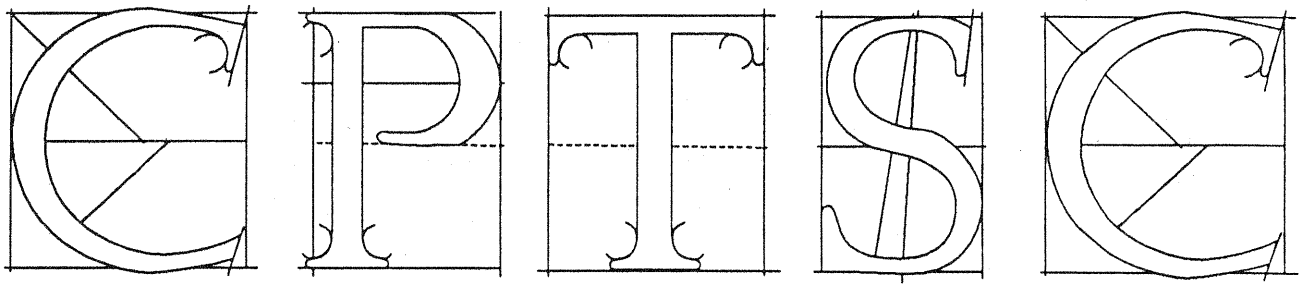

The Council for Programs in Technical and Scientific Communication

Proceedings
1993

Charlotte,
North Carolina

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PROCEEDINGS

The Council for Programs in Technical and Scientific Communication

20th Annual Conference

Charlotte, North Carolina
September 30-October 2, 1993

Daniel G. Riordan
Editor

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Contents

Program

20th Annual Meeting
The Council for Programs in Technical and Scientific Communication

Host: Department of English,
University of North Carolina-Charlotte
Location: University Hilton, Charlotte, North Carolina
Date: September 30-October 1, 2, 1993

Meeting Theme:
Technical Communication:
Strategies for the Next 20 Years

Thursday, September 30

5:00-6:30 **Registration and Reception** (Walden)

6:30-8:00 **Introduction: Greg Wickliff**

Paul Anderson, Roundtable Discussion, "Instructional Materials for the Future: How Can The Needs Of Advanced Courses Be Met?"

Friday, October 1

8:00 a.m. Continental Breakfast (Salon 4)

8:30 a.m. **Welcome**: Meg Morgan, UNC-Charlotte
More Welcomes: Schley Lyons, Dean, College of Arts and Sciences, UNC-Charlotte; Ronald Lunsford, Chair, English Dept., UNC-Charlotte
Introduction: James Zappen, President, CPTSC

9:00 a.m. **First General Session** (Salon 4)
Ties: Industry, the Profession, the Academy
Russell Hirst, "Ties Between Industry and Academia: Marriage of Two Cultures"
David Kaufer, "Technical Communication: Strategies for the Next 20 Years"
Ken Rainey, "Promoting Cooperation in Technical Communication"
Judith Glick-Smith, "The Role of Continuing Education in Technical Communication"
Sam Geonetta, "Dealing with Apparent Contradictions in Technical Communication Education"
Moderator: James Zappen

10:15 a.m. Break

10:30 a.m. **First Concurrent Session A** (Salon 4)
Promotion, Funding, and Administration: A Room of Our Own
Jo Allen, "The Potential Influences of the 1990 Carnegie Report on Technical Communication's Personnel Decisions"
Alice Philbin, "The Role of a Program-Centered Database in Effective Planning"
Mohsen Mirshafiei, "The Place of the Professional Technical Communicator in the School of Liberal Arts/Humanities and Social Science"
Marian Barchilon, "Technical Communication in a Practical Era"
Moderator: Daniel Riordan

10:30 a.m. **First Concurrent Session B** (Room 309)
Courses to Meet the Future
Elizabeth Turpin, "New Interaction Between Academic Programs and Industry Applications: Training Students in Usability Testing"
Carol Barnum, "Team Teaching a Course in Usability Testing with an Industry Expert"
Ronald J. Nelson, "Medical Writing and the Future"
Nancy O'Rourke, "Building Bridges for the Future: A Capstone Course in Theory and Practice of Electronic Texts"
Dan Jones, "Involving Professional Technical Communicators in Portfolio Assessment: A Trend for the Future?"
Moderator: Mary Coney

