of opportunities to relate to each other and new kinds of opportunities to make positive changes in their lives. It takes energy and careful thinking to create a landscape in which women can participate in roles other than those of seductress, beauty, or mother; and in which men don't have to be bikers or abusers or rabid techno geeks or violent sex maniacs. And it is far easier and more comfortable simply to reconstruct for ourselves those traditional narratives that tell the same old gender stories over and over again, and that re-create the status quo ever more clearly in their retelling.

Well, let's close the American snapshot album for now. There are more pictures, but no more time. What we do have is opportunity.

These images illustrate to us—as communication professionals—the richly textured fabric of values within which computer technology and other communication technologies are situated in this culture. Our work as teachers, the curricula we fashion, the corporate environments our students enter as professionals, the schools that make up the educational systems—these social formations are also shaped by the same sets of culturally determined values, the same complexities, the same ambiguities, the same contexts for our collective imaginations.

Such a realization reminds me that technology does not necessarily bring with it social progress, and that I had better make sure that students recognize this fact if I want them to be able to make contributions that they can be proud of. Within the technical communication programs that we design and administer, and participate in, we place everyone in jeopardy if we limit our understanding of technology and change to one dimension, if we teach students only one part of this complicated picture.

A good technical communication curriculum will educate students robustly and intellectually rather than narrowly or vocationally. It will recognize the importance of educating students to be expert technology users as well astute social scholars, rather than simply as one or the other. As Stuart Selber reminds us in his paper "Training students for academic careers in technical communication: Three challenges for graduate programs" (this volume, p. 46), technical communicators are already faced with an increasingly complex set of issues in the workplace and in the public sphere, and our failure to provide the intellectual tools necessary to understand and cope with these issues at multiple levels signals our own inability to lead productively as professionals and as citizens.

Finally the images remind me that even though productive changes are hard to make—with or without technology—our responsibility to work for change, especially as educators, remains *undiminished* in its urgency and importance. Like Paolo Friere, I am optimist enough to believe that in teaching ourselves and others to *recognize* the inequities that challenge humanity in our world—the ethnocentrism, racism, classism, sexism—we have *already* begun the difficult work of addressing these problems.

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Going to Extremes by Integrating Communities

Moving Technical Communication to the Center of Academic Learning: General Education, Writing Across the Curriculum, and the Development of Discipline Specific Knowledge

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Program administrators and teachers in technical communication (TC) and in writing across the curriculum (WAC) should seek to join forces to establish comprehensive writing programs on college campuses. Important educational opportunities emerge when these two programs work together to establish an aggressive new role for writing in society, in the curriculum, within English departments, and within individual learners.

At Michigan Technological University and at Clemson University, I've been instrumental in founding and directing both TC and WAC programs that worked together to build a comprehensive writing program for students and faculty. While I was department head at Michigan Tech (1976–87), our department proposed and had approved a B.S. program in Scientific and Technical Communication (STC), a B.A. program in STC, and an M.S. in Rhetoric and Technical Communication (RTC). In addition, most of the planning and hiring for a Ph.D. program in RTC had been completed, and this degree was subsequently approved by the university and state after I accepted my present appointment at Clemson University. At the same time that this growth in TC was occurring at Michigan Tech, the faculty founded and implemented a nationally recognized WAC program. Indeed, the success of the WAC program provided the campus recognition and support for degree programs in TC. The same faculty were a part of both programs—and both programs played a double role in the life of the department: 1) they provided us with a leadership role on campus for issues involving teaching, general education, and service roles, and 2) they provided us with a leadership role on campus and within our profession through TC and WAC research and the development of programs in the major at the undergraduate and graduate level. The fact that both developed at the same time enabled both to be stronger than had they developed in isolation.

At Clemson (1987–present), I have pursued the goal of developing interrelated TC and WAC programs along the Michigan Tech model, but with some significant differences to fit a different educational context. My colleagues and I have established a communication-across-the-curriculum (CAC) program, changing the name from WAC to CAC to incorporate an emphasis on oral communication, visual communication, and communication technology, as well as maintaining a central focus on written communication. This name change demonstrates the interdisciplinary nature of both WAC and TC programs as well as their importance to undergraduate education in all disciplines. We are now in the third year of a new Master's degree in Professional Communication, and we have begun planning for a Ph.D. program in Rhetoric and Professional Communication. As at Michigan Tech, we are encouraged in these plans to develop TC degree programs by the larger Clemson community, a community that appreciates and supports the efforts TC faculty have made in communication across the curriculum. Indeed, what we are learning in research and program development in TC has direct implications for CAC and vice-versa; both programs are stronger for their symbiotic relationship.

Because TC and CAC work together on our campus, we can bring the genres and the strategies of TC to the writing-across-the-curriculum movement: multimedia, on-line composing, desktop publishing, graphics, technical reports, project-based education, client-based instruction. We can introduce all students to public discourse by having them participate in public discourse (not just classroom discourse).

Both CAC and TC are transformative educational movements that should be opposed to education as usual on college campuses. Selected TC projects supported by the CAC program and based on the belief that TC development will assist CAC implementation on the Clemson campus include: AT&T (funded) Usability Testing Laboratory; IBM (funded) Multi-Media Laboratory; Campbell Chair in Technical Communication—Campbell Endowment funded ($1,500,000); Sports Communication professorship—Brooks Endowment funded ($250,000); Portfolios in Financial Management—NationsBank funded ($500,000); Faculty workshops on computer conferencing, collaborative writing, visual communication; Master's Projects on "police writing" and on "assessment of writing in experimental biology laboratories" (FIPSE funded), on "risk communication" (Thurmond funded); WAC Graduate Seminar for TC students on research in the disciplines.

Technical Communication and Service Learning: Integrating Profession and Community

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Technical communicators have always been civic minded in a quiet way, at their computer screens, in their editorial offices. They have participated in numerous efforts to be socially responsible, especially in the creation of clear, honest, useful publications which avoid sexist language and similar issues of social sensitivity. But how many technical communication programs push the civic responsibilities of technical communicators to extremes of social action (or the meeker term, community service)?

How many courses go beyond the professional mission of translating complex technical information for use by less technical users? In the information age, shouldn't technical communicators be community leaders, addressing serious problems and issues in our communities? If information is power, then shouldn't technical communicators be power brokers—masters of information gathering, massaging and presenting? It should not surprise us that technical communicators are being called upon to help solve problems in our communities and that our students should be prepared to use their professional expertise to help communities. In this presentation, I argue that we must teach our students that their professional skills will be valuable to the health of community. I argue that we must provide service learning opportunities in our technical communication programs, so that our students will learn to integrate professional and community responsibilities.

Technical Communication and Service Learning. What is service learning? Service learning is a form of experiential education in which students learn by providing a service and thinking about what they are doing. In terms of curriculum design, the most valuable service learning includes reciprocity of outcomes: (1) the doing helps the community solve problems or address needs, and (2) the thinking helps the student develop disciplinary skills, community responsibility (ethos), awareness of cultural diversity through the integration of theory and practice.

How can it be integrated into a technical communication program? Many students can individually serve as volunteers or technical communication interns for various community organizations. Courses may also include collaborative service projects related to information needs of community organizations. In either case, you must carefully plan and structure the service learning experience. Start where your students are—help them set appropriate goals: (1) task goals that draw on their technical communication skills, (2) disciplinary concept goals or theoretical questions to consider throughout the experience, and (3) personal development goals related to participating in community.

In order to insure that learning is deliberate, rich reflection components need to be required as part of the service learning experience. Students need to share their experiences informally through ongoing discussions, and they need to formally present their realizations at the conclusion of projects. Journals, ongoing discussion groups, formal presentations, publications, exhibits or reports are common methods of inculcating the thinking component of service learning experiences.

An Example of a Long-term Service Learning Project. Finally, some of the best learning experiences are long-term service projects that take several semesters and lots of students to complete. For example, Millikin University writing majors have been developing a community information system for the last three semesters. In partnership with community service leaders and the public library staff professional writing majors have helped create two information systems: a touch screen hypermedia kiosk and a networked database of community organizations. The information system encourages people to volunteer or to seek help with appropriate organizations, programs or agencies. I will describe this project more fully at the conference.

What are the outcomes from service learning experiences? Service learning projects such as developing the community information system provide (1) opportunity to create usable information for the people of a community, (2) students learn about the collaborative development process, and (3) technical knowledge such as information design and usability have an immediate, practical application. We can help prepare future technical communicators for social responsibility by showing them how their knowledge and expertise can make significant contributions to community. Communities are seeking more complex access and use of local information, and they are calling on our professional expertise to help. Are we prepared to teach our students to answer their call for help? I believe we are.

Blurring Administrative Distinctions: Education, Training, and Expertise

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Technical communication redefines the nature of expertise both inside and outside the academy. For this reason, the discipline and the profession have new possibilities to offer education, but at the expense of traditional administrative boundaries.

Since the profession evolves rapidly to meet rapidly changing social needs, the technical communication expert is constantly learning. Thus the technical communicator's expertise is truly socratic, requiring cooperative collaboration from a healthy stance of inquiry. Industry—which can reorganize departments for better collaborative relationships, quickly redefine goals, and redesign services and products to meet them—can support this new expertise with parallel promotion and cross functionality—as well as with continuing education. However, academic organizations, with rigid and competitive distinctions between disciplines and departments, lack this ability to evolve. In technical communication, our disciplinary breadth and diversity threaten the academic view of expertise: a limited, indepth specialization. In technical communication, we have come to question the academic system for rewarding only such limited expertise, calling for new ways to evaluate and reward the diverse and evolving inquiry that has come to characterize research—like practice—in our disciplinary area (Kreppel).

Like research, teaching in technical communication will suffer without new administrative strategies to support our particular kind of disciplinary expertise. Learners are returning to the academy at all ages and for selective and specialized study, not necessarily for degrees. If academic organizations are to promote high-level learning for students of many ages and with diverse goals, we must redesign not only our disciplinary expertise but also the structure and range of the educational services which we offer.

How can colleges and universities meet the need for high level, multidisciplinary education for a diverse audience of lifelong, career-long learners? The distinction between "training"—noncredit, applied, skills-oriented, on-the-job, and limited in scope—and "education"—college credit-bearing, challenging, integrative—must necessarily blur (Hart and Glick-Smith). We can restructure prerequisites, offer instruction at nontraditional hours and through distance learning, and collaborate instructionally with learners from the profession. We can restructure our majors, allowing for new disciplinary combinations and new instructional projects. In such an educational program, internships assume increasing importance for students entering the profession (Zimmerman and Long; Hayhoe et al.), for faculty involved in research, and for practicing professionals who return to the academy to teach.

Such change is not easy or without cost to those who initiate it. However, the problems with disciplinary recognition which technical communication academics face parallel the ones which practicing professionals face with professional recognition. It's hard to define an evolving expertise, harder still for those outside to recognize it. However, acknowledging the shared nature of an expertise of inquiry between *all* technical communicators—no matter how diverse the differences in specific subject matter may be—is a first step for educational change. Industry and academia can become powerful allies in redefining expertise, disciplinary authority, and educational structures for the future.

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Going to Extremes in the Technical Communication Classroom

Vigilance and Balance

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Recently, a technical communication student handed in a visually attractive essay on Mark Twain, entitled "Complaining About the Weather: Storm Imagery in *Huckleberry Finn.*" On the cover was a wonderful caricature of Mark Twain standing in a downpour and looking dour under a black umbrella. The student had used the magic of the computer to remove some human figure from a magazine drawing and replace that figure with a photo image of Mark Twain. That clever cover plus the clean, crisp type-script, the perfect margins, and the balance and variety in paragraphs and headings prompted me to select that paper to read first.

What a disappointment.

The prose was abominable. It had no illustrations or examples, no specifics. It lacked focus, insight, interest, fun. It rambled and generalized but failed to find any theme. Its grammar, diction, and sentence sense were embarrassing.

Certainly, this essay was an exceptional example of someone erecting a beautiful fence to hide a trash pile, but it served to remind me of how frequently of late the internship reports I receive each year from seniors have been brilliant displays of their computer skills but rather low-voltage illuminations of their writing skills.

Two questions come to mind as a result of these observations. The first question applies to all programs. Is our commitment to computer technology with its large appetite for credit-hour consumption reducing the time students devote to developing a mature prose style? We might do well to remember that the historical roots of technical communication are in *writing*. And writing is still the main stem; other skills are the branches. Judicious pruning may be needed to strengthen that stem.

The other question arising from my observations is especially applicable to BS programs that offer backgrounds in technical and scientific fields. Does a bachelor of science curriculum provide students too little exposure to the very courses where the most sophisticated qualities of style are illustrated and examined—i.e. literature and fine arts courses? Obviously, there is a trade-off here. The B.S. degree gives the graduate a higher value in the job market, but programs leading to the B.S. must guard against the insidious pull of technical sophistication at the expense of writing sophistication.

Designing Assignments for a Technical Writing Course: Balancing Breadth with Depth

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To prepare engineering and science students for the writing that they will do as professionals, most technical writing teachers design assignments that mirror professional documents. Many variables go into designing these assignments, such as the kind of document (report or proposal, for instance), the audience for the document, and the format for the document. Over a semester or quarter, most teachers assign a variety of documents: formal report, proposal, progress report, instructions, presentation, and correspondence. While assigning a variety of documents allows students to tackle different writing situations, the lack of time devoted to any one assignment inhibits students from achieving depth in the subject.

Depth is an aspect of writing that is overlooked by many technical writing courses and by many technical writing books. Depth is important, though. In longer documents, such as formal reports, achieving the proper depth for details is as important as organizing or emphasizing the details. Achieving the proper depth does not mean conveying as many details as possible to the audience; rather, it means conveying well-chosen details that the audience needs to understand the subject. The amount of depth that the writer conveys to the audience depends on two things: the amount of information that the writer knows about the subject, and the amount of information that the audience needs to know about the subject. When the writer has only a cursory understanding of the subject, then only a cursory amount of information can be conveyed. The following question then arises: In a technical writing course, how can students be exposed to a variety of assignments and still achieve depth in those assignments?

Like many teachers, Christene Moore and I link our assignments so that students do not change topics with each new assignment. However, we take this linking of assignments to an extreme to insure that the students achieve depth. Our designed set of assignments consists of a single major assignment (a formal report at the end of the semester) that builds on the research and writing done in several minor assignments (correspondence, proposal, and presentation). In our set of assignments, students retain the same topic for the entire semester. Moreover, this topic must meet five criteria: (1) be interesting to the student; (2) be technical; (3) be quickly researched; (4) require analysis rather than just straight reporting; and (5) be specific enough that the students can achieve depth. In using this set of assignments over the last six years, we have found that the amount of depth achieved in the final report has improved dramatically. Our design of assignments is not the sole reason for this improvement, though. Also important is having the students read strong models that achieve depth.

Going to Extremes: Rethinking the Content of Introductory Courses in Technical Communication

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I wish to argue that introductory courses in technical communication at the undergraduate level should be thought of as integral to a liberal-arts core curriculum. By saying this I do not mean to suggest that conventional courses which train students to become successful communicators in the technical workplace should be eliminated or even de-emphasized; I am arguing that they should not be considered introductory, except in technical institutes or community colleges. In a four-year college or university, with a core liberal-arts curriculum, an introductory technical communication course should emphasize the role of scientific and technical literacy in our culture, should introduce a wider range of aims for communicating technical information, as well as a wider range of documents that are generated by these aims.

I see three problems with our present system: (1) the "two cultures" syndrome—the simplistic bifurcation of knowledge: humanistic inquiry here, career preparation there; vocational practicality here, "intangible" intellectual inquiry there; (2) confusion over what constitutes appropriate content in an introductory course; and (3) confusion over where and when fundamental computer-literacy skills should be taught.