12:00 noon Lunch (on your own)

1:30 p.m. **Second General Session** (Salon 4)
Curriculum, Instruction, and the Future
Brad Mehlenbacher and Carolyn Miller, "Establishing the Role of Research in a Master's Level Technical Communication Program"
Laurie Hayes, "The Future Role of STC Faculty and STC Programs in Distance Education Initiatives"
Stuart Selber, "Resisting Technological Inertia in Technical Communication Curricula"
Donald Samson, "Science, Technology, and Technical Communication Students"
Steve Bernhardt, "On Developing Useful Computer Skills in Our Students"
Moderator: Katherine Staples

2:45 p.m. Break

3:00 p.m. **Second Concurrent Session A** (Salon 4)
Defining the Discipline
Carolyn Rude, "Defining Our Values: Lessons of Parallel Disciplines"
Marjorie Davis, "Designing Technical Communication Programs for 2020"
Bob Johnson, "Writing and Teaching Our History: Developing a Historiographic Model for Technical Communication"
Michael Moran, "To Know Where We're Going, We've Got to Know Where We've Been"
Ann Brady Aschauer, "The Generative Power of Classical Theory in Modern Context: New Directions for Technical and Scientific Communication"
Moderator: Greg Wickliff

3:00 p.m. **Second Concurrent Session B** (Room 309)
Curriculum Design: The Workplace and the Academy
Rita Reaves and Sherry Southard, "Ensuring Quality in 'Non-Program' Programs"
Deborah Andrews, "International Dimensions of Technical Communication"
Johndan Johnson-Eilola, "The Politics of Post-Hierarchical Organizations: Questions for Technical Communication Educators"
Carl Lovitt, "The Implications for Writing Programs of Increased Involvement in Outreach"
Herb Smith, "Where do We Go From Here and How Do We Get There? Educating the Technical Communicator for the 21st Century"
Moderator: Chris Velotta

4:15 p.m. **Closure**; Katherine Staples, Program Chair

6:00 p.m. **Banquet** (Glenwaters)

7:30 p.m. **Panel** (Glenwaters)
Corporate Visions of Technical Communication for the 21st Century
Sally Crosly, First Union Bank, Charlotte
Melody Hecht, Duke Power, Charlotte
Teresa Painter, IBM-Charlotte
Moderator: Deborah Bosley

Saturday, October 2

9:00 a.m. **Business Meeting** (Salon 4)

12:00 **Folk Festival** (Latta Plantation Park)

8:00 p.m. **Dessert and Coffee** (Meg Morgan's House)

Ties:
Industry, the Profession, the Academy

Ties Between Industry and Academia: The Marriage of Two Cultures

Russel Hirst
Asst. Prof. of Rhetoric and Technical Communication
The University of Tennessee, Knoxville

Ties between Industry (those who practice scientific and technical communication, as well as their managers) and the Academy (those who teach scientific and technical communication) have been improving in many quarters, but improvements are still not wide or deep enough. When I reflect on the relations and attitudes among many "academics and practitioners" in the field of technical communication, I am reminded of C.P. Snow's The Two Cultures, the Humanities and the Sciences. There is still quite a bit of suspicion between the two cultures in technical communication: academics and practitioners in business/industry. Practitioners, especially the managerial/supervisory set, often suspect academics of taking a superior attitude, of emphasizing history and theory rather than "practical skills," or at the very least of being part of an unwieldy organization that has its own, scholarly agenda–one that is not highly responsive to the "demands of the real world." Many academicians in the field of technical communication harbor their own grievances towards practitioners–especially those in a position to hire or reject their graduates–believing them to be unreasonable in their expectations, possessed of little understanding of the realities of curriculum design and academic politics, and convinced of their own superiority in the field of technical communication. –I am also reminded of an article in Technical Communication that answered its own rhetorical question, "Who better understands the art of technical communication than its practitioners?"–(No one.)

I repeat that these attitudes are not universal, or at least not felt with uniform passion throughout the field of technical communication. But they are still around in varying degrees, and that is regrettable. I believe that any strategy in technical communication for the Next Twenty Years must include closer ties between industry and the academy. Fundamental to this marriage is mutual respect, recognition of strengths and benefits that can flow from both groups, and clear understanding of the "culture" in which each group moves.