The "Two Cultures" Syndrome

Even (or perhaps especially) in schools with strong core curricula, the tendency is to distinguish too sharply between "humanities" and "sciences," or between "liberal arts" and "specialized training" within career-preparation majors. The customary metaphors—"solid grounding," "exposure," "backgrounding," "well-roundedness," etc. suggest an underlying assumption that liberal-arts education, in ironic contradiction to the very designation "*core* curriculum," has only secondary value. I wish to argue, on the contrary, that "core" subjects are truly what the word implies: subjects that should lie at the very heart of career training.

Striking a balance is the key. Humanistic objectives that marginalize the ways in which science and industry contribute to our understanding of culture are as problematic as vocational objectives that dismiss cultural studies as nice but not essential. As Arabella Lyon warns, "Humanistic scholars—say, from conventional departments of English—must learn "to breathe the air outside the archives" (61); that is, they ought to reconsider the ancient ideal of *paideia*, or *studia humanitatis*, which did not segregate scholarly study from productive activity or "arts": rhetoric, logic, grammar—i.e., the Trivium—from "measures": arithmetic, geometry, astronomy, and music—the Quadrivium (57).

What Should an Introductory TC Course Include?

In conventional introductory technical communication courses, instructors typically ask themselves, "What must this course do to adequately prepare students to become strong communicators in the technical jobs they enter?" But in the liberal-arts oriented course, that question becomes, "How can humanistic, intellectual inquiry inform the responsible communication of scientific and technical ideas?" Science and technology as shapers of culture is integral to technical communication. As Russell Rutter notes, an ideal technical communicator should be "a liberally educated generalist" (133), and an ideal technical communications course should be a site for the "vital interplay of theory with practice" (137). Topics for such a course might include the history of scientific and technical communication, rhetoric of science and technology, the relationship between old and new communication technologies, such as conventional text vs. hypertext; between old and new methods of information gathering (conventional library research vs. Internet research); the ways in which electronic communication is changing interpersonal relationships; the future of the book; the possibilities and dangers of VR; ethical dimensions of technical communication—although, curiously, this last example has quite successfully found its way into introductory technical communication courses already. But why stop with ethics?

Interdisciplinary courses such as environmental studies, the history of science or technology, and cultural studies of science and technology might serve as bridges between the old approach and the new. The English major who reads Thoreau and Muir, Mary Austin and Aldo Leopold, Gary Snyder, and Annie Dillard, could team up with the environmental biology or chemistry majors in the course in order to produce "real world" documents such as

environmental impact reports that, say, support or reject the clear-cutting of a forested area to create a shopping mall. Moreover, they could also work together to write essays on these same topics that emphasize the philosophical, aesthetic, and spiritual grounding of a given scientific investigation.

Instead of limiting the introductory technical communication course to just "utility" documents like proposals and user manuals, why not assign students to write and design documents intended for lay readers—that is, for everyone outside of the specialized area in question. Documents such as brochures, fact sheets, feature articles, reflective essays, are crucial means of transmitting technical information both within and outside work environments. Writers in today's highly competitive companies should be versatile enough to produce a wide range of documents: user manuals, speeches, publicity releases, field reports, memoranda and letters.

Computer Literacy: When and Where

To be sure, students of technical communication need to be computer literate, need to possess a working knowledge of word processing, document design, and graphics; learn how to communicate by e-mail, gather and utilize information from Internet sites; understand hardware, including peripheral systems. But the proper site for such skills acquisition is not the introductory course but the introductory workshop—either a pre-college summer workshop intended for all liberal arts students, including those focusing on technical communication, or a computer lab dedicated to one-on-one or small-group training sessions. Including such instruction in introductory technical communication courses causes clutter and undermines intellectual coherence.

If we do more to integrate liberal arts with vocational objectives rather than to separate them, students will be in a better position not only to appreciate the existence of a "core" undergraduate requirement, but to truly be able to integrate humanistic values with technological innovation—in the workplace and in the world.

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Artists of Pen and Page: Combining Skills, Knowledge, and Disciplines in Technical Communication

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We know from research and personal experience that today's technical communicators need expertise in areas beyond language usage. Technical communicators are being asked to create multimedia presentations for audiences from varied disciplines and cultures. They are especially pressed to be knowledgeable and skillful in the graphic arts. In the past a communicator could expect to work with a graphics designer, who would be responsible for issues involving design and illustrations, while the communicator focused on issues of language use. Desktop publishing and ready access to graphic software, however, have given writers the opportunity to become designers and publishers of complete documents from their offices or homes. This opportunity has quickly become an obligation, as employers and clients have come to expect these skills from those they hire as "technical communicators." Such publications demand knowledge of page design and layout as well as skillful language use and development of graphics that carry information while they also support text.

The demand for graphic skills from writers raises serious concerns for those in the profession as well as for consumers. Can we who work hard to become artists of the word also become artists of design? Or are consumers and our clients destined to become accustomed to lower standards and inferior design?

As our profession searches for ways to help practitioners and students become more successful with design decisions in both global and specific terms, our attention has recently been drawn to different dimensions in which these decisions are applied. Patricia Sullivan, for example, has written about controlling the page as an area of design, and William Horton has instructed us in designing for a small area, the computer screen. This presentation will focus on another space for which communicators must control design in order to help consumers develop meaning—the poster.

Poster sessions have long been common at scientific meetings. Now posters are also becoming common modes of presentation at NCTE and technical communication conferences. In handling this space communicators confront the challenge of converting textual explanations to meaningful graphic presentations. The poster is an excellent training ground for exploring similarities and differences between ways of making meaning in the language and graphic arts.

Going to Extremes in Our Uses of Technology

Technical Writing On-line

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Electronic on-line delivery of courses is becoming more popular as universities realize that they can meet the needs of students who are not able to attend the "traditional" classroom. Such courses share common features: on-line availability of course materials, individual conferences via e-mail, a complete record of on-line class discussions, the ability to exchange formatted documents with fellow students and instructors.

Overview

We taught a technical writing course using an on-line delivery through the Electronic University Network via America Online. The course consisted of an on-line discussion and e-mail for sending and receiving assignments and materials. We required students to post two comments to the discussion thread each week in response to assigned text book readings and supplemental materials which we either posted on-line or sent to students in attached files. Students also prepared four formal written assignments and sent them to us in files attached to e-mail messages.

Our students were all working professionals—freelance technical writer; bank executive secretary; technical instructor for motorcycle maintenance school; senior instructor of service training for a motorcycle company; middle school guidance counselor; high school librarian; bank compliance officer; marketing information coordinator for a national consulting firm; two high school teachers; two technical college teachers—and we enjoyed their insight, their workplace writing examples and anecdotes, their humor, and their professionalism.

Theory

The course was based on understanding workplace writing as cultural, social, and political communication. The on-line discussion thread provided a medium for students to develop on-line personas within the context of a diverse group of individuals with similar goals but different backgrounds and needs. The on-line discussion mirrored a workplace community in that students had to consider the social context of the electronic classroom. With the ability to transcend time and place, the on-line discussion gave students and instructors the opportunity to reflect on responses before posting, and to adapt those responses to the context. Student responses made the class fascinating because through their writing, we could clearly see that they were applying principles of communication that we had discussed, and were accommodating their on-line personas to the dynamics of the class.

Comparison of On-Line and Traditional Classroom

The on-line class offered the same pedagogical opportunities as a traditional course, yet the on-line class differed in several ways. Since we never met face-to-face or had real-time discussions, students had to be highly self-motivated. We did send encouraging e-mail messages when a few of them seemed to be falling behind in the discussion, but students were ultimately responsible for keeping up with the class. Most students posted more often than they were required to, and their well-thought-out responses made the discussion more insightful than what one often hears in a traditional classroom.

Evaluation

We were fortunate that all of our students were working professionals who were motivated to improve their written communication skills in order to enhance their careers. The on-line course was ideal for students such as these because it transcended the limitations of time and place. However, for students who were not as well disciplined and motivated, the course might not have met their needs.

Since this course was entirely text-based, students came to recognize that writing is a powerful medium. Because both instructors and students had time to compose responses off-line, we all had time to reflect on what we wanted to share with the class. This made the discussion more insightful than what one often hears in a traditional classroom.

From the instructor viewpoint, an on-line course initially requires a greater time commitment than a regular

class. We had to manage the on-line delivery platform and then coach several students in the idiosyncrasies of the on-line format. In addition to reading and responding to formal assignments, we monitored the discussion thread several times a week and frequently responded to individual student questions through e-mail. Since all class information—"lecture material," assignments, instructions—were written, attention to accuracy, tone, and completeness was critical.

Additional Benefits for Students

Students who successfully complete an on-line course come away with a heightened sense of on-line culture and an ability to manage electronic modes of communication. They also realize the full capability of computers to access the world at large from the comfort of their own homes.

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Reaching Technical Audiences: Hypertext as Permeable Membrane

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As technical course materials are increasingly put on-line in engineering schools, we now have the opportunity to embed technical communications materials where they are most useful. These communications materials can then be encountered on a user-driven basis. The approach sidesteps two basic resistance sites among technical faculty: 1) that such materials lack relevance, and 2) that incorporating such material displaces technical material.

A first experiment with this approach is now underway in the School of Mechanical Engineering at Purdue University. A core course in the undergraduate engineering curriculum, Heat and Mass Transfer, uses a Web homepage to organize course schedules and course materials. Assignments are also placed on the Web. Such an organization of technical course materials invites the linking of technical assignments to communications support materials.

The unobtrusive embedding of links to these materials allows for the customizing of student support on a demand basis. Each student can decide when to follow a link to find additional instructional support for the task at hand. Similarly, students can bypass optional materials not relevant to their current needs. Technical courses are not burdened by distribution costs of materials that may not be used and that reduce resources available for technical materials.

Computer Technology: Fronting the Extremes

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As we prepare to close out the century, our literature is rife with the fears and celebrations of a new age. Have we, as Richard Lanham argues, entered the third great phase of rhetoric, passing now from orality and print to the multisensory dimension of digital rhetoric? Will our technical writing programs, indeed our entire educational enterprise, be transformed by what Nicholas Negroponte optimistically identifies as the "decentralizing, globalizing, harmonizing, and empowering" qualities of computers? Is hypertext a grand vision of memexes, xanadus, docuverses, and electronic Gutenbergs, or is hypertext mere hyperhoax, a form at least as old as the first manuscript to bear marginal notes, to record its glosses upon glosses, its texts upon texts? If growth of knowledge is a Kuhnian "succession of tradition-bound periods punctuated by non-cumulative breaks," is the digitalization of knowledge powerful enough to spur such breaks across many disciplines at once? If we are trapped in a paradigm defined by print-based concepts and values, how will we know when we have stopped translating the new into the language of the old and begun instead speaking the new language as natives?

Paradigm is at heart paradox. We cannot be what we are not already. We cannot see beyond what we are. We cannot systematically plan a "non-cumulative break." Nonetheless a logical place to test—perhaps to transcend—our current paradigm is at its extremes. Here are just three areas where we might stretch our thinking to new extremes; they suggest how far we are from viewing the information age through the looking-glass.

Composing tools. Do we as professional communicators have at our disposal the kinds of generative software that a post-print age might envision? Twenty years or so of word processing programs and most are still linear, still confined by two-dimension rectangular space, and still, in an age of visualization and sonification, largely silent "word" processors. Can't we imagine composing and editing tools where we create and "read" in three-dimensional space? If I am doomed to stare at a blank page, let it at least be a transparent sphere suspended in space, one that I can move around and through, a musical space, a space itself in motion through the shapes and sounds of digitized knowledge. I want to set my own flight parameters—the language, the level of technical difficulty, the style, the historical pattern—then soar through multisensory texts. I want to assign themes to colors and sounds as a way to comprehend hyperdatabases through the spectral and sonar topography of a multisensory landscape. Such hypermedia processors would not be mere whimsical offshoots of virtual reality, but essential tools for producing, managing, and analyzing large information structures in a way not feasible through traditional modes of writing and reading. Hypertext links, arguably the most valuable component of these information databases, might attain three-dimensional and multimodal integrity, something akin to tubular wormholes, experiential hypertexts in their own right.

Educational structures. Can we imagine professional organizations like CPTSC morphing into courseware brokers where teacher-consultant-programmers design and distribute global instructional units? Colleges and universities, no longer physical sites for classroom instruction, might select and package this global courseware into degree programs as well as continue their role as academic recordkeepers.

Intellectual property. Are we as a profession ready to enter the postmodern intellectual property wars, to undertake Ted Nelson's challenge to construct an economic base for global hypertext? Can we even imagine a consensus that could reconcile an educator's desire for free information with a capitalistic view of authorial rights? Others are uniting and acting (e.g., the CARL Corporation recently allied with the National Writers Union for a transaction-based electronic royalty system); will professional communication organizations help shape these new boundaries?

Extremes are only at the edge of our vision, and we haven't yet positioned ourselves very close to the edge.

Teaching Technology: Making More from Less

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To take technology pedagogy in our programs to an extreme, we need to do more with less. Computer tools support important, emerging technologies; but there are too many such tools—and too many other critical uses for our time, energy, and college dollars—for us to teach all of even the most high-demand new tools for writers.

As a result, we need to experiment with new approaches for teaching. Ideally, our technology courses should do *more* to help students prepare for long-term careers, in which technologies will continue to evolve and make today's "hot" tools obsolete. Practically, these courses need to do so with *less* investment in faculty training and software purchases.

Some suggestions on how to design such courses:

Focus more on technologies. Students need thorough grounding in relevant design and social issues in order to use tools well.

Offer more help to students choosing among technologies. The overwhelming lists of tool and technology "musts" grow shorter when students individually target compatible industries, forms, etc.

Provide more support for students' independent skills development. Instead of teaching classes in a single tool, provide introductions to several in a single course, along with reference materials, practitioner contacts, and online resources. Then assign projects that use just one tool, encouraging collaboration among the students with technology choices in common.

Focus less on tools. Let the market dictate technologies, perhaps, but not brand names. Choose easy-to-learn (rather than most powerful) programs; and use templates for practice assignments.

Focus less on classroom use. Purchase programs in small quantities for network access.

Require less expertise in tools from faculty. With an understanding of technologies (through research) and with student access to self-help resources, faculty can be novice tool-users—just hands-on enough to introduce students to basic program features. Practitioner guest lecturers can help with tools introductions, too.

Such "less is more" approaches can help us to keep our programs in balance: current and responsive to employment realities, yet also distinct from job skills training. We can "push the envelope" and still remain responsible to the long-term academic goals appropriate to higher education.

An Internet Based Approach to the Service Course

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Introduction

Based on the work of Jimmie Killingsworth and Michael Gilbertson and of Robert Brooke, Ruth Mirtz, and Rick Evans, my service course focuses on Internet to develop students who define themselves as writers in a community. These students set goals, conduct research and report to a community that includes them. The objectives require the students to learn Internet, to write papers that grow out of that process, to learn to collaborate, and to accept the responsibility of creating writing.

Method

To accomplish these objectives I divide the course into an introductory section and a feasibility section. The introductory section lasts about twelve weeks, the feasibility section about five weeks. In the introductory section the students learn the Internet, learn to work in groups, write daily reports about their activities, and create portfolios of their work.

To learn Internet students first master basic email functions such as send, receive, reply, forward, and copy. They also learn to create distribution lists which allow them to post their writings to all members of the class. From email they move to gopher, learning its menu system and its search engines, Veronica and Jughead. After gopher they enter the World Wide Web, learning its search engines such as Yahoo and Infoseek.

To assist with these tasks the students are formed into support groups of three or four. Following Brooke, Mirtz and Evans's method, the groups meet daily during the early weeks of the course and at least once a week, in the later stages of the course. Students help each other set goals, provide advice on learning Internet systems, and respond to the writings that are regularly produced in response to daily assignments.

The writing emerges from the research and group activity. Students write daily reports and hand in two portfolios during this introductory section. Posted to the distribution lists, the daily writings allow students to share their experience and new knowledge of the Internet with other class members. The basic genre that students use is the informal IMRD (Introduction, Methodology, Results, and Discussion) to which Killingsworth and Gilbertson assign a key position in their taxonomy of technical writing. The discussions of the reports quickly lead to important realizations of tone, audience, presentation (chunking and use of heads), and organization.

The portfolios, also based on the method outlined by Brooke, Mirtz, and Evan, have three parts: a learning report, samples of work, and a final report. In the learning report students reflect on what they have achieved in terms of the Internet, writing, and group membership. In the samples section students present work that supports the assertions they make in the learning report. The final report is a professional-level final draft. To construct the portfolios students critique in their groups the reports they have sent to the distribution list.

For the first portfolio, due about six weeks into the course, students produce a finished IMRD, along with a learning report and a selection of samples. For the second portfolio (due about the 12th week) students present the learning report, more samples, and more complicated work, including another IMRD, a letter of application, a set of instructions, and sometimes an informational article written for a general audience.

In the shorter feasibility section of the course, the students determine whether the Internet is a feasible source of professional information in their major. Students write a project proposal, set up a time line, create a series of research questions which focus their searches, present a progress report, create and follow a style sheet, post the results of their searches on the distribution lists, and produce a series of drafts. All the writings of this project become the contents of the third portfolio, which contains, like the other two, a learning report, samples, and the feasibility report. In the learning report students evaluate their planning, research techniques (almost always on the Web), and drafting, including the relation of their IMRD reports to their finished report sections. In the feasibility report the students evaluate the Internet in terms of criteria they established in the planning stage and data they found in the research stage.

Results

This sequence has three key results: students accept responsibility for writing, the IMRD emerges as a key form, and students gain a new view of failure.

Students gradually accept the responsibility of creating writing, largely because the effect of their writing is immediately evident in their groups. They realize that writing is a part of a larger whole that includes planning, research, and audience. Even more they realize that writers must produce clear prose that readers will use. As the students wrestle with the demands of audience, accuracy, and page design, they realize that writing is something that they create out of their own experience for their readers. Furthermore they find that writing has a community basis. They rely on their groups for advice in planning, research activities, and paper evaluation.

The IMRD emerges as the key form that students learn to use. They discover that they need some intelligible way to structure actions and results. This genre provides that form, while requiring a real discipline as students learn to differentiate results and methods. Students learn to use the genre informally in the distribution lists and formally in portfolio papers. In addition they learn to use the form as the basis for other writings. Method statements can be transformed into sets of instructions, results develop into feasibility sections, discussions into articles for general audiences.

The failure of goals creates a dilemma that most students resolve positively. Almost all the students have never closely followed the process of setting up a goal, acting to implement the goal, and then writing up the results of the action. Further they seem programmed to report only success. In this course they realize that success is not measured only by accomplishing goals, it also can be measured by the usefulness of the description of the project. Readers can use a clear, precise description of a failure to determine alternate courses of action thus conserving valuable time.

Discussion

The sense of community which this type of course generates is extraordinary. Students help each other plan, share knowledge, critique papers, become careful listeners and willing recipients of criticism. One student, for instance, commented that his group became aware that they had to keep reevaluating their audience because the level of knowledge kept changing. The kind of detail and approach used in the first assignments became ineffective as the audience grew more sophisticated and new strategies had to be employed. To be candid, I have never taught a course before where the sense of audience—and the role of community as a basis for writing—was so obviously present. The group members told each other what worked and what didn't and the writers changed their approach accordingly.

Students evaluate the course enthusiastically. Many point out that they use the IMRD format successfully in other courses; several have mentioned that writing IMRDs helps them read technical articles more effectively. Almost all students comment that their awareness of audience is dramatically heightened. Many students acknowledge that their view of Internet changes from seeing it as a toy or source of entertainment to seeing it as a professional tool. Most students comment that the Internet skills are invaluable for the work place. Some students report that because of their new knowledge they are asked to give Internet training sessions at their work site.

The course successfully introduces students to collaborative action and creates a goal-research-writing dynamic which leads to creative confidence. Students actually can experience that technical writing is "instrumental writing that aims to get work done, to change people by changing the way they do things" (Killingsworth and Gilbertson 232).

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Going to Extremes in Designing Technical Communication Curricula

Staying Extremely Focused While Becoming Extremely Generic: Quandaries of Curriculum Restructuring

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A recurring topic of discussion among technical communication educators concerns our efforts to balance the expectations of traditional English departments with the unique needs of technical communication programs. Another repeated topic, particularly for technical communication faculty in undergraduate programs, involves balancing expectations of industry with those of advanced academic programs, as we try to prepare students for diverse future goals and roles. A third, increasingly frequent topic in the era of institutional downsizing is the balance needed to make our programs fit institutional standards of "efficiency" while preserving academic integrity.

All of these balancing acts are affecting the technical communication associate of applied science degree program at Cincinnati State. For ten years, the program has emphasized preparing students (usually adults seeking career change or advancement) for immediate employment in technical communication, consistent with the college's technical education mission. Now that the institution has become a comprehensive community college offering associate of arts and associate of science degrees, the student population includes those who seek appropriate preparation for upper-level studies and eventual employment in other communication fields, including journalism, speech, public relations, and even traditional composition and literature. It's in the best interests of the technical communication program to try to become more inclusive of these other disciplines. At the same time, the program needs to maintain its technology-based strengths by providing additional opportunities to learn about constantly-changing advanced media tools and technology. Unfettered growth in all of these directions is impossible because of budget constraints; extremely high levels of integration and collaboration are necessities.

My CPTSC presentation will focus on some tentative answers to a few of the specific questions we're asking at my institution as we try to address effectively the issues and situations I've outlined. These questions include:

- How should we revise a highly successful course titled "Introduction to Technical Writing and Editing Careers" to make it suitable for students interested a broad range of communication-related careers, and appropriate for students seeking immediate employment as well as those planning to continue with baccalaureate-degree studies?
- Should we revise or replace several English Department courses in composition and research that have been offered only to tech communication majors, and instead provide more courses suitable for students in a variety of undergraduate liberal arts majors? Should we take this step even though it's the opposite of a traditional "program building" approach?
- As we develop articulation agreements with "senior" institutions for our liberal arts associate degrees, can we include in these agreements our advanced technical communication courses which have been excluded from previous transfer agreements? Is there a definable distinction between "beginning" and "advanced" undergraduate technical communication curricula?
- Should we attempt to develop a new degree or certificate program, in collaboration with colleagues in applied computer science and other technologies, which would emphasize evolving communication forms such as online documentation and multimedia products?

Technical Communication and Disciplinarity: The Historical Perspective

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Called variously *technical exposition*, *technical composition*, and *engineering English*, Technical Writing gradually emerged as a distinct discipline in roughly the mid 1920s as engineering and English educators began to realize the vast differences between teaching composition and teaching technical communication. By the 1930s, Robert Connors described technical communication "as a thriving industry." How, in particular, did the shift from *technical composition* to *technical writing* (as a distinct discipline) occur? The factors which led, historically, to the shift away from only *technical exposition* (for primarily engineering students) to composition *plus a technical writing* course establish a framework for disciplinarity as well as a foundation for continued investigation into the discipline's roots in an engineering curriculum. The historical site of the shift to technical communication is particularly important to today's teachers as departments (particularly in liberal arts institutions) increasingly describe technical communication as a "composition" course. Though technical communication, in all likelihood, evolved out of composition courses, its distinct disciplinarity precludes the label.

What's Sexist About Technical Writing?

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In 1983, David Dobrin proposed that we think of technical writing as "writing that accommodates technology to the user." What makes a kind of writing "technical" is its connection to "technology." In forming his definition, Dobrin's concern was to shift focus from "the technology of writing"—computers, software, and so forth—and instead to "[call] attention to the *experience* of technology." How could such a definition possibly be sexist? I contend that "the experience of technology" has been and remains significantly different for men and for women, and that failure to recognize such differences leads to sexism in technical writing. I'll begin my argument by considering how we define "technology" then follow with feminist criticisms of the same. I conclude by considering whether the academy and professional technical writers exhibit the same biases as have some academics in other disciplines.

Defining Technology

Dobrin is careful in his definition to construe "technology" broadly. "'Technology' is more than an array of tools or procedures," he asserts, "It extends to the way human beings deploy themselves in the use and production of material goods and services."

We might extract from his statement the three-component notion of technology that historians, sociologists, and anthropologists subscribe to: technology as knowledge, as hardware, and as human activities. As a human activity, "technology" has location, purpose, and people who "just do it." Since "technology" is something people do, it consists also of the knowledge those people possess: verbal and mathematical, but visual and tactile knowledge as well. People use their technological knowledge to produce things—goods or services— with certain kinds of *tools* or *hardware.*

Technology as Hardware

Let's consider first the most tangible aspect of "technology," the hardware. Though women—like men—have undoubtedly been inventing since the beginning of time—and receiving U.S. patents since 1809—we rarely conceive of the creators of technology's hardware as women. One reason for this is a lack of history. By 1940, Thomas Edison had been portrayed on the silver screen in at least two films; yet in 1970—some thirty years later—not even one book chronicled the accomplishments of women inventors in the 160-plus years since a woman, Mary Dixon Kies, first received her U.S. patent. In fact, as late as the 1970s librarians "did not even use 'women inventors' as a category for filing information."

A second historical omission has to do with the tendency to associate technology with men's work rather than women's. As Wajcman observes, "we tend to think about technology in terms of industrial machinery and cars . . . ignoring other technologies that affect most aspects of everyday life." Cowan agrees, noting in *More Work for Mother,* her history of household technology: "because of our peculiar set of cultural blinders, we do not ordinarily associate 'tools' with 'women's work.'" Furthermore, technologies that pertain specifically to women's biological functions and social roles have been essentially ignored by historians of technology. "The indices to the standard histories of technology . . . do not contain a single reference . . . to such a significant cultural artifact as the baby bottle," a technology Cowan asserts has "revolutionized a basic biological process, transformed a fundamental human experience for vast numbers of infants and mothers, and been one of the more controversial exports of Western technology to underdeveloped countries."

Technology as Knowledge

The "knowledge" dimension of technology is similarly influenced by gender. If we return to the patent records briefly, we find that early on the majority of women patentees had to rely on outside help to build the working models and to prepare the technical drawings required by the Patent Office during much of its history. This is one illustration of the effects of gender-segregated education. These women did not have access to the knowledge—of drafting and construction—necessary to obtain legal protection for their ideas. Certainly the educations women have received have been adapted to the expectation that women's proper place was the home, and their need for mathematical and technical training was less than that of their brothers. Any young woman who sat through home economics while her brothers took shop can attest to this. Yet there's more going on here than just segregation.

Cockburn points out that "Technological knowledge at the professional level, and technological know-how at the practical level, are sharp differentiators of men and women." Consider, for example, Wajcman's observation that "skilled status has . . . been traditionally identified with masculinity and as work that women don't do, while women's skills have been defined as non-technical and undervalued." She illustrates her point with the example of sewing: "It is not possible for anybody to sit down at a sewing machine and sew a garment without previous experience . . . . Although this is one area where women are at ease with machines, this is seen as women's supposed natural aptitude for sewing and thus this technical skill is devalued and underpaid." Women are accepted as users of machines, particularly those that are used for housework, but such knowledge is not considered "competence with technology."

Technology as Human Activity

A significant aspect of human activities, the last dimension of technology, is that they tend to be segregated by gender. Despite some changes, jobs remain sex-typed. The outcomes of technology—production of goods and services—are typically associated with economic gain and the "workplace" rather than the household, where work is often unrecognized and generally unpaid. Historical studies find women are excluded from technology "as a consequence of the gender division of labor and the male domination of skilled trades that developed under capitalism." Men remain predominantly the makers, repairers, designers, and users of what we consider technological tools. In fact, Wajcman observes that "technical competence is central to the dominant cultural ideal of masculinity, and its absence a key feature of stereotyped femininity" and that "the work of women is often deemed inferior simply because it is women who do it." Hence the remarks of anthropologist George Murdock (as quoted by Stanley):

> The statistics reveal no technological activities which are strictly feminine. One can, of course, name activities that are strictly feminine, e.g., nursing and infant care, but they fall outside the range of technological pursuits.

To summarize, feminist critics of technology contend that women are excluded from that which we consider technological by definition: As Autumn Stanley puts it, technology is "what men do" rather than "what people do." The basis of this assertion lies in cultural views that

1) deny women's identities as inventors and women's work aids as "tools"
2) deny women access to knowledge necessary for inventing and protecting tools and ideas
3) diminish the significance of women's technological skills in areas they are expected to have expertise
4) define women's unpaid labor as "not work"
5) define traditional women's work as not "technological"

Technology and Technical Writing

At this point, I'd like to return to the question posed in the title of this talk, "What's sexist about technical writing?" Recall that Dobrin named connection with "technology" as the key identifying feature of technical writing. Such a definition needn't necessarily be sexist—but I could not help but wonder: Does our profession exhibit the some of the same biases as feminists find in other disciplines' treatment of technology?

In a recent editorial published in *The Journal of Technical Writing and Communication,* John Harris celebrates machines and attributes his success with teaching and practicing technical writing to his interest in mechanical devices of all sorts, including his mother's treadle sewing machine and the process of making root beer at home out of Hires Extract, sugar, and Fleischman's yeast. Yet what Harris found remarkable about making root beer was not the productive activity itself, but rather the fact that it took place at home: "I suppose what impressed me was that we were doing at home what I would have considered industrial production," he comments. Harris also describes the sorts of activities we might expect an inquisitive boy to engage in: he relates his experiences with taking things apart, putting them back together, figuring out how things work. None of these activities need be thought of as gender exclusive: little girls might also take things apart, put them back together, and figure out how things work—but they might more likely be dealing with garments rather than the erector sets Harris recalls. He reveals most explicitly a view of technology that excludes women near the end of the article as he laments the reduced stature of today's inventors:

> A few bodies of diehard inventors and tinkerers hang on . . . . We see them at the annual hot rod speed trials at Bonneville Salt Flats and at some power boat races and at bench-rest shooting matches and so on.

Such gendered scenarios as hot rod speed trials and boat races encourage readers to conceive of inventors—as I imagine Harris did—strictly as men.

The academy fares little better in its treatment of the history of technical writing. This history, with little

exception, exhibits the same biases as feminist critics noted in the history of technology. An illustration of this bias is evident in William Rivers' 1994 bibliographic essay on "studies in the history of business and technical writing." In constructing this essay, the author strove to include "all items published in business and technical writing journals over the past 20 years." Indeed, his list is exhaustive; yet of the 199 entries in each of 13 categories, only the titles of two entries indicate texts that deal specifically with women: "Images of women in technical books from the English Renaissance" by Elizabeth Tebeaux and Mary Lay; and "Woman as Mediatrix: Women as Writers on Science and Technology in the Eighteenth and Nineteenth Centuries" by Kathryn A. Neeley. Both these texts, published in 1992, are among the most current works that appear in Rivers' bibliography. If we attribute its omission to its later publication date—in 1993—we might add to Rivers' list only one more article: Beverly Sauer's "Sense and Sensibility in Technical Documentation: How Feminist Interpretation Strategies Can Save Lives in the Nation's Mines." There are no histories in technical writing of the development of the nomenclature of knitting or the evolution of proper procedures for toilet-training children.

The last item I considered in seeking information about how technical writers conceive of their profession was the call for submissions to the Society for Technical Communication's annual publications competition. I should note here that a cookbook was submitted—and rejected by the judges—to the 1991/92 Kachina Chapter competition in this state. Last year's call would seem to be no more open than in previous years: It stipulates specifically that "all entries must contain technical, scientific, medical or similar content in sufficient quantity to justify their consideration." Those categories that permit the entry of "house organs" must feature technical, scientific, or medical products or represent technical, scientific, or medical organizations. Three of the categories pertain specifically to computer software, and of the hardware categories acceptable alternatives to computer hardware are listed as: printers, facsimile machines, modems, watches, cameras, calculators, and tractors. The only "home" technology listed among these options is "stereo" equipment. Notably missing are blenders, mixers, home breadmakers and cookbooks, sewing machines and patterns, and other technologies socially constructed as feminine.