What can bring about this closer tie between academia and industry? One rope must be the Profession of Technical Communication, conceived of and operating as an "organization" that brings academics and practitioners together to become aware of respective strengths and resources, and functioning to coordinate the efforts and advance the goals of both groups. Of course, a lot of this sort of thing now goes on through various journals and through organizations such as the Society for Technical Communication (STC), the Council for Programs in Technical and Scientific Communication (CPTSC), and the National Council of Teachers of English (NCTE)–especially through the Conference on College Composition and Communication (CCCC) and the Association of Teachers of Technical Writing (ATTW)–but I think it should go farther. Why, for example, is the percentage of academics attending the STC annual conference so small, and the percentage of practitioners at CCCC so small?

Strategies for closer ties include:

- A better balance in accommodating both academics and practitioners at professional conferences. These accommodations should be of every kind: programmatic, social, and financial.

- More "meetings of the minds" between academics and practitioners, such as the "Academic/Industry Workshop" held in Tampa, Florida this year under the auspices of STC.

- More faculty internships in a broad range of areas in technical communication, and more exchanges whereby practitioners learn about the needs of academic programs in technical communication and share their knowledge with students and faculty.

- More partnerships of all kinds between academia and industry. This includes a fusion of resources: Libraries, databases, computer (and other) equipment; personnel (in the context of internships, mentoring, teaching); cooperative degree programs; advisory boards; practitioners on thesis and dissertation committees; academics advising in industry; and scholarships/funding of various kinds.

TC Programs: Strategies for the Next 20 Years

David Kaufer
Professor of English
Director of Writing Programs
Carnegie Mellon

Strategies need to address challenges so let me begin there. I believe the most important challenge we face over the next 20 years is better defining the ties between academe and industry. Should TC programs be farm systems for industry? or agents for changing industry? These questions are very much related to curricular issues. Should the TC curriculum duplicate industrial conditions? or should it provide enough distance so that students can come to question (and, in some cases, change) those conditions? And these questions are related to our mission as educators within a professional program. Is it our job to make students employable through training? Or should employability be thought a (central, to be sure) side-effect of being well educated about professional practice?

I predict that TC programs will gradually disappear from the university environment and take residence in corporations if we continue to choose from the first set of alternatives. If we continue to think that a TC program "improves" to the extent it "looks like" industry, we will eventually conclude that it should be an industry-based program. The challenge we face as college program administrators is how to deal with the fact that the maturation of TC programs is often identified with increasing separation from the university community. The strategies we must deploy depend on how we interpret this challenge. If present trends continue and we like them, then our strategy might be to move our operations to industry. If they continue and we don't like them, we need a coordinated strategy to hammer out the added value of keeping TC programs university-based.

The Role of Continuing Education in Technical Communication

Judith L. Glick-Smith
Instructor, Continuing Education
Richland College
Dallas County Community College District
Dallas, Texas

Introduction

As we move into the next millennium, continuing education in technical communication will play a key role as

- ❑ An instrument and facilitator of change
- ❑ A bridge between corporate training and university-taught theory
- ❑ A promoter of the technical communication profession

Facilitator of Change

Change, in all aspects of our lives and world, is occurring at an ever-increasing rate of speed. People do not stay in the same job or even the same career for a lifetime anymore. Often they make job and career changes out of necessity because of economic changes and technological advances. People who have been displaced or who want to improve their careers need a place to turn to further their education to keep up and to get ahead.

The accounting, legal, and medical professions have always known that they must continue their education to provide quality service and to remain competitive. People in other professions are learning the same lessons.

By continuing their education, people take control of their lives. Not-for-credit continuing education programs offer people a way to use their current knowledge base as a building block toward a career in technical communication.

A Bridge Between Training and Theory

Continuing education goes beyond corporate training and education at the university level. Training teaches skills; higher education teaches theory. Continuing education is the bridge. It teaches people not only practical theory but specific ways to apply the theory. It is the academy's answer to being more customer oriented.

A Promoter of the Profession

As more and more information becomes available, the need for effective technical communicators increases. By producing quality continuing education programs that work in tandem with for-credit programs, continuing education will produce top notch technical communicators.

Conclusion

We must be visionary in our approach to developing continuing education programs in technical communication. While it is important to meet the needs of industry in the short term, we must also anticipate the needs of the future. We must be creative in both our planning and execution. The future is very bright for continuing education in technical communication.