In my view, what's sexist about technical writing is that it derives from a gender-based view of *technology*. To quote Mary Lay: "If new definitions of technical communication acknowledge the culturally based perceptions within scientific and technical discourse, gender studies of science and technology must change the way technical scholars view their field." We needn't discard or even re-write Dobrin's definition to effect change within our discipline. In fact, a strength of Dobrin's conception is its flexibility: "with changes in our society, this definition could change," he stated. All we need to do is update our view of technology, in the present and in the past, to include women's tools, women's knowledge, and women's activities. After all, Harris, quoting J. W. Willoughby, warned that "In an age of technology, whoever is not master of technology will be its servant or its victim."

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Technical Communication as Cross-Dressing: Fashioning New Relationships between Technical/Scientific Fields and the Humanities

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MH: Let me begin by speaking briefly about a phenomenon that I've noticed when teaching Technical Communication in a Humanities setting: Most of us are aware of the need to be culturally sensitive when working at a site in Writing in the Disciplines, a major condition of doing Technical Communication. We remain alert to customs and conventions, disciplinary knowledge, epistemology and even ontology that sometimes seem as strange to us as we may seem to "natives" of, say, Chemical Engineering or Computer Science. Are we New Anthropologists in pith helmets and khaki, with knobby knees and sunburn rampant? Strange picture, but stranger still is that, for all our humanist refinement—and some well-earned pride in our ability to work "abroad"—we continue to struggle with powerful influences we may not recognize.

Briefly put, that fear is the one of taking a technological viewpoint. We may fear exploring the use of graphics for purposes of statistical analysis of a situation, which would require formulating quantitative interpretation of data. Or we may have difficulty understanding the technique of the Mechanical Engineering student who can explain the Second Law of Thermodynamics, with a list of well-chosen points, but not be particularly interested in remembering the ins and outs of parallel construction. We may even cling determinedly to wordy devices for showing coherence when a simple decimal numbering scheme or some attention to the reasons for sectional divisions would prove more effective. What I am concerned about is not the superiority of either side of the humanities/science complex we meet in Technical Communication, or accusing one or the other of being guilty of proselytizing. My concern centres on the need of Tech Comm programs in Humanities settings to work toward the kind of understanding—even appreciation, if you will—enabling all of us to help what currently remains a deep disciplinary division, with both sides afraid of being seen to be cross-dressers if they employ anything not originating from their "home base." Frightened by the fear itself, perhaps of "going bush," we metaphorically don a tuxedo for dinner every evening in the Congo when loose cotton wraps better fit the circumstances.

SS: And I will continue to elaborate the theme, but do so from the "other side"—teaching Technical Communication in an Engineering setting. Technical communication is an essential aspect of engineering education, not only in terms of communicative and interpersonal development, but also in its potential to integrate often disparate aspects of technical/scientific education. For example, beyond their technical and scientific training, graduates from engineering must be prepared for lifelong learning, be able to cope with change, be aware of social implications and environmental impacts, be sensitive to cultural differences—and on down the list. Technical communication taught as part of the core curriculum can help ensure these abilities are developed.

In Canada, this integration of technical communication and the core curriculum is rare. Of course, engineering students must take at least one communication course and one-half year of courses that expose them to the central issues, thought processes, and methods of the humanities and social sciences. Presumably, these elective courses round out their undergraduate education and encourage the kind of thinking necessary to deal with the non-technical, non-scientific aspects of the profession. And yet, the issues, thought processes, and methods encountered in these courses most often remain unconnected to the core curriculum—both in structure and in the students' minds.

We can help bridge the gap by integrating our courses with the core curriculum. Drawing upon our education and our training in rhetoric, we can provide opportunities for contextual, open-ended problem solving, counteract resistance to dealing with problems with no one right or wrong answer, and make clear connections between these ways of thinking and our students' fields of study. We can integrate ethics, human factors, social implications, and environmental impacts with the core curriculum either as stand-alone courses or as aspects of design or laboratory

courses. We can also provide opportunities for team building, collaborative writing, oral presentations, and so on by integrating our program requirements into core courses or by teaching companion courses.

Attaining greater integration is not only good educational practice, it is also a good strategy for improving conditions in which some of us work, and it is a way of gaining more respect for the work we do in any circumstances. Too often we are seen as teaching service courses to help students improve their written and spoken English. In this light, what we do is seen as important, but not as academically challenging, as necessary but secondary. And we are often treated as second class citizens in our adopted homes, given heavy work loads and little support for professional development. Striving for greater integration is one way of educating both our students and our colleagues, and perhaps even ourselves, about the value and potential of our programs—of, again, taking the fear out of cross-dressing.

Going to Extremes in Creating Technical Communication Programs

Technical Communication on the Pre-College Level: Do We Need an Information Clearinghouse?

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In the United States and Canada, interest in introducing technical writing on the pre-college level is growing. In the April 1995 issue of *Intercom*, Ron Blicq describes the Province of Manitoba's pilot program for teaching technical communication in the secondary school. This pilot program is the first step in Manitoba's plans to introduce technical communication into all levels of education, extending eventually all the way to kindergarten.

In the United States, the introduction of technical communication on the pre-college level is taking place in a much more haphazard manner. We have no central planning agency, no government or national education office that disseminates information on the topic, and very few curriculum materials. Nevertheless, individual public school teachers and administrators who recognize the need are incorporating technical communication into their curricula despite the difficulties in finding faculty training or even information.

How can we, as college and university faculty in the United States, address this need? Should we create an information clearinghouse? And if so, should it be part of an existing organization such as CPTSC or STC or ATTW?

Training Students for Academic Careers in Technical Communication: Three Challenges for Graduate Programs

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Historically, programs in scientific and technical communication have prepared students for workplace employment—primarily, for corporate settings in business, industry, and government that employ writers and managers of print-based and online materials. In realistically preparing students for these contexts, teachers have relied on a wide range of areas: internship programs, co-op opportunities, computer labs including industry standard writing technologies, and project-based learning. And, this kind of preparation remains an important component of many certificate, undergraduate, and graduate programs today. In addition, however, the recent explosive growth of Ph.D. degree programs in scientific and technical communication—or in related areas of rhetoric and composition—poses additional and heightened challenges. Students now spend, after all, a median time of 11.9 years from the receipt of a Bachelor's degree in English studies graduate programs (*Summary Report 1993: Doctorate Recipients from United States Universities,* 1995). Although, as a profession, we should continue to debate the amount and kind of preparation we provide such students and the numbers of students we prepare with advanced degrees (see Brown, Selzer, and Selfe, 1994), one reality remains clear: we have already admitted many students into these programs, and we have an ethical obligation to prepare them for an increasingly competitive academic job market.

If our responsibility to prepare students for the academic workplace looms large, few programs have systematic plans in place, and too few teachers are prepared for success in this area. From our perspective, three major challenges exist: (1) familiarizing graduate students at several levels with robust, interdisciplinary curricula for the study of technology and communication; (2) providing graduate students with the experiences they need to join and operate successfully within professional communities of technical communication scholars and teachers; (3) creating departmental infrastructures that can support year-round, professional development activities for graduate students.

Challenge #1: Familiarizing Graduate Students at Several Levels with Robust, Interdisciplinary Curricula for the Study of Technology and Communication

The scope of scientific and technical communication has generally expanded over recent years, transcending a narrow focus on traditional publications work and print-based materials, and our curricula should change to reflect this expansion. Currently, communication specialists in both academic and non-academic settings investigate an increasingly wide range of issues in the field—among them, the models we should establish for human-computer interaction, the ways in which communication is situated within cultural contexts, the civic responsibilities of technical communicators, the ideological content of language in science, the instructional needs of real-world audiences, and the nature of technical communication in the workplace.

Given this wide range of complex issues, programs in scientific and technical communication must draw on a concomitantly wide range of disciplines in establishing meaningful interdisciplinary curricula—among them,

- rhetorical theory,
- cultural studies,
- technology criticism,
- critical theory,
- genre studies,
- psychology,
- philosophy,
- the social studies of science,
- intercultural communication, and
- human-computer interaction.

Graduate students preparing to teach in scientific and technical communication programs must not only be aware of such curricular developments, but also prepared to involve themselves actively in the development, management, and evaluation of interdisciplinary curricula.

Challenge #2: Providing Graduate Students with the Experiences They Need to Join and Operate Successfully within Professional Communities of Technical Communication Scholars and Teachers

If expanded curricula provide one challenge to graduate programs in scientific and technical communication, a second is provided by the increasingly competitive academic job market. The requirements for tenure-track academic jobs are significant, and the strategies necessary for preparing students to assume such positions are equally daunting. The recent experiences of Michigan Tech graduate students and of other graduate students we know at the MLA conference and CCCCs indicate that it is not enough for students to claim an interest in technical communication on their vitae or to have a dissertation in some vaguely related area. Rather, in addition to substantial interdisciplinary course work, students need

- technical communication experience in workplace settings,
- teaching experience in computer-supported writing facilities,
- committee service at the departmental level,
- administrative experience in program management,
- several publications in refereed technical communication journals,
- experience in delivering papers at national conferences,
- a dissertation squarely in technical communication, and
- familiarity with professional contexts (professional organizations, issues in technical communication, the history of the field, the intellectual issues concerning the field, and major figures who have centrally contributed to the field, and so on).

Challenge #3: Creating Departmental Infrastructures that Can Support Year-Round, Professional Development Activities for Graduate Students

The final challenge for technical communication programs involves establishing departmental infrastructures that can support the on-going professional development of graduate students. Given the demands of the increasingly competitive job market we have just outlined, departments must be prepared to help graduate students seek external and internal internships, serve on departmental committees, establish productive mentoring relationships, and assume administrative posts under the guidance of senior faculty members. These opportunities, we would claim, are not often well supported by formal departmental structures and systems.

In preparing for an academic job search, for example, students will need help reading and interpreting job ads, making initial contacts, preparing vitae and application letters, and practicing for conference and on-site interviews. They will also need help preparing for campus visits and job offers that require some negotiation. Such help requires a great deal of faculty involvement, time, and energy—much of it at the expense of formal teaching duties, publication efforts, and committee service, all heavy prices to pay for a department or program. In these hard economic times, remaking departmental structures and systems in this way may be the most significant challenge.

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The Brave New World of National Skills Standards May Be Worth Exploration

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Remember the 1994 CPTSC debate captured by James Zappen in the following question series: ". . . are we to prepare our students to adopt the norms and practices of the disciplines and organizations within which they are going to work, are we to prepare them to make their own meanings in concert with others with whom they will live and work, or are we to prepare them to view their own disciplinary and organizational affiliations and allegiances within the larger social and human contexts within which we all live?" (*Proceedings*, 55). Laurie Hayes suggested that "as academic leaders [we not] go to industry to take the pulse of the profession, but to think critically about *what we teach to whom* and to ask about the history of that knowledge and to ask the inclusiveness of its future" (*Proceedings*, 7). I do not propose to resolve these tensions. Instead, I will illustrate one approach to constructing a curriculum directly from these competing interests.

Assisting colleagues in Chemical Engineering Technology, I am working on the design of a new baccalaureate curriculum in that discipline. Our product is *their* program, and yet, the emerging degree is more than a Chemical Technology program with the addition of some technical writing in the discipline. Our conversations and collaborative design have been framed by a third set of parameters: the Occupational Skill Standards Project for Chemical Process Industries. (I can hear you saying that I have now sold out completely.) To the contrary, I contend our methodology may offer one model for recognizing and shaping what Anthony Flinn called "necessary cooperation in the face of necessarily competing interests" (*Proceedings*, 44).

Skills standards "compatible with world-class levels of industry performance" are developing from twenty-two separate disciplinary-based projects. The Introduction to *Occupational Skill Standards Projects*, issued in 1994 by the Departments of Labor and Education, mandates that standards "must also be tied to measurable, performance-based outcomes that can be readily assessed, [and] be comparable across industries, similar occupations, and states." Lastly, standards must be "free from gender, age, racial, or any other form of bias or discriminatory practice." The resulting "system" of "voluntary skill standards" is intended to connect and focus the Goals 2000: Educate America Act and School-to-Work Opportunities Act to achieve "workforce preparedness." The specific Chemical Process Industries standards, now in draft form, describe appropriate competencies for the "entry-level chemistry-based laboratory technician for research, chemical and instrumentation analysis, and development; and [the] technical plant operator" (*Occupational Skill Standards Projects*, 8).

The Chemical Technology faculty are at work within this emerging framework to implement a laboratory-driven baccalaureate curriculum in chemical analysis. My particular contribution is the senior capstone project. Of the senior project curriculum, my colleagues have written, "The Senior Project provides experience in the convergence of theoretical and practical knowledge and skills for problem-solving in an environment of mentorship and teamwork, as well as individual responsibility" (Curriculum Draft, 2/11/95). Each student's work will be submitted to and evaluated by that student's Senior Project Committee composed of the faculty or industry mentor, the instructor of the Senior Project course sequence, and the instructor of the Senior Project *Communication* course sequence. Together, the Committee has oversight responsibility for the student's progress to degree.

For me, this curricular design represents a new level of interdepartmental and interdisciplinary collaboration. As the charge of the Student Project Committee makes clear, we are not leveling uneven disciplinary playing fields; we are playing on the *same* field. This shared field remains distinct from each of the separate disciplinary domains, and, at the same time, unachievable without them. I do not believe a "pure" disciplinary-based curriculum has much more potential for the future we recognize ahead of us than does "pure" disciplinary-based research. In some ways, this new curriculum pushes the envelope of academic acceptability, but I, for one, welcome the nudge. What do you think?

Going to Extremes in Theory, Research, and Practice in Technical Communication

The Three Rs: Writing, Responsibility, and Resistance

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Technical and professional writing programs have spent a great deal of effort developing curricula that prepare graduate students for nonacademic work, something English departments did not do fifteen or twenty years ago. Many of us train graduate students for professional writing jobs, or else we train new researchers who study technical and professional writing. And the body of research reports in nonacademic writing that has accumulated since the publication of books like Odell and Goswami's *Writing in Nonacademic Settings* provides a substantial corpus from which faculty design courses. Furthermore, collaboration between program faculty and industry has become the norm rather than the exception.

The situation I have described is both productive and problematic. Productive because, as Foucault has argued, cultural and ideological power is efficient at producing knowledge. Problematic because, as Richard Ohmann argued some time ago in *Politics of Letters*, disciplines "must respond to the power and needs of the dominant groups in society at large."

When concepts of corporate "culture" and the study of socially constituted knowledge emerged in research and in professional communication programs, they provided more sophisticated understanding of discourse and its institutional function. But our research, and, even more so, our curricula concentrate on improving writing and communication in industry and the professions without adequately considering the cultural consequences of this discourse. That is, programs have benefited from the more sophisticated understanding of discourse as a cultural practice, but largely overlooked the cultural critique that accompanies that same cultural theory. In my graduate classes I face this when students despair of changing institutional practices, when most of their courses and textbooks aim at efficiency as the goal and, to borrow Steve Katz's language, adopt expediency as a rhetorical guide, when corporate culture seems all powerful and inviolable.

I would like to discuss the responsibilities writing programs have to resist as well as serve the interests of industry and the professions, and what resources we might draw upon to do so. I will describe some of my recent work with professionals who resist the dominant discourse of their institutions and how their communication practices seek to change institutional culture. Drawing on the poststructural social theory of Anthony Giddens, Pierre Bourdieu, and Michel de Certeau, I will outline the conception of resistance and practice on which my critique depends and suggest ways we can incorporate a cultural critique into our programs.

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Postmodern Technical Communication Classroom Practices: Revealing the Paradox at the Heart of Our Enterprise

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The theme of "Going to Extremes" for the Houghton, Michigan CPTSC meeting in 1995, suggests the discipline of Technical Communication is in an expansive, inclusive stage of its history. The profession is branching out, even "going to extremes" to incorporate more practices and more theory. Yet the trend in the culture at large appears to be in the opposite direction, towards constriction and cuts, downsizing and eliminating programs. My position paper for the CPTSC meeting examines this paradox at the heart of the idea of expansion and accretion in times of economic and social constriction. Are we technical communicators trying perhaps in vain to create expansive and generous ways of thinking as a counter force and counterweight to rather depressing cultural trends that stress downsizing and selfishness?

I propose possible approaches in our TC programs for introducing and examining the tensions this paradox implies between the needs of technical communication to expand and those of the general culture to contract. Courses and their materials, class assignments, and internships, among other parts of the curriculum, can put students in a position to examine the opposition between growing needs and shrinking resources and opportunities: technical communication needs to expand its research and support because of the growing sophistication of its applications and theories, and yet that need is offset by shrinking resources, threatened reductions, and an almost mean-spirited public discourse about education.

Postmodern teaching practices bring to students the consciousness that the self is "'discursively produced and discursively bounded'—that the self is subject(ed) to rather than outside of language practices," as Charlotte Thralls says in her review of Lester Faigley's *Fragments of Rationality*.

Thralls says Lester Faigley sketches "out a direction that postmodern pedagogy might take. This pedagogy would be built upon the contingent, open, and multiple nature of postmodern subjectivity, and it would emphasize the possibilities of diversity and difference.

"His vision . . . include[s] microethnographies and other classroom practices that would enable students to explore 'the politics of location.' Microethnographies, for example, would invite students to examine self-consciously the disclosure practices of the various cultures in which they participate, locating themselves within these practices while exploring the differences of others.

Faigley suggests that a postmodern pedagogy would be inextricably linked with an ethics that locates responsible decisions and justice *within* discourse rather than in external metanarratives that posit the notion of universal truth" (219–221). In other words, postmodern teaching practices may direct us to teach not by "colonizing" the minds of our students with our ideas, but by liberating them and the culture by the discovery of what Cornel West calls "democratic accountability."

West says, "The nihilistic threat to black America is inseparable from a crisis in black leadership. This crisis is threefold:

> 1. Black leadership at the national level tends to lack a moral vision that can organize (not just periodically energize), subtle analyses that enlighten (not simply intermittently awaken), and exemplary practices that uplift (not merely convey status that awes) black people.
>
> 2. This relative failure creates a vacuum to be filled by bold and defiant black nationalistic figures with even narrower visions, one-note racial analyses and sensationalist practices . . . . In this way, black nationalist leaders often inadvertently contribute to the very impasse they are trying to overcome: inadequate social attention and action to change the plight of America's 'invisible people,' especially disadvantaged black people.
>
> 3. This crisis in black leadership contributes to political cynicism among black people; it encourages the idea that we cannot really make a difference in changing our society. This cynicism—already promoted by the larger political culture—dampens the fire of engaged local activists who have made a difference.

We need serious strategic and tactical thinking about how to create new models of leadership and forge the kind of persons to actualize these models. These models must . . . force us to interrogate iconic figures of the past(43–46)."

West's call to address the "threat" of nihilism in black America warns us all of the crisis in leadership not just in black America but in America at large. As teachers of technical communication we too must be concerned with our students learning how to engage in their communities in ways that encourage, as Faigley says, their "postmodern subjectivity" or, as Cornel West says, "courageous engagement."

I propose students write what Faigley calls "microethnographies" as part of their community service projects to discover a "postmodern subjectivity" that "locates responsible decisions and justice *within* discourse rather than in external metanarratives."

Postmodernism can help generate ideas for bridging the gap between the social agenda for reductions and the educational needs for growth and development. Indeed, postmodernism can offer guidance for "going to extremes" to bring the paradoxical nature of our situation to consciousness.

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Research in Technical Communication Curricula

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Introduction

The Society for Technical Communication has significantly increased its involvement and influence in technical communication research by funding projects at well over $100,000 in the last three years alone, including a seminal study on the value added to products by effective technical communicators; by establishing a Research Advisory and Assistance Committee that will provide a research agenda to guide the research grants program; and by sponsoring a focus group on research that has generated a list of research topics.

With one exception, little of this funded research has involved topics related to academic technical communication programs or curricula. The exception is the study being conducted by Freda Stohrer and her colleagues to describe academic programs at various levels. That study is almost complete.

Studies of Curricula

At this conference, I have noticed two themes in speakers' references to curricula in technical communication: 1) most of the references were to what "I/we" are now doing in "our" technical communication program; 2) other references, in the form of a question, wondered, "Should we be doing *thus* or *so?*" Both of these reflections are valuable. We do need to know what is happening in current technical communication programs; that is the thrust behind Stohrer *et al.*'s study and the somewhat failed attempt to publish an academic program directory. One major problem in all of these studies is that the programs are like a raging river that, just when one focuses clearly on one part of it, is gone—changed, absorbed, mixed with other elements—so that it is no longer what one first fixed upon (the list of academic programs is now posted on the World Wide Web at http://stc.org).

And we do need vision—focus into the future and on what should be. For the most part, however, neither the study of current practice nor the visions of the future have been based on much research data. The Works Cited contain a list of some studies of curricula that have been made. For the most part, these have been restricted studies of one segment of the total technical communication population. Barnum and Fisher (1984); Bataille (1982); Davis (1977); Little and McLaren (1987); Kalmbach, Jobst, and Meese (1986); Phillips (1984); Rainey (1987); Skelton (1977); Trevathan (1987); Walton (1986); and Whitley (1984), for example, focus on the populations in their own institutions or areas. These studies do provide valuable insights into the configuration of technical communication curricula for specific purposes. The 1988 conference of CPTSC sought to synthesize some of these data and published reports of the discussion groups in the *Proceedings* (Council 1988).

Other studies provide analyses based on experience, on a study of the literature, or on other observations of what the author(s) think(s) a curriculum should look like: Burke (1986), Carliner (1992), Little (1990), Jones and Steinberg (1987), Kerr and Von Glinow (1977), Norman (1986), Sawyer (1977), Smith (1977).

A special issue of *Technical Communication* (Fourth Quarter 1995) presents the current thinking of a number of professionals on various aspects of technical communication education.

Research Need

The fact is that there is little solidly based research data on technical communication curricula. The profession needs a vigorous research program in technical communication education that will answer these questions, among others:

- In view of skills required for various roles in technical communication, what should a technical communication curriculum contain at various levels (i.e., certificate, associate, bachelor, or master)?
- What is the role of technology in technical communication education?
- What is the level of training and support for technology?
- Can distance learning technologies effectively educate technical communicators?
- How effectively can multimedia be used in technical communication education?
- What should technical communicators learn about visual communication?
- What should a curriculum in international technical communication look like?

Doubtless, there are other and, perhaps, better questions; but such questions as these need to be addressed, and research on them needs to be funded. (Another area of study, which I have not addressed here, includes programmatic

issues: teacher-training, workloads, advisory boards, internships, projects, theses, recruitment, promotion and tenure, etc.)

First Steps

Some efforts are underway in these areas. I have mentioned the Stohrer study; also a graduate student at Michigan Technological University is beginning a doctoral research project on the levels, mechanisms, and processes of support for technology rich programs in technical communication. These studies are in the right direction.

In addition, the Society for Technical Communication has launched a study that will generate data for technical communication curricula by studying job roles and competencies of various technical communication professionals, by identifying the skills required to fulfill those roles, and by identifying curricular elements that will support those skills. The Society is seeking the assistance of the Council for Programs in Technical and Scientific Communication, the Association of Teachers of Technical Writing, and the IEEE Professional Communication Society in pursuing this study.

The purpose of this committee is to identify a "core" body of knowledge that defines what technical communicators do. This body of knowledge will

- define who and what we are as professionals
- support any certification effort that may (or may not) be pursued
- serve as input to academe in supporting curriculum development
- focus on competencies, independent of specific fields or technologies
- provide a set of core competencies (those competencies that anyone who is in the profession should be able to do) and supporting competencies
- serve as source material for technical communicators to develop self-assessment tools
- explain consistently to the public who we are

The committee leading this study intends to proceed by creating a description of where the occupation of technical communication takes place and of what people in the profession do. For additional information, the committee will examine technical communication curricula that are currently in use and design a survey to determine how many members actually do what has been described. Once these data are available, the committee intends to identify the required competencies for those activities by using Behavior Event Interviews and other data gathering methodologies.

The first data-gathering events in this process will occur at the 1996 Society for Technical Communication Conference in Seattle, Washington. Over a two-day period, four focus groups (one for managers and three groups representing a cross-section of technical communicators) will address questions such as the following:

- What is it that you do?
- What tasks distinguish your profession from others?
- What do your customers do with the products you make?
- What skills do you consider most important when hiring people?

These data will be statistically analyzed and evaluated as a basis for designing a survey of professionals.

Parallel to this study, the Society is conducting a "trends survey" that seeks to identify trends in the profession and trends in society that impinge upon technical communication education. Such data can be immensely useful for technical communication programs as they examine their curricula and modify them to meet the rapidly changing profiles of our profession.

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Rationale for a CPTSC Consortium: The Virtual Technical and Scientific Communication Program

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For the past 22 years the technical and scientific programs represented by the CPTSC membership have functioned as independent but isolated entities, sharing ideas and approaches at our own annual meetings and sometimes at other professional conferences and in our professional journals. While these brief, but intense, exchanges have been useful, they are usually sporadic, fragmentary, and temporary. It is time for a new vision and an entirely different approach to the education of students in our field.

Existing computer technologies already provide some currently unexplored pedagogical possibilities for CPTSC to move beyond its current boundaries. When considering all the aspects of technology-mediated learning, including multimedia, video conferencing, and distance learning, ask yourself:

What would happen if my students could communicate with other students in similar programs around the country and explore their common interests, concerns, successes, and frustrations with each other? Could students in programs at different institutions even serve as peer reviewers for each other's writing?

What would happen if my students had ready access to several different experts on topics in the field, rather than having to rely on my own broad (and sometimes limited) knowledge of some of its many facets? Could students even conduct online interviews with some of the current scholars in the field?

What would happen if teachers could easily develop, and students could readily access, a growing database of interactive exercises, role-playing scenarios, case studies, and simulations? Could teachers from different programs even create some of these materials collaboratively using the Internet?

I propose that CPTSC immediately begin to explore the possibilities of establishing a consortium of programs and experts on the various topical areas that are fundamental to our field. As a starting point, we could survey the membership to ascertain interest in such a project and to identify a beginning list of participant developers as well as topical areas and resources in the field. We could then begin in an initial introductory way, using the resources we already have to record bibliographies, exercises, and other resources currently used in our programs. Such information could be disseminated on disk or through the Internet. The Internet could also be used for ongoing electronic conversations between students and faculty members from participating institutions. Depending on the success of this initial effort, a CPTSC Consortium could then consider developing CD-ROMs (perhaps updated regularly and made available through a subscription service much like the bibliographic databases now in libraries). CPTSC could also explore establishing its own World Wide Web electronic publishing site for the dissemination of information created by the Consortium. The technological tools for such a project already exist. The effort would be in exciting and committing ourselves to such an ongoing and collaborative partnership.

I suggest that most of us are currently institution-bound. None of our programs individually has the resources to create a totally comprehensive and effective technology-mediated learning environment for the field of technical and scientific communication. After we in our individual institutions begin to function as partners with our counterparts in other institutions to create a national database of information about our field, our individual programs will evolve to meet the changing and increasing needs of our students. In the past, we have been isolated and somewhat parochial in terms of program development, but the future of our field demands organized collaboration.

Although the CPTSC members do not have a history of multi-campus efforts or of joining with each other in our pedagogical endeavors, the best features of our existing traditional instruction could be combined effectively with the emerging technologies to create a technical and scientific communication program for the future. Such a virtual "mega" program database must be continually evolving as well as capable of being tailored to meet multiple and changing pedagogical needs. As participating CPTSC members, we could then easily select from the Consortium materials that best supplement our unique local requirements.

Technical Communication as Symbolic-Analytic Work: Possible Futures in Technical Communication

Johndan Johnson-Eilola
Department of English
Purdue University

I have this recurring nightmare in which I'm a technical communicator finishing a piece of software documentation. When I hand the finished product over to the customer, I repeat the phrase I've memorized not because I mean anything by it but because it's part of the ritual (which probably explains my lack of interest or intonation): *Ya' want fries with that?*

Most of us are well aware of the service role we provide, both in the workplace and in the academy. And most of us are just as familiar with the problems of that role, including a lack of support for anything but applied research, a tendency to discuss technical communication at the end rather than the beginning of a project, and the idea that technical communication is a necessary evil. Elegant technologies, after all, don't need to be explained; they are intuitively obvious. Documentation is an admission of weakness.

To put it bluntly, almost everyone views technical communication as a routine service, something that any moderately literate person can provide. Furthermore, it's something you do if you don't have the talent to actually invent and make the technology. We're sort of the industry equivalent of groupies or cheerleaders or, to carry the strikingly gendered analogy further, housewives. We're supportive of the breadwinners. This perception, in fact, is sometimes the way we advertise ourselves: the division head of a technical communication department at one of the national research labs told me that she convinced scientists to rely more heavily on technical communicators by arguing that even though the scientists were able to clean up their prose and correct grammar and punctuation on their own, a scientist's time was too valuable for that sort of thing. Leave that up to us, she said, and you go on to something more important.

There are a host of reasons for this situation: our society's historical obsession with technology as an artifact, the social position of departments of English in most educational institutions, the persistent acceptance of the Shannon-Weaver model of communication, and more. But rather than trace out a neat history and structure of causality here, I'd like to suggest one possible way of responding to this problem. I don't think we'll ever be out of the service industry, but we can look at service providers and position ourselves at another sector of service, light years away from working the counter at Mickey D's.

Robert Reich's work is particularly helpful in thinking about how important it is that we cast ourselves as people who analyze and arrange symbols. In his analysis of contemporary business trends, Reich sees a movement toward three main job classes:

1. **Routine Production Services**. These "entail the kinds of repetitive tasks performed by the old foot soldiers of American capitalism in the high-volume enterprise" (p. 174). These jobs include traditional blue-collar positions and also a number of white-collar jobs—"foremen, line managers, clerical supervisors, section chiefs—involving repetitive checks on subordinates' work and the enforcement of standard operating procedures" (p. 174). These workers are valued for their ability to follow rules, remain loyal to a company, and work accurately and quickly.

2. **In-Person Services**. In-person service workers also complete routine, repetitive tasks and are usually closely supervised. The primary difference between routine production workers and in-person workers is that in-person service workers deal with people directly. So in addition to the skills of routine production, in-person workers must possess what Reich calls "a pleasant demeanor. They must smile and exude confidence and good cheer, even when they feel morose. They must be courteous and helpful, even to the most obnoxious of patrons. Above all, they must make others feel happy and at ease" (p. 176). In-person service workers have replaced much of the historical emphasis on routine production work There were more in-person service jobs created during the 1980s than there are total workers in the steel, textile, and automobile job classes *combined.*

3. **Symbolic-Analytic Services**. These are the problem-identifying and problem-solving, strategic brokering people. In some ways, symbolic analysts are similar to routine production workers because they typically

compete on an international level for positions; because so much of the work of a symbolic analysts takes place in computer-mediated communication, they are more likely able to telecommute. But in most other ways symbolic analysts differ from the other job classifications in terms of status, responsibility, mobility, and pay. Because they are often highly recruited, they are more able to move from place to place because of their higher disposable incomes and because companies will often pay moving expenses for their services. In essence, symbolic analysts act out the movement away from history (where an employee often worked in the same location and position as their parent and even grandparent) to power over global information spaces.

Technical and business communication can redefined to occupy *any* one of these categories, although I think we're currently in danger of moving into routine production or in-person service, classifications I think it's probably clear are not all that lucrative or possessing a very positive job outlook. The reason I see for these trends is not because of the ways that we typically think about technical and business communication. We think of our work as nonroutine, difficult, not amenable to direct supervision or inflexible rules. At the same time, though, we don't think of our value in the manner of symbolic analysts, because we are content to think of ourselves as *enablers*, people whose main job is to help customers find the real value (which is in the technology).