Technical Communication in the Next Twenty Years: Dealing with Apparent Contradictions in Technical Communication Education

Sam C. Geonetta
Professor of Communication
University of Cincinnati, College of Applied Science

Introduction

Over the past eighteen months I completed a survey for a new edition of the Society for Technical Communication's *Academic Programs in Technical Communication.*[1] I also chaired the first STC Academic/Industry Roundtable at which representatives from businesses and schools met with the STC Board to discuss issues in technical communication education. However, it was a third event, which, while it seems relatively minor, is actually the one that triggered this paper. Teaching in a College that emphasizes engineering technology, I often talk with students and faculty about computing technology: after one especially technical discussion I had overdosed on "techno-talk". I needed a good dose of literature to restore my intellectual balance.

Collectively, these events made me realize that while technical communication has moved toward maturity as a discipline during the past twenty years, the next twenty years affords opportunities for strengthening the ***discipline***. As greater recognition comes to faculty and the teaching and research they do, as alliances between business and educators grow, and as the professional impact of the students of formal technical communication builds, the discipline will evolve significantly. This paper explores the apparent contradictions technical communication educators face as this growth and evolution occur. The key element of these contradictions is the increasing recognition that full competency with the tools of technical communication--computer competency in many forms being central--must be met with scientific/technical competency and competency in the elements at the root of the liberal education from which the discipline developed.

A Contradiction in "Technical" Communication Education?

The foundation of technical communication in a liberal education is apparent in the mix of degrees offered throughout the United States. The Bachelor of Arts and Master of Arts degrees outnumber BS and MS degrees nearly 2-to-1 (**Table 1.**). A review of the program descriptions further emphasizes the foundation in a liberal education: while few have technical or scientific concentrations, many have considerable requirements in literature and/or rhetoric.[3] This illustrates to me a theme repeated in many discussions with colleagues at various professional meetings that is indicative of the past twenty years in technical communication: in order to gain a toe-hold for a major in technical communication, compromises have been made with the dominant "literature" faculty. These

Table 1. Degrees in Technical Communication[2]

TYPE OF PROGRAM	*NUMBER OF SCHOOLS OFFERING*
Ph.D.	11
MA	29
MS	15
Other Master's**	4
BA	44
BS	22
AA	8
AAS.	4
Minor	28
Certificate	37
Other non-degree***	3

Number of Schools Responding to the Survey: 140
Number of Formal Programs of Study: 206*
Number of Schools Offering Coursework Only: 39

*There are more programs than there are schools responding because several schools offer multiple programs. For example, one school might offer a BA and an MA; each of these is counted as a separate "program".

**There are four programs in this category: Master of Special Studies, Master of Professional Communication, Master of Technical and Professional Writing, and Master of Technical and Scientific Communication.

***There are three programs in this category: "Concentration," "Option," and "Emphasis".

curricula reflect those compromises. Although there is no specific pattern, the general pattern is more of an emphasis on traditional liberal education, which one would expect in a BA program, and less of an emphasis on technical and scientific cognate areas than one would expect for a major in technical communication.

I found a similar contradiction at the STC Academic/Industry Roundtable in January 1993. The representatives from business[4] stressed the need for more "traditional" study for technical communication majors, with a call for greater emphasis on writing skills, grammar study, and editing. I heard the academics[5] talking more about a "body of literature" that "defines the discipline". A key concern of the academics seemed to be the need for more of an immersion of students in that which gives a clearer form to technical communication as a field of study standing on its own strengths because of its ***disciplinary*** focus.

Technical Communication Education in the Next Twenty Years

These represent an apparent contradiction in technical communication education we face over the next twenty years. Some have argued for the application of strict standards to academic programs through accreditation, represented, for example, by engineering and technology programs. The perspective of those who argue for accreditation seems to be that the key material with which technical communicators deals comes from fields that have respect and rewards because of the "professionalism" of those who work in them. Much of the respect and rewards is based on a professional identity secured through accreditation, which apparently acts as a method for "quality control". Therefore, the argument goes, accrediting technical communication programs will establish an identity as "professionals" for technical communicators that will offer the same respect and rewards. The difficulty with this approach seems to be the perception it establishes of programs in technical communication as producers of "technicians" of language. This perception is further reinforced by the emphasis programs often give to the technology of technical communication. For example, the majority of descriptive listings in *Academic Programs in Technical Communication* especially emphasize the computer technology to which students have access.