If we wish to capitalize on our somewhat hazy position and to reconstruct technical and business communication as symbolic analytical work, we need to begin to think of ourselves as not just enabling people to use technologies someone else invented, but to think of ourselves as orchestrating a context, of arranging user, technology, and knowledge in particular, valued alignments. Reich outlines four key areas of education valuable to the work of symbolic analysts: abstraction, system thinking, experimentation, and collaboration. Like the symbolic analysts Reich evaluates, we need to illustrate both to ourselves and to the rest of the world that technology is easy to come by, but understanding and strategic use are the crucial components.

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22nd Annual Business Meeting

Business Meeting Agenda
Council for Programs in Technical and Scientific Communication
22nd Annual Meeting

Saturday, September 30, 1995
Houghton, Michigan

1. Approval for the Minutes of the 1994 Business Meeting (Rude)
2. Recognitions (Riodan)
3. Report on Publications (Cooper)
4. Secretary's Report (Rude)
5. Treasurer's Report (Shirk)
6. Report: Program Development Advisory Board (Karis)
7. Report: ATTW (Little)
8. Report: NCTE (Staples)
9. Report: STC (Rainey/Carliner)
10. Report: Archives (Hayes Report; Price Committee)
11. Selection of Site and Dates for 1997 Meeting
12. New Business
    a. Nominating Committee (Zappen)
    b. Executive Committee Concerns
    c. Other
    d. Thanks
13. Invitation to Miami (Johnson)

Minutes: CPTSC Annual Business Meeting 1995
Saturday, September 30, 1995, Houghton, Michigan

Dan Riordan called the meeting to order at 9:05 a.m. and welcomed 29 people in attendance, including officers.

Approval of Minutes of the 1994 Business Meeting
Maria Kreppel moved and Jim Zappen seconded approval of the minutes of the 1994 meeting as printed in the *Proceedings*. The minutes were approved.

Recognitions
Katherine Staples and Carolyn Rude were recognized for election to the rank of Associate Fellow of the Society for Technical Communication. Jim Zappen was recognized with a plaque and certificate for outstanding leadership as CPTSC president 1992–1994, especially for setting up templates for the proceedings and newsletter.

Report on Publications
Marilyn Cooper called for final copies of the abstracts for the 1995 *Proceedings*. She also invited news for the fall and spring issues of the newsletter. Dan Riordan thanked her for her work on publications.

Secretary's Report
Steve Bernhardt is consulting in Switzerland and could not be present.

Treasurer's Report
Henrietta Shirk distributed the treasurer's report (attached). The Council is solvent with a balance of $6,117.86 in an interest-bearing checking account. Three mailings for membership renewal were subsidized by Boise State University.

Membership is down 33% since last year, in spite of three notices about renewal: 115 compared to 170. The location of the meeting may influence membership, and membership may have surged in 1994. Historically the Council has had a membership lower than 100. Ken Rainey observed that 90 schools have programs and suggested that Henrietta Shirk compare the list of programs with the membership to determine which schools were not represented. Stuart Selber suggested recruiting one or two graduate students from each graduate program. Katherine Staples encouraged contact with two-year programs. Henrietta will distribute information on CPTSC to these groups.

Report: Program Development Advisory Board
The program development project is ongoing with the goal of being a presence in self-review—to help programs review themselves. A set of guidelines for self-study has been developed, published in the 1991 *Proceedings*. Bill Karis, Meg Morgan, and Tom Warren have also drafted guidelines for facilitating program reviews. Bill has used the guidelines for a site visit and review of Michigan Tech with the assistance of Pat Sullivan in September 1995. Review and revision of the procedures are an ongoing task.

Bill Karis recommended

- The guidelines for self-study established in 1991 as a "draft" should be reviewed by the committee, and a final version should be established.
- A pool of potential reviewers should be established.
- The CPTSC secretary should maintain a list of the programs reviewed and reviewers.
- The committee should continue as formed.
- The programs reviewed should report on the review process, not on the results of the review.

Cindy Selfe, director of the program at Michigan Tech that has just been reviewed, recommended

- Guidelines should be revised to include questions with an orientation to graduate programs (for example, there are presently no questions about grant funding).
- In self-study, each program should develop its own survey tailored to the program. These questions could be part of the final report, and other programs could use them.
- CPTSC should also formally report back to the program.

According to Cindy Selfe, the experience of the self-study with CPTSC guidelines and consultants was a good experience for the Michigan Tech program and for positioning the program with the university administration. She also recommended informing program directors of the CPTSC service. Cindy also observed that a self-study takes a lot of time. She estimated 400 hours of time and six months lead time. A smaller program may take less time.

Maria Kreppel recommended that the fall newsletter or a fall letter announce the review service and suggested that the service would attract new members. The timing is good, given the current program cutting. Completing pilot studies at all program levels would provide results on what self-study could mean for program development. Programs that routinely collect data about graduates and with advisory boards have an edge over others in seeking funding and other support.

Sherry Little observed that the WPA has an established fee schedule for review that CPTSC might adopt, but Jim Zappen and others observed that the funding regulations at each school vary widely. Sherry suggested getting information from WPA would help CPTSC set guidelines. For the present, CPTSC will not set funding guidelines.

A final form of the guidelines for self-study should be approved by the executive committee before distribution.

Jim Corey moved and Katherine Staples seconded the acceptance of the "Guidelines for Facilitating Program Reviews."

Discussion focused on these questions:

- Should CPTSC receive a copy of the report the reviewer writes? No. The information is privileged.
- Should the reviewer make a separate report to CPTSC? Yes. This report would focus on the process and data collection, not on the results. Maria Kreppel advised using the report from the first evaluation as a template to be distributed to programs being reviewed.
- Should CPTSC notify STC and ATTW? Yes. Presidents should be notified as professional courtesy and for the flow of information.
- Who are the reviewers? These suggestions were offered:
  - Programs should be able to nominate reviewers. Cindy Selfe selected reviewers whose programs complemented hers in terms of level and emphasis. Other issues could be gender, location, and age.
  - Credibility of the review may depend on whether the program or administration selects reviewers.
  - Since the review is a service of CPTSC, the reviewers should be CPTSC members. Nonmembers could join, asking the reviewed institution to pay for membership. A reviewer who has been a long-term member of CPTSC has a broader base from which to use the guidelines.
  - Reviewers from industry could be useful for political reasons.
  - Reviewers from other disciplines could be useful for service programs.
  - The process should be flexible enough to suit a review of a communications program in an engineering school.

Formalizing a list of reviewers and policies for selection can take the service into evaluation rather than program building. At least at the pilot phase, we need to be flexible enough to experiment. Bill Karis, Meg Morgan, and Tom Warren plus past presidents might be reviewers, but Bill Karis said that there could be a conflict of interest if the program facilitators were also the reviewers.

Maria Kreppel proposed a friendly amendment to the motion that the guidelines be accepted: that they be accepted until the next business meeting. This friendly amendment was accepted. The motion for acceptance of the "Guidelines for Facilitating Program Review" passed.

Report: ATTW

Sherry Little, President of ATTW, reported that the focus of ATTW is pedagogy and technical communication as an academic discipline. The change in the name of the journal from *The Technical Writing Teacher* to *Technical Communication Quarterly* reflects not a shift from pedagogy but an approach to pedagogy based in theory and research. To the mutual benefit of ATTW and CPTSC, the organizations could create Internet links for information. ATTW has a home page that could be linked to CPTSC's when one is created. The two organizations might make available through their web sites abstracts from journal articles, course materials, and information about programs.

Carolyn Rude invited members to the two 1995 sessions sponsored by ATTW at MLA in Chicago: 1) The

Relationship of Technical Communication and Writing Across the Curriculum and 2) Interpreting Information in Technical and Scientific Contexts. She also encouraged CPTSC members to submit proposals for the 1996 ATTW-MLA sessions: 1) Technical Communication in Cyberspace and 2) Ethics in Technical Communication. Proposals are due February 16, 1996.

Report: NCTE

Katherine Staples, a member of the NCTE Committee on Technical and Scientific Programs, reported that Rebecca Burnett is chair of the committee and that Pat Sullivan is also a member. The committee administers the awards for excellence and recommends policy to NCTE. The committee also sponsors publications, such as the collection on workplace writing edited by Bernhardt and Garay. The committee also advocates for sessions on technical communication at 4Cs.

All the professional associations could join in creating information on teaching technical communication for high school students. This information could be available on the Internet.

Report: STC

Ken Rainey, Assistant to the President for Academic and Research Programs and a member of the Academic and Research Programs Committee, announced that an update of the directory on academic programs is being prepared. The list is available at an ftp site: http://clark.net.stc/pub.

That site also includes an index to *Technical Communication* and the STC *Proceedings*, the academic program directory, bibliography on internships, and database on theses and dissertations in technical communication. Information is being solicited now on abstracts of theses and dissertations since 1992.

STC has these goals related to academic programs:

- identify academic programs that encourage academe-industry dialog through faculty internships and other means
- identify job functions and skills
- develop STC's role in reviewing and strengthening academic programs
- develop web sites and links to programs
- maintain the electronic bulletin board
- establish a research agenda for STC and guide the research that STC is funding.

A committee under Brad Mellenbacher will suggest a prioritized list of research projects, including target funding and methodologies. STC will issue RFPs on those projects and seek funding outside STC for these projects through foundations and corporate sponsorship.

The Job Competencies Committee will develop job descriptions for six common jobs in the field and define the knowledge required for each job. Ken Rainey will advise that the committee investigate social responsibilities of each job and the cultural values attached. Then the committee will create a group from industry and academe to develop curriculum that will in turn be available to academic programs for use as they want it to be used. This work is under the direction of the Professional Development Committee, not the Academic and Research area.

Some questions about the DACUM process were raised, specifically about whether it merely describes current responsibilities as opposed to projecting the future. A caution was also voiced about whether STC will try to establish a rigid curriculum and certification process.

Report: Archives

In accord with the resolution passed in 1994, Laurie Hayes has establish CPTSC archives at the University of Minnesota library and a bibliography of its contents from 1974 through the present. A recommendation was made that the list be posted on the Minnesota web site.

Jonathan Price has proposed an extensive archive in a $500,000 building as an addition to the Library of Congress.

Dan thanked Laurie Hayes for her extensive work and Jonathan Price for his vision.

Selection of Site and Dates for 1997 Meeting

Katherine Staples proposed Austin, Texas, as the site with the support of academic programs at Texas A&M, Texas

Tech, and the University of North Texas. Betsy Aller moved and Susan Stevenson seconded the selection of Austin as the 1997 site. The motion passed. An October date is preferable to late September because of late-starting academic programs and High Holy Days. Katherine Staples will check suitable dates.

New Business

Nominating committee. A nominating committee for 1996 will be selected by the executive committee, and Jim Zappen invited people to present their names or the names of others to be nominated for the positions of president, vice president, secretary, treasurer, and three at-large members. The election will be held in the summer of 1996. Membership requires attendance at the CPTSC meeting and sometimes at 4Cs.

Web site and network discussion list. The executive committee has recommended that CPTSC develop a web site and network discussion list. Betsy Aller moved and Ken Rainey seconded the recommendation for Bill Williamson and Bill Sewell to develop a CPTSC home page and for Stuart Selber and Bill Karis to develop and run a CPTSC list from Clarkson. The motion passed.

Program proposals. Ken Rainey moved and Katherine Staples seconded the motion that the program chair have the authority to reject proposals that are not appropriate to the conference or theme. The motion passed unanimously.

Thanks. Dan Riordan commended the Michigan Tech program, especially Marilyn Cooper, Bill Sewell, and Betsy Aller, for hosting an excellent conference. Sue Niemi, Jeanne Fricke, Marjorie Lindley, and Carol Johnson provided staff support for the conference and CPTSC review. Sean Clancey, Allan Heaps, Tim Fontaine, Margaret Hundleby, Bill Williamson, Deb Schueller, and Rob Wood helped with arrangements, and the Michigan Tech Humanities Department and the School of Sciences and Art provided financial support. Dan Riordan also commended Deborah Bosley for managing the program.

1996 Invitation. On behalf of Bob Johnson, Dan Riordan invited all to participate in the 1996 conference in Miami, Ohio, September 26-28.

Respectfully submitted,

Carolyn Rude
Member-at-Large, Executive Committee

Note: These minutes are printed in the *Proceedings* in draft; they are approved at the annual business meeting the following year.

Attachment: Financial report, January 1, 1995–September 28, 1995

CPTSC Financial Report

January 1, 1995 to September 28, 1995

BALANCE FROM JANUARY 1, 1995			$ 5,404.74
CREDITS/INCOME			
Interest on Checking Account (1/95 through 8/95)		69.96	
Memberships — 1995 (115 individuals)		2,300.00	
Memberships — 1996 (2 paid in advance)		40.00	
	Total:	2,409.96	+ 7,814.70
DEBITS/EXPENSES			
Printing (Stationery, Brochures, etc.)		467.53	
Newsletter — Spring 1995			
Printing	41.30		
Postage	33.25	74.55	
Proceedings — 1994			
Printing	806.20		
Envelopes	9.74		
Postage	245.12	1,061.06	
Miscellaneous Administrative Costs:			
Printing (1995 Renewals, Follow-Up)		25.83	
Postage (Mailing for Renewals, Conference Materials, etc.)		67.87	
	Total:	1,696.84	– 1,696.84
		BALANCE:	$ 6,117.86

Respectfully submitted,

Henrietta Nickels Shirk
CPTSC Treasurer

September 28, 1995

Executive Committee Meeting

Minutes: CPTSC Executive Committee Meeting
Saturday, September 30, 1995, Houghton, Michigan

The Executive Committee met at dinner and briefly later at dessert. Present were Dan Riordan (presiding), Marilyn Cooper, Jim Zappen, Henrietta Shirk, Katherine Staples, Carolyn Rude, Bill Sewell, and Betsy Aller.

Conference 1995
This year's conference has been a good one, and the local hosts (Marilyn Cooper, Bill Sewell, and Betsy Aller) and the program coordinator (Deborah Bosley) were congratulated.

Conference theme for 1996
Discussion centered on the moment of risk and opportunity facing technical and scientific programs as new technologies, theories, social realities, and administrative priorities change teaching and program design. The committee could not agree on a suitable metaphor to describe these changes and opportunities and agreed to pursue the theme further through email. Carolyn Rude will prepare a draft of a call for papers, and committee members will suggest revisions.

Elections
Elections for officers and executive committee members will take place in 1996. Jim Zappen, who heads the nominating committee, invited members to submit by email names of potential officers and members-at-large. He advised sensitivity to age, gender, geographic distribution, and type of program. Jim also asked existing officers and members to advise him of their interest in serving.

Payment of Conference Fees
No existing policy directs whether the CPTSC treasurer or the host institution pays the conference bills. In the past the treasurer has handled receipts and disbursements, but some universities require that fees be paid through university accounts, thus requiring that a host institution may have to handle the conference money. Henrietta Shirk will draft a policy statement that each year the host and treasurer will establish a procedure in advance of the conference that will allow each party to fulfill its responsibilities.

Meeting at 4Cs
Some questions arose during the conference about CPTSC's role in the discipline (whether, for example, CPTSC might organize a consortium of programs for organized collaboration via the World Wide Web and Internet, as Henrietta Shirk suggested in her presentation this year). The CPTSC Executive Committee will meet on Wednesday at the 4Cs conference for further discussion of these issues and other unfinished business. Dan will set up the meeting and inform the members of the time and place.

Respectfully submitted,

Carolyn Rude
Member-at-Large, Executive Committee

Note: These minutes are printed in the *Proceedings* in draft; they are approved at the next meeting of the Executive Committee.