How can technical communication educators meet the challenge of the apparent contradictions they face? Accreditation standards lag, technology becomes obsolete rapidly, and budgets shrink. It seems that building a firm foundation on the model of a liberal education offers strength to programs in technical communication. By molding learners who think and adapt, programs can help them better complete the key tasks of the technical communicator--gathering, analyzing, synthesizing and reporting. Furthermore, learners will have the intellectual tools to adapt to the rapid changes in science and technology knowledge and the communication technology with which they will have to work. There should be a core of ideas and information, with strong offerings in science and technology. This will help learners have a basic awareness of the technical world in which they will work as *technical* communicators. The tools of the trade should also be incorporated *across* the curriculum so learners know how to use specific tools, but also to make them aware of the

limits of technology and the rate of obsolescence of technology so they learn to adapt to rapid technological change. Thus, the *attitudes* of a professional become as much a part of their learning as the *tools.*

Footnotes

[1]Sam C. Geonetta, Jo Allen, Donnelyn Curtis and Katherine Staples. *Academic Programs in Technical Communication.* 4th ed. Arlington, VA: Society for Technical Communication, forthcoming.

[2] This information is current as of March, 1993, when the copy was submitted to the Society.

[3]I recognize the great generalizations represented by the words "many" and "few", but I did not want to get into details outside the scope of this paper as presented at the Annual Meeting.

[4]The Industry representatives included: Don Barnett of Hewlett-Packard Corporation, Charlie Brenninger of E.I. du Pont de Nemours and Co., Beth Ann Cyrus of IBM Corporation, Stephen Murphy of Digital Electronics Corporation, and Mike Rogers of SunSoft.

[5]The Academic representatives included: Paul Anderson of Miami University, Bob Krull of Rensselaer Polytechnic Institute, Kenneth Rainey of Southern College of Technology, and Tom Williams of the University of Washington.

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
Associate Professor
Department of English
East Carolina University

In 1990, The Carnegie Foundation for the Advancement of Teaching published its report on the need to reassess the nature, value, and reward system of teaching, research, and publication. *Scholarship Reconsidered: Priorities of the Professoriate* (by Ernest L. Boyer) dramatically argues for the logic of expanding our definition of "scholarship," moving beyond the hierarchical layers in most colleges' and universities' static definition toward a more comprehensive and inclusive system that seeks to reward those faculty who perform quality teaching, research/publishing, and professional service within their own academic contexts.

The report's new definition (or classifications) of "scholarship" holds special import for academicians in nontraditional areas, such as technical communication, where administrators and personnel committees have frequently had difficulty categorizing and evaluating the works we most often create as part of our profession. First, therefore, I will examine some of these difficulties and then present the potential solutions to these difficulties offered by the Carnegie Foundation's report.

One of the difficulties associated with evaluating technical communicators' academic qualifications stems from our colleagues' unfamiliarity, inexperience, and insecurity about evaluating the variety of arenas in which we technical communicators perform our professional work. (All of us, the Carnegie Report argues, may be guilty of relying on traditional, rather than insightful, recognitions of what is valuable about any academic's work.) For instance, because most technical communication programs reside in other, more traditional departments/schools such as English or Engineering, the majority of academics in those areas are quite aware of their own fields' most respected publications but are unfamiliar with technical communication's. Thus, the mere recognition of our most important journals is a problem for those who have to evaluate the quality of our work.

Another difficulty is the confusion over whether and how to credit consulting work—is it a professional activity or is it moonlighting? Many of us would argue that our consulting work is comparable to the creative writer's poetry or fiction—that it is the premiere evidence of our talents and the perpetuation and refinement of our craft. We can further argue that consulting with private industries and government organizations presents the most useful information we take back to our classes: evidence from "the real world" that our ideas and advice work. Our colleagues may see our point but may still argue that consulting is too difficult to assess; in other words, they ask, does all consulting count the same? And if not, how do we determine what should count as quality versus hack work?

The Carnegie Report offers some solutions to these difficulties for any discipline, but many of its ideas seem especially useful to those of us in technical communication programs that are situated in traditional departments or schools. First, the report sets forth a revised definition of "scholarship": a four-part definition that accommodates traditional research ("the scholarship of discovery"), interdisciplinary research ("the

scholarship of integration"), pedagogical research ("the scholarship of teaching"), and applied knowledge/research ("the scholarship of application"). Although the book *Scholarship Reconsidered* presents these four categories in general terms, I have interpreted them to apply to technical communication scholars in the following examples:

- the scholarship of discovery: the investigation and perpetuation of original questions for research. In our field, such investigations would include theoretical work, empirical studies, and other forms of original (traditional) research that most frequently gets published in our top journals. For instance, the scholarship of discovery might have researchers present a new way of addressing audiences, a new theoretical discussion about the nature of collaboration, a new communication model, or a new perspective on some aspect of the writing process. Further, it might initiate ethnographic or empirical studies to examine a particular strategy for revising online documentation, writers' attitudes toward various stages in the documentation process, usability questions that most frequently garner useful information, and so on. All these research questions and issues may certainly build on traditional or established knowledge, but they typically present new ideas that somehow shape and direct the future research in the field.

- the scholarship of integration: the assimilation of information from various sources; the interdisciplinary works that have garnered quite a bit of recent attention. In our field, such works might compile and synthesize the relevant research on a particular topic in technical communication, such as audience analysis, organizational strategies for writing technical documents, uses of computers in illustrating technical documents, and other topics. Further, such research creates a place for textbooks, which must be just as rigorously evaluated as any other publication, but which "if done well, can reveal a professor's knowledge of the field, illuminate essential integrative themes, and powerfully contribute to excellence in teaching, too" (Boyer 35). The panel also recognizes interdisciplinary research that may not currently garner the attention it should in technical communicators' personnel decisions. Recent publications, for instance, have combined various aspects of technical communication with sociology, politics, business, technology, engineering, psychology, linguistics, rhetoric and composition, and other fields, demonstrating that we, too, have found usefulness in interdisciplinary approaches to studying our field.Many departments, however, have found it difficult to credit works that rely on other fields as the groundwork for a particular article or book because they are uncertain about evaluating the accuracy of the ideas. Finally, although the scholarship of integration does not necessarily require collaborative writers, many integrated works are, indeed, coauthored. Traditionally, coauthored works are problematic for departmental evaluations because of the uncertainty about an individual author's contributions. Emphasis on the propriety and usefulness of the scholarship of integration may help us move beyond the number-crunching of awarding percentages for collaborative works toward evaluating the holistic quality of the writing and ideas. Finally, although not often practiced by academic technical communicators, the value of "popular writing" (writing for lay audiences) as a "legitimate scholarly endeavor" is also argued by the Carnegie panel, lending more

credibility to works such as popularizations of science and technology (35).

- the scholarship of teaching: appropriately innovative, insightful, and dynamic approaches to and inspirations for learning. Recognizing that good teaching stems from lifelong learning, Boyer argues that "teaching, at its best, means not only transmitting knowledge, but *transforming* and *extending* it as well" (24). We could even argue, I think, that the scholarship of teaching should incorporate published accounts of pedagogical practices and theory. Beyond just relaying the details of a favorite assignment, such scholarship would offer research-supported proof that such approaches, strategies, or assignments work in a classroom. Further, because much of our work in technical communication is coinciding with work in other disciplines, many of our recently published articles also have classroom implications (instead of just practical applications) that offer perspectives on the kinds of issues we should be teaching or incorporating into our courses (lectures and assignments on collaboration in the classroom, the writing process, the ethical nature of technical communication, computer applications, etc.). Sharing such approaches and information with other teachers/scholars provides an invaluable source of information to the profession; thus, the report argues, the scholarship of teaching also merits significant reward in our evaluations.

- the scholarship of application: a variety of consulting opportunities; documentation writing, design, and production design; seminars on technical communication; various forms of technical assistance offered to business, industry, and government; program reviews and evaluations; policy and standards analyses; etc. This form of scholarship most clearly demonstrates our contributions to the profession as well as what we learn from working in business and industry. Traditionally, however, such work has been difficult to evaluate, an important point addressed by the Carnegie Foundation. They say that only work that specifically applies to the scholar's profession should merit consideration as a form of scholarship. Then, such work should be documented and evaluated by the recipients of the work (the contracting agency). Further, such work should be evaluated by outside reviewers—in much the same way that our current publications are typically submitted to outside reviewers—who would ask, "Is the activity directly related to the academic expertise of the professor? Have project goals been defined, procedures well planned, and actions carefully recorded? In what ways has the work not only benefited the recipients of such activity but also added to the professor's own understanding of his or her academic field?" (37). Such a procedure would not only establish expectations about the quality of consulting work, but would also recognize that work as a substantial part of the professor's commitment to learning and teaching.