Appendices

Appendix A:
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Appendix B:
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1st	University of Minnesota	St. Paul, MN	1974
2nd	Boston University	Boston, MA	1975
3rd	Colorado State University	Fort Collins, CO	1976
4th	University of Minnesota	St. Paul, MN	1977
5th	Rensselaer Polytechnic Institute	Troy, NY	1978
6th	Oklahoma State University	Stillwater, OK	1979
7th	University of Central Florida	Orlando, FL	1980
8th	University of Washington	Seattle, WA	1981
9th	Carnegie-Mellon University	Pittsburgh, PA	1982
10th	University of Nebraska	Lincoln, NE	1983
11th	La Fonda	Santa Fe, NM	1984
12th	Miami University	Oxford, OH	1985
13th	Clark Community College	Portland, OR Vancouver, WA	1986
14th	University of Central Florida	Orlando, FL	1987
15th	University of Minnesota	Minneapolis, MN	1988
16th	Rochester Institute of Technology	Rochester, NY	1989
17th	San Diego State University	San Diego, CA	1990
18th	University of Cincinnati	Cincinnati, OH	1991
19th	Boise State University	Boise, ID	1992
20th	University of North Carolina–Charlotte	Charlotte, NC	1993
21st	New Mexico State University	Las Cruces, NM	1994
22nd	Michigan Technological University	Houghton, MI	1995

Appendix C:
1994–1996 CPTSC Officers

President:	Dan Riordan	University of Wisconson–Stout
Vice-President:	Marilyn Cooper	Michigan Technological University
Treasurer:	Henrietta Shirk	Boise State University
Secretary:	Steven Bernhardt	New Mexico State University
Members at Large:	Deborah Bosley	University of North Carolina–Charlotte
	Carolyn Rude	Texas Tech University
	Katherine Staples	Austin Community College
Past President:	James P. Zappen	Rensselaer Polytechnic Institute

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Appendix E:
Tables of Contents of CPTSC *Proceedings*

Council for Programs in Technical and Scientific Communication (CPTSC) Proceedings 1974–1994

1974, University of Minnesota

1975, Boston University

A Roundtable Letter
David G. Clark

1976, Colorado State University, No Proceedings

1977, University of Minnesota

Vice-President's Report of the Council's Resource Materials Project
Thomas L. Warren

Relationship Between the Council for Programs in Technical and Scientific Communication and the Society for Technical Communication
Myron L. White

Possible Certification of Technical Communicators by STC
Richard M. Davis

The RPI Graduate Student in Technical Writing, Class of '77: The Role of the Humanist in Technical Communication
David L. Carson

Criteria for Appointment and Promotion of Teachers of Technical Communication
Robert R. Rathbone

A Proposal for Planning and Achieving a Program for Educating Handicapped to Become Technical and Scientific Translators
H. S. Bruce Linn

Internship Programs in Technical Communications for the Technical Student
Leslie A. Olsen

Technical Advertising—Classes That Would Have Helped
Karen Bunting

Graduate Programs in Biomedical Communication
Kenneth L. Kuczynaski

New Program Development at Texas A&M
Merrill D. Whitburn

Constitution

1978, Rensselaer Polytechnic Institute

President's Opening Remarks
Thomas E. Pearsall

Some Remarks on Technical Communication
Jay R. Gould

Report From the Member at Large
Virginia Book

STC and Its Role in Education
R. Frank Hammet

Design as a Communication Model
Philip M. Rubens

A View From the Computer Industry
Joseph T. Rigo

1979, Oklahoma State University

1980, Florida Technological University

1981, University of Washington

1982, Carnegie-Mellon University

1983, University of Nebraska

Technical Writing Internships at Eastern Washington University
Judith Kaufman, Eastern Washington University

A Two-Year Progress Report on the Technical Writing Program at Case Western Reserve University: What's New on Euclid Avenue?
Marilyn Schauer Samuels, Case Western Reserve University

Teaching Problem-Solving Strategies in the Technical Communication Classroom
JoAnn T. Hackos, University of Colorado at Denver

"Breadth and Depth" for Engineering and Science Students: The Communication Minor at the University of Missouri–Rolla
Sam C. Geonetta, University of Missouri–Rolla

Planning a Technical Writing Program at Kansas Technical Institute
Dale Sullivan, Kansas Technical Institute

A Contemplative View of Technical Writing
Carol Lipson, Syracuse University

Annual Business Meeting

Participants and Guests in 1983
Secretary's Minutes for 1983
Treasurer's Report for 1982-83

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Appendix A: Constitution (As Amended 1981)
Appendix B: Annual Meetings, Sites, and Dates
Appendix C: Executive Committee and Institutions Represented by Current Members
Appendix D: Current Members

1984, La Fonda, Santa Fe, New Mexico

From the President: CPTSC at Present
Patrick M. Kelley

From the Vice President: A Look at the Near Future
Marilyn S. Samuels

Program

Keynote Papers

Faith Without Works is Dead
Thomas E. Pearsall, University of Minnesota

"History Is Philosophy from Examples": Technical Writing Yesterday and Today
Thomas L. Warren, Oklahoma State University

Papers

A Graduate Studies Proposal
James W. Souther, University of Washington

Filling a Felt Need: The Master of Arts in Professional Writing
Beekman W. Cottrell, Carnegie-Mellon University

1985, Miami University, Oxford, Ohio

From the President: CPTSC and "Quality"

Program

Papers

Problems in Designing Graduate Programs in Technical Communication
Carolyn R. Miller, North Carolina State University

Graduate Technical Writing Programs: Determining Audience vs. Shaping It
Kristin R. Woolever, Northeastern University

How "Technical" Should Our Technical Communication Students Be?
JoAnn T. Hackos, University of Colorado at Denver

A Practitioner's View of Technical Communication Education
Lionel A. Howard, Jr., Bell Communications Research, Inc.

Industry and Education Working Together: The Use of Advisory Committees
Sherry Burgus Little, San Diego State University

Seeing Both the Silicon Forest and Its Trees: Achieving Currency in a Scientific-Technical Communications Program
E. Richard Kreighbaum/Robert E. Ryan/Patrick M. Kelley, Clark Community College

Who Are Our Students?
Judith Kaufman, Eastern Washington University

An English Major for Professional Writers
Scott P. Sanders, University of New Mexico

Technical Communication and Engineering Technology: New Programs Developing Together
Maria Curro Kreppel, University of Cincinnati

Finding Jobs for Technical Writing Students
Sally A. Jacobsen, Northern Kentucky University

Is There Funding for Individual and Group Research in Technical Communication?
Marilyn Schauer Samuels, Case Western Reserve University

The Challenges of Consensus Theory in Modern Rhetoric for Teaching Technical Writing
Daniel R. Jones, University of Central Florida

Teaching Collaborative Technical Writing Projects
Gloria Jaffe, University of Central Florida

The Place of "Media Literacy" in the Technical Communication Curriculum
Sam C. Geonetta, University of Missouri-Rolla

Visual Rhetoric in Technical Communication: 1. Theoretical, Empirical, and Intuitive Bases; 2. The Impact of the Computer
Ben F. Barton/Marthalee S. Barton, University of Michigan

Approaches to Theories of Grammar: An Unexamined Chapter in Technical Writing Texts
Mary B. Coney, University of Washington

Technical Writing and the Vulgate
Edgar S. Laird, Southwest Texas State Unlversity

The *De Linguae Latinae* of Lorenzo Valla and the Teaching of Technical Writing
Lawrence J. Johnson, University of Texas, El Paso

1986, Clark Community College, Portland, Oregon/Vancouver, Washington

1987, University of Central Florida, Orlando

Sam C. Geonetta, University of Missouri–Rolla

Disciplinary Tensions: Teaching Self-Critical Reflection in an Upper-Division Technical Writing Course
Carol Lipson, Syracuse University

The Metaphor of the Web: A Link Between Collaborative Writing and Gender Studies
Mary M. Lay, Clarkson University

Designing a Model for Collaboration
Susan Feinberg, Illinois Institute of Technology

The Need for Collaborative Learning Opportunities in Technical Writing
Kenneth T. Rainey, Memphis State University

Reaching Out with Grant Proposals: Linking Classroom Instruction with Program Development
Susan K. Ahern, University of Houston–Downtown

Electronic Documentation Comes of Age
Henrietta Nickels Shirk, Northeastern University

Desktop Publishing: The Writer's Expanding Role
Chuck Nelson, Youngstown State University

1988, University of Minnesota, Minneapolis

Agenda for 1988 CPTSC Meeting

Position Papers Prepared to Initiate Discussion

Education or Training? Issues for Certificate Programs In Technical Communication
Henrietta Nickels Shirk, Northeastern University

Establishing Standards for Graduate Programs In Scientific and Technical Communication
Billie J. Wahlstrom, Michigan Technological University

The President's Address

Taking Control of How Others View Us
Marilyn Schauer Samuels, Case Western Reserve University

Reports From Workshop Groups

Service Programs
Donald Cunningham, Texas Tech University

Certificate Programs
Katherine E. Staples, Austin Community College

Undergraduate Programs
Mary Lay, Clarkson University

Graduate Programs
Carol S. Lipson, Syracuse University

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Appendix A: Pre-registered Conferees

Appendix B: Annual Meetings, Sites, and Dates
Appendix C: List of Officers for 1988

1989, Rochester Insitute of Technology, Rochester, New York

Agenda for the 1989 CPTSC Meeting

Annual Business Meeting

Secretary's Minutes
Treasurer's Report
Proposal to Create a CPTSC Program Review Board

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Appendix A: Pre-registered Conferees
Appendix B: Annual Meetings, Sites, and Dates
Appendix C: List of Officers for 1989
Appendix D: Constitution

1990, San Diego State University, San Diego, California

Program of the 17th Annual Conference

Papers and Discussion on Curricula

Model(s) for Educating Professional Communicators
Marilyn M. Cooper, Michigan Technological University

Summary of Discussion of Model(s) for Educating Professional Communicators
Karen A. Schriver, Carnegie-Mellon University

Summary of Discussion of Model(s) for Educating Professionals Who Communicate
Daniel Riordan, University of Wisconsin–Stout

Papers and Discussion on Program Assessment

Reassessing Program Assessment: The Other Side of the Coin
Carol S. Lipson, Syracuse University

Measuring Institutional Culture: An Anthropological Approach to Assessment (Response to Reassessing Program Assessment: The Other Side of the Coin)
Carole Yee, New Mexico Institute of Mining and Technology

Evaluating Service Programs in Scientific and Technical Communication: How Can Qualitative Research Help Us?
Jimmie Killingsworth, Texas A&M University

Summary of Discussion of Papers on Program Assessment
Henrietta Nickels Shirk, Northeastern University

17th Annual Business Meeting

Agenda
Catfish (President's Address)
Minutes
Financial Report

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1991, University of Cincinnati, Cincinnati, Ohio

1992, Boise State University, Boise, Idaho

1993, University of North Carolina–Charlotte

Program of the 20th Annual Meeting

Ties: Industry, the Profession, the Academy

Ties Between Industry and Academia: The Marriage of Two Cultures
Russell Hirst, University of Tennessee, Knoxville

TC Programs: Strategies for the Next 20 Years
David Kaufer, Carnegie Mellon University

The Role of Continuing Education in Technical Communication
Judith Glick-Smith, Dallas County Community College

Dealing with Apparent Contradictions in Technical Communication Education
Sam Geonetta, University of Cincinnati

Promotion, Funding, and Administration: A Room of Our Own

The Potential Influences of the Carnegie Report on Teaching (1990) on Technical Communication's Personnel Decisions
Jo Allen, East Carolina University

A Program-Centered Database for Effective Planning
Alice Philbin, Bowling Green State University

The Place of the Professional Technical Communicator in the School of Liberal Arts
Mohsen Mirshafiei, California State University, Fullerton

Technical Communication in a Practical Era
Marian Barchilon and Donald G. Kelly, Arizona State University

Courses to Meet the Future

New Interaction Between Academic Programs and Industry: Training Students in Usability Testing
Elizabeth Turpin, Ferris State University

Team Teaching a Course in Usability Testing with an Industry Expert
Carol Barnum, Southern Tech

Medical Writing and the Future
Ronald J. Nelson, James Madison University

Building Bridges for 21st Century Technical Communicators: A Capstone Course in Theory and Practice of Electronic Texts
Nancy O'Rourke, Utah State University

Involving Professional Technical Communicators in Portfolio Assessment
Dan Jones, University of Central Florida

Curriculum, Instruction, and the Future

Establishing the Role of Research in a Master's Level Technical Communication Program
Brad Mehlenbacher and Carolyn Miller, North Carolina State University

The Future Role of Scientific and Technical Communication Faculty and Scientific and Technical Communication Programs in Distance Education Initiatives
Laurie Hayes, University of Minnesota

Resisting Technological Inertia in Technical Communication Curricula
Stuart Selber, Michigan Technological University

1994, New Mexico State University, Las Cruces, New Mexico

Challenging Assumptions: Identity and Roles

Multiculturalism, Postmodernism, and Radical Education: Whither Technical and Scientific Communication Programs
Laurie Schultz Hayes, University of Minnesota

Challenging and Being Challenged in a Faculty Internship in Technical Communication
Russel Hirst, University of Tennessee/Knoxville

Student Concerns: A Conversation over Email
Philip Bernick and Rhonda Steele, New Mexico State University

What We Can Assume About Academic Programs in Technical Communication
Kenneth T. Rainey, Southern College of Technology

Challenging Assumptions: Curricular Issues

Keeping the Technical Communications Curriculum Relevant
Craig Hansen, Metropolitan State University

Positioning Technical Writing Students as Interpreters of Workplace Culture(s)
Jim Henry, George Mason University

What Do You Do When the Computer Takes Over the Classroom?
Pamela S. Ecker, Cincinnati State Technical and Community College

Designing Information Systems for a Multinational Company: A Proposed Short Course
Deborah Andrews, University of Delaware, and Heather J. Fox, DuPont Company

New Answers to Old Questions: Curriculum

A New Answer to an Old Question: Increasing Audience Accuracy in Student Writing
Elizabeth R. Turpin, Ferris State University

Who's Your Audience? Incomplete Answers to One of Our Oldest Questions
Nancy Allen, Eastern Michigan University

Rediscovering Strategies for Interpretation of Data
Carolyn D. Rude, Texas Tech University

Sharing Curriculum: Developing Courses for Graduate and Undergraduate Programs
Herb Smith, Southern College of Technology

Linkages and Institutional Restructuring

Adjusting a Technical Writing Program to the Demands of Restructuring and the Needs of a New College
Ron Nelson, James Madison University

Developing University-Industry Linkages
Deborah S. Bosley, University of North Carolina/Charlotte

The Other, Other Side of the Desk: Negotiating with Administration to Get What You Want for Your Technical Communication Program
Jo Allen, East Carolina University

Cross Disciplinary Efforts

The Post-Challenger Challenge: Communications for Engineering Design Curricula
Dianne Atkinson, Purdue University

Cultural Implications of Ethics in Technical Writing Classes
Mohsen Mirshafiei, California State University/Fullerton

Appendix F:
The Constitution of the Council for Programs in Technical and Scientific Communication

(as amended by mail ballot Spring 1992)

Article I

Name: The name of the organization shall be the Council for Programs in Technical and Scientific Communication.

Article II

Purposes: The primary purposes of the organization shall be to (1) promote programs in technical and scientific communication, (2) promote research in technical and scientific communication, (3) develop opportunities for the exchange of ideas and information concerning programs, research, and career opportunities, (4) assist in the development and evaluation of new programs in technical and scientific communication, if requested, and (5) promote exchange of information between this organization and interested parties. Said organization is organized exclusively for educational purposes.

Article III

Membership: Membership shall be open to any individual or institution interested in supporting the purposes identified in Article II. Individuals or institutions whose primary responsibilities or functions are education shall be designated *Regular Voting Members.* Others shall be designated non-voting *Special Advisory Members.* Membership shall be open to any person without regard for race, age, sex, or religious affiliation.

Article IV

Officers: The officers of the organization shall be president, vice-president, secretary, and treasurer, each to be elected for a two-year term. The duties of the officers shall be:

President:

(1) preside at the annual meeting or special meetings of the organization.
(2) represent the organization at official functions.
(3) serve as the chairperson of the executive committee.
(4) designate others to perform duties.