Although the report offers several other important insights about scholarship and other aspects of the state-of-the-academy, particularly useful are its lessons and recommendations for evaluating the work of professors facing personnel decisions. This kind of inclusive, respectful valuing of the work that goes on in the academy demonstrates a more clear-headed and realistic approach to assessment and

evaluation than our typically restrictive methods can offer. That is not to say that we sacrifice quality—quite the contrary: Quality must be our supreme concern and the ultimate yardstick against which we measure every form of scholarship. Realizing that we do, indeed, have the power, sense, and responsibility to assess quality, and not just quantity, should free us from awarding tenure and promotion for a specified number of articles and for publishing only a certain kind of research and its common legacy: the convoluted academic discourse that so frequently, and mysteriously, passes for "scholarship."

In conclusion, perhaps CPTSC's members should look at the Carnegie Report's definitions of scholarship to determine the feasibility and advisability of using these schema for refining procedures for our own technical communication faculty. Perhaps we should especially consider the descriptions as appropriate support for our own discipline's "fringe" activities that rarely find a place in traditional tenure and promotion criteria. While our group can hardly make rules to change our colleges' and universities' personnel policies, we can recognize that these institutional policies have frequently been generated and altered through faculty initiatives; and perhaps we can rally the support of other disciplines who are similarly bound to tenure and promotion criteria that marginalize some of their most valuable activities.

Work Cited

Boyer, Ernest L. *Scholarship Reconsidered: Priorities of the Professoriate*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching, 1990.

A PROGRAM-CENTERED DATABASE FOR EFFECTIVE PLANNING

by Alice Philbin, Ph.D., Director
Program in Scientific and Technical Communication
Bowling Green State University

At Bowling Green State University, I am designing a system that will allow our faculty and students to work with our graduates . My goal is to build a knowledge network about our graduates because I believe that in the years to come a program director will need a database that works like a "knowledge bank" as the basis for a program's steady maintenance and preparation for change. The cornerstone of my system is the database that helps us to maintain accurate records of our graduates' career paths and areas of technical expertise. Why should a director start his or her strategic planning with a database? What can the database contribute to the future? These are the topics of this paper.

Why Should a Program Director Build an Independent Database?

The design of the database is an exercise in philosophy, specifically epistemology, because the designer must think in terms of categories of knowledge. Five criteria must be considered. First, the database must have a unifying theme, much like the thesis statement of a successful paper. Second, the database must employ the full potentiality of the institution's computer technology; it must complement the institution's mainframe and the program's mini and microcomputer capabilities. Third, the design should allow for both categoric changes and shifts of the knowledge paradigm. Fourth, it should address the institution's information needs with contextually appropriate language and metrics. Fifth, the database should provide information in categories that facilitate on-going program evaluation.

What Can the Database Contribute to the Future?

It is very difficult for an alumni office to track graduates after they have left the institution. The first obvious benefit of a program-centered database is the program director's on-going access to his or her graduates in the workplace over a period of years. As a link

with the alumni, the database information allows the program director to do some of the following: study employment trends, key in on companies that hire the institution's graduates, interview company representatives about their anticipated needs, plan for new courses, design changes in existing courses, and select experts working in fields of interest to the program, so that these alumni can visit the college and help to institute change. Thus, the database can strengthen ties between industry and academe as it facilities the information transfer between alumni and their program in the areas of curriculum, program demographics, and program design.

Already the database has helped our program. When applicants ask about specific cognates (technical course concentrations within the M.A.), I can locate graduates with similar training; we then study the employment patterns of the successful graduates to recommend a course of study for the prospective student. I'll be happy to work with other program directors who wish to develop models for their programs. I also believe the databases can document the successes of our programs to colleagues, administrators and taxpayers.

The Place of the Technical Communicator in the School of Liberal Arts

By Mohsen Mirshafiei, Ph.D.
Assistant Professor of English and Comparative Literature
California State University, Fullerton

Technical writing is a fast-growing discipline which is frequently misunderstood by academicians in schools of liberal arts or humanities and social sciences. Therefore, technical writing teachers have had to define this new discipline, as well as their own place within the discipline, for their colleagues. Some of the reasons for this misunderstanding of technical communication arise from the fact that many technical communicators working for industries and businesses have not received formal academic training in technical writing before they became professional technical communicators.

Currently, a large number of those who teach technical writing are also teachers of rhetoric and composition, communication, or literature. Many of them were recruited primarily in these other fields. For tenure and promotion, these faculty members followed department guidelines and published in journals of rhetoric, composition, and literature.

New candidates for teaching technical writing in colleges and universities are graduates in technical communication who wish to write and publish in their own discipline. Unfortunately, the schools of liberal arts which recruit them do not have enough information about this discipline and may use the criteria for teachers of rhetoric, composition and literary theory in recruitment, promotion, and tenure considerations.

While increasing demand for technical writing programs is encouraging, we need to recruit faculty who are specifically trained for technical writing. Unless we set specific criteria for recruitment, tenure and promotion, we will have difficulty in finding candidates suitable for this new task.

Therefore, I suggest that we educate our colleagues about the discipline of technical communication and its applications in industry and business.

Technical Communication in a Practical Era

Marian G. Barchilon, Assistant Professor
Donald G. Kelley, Associate Professor
Arizona State University

Introduction

U.S. industry has become less technologically competitive and has lost its lead in one-third of the technologies that are considered for future growth (Council on Competitiveness). According to Lawrence P. Grayson of the U.S. Department of Education, America has lost its once dominant position in manufacturing steel, automobiles, heavy machinery, and consumer electronics; moreover, the U.S. is being challenged in computers, telecommunications, aerospace, biotechnology, and other high-tech industries (Grayson). As a result of this reduced national competitiveness, U.S. workers have experienced downward economic mobility since 1980 because of the steady decline of real average earnings and the loss of high paying manufacturing jobs. In 1990, for example, 19.1 million manufacturing workers earned an average hourly wage of $8.28 in inflation-adjusted 1982 dollars; in June 1993, there were only 17.9 million workers who earned $8.02. These figures compare with the relative stable rate of lower paid service sector jobs, which dropped from an average hourly rate of $7.39 in 1990 to $7.38 in June of 1993. Likewise, these statistics coincide with a recent Bureau of Labor Statistics workplace survey that indicates earnings have declined. Of 2.7 million displaced workers who were in new, full-time jobs in January 1992, 43% were paid less than they earned previously (Lewthwaite).

As additional proof of our nation's reduced competitiveness, in the summer of 1992 a panel of five individuals on the National Science Board (NSB), the National Science Foundation's (NSF) policy making arm, issued a report based on NSF's collected data. In this report, the panel bemoaned the reduction in the U.S. firms' share of global markets for high technology products (Lepkowski). Due to these findings, the NSB report was a strong impetus for an economic shift from basic research to applied research funding, which this country has not seen since the 1950s (Thompson).

The Significance of Applied Research

In August of 1992, Walter E. Massey, then the Director of NSF, issued a six-page memo to the NSB. In that memo, Massey pointed to the erosion of U.S. industrial research and development discussed in the recent NSB report. Massey advocated making NSF the lead agency for transferring the results of basic research from academia to the marketplace. Moreover, he indicated that if we do not exercise our leadership and expand our role, the U.S. will suffer a decline in its science and technology capabilities (Seltzer). NSB member and Stanford University professor Richard N. Zare agreed. Zare said that NSF is at a

crossroads; further, he implied that NSF needed to show Congress that its money was put to practical use. Zare said

> It doesn't do much to tell Congress of the glories of scientific research. We have to tell what contributions we can make to the national welfare. We'll become increasingly irrelevant from Congress' standpoint if we don't. (Seltzer)

John M. Deutch, an Institute professor at MIT, and formerly the provost and dean of science, recently agreed with Zare's statement by indicating that "public support for science increasingly requires that research be relevant to the nation's economic performance" (Deutch). In addition, Frank Press, the president of the National Academy of Sciences indicated that the application of research, from which the public can benefit, entails a more "direct connection between fundamental science and engineering and their commercial applications" (Deutch). Moreover, as a writer from Chemical and Engineering News bluntly stated, "NSF has invented a term for this kind of research: mission-motivated. The more researchers can make it look as if their work has application the better it will be for them" (Lepkowski 9).

Shortly after Massey