Vice-President:

(1) perform all the duties of the president in the event of the president's absence.
(2) serve as managing editor of all publications.

Secretary:

(1) record all official minutes of all meetings.
(2) maintain an up-to-date membership list and mailing lists.
(3) oversee correspondence.

Treasurer:

(1) handle all financial matters of the organization including the receiving and recording of dues and payment and paying the bills of the organization.
(2) transmit current membership information to the secretary on a regular basis.

The president, vice-president, secretary and treasurer, plus the immediate past president and three members-at-large, elected by the membership, shall serve as the executive committee. The executive committee shall have the right to act on behalf of the organization at such times as the organization is not meeting at the annual meeting or at special meetings, except to change the constitution or carry out elections.

Article V

Limits:

No part of the net earning of the organization shall inure to the benefit of, or be distributable to its members, trustees, officers, or other private persons, except that the organization shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article II hereof. No substantial part of the activities of the organization shall be the carrying out of propaganda, or otherwise attempting to influence legislation, and the organization shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provision of these articles, the organization shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from Federal income tax under section 501 (c) (3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law) or (b) by a corporation, contributions to which are deductible under section 170 (e) (2) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law).

Article VI

Meetings:

The organization shall convene an annual meeting. The location and approximate date of the annual meetings shall be determined by vote of members present and voting at an annual meeting. Special meetings of the organization may be held as needed and determined by the executive committee.

Article VII

Finances:

The dues of the organization shall be $20 per year for Regular Voting Members and $100 per year for non-voting Special Advisory Members. Memberships shall be based on a calender year, and dues shall be payable in January.

Article VIII

Elections:

(1) The election of officers and members-at-large to the executive committee shall be by written mail-in ballot. The ballot will have a list of candidates who are members presented by the nominating committee, and all nominations will have secured permission. There will be at least one candidate, but not more than three candidates, as well as provision for writing in at least one additional nominee for each position open.

(2) The Immediate Past President shall chair the nominating committee and shall appoint, in consultation with the executive committee, four additional members: one from the executive committee and three from general membership, and shall announce committee membership at the annual meeting preceding elections.

(3) The nominating committee will have a slate of officers and members-at-large mailed to the membership no later than 60 days prior to the annual meeting. Ballots must be returned no later than 15 days before the start of the annual meeting.

(4) Results of the election will be announced at the business meeting of the annual meeting.

Article IX
Constitutional Amendments:

Proposed amendments to the constitution must be in the hands of the members at least 60 days in advance of the annual business meeting at which the vote is to be taken. The constitution shall be amendable by a two-thirds vote of those present and voting and the ballots mailed in to the secretary or proxy ballots from members unable to attend the annual business meeting accepted up to the opening of the annual business meeting.

Article X
Dissolution:

Upon the dissolution of the organization, the executive committee shall, after paying or making provision for the payment of all the liabilities of the organization, dispose of all of the assets of the organization exclusively for the purposes of the organization in such manner, or to such organizations or organizations organized and operated exclusively for charitable, educational, religious, or scientific purpose as shall at the time qualify as an exempt organization or organizations under section 501 (c) (3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law), as the executive committee shall determine. Any such assets not disposed of shall be disposed of by the Court of Common Pleas of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

Article XI
Parliamentary Authority:

All official meetings, of the organization, shall be conducted according to the most current edition of the *Standard Code of Parliamentary Procedure* by Alice B. Sturgis. The presiding officer shall appoint a parliamentarian to advise the assembly as each annual meeting.

Appendix G:
Program Review Board Planning Committee Documents

COUNCIL FOR PROGRAMS IN TECHNICAL AND SCIENTIFIC COMMUNICATION (CPTSC)

APPLICATION FOR CPTSC PROGRAM REVIEW

and

GUIDELINES FOR SELF-STUDY TO PRECEDE CPTSC VISIT

October 1991

COUNCIL FOR PROGRAMS IN TECHNICAL AND SCIENTIFIC COMMUNICATION (CPTSC)

APPLICATION FOR CPTSC PROGRAM REVIEW

General Information:

1. Name of institution: _____

2. Address of institution: _____
   Telephone: _____

3. Name of the department: _____

4. Name of person completing this profile: _____
   Title: _____

5. Public: _____ Private: _____

6. Two-year college: _____ Four-year college: _____ University: _____

7. Undergraduate programs:
   _____ AA
   _____ BS
   _____ BA
   _____ Certificate
   _____ Minor
   _____ Other: _____

8. Graduate programs:
   _____ MS
   _____ MA
   _____ Ph.D.
   _____ Other: _____

9. Student enrollment in each of your programs:
   _____ AA
   _____ BS
   _____ BA
   _____ Certificate
   _____ Minor
   _____ MS
   _____ MA
   _____ Ph.D.
   _____ Other: _____

10. Why are you seeking an outside evaluation?
    _____ State legislative mandate
    _____ Board of Trustees' (Regents') mandate
    _____ College president's or dean's request
    _____ Department chair's request
    _____ Request of department members
    _____ Other (please explain): _____

11a. How do you define your program?
    _____ Technical writing program
    _____ Technical communication program
    _____ Other: _____

11b. What does the above program nomenclature mean for you practically and philosophically?

Course Offerings: [*Indicate those which are required courses.*]

12. Courses offered in your undergraduate programs:
(*Please attach an additional sheet, if necessary.*)

Course Number & Title:	Frequency of Offering:	No./Size of Sections:

13. Courses offered in your graduate programs:
(*Please attach an additional sheet, if necessary.*)

Course Number & Title:	Frequency of Offering:	No./Size of Sections:

14. What percentage of your program courses are taught by each of the following groups?

_____ Full-time tenured faculty
_____ Full-time non-tenured
_____ Full-time pre-tenured faculty
_____ Part-time faculty
_____ Teaching assistants

15a. Do you offer any courses that introduce students to the discipline of Scientific and Technical Communication? _____ Yes _____ No

15b. If so, please list them:

16a. Do you have any laboratories associated with your Scientific and Technical Communication programs—photography, video, print lab, computers, graphics, etc.?

_____ Yes _____ No

16b. If so, what are they?

_____

_____

_____

_____

_____

_____

_____

16c. If so, who supervises them?

_____

_____

_____

_____

_____

_____

16d. If so, how many students are served by the labs? _____

16e. If so, how many faculty are involved in them? _____

Faculty:

17. How many faculty teach in your programs? _____

18. How many of these faculty are:

_____ Tenured faculty

_____ Pre-tenured faculty

_____ Part-time faculty

19. In what areas have your program faculty received their terminal degrees?

_____

_____

_____

_____

_____

_____

_____

_____

20. In what areas are your program faculty conducting research/scholarship?

_____

_____

_____

_____

_____

_____

_____

_____

_____

21. How many faculty have industry experience? _____
_____ Years of full-time industry experience for each
_____ Years of part-time consulting for each
In what areas of the profession? _____

22a. What is the typical course load per term for a teacher in your programs? _____

22b. Please explain, if this course load differs for full-time versus part-time faculty:
Full-time faculty: _____
Part-time faculty: _____

Administration and Governance:

23. Who directly supervises your programs? _____

24. Name and title of person indicated in question above: _____

25a. Is there a committee which is advisory to the program supervisor?
Yes _____ No _____

25b. If so, how is membership on the committee determined? _____

25c. If so, on what matters do they advise? _____

Summation:

26. What major concerns would you like to have the CPTSC program review committee address?

C. Instructional Methods and Materials

1. What methods are used to deal with student writing in the program's writing courses? Are these methods consistent with the program's goals?

2. What kinds of classroom activities are most common?

3. Do the writing courses use textbooks? How many and what kind (handbooks, rhetorics, anthologies, workbooks, dictionaries, etc.)? Which books are used in which courses?

4. Who makes decisions about texts? What options are available for faculty and for teaching assistants or adjunct faculty?

5. Why is the program using the textbooks it is currently using?

6. What instructional materials and media does the program use other than textbooks?

7. Does the program use student writing as instructional material? Are there reproduction facilities readily available to duplicate student work for classes?

8. Do writing teachers have adequate office space for conferring with students?

9. Do teachers in the program require use of the computer for any courses? What computer facilities are available for faculty and to students? What fee structure or other course requirements are used to control access to computing? What kinds of computer applications are used or available?

D. Testing

1. What tests and testing procedures does the program currently use for placement and exemption? Why are these particular tests used? Have they been validated for the population of students they are administered to at this institution?

2. How are placement decisions made and carried out? Does the program evaluate proficiency? If so, how?

3. How are the tests administered? Who administers them? Who scores them? How are those who administer and score tests compensated? What kind of and how much compensation do they get?

4. What is the program's policy on transfer students?

E. Grading Practices

1. What is the institution's grading system? How does the program's grading system relate to the institution's grading system?

2. How are grades determined in individual courses? Are there agreed-upon criteria? If so, how are these criteria enforced? If not, how does the program arrive at uniformity in grading?

3. How do students perceive the program's grading system? What has been done to find out?

F. Internships

1. Does your program have an internship option for students?

2. Are internships supervised? Who is responsible for supervision?

3. Where, typically, have students been placed for internships?

III. Program Administration

A. Institutional and Program Structure

1. What is the size and makeup of the department or administrative unit in which the Scientific and Technical Communication program is housed? What is the governing structure of that department or unit? What percentage of full-time faculty at each rank, adjunct faculty, and graduate students teach in the program?

2. How many writing courses do faculty at each rank or status teach?

3. What is the internal governing structure of the Scientific and Technical Communication program? Is there a Scientific and Technical Communication program administrator ("director of technical communication," "scientific and technical communication committee chair," etc.?) If so, what is this person's administrative relation to other levels of administration? To whom is this person responsible?

4. How is the Scientific and Technical Communication program related through administration and curriculum to other departments and divisions in the institution?

5. If there are night school or nondegree programs, what control does this administrator have over the way the Scientific and Technical Communication courses are taught in those programs? How does the administrator exercise that control? What responsibility does the administrator have for the teaching of technical communication (e.g., "Technical Writing for Engineers") in other departments or colleges within the institution?

6. Where do the funds that support the Scientific and Technical program come from? Who administers that money? What is it spent on?

7. Who hires, promotes, tenures, salaries, and assigns courses to Scientific and Technical Communication staff?

8. How are new teaching positions in the Scientific and Technical Communication program determined, and by whom?

9. Who determines class size, curriculum, and teaching load?

10. How are the program's internal problems solved? Who decides on syllabi, testing procedures, textbooks, curriculum, etc.? What voice do full-time faculty, part-time faculty, teaching assistants, and students have in shaping scientific and technical program policies? What permanent or *ad hoc* committees relevant to the Scientific and Technical Communication program exist? How are these committees appointed? What do they do?

11. What are the procedures for negotiating complaints about grading, teaching, and administrative processes and policies?

B. Scientific and Technical Communication Administrator's Job Description

1. How is the Scientific and Technical Communication administrator chosen?

2. What is the current administrator's academic and professional background?

3. What is the current administrator's rank and tenure status? Is the director tenured? If not, why not?

4. What is his or her teaching load?

5. What is he or she responsible for?

6. To whom is he or she responsible?

7. How long does the director hold the job? Is there a specified term of appointment? What provisions are made for reviewing the quality of the director's work and the quality of his or her contributions to the Scientific and Technical Communication program and institution as a whole?

8. What rewards are there for doing high-quality work as a director? Who grants these awards?

IV. Faculty Development

A. Current Conditions

1. How many full-time and part-time people teach program courses?

2. What training and experience do these teachers have? What professional organizations do they belong to? What is their record of research, publication, and conference participation?

3. How are high-quality teaching and research rewarded, especially in terms of salary increase, promotion, and tenure?

4. What courses, speaker programs, workshops, awards and support series does the program offer or support to encourage excellence in teaching scientific and technical communication? What opportunities for faculty development already exist? Who uses them? How do faculty find out about them? In what ways are faculty encouraged to avail themselves of these opportunities?

5. What kinds of work and activities occur during department or program staff meetings? How frequently are these meetings held? Who attends them?

B. Support for Faculty Development

1. How is "faculty development" defined as a goal of the institution, the department or administrative unit, and the Scientific and Technical Communication program?

2. What financial resources are available for workshops, speakers, travel to conferences, developing research, and evaluating new Scientific and Technical Communication courses and new teaching techniques?

3. What is the faculty attitude toward faculty development? What is the faculty attitude toward training that is designed to improve the teaching of Scientific and Technical Communication? What is the attitude of composition teachers, speech teachers, humanities teachers, and literature teachers toward Scientific and Technical Communication teachers? What is the attitude of faculty in one area of the scientific and technical communication program (e.g., speech, graphics, rhetorical theory, etc.)?

4. How are faculty encouraged to develop their skills in Scientific and Technical Communication research and teaching? What opportunities exist for learning about faculty development programs

in effect at other institutions?

IV. Support Services

[*Definition: A support service is a facility which provides learning resources to expand and enhance classroom instruction. Examples may include such services as libraries and computer labs.*]

A. Definition

1. What services exist at the institution? What specific kinds of help do these services offer to students and faculty? What kinds of materials and techniques does each support service use? Does the service use a variety of materials and techniques, or does it focus mainly on one type?

2. What are the goals and instructional plans of each service? Do any services offered by the Scientific and Technical Communication program and the support services overlap? Do their common goals and procedures reinforce each other or conflict?

3. In what institutional ways (through scheduling, a coordinating committee, handbook exchange, etc.) is each support service coordinated with the Scientific and Technical Communication program?

4. Do all the faculty in the Scientific and Technical Communication program and elsewhere in the institution know that all these services exist? What is the faculty attitude toward these services? Do they send their students to them, or use them themselves?

5. Who uses each support service? How many students and which faculty? What is the profile of students who use each service?

6. How is information about each service spread to students and faculty?

7. How are students placed in or referred to each support service?

8. What evidence is there that each service meets the goals it sets for itself or that the institution has set for it?

C. Personnel

1. What are the qualifications for working in each support service? How are the director and staff selected for each? What is the institutional status (faculty, graduate student, full-time, part-time, etc.) of support service personnel? How are they compensated for their work? How is their work evaluated?

2. How are support service personnel trained?

3. What evidence is there of professional development among support service personnel?

4. What opportunities are there for professional development of support service personnel? How does the institution reward support service personnel for improving the service and for developing themselves professionally?

5. What kind of relationship exists between the Scientific and Technical Communication program faculty and support service personnel? How do support service personnel view the Scientific and Technical Communication faculty, and vice versa? Do writing program faculty and support service personnel meet regularly to discuss students involved in both programs? Is there an active exchange

of information on curricular and administrative matters?

6. What role do support service personnel play in formulating Scientific and Technical Communication program policy? What role to Scientific and Technical Communication program faculty play in formulating the policies and procedures of support services?

D. Administration

1. Do students get credit for work completed in support services? If so, how is credit determined?

2. How is each support service funded? Who decides how the money is spent? How is it currently being spent?

3. Does each support service keep records of expenditures, contact hours, enrollment, student work completed, services rendered, credit cards, etc.?

4. Does each support service follow-up on students who have used its services?

5. Is their continuing self-evaluation of each service by its staff? Is each service regularly evaluated by someone not actively involved in its work?

6. What coordination exists between the support services, the Scientific and Technical Communication program, and the institution's admissions and recruitment officers?

7. What are the short-term and long-range goals of each support service? How does each plan to reach these goals?

You do not want to overwhelm consultants with background materials, but you will want to include the following in an appendix to the narrative report:

1. Statistical information for the previous and current academic year: enrollments, class sizes, composition of the teaching staff, final grade distribution.

2. A description of each course within the program(s) to be evaluated (objectives, syllabi, texts, placement and exemption procedures, grading criteria).

3. Tallies of evaluations completed by students and peers.

4. Materials pertaining to teacher training (both faculty and graduate students or adjuncts), including orientation meeting agendas, workshop descriptions, and syllabi for training courses.

5. Curriculum vitae and position description of program director(s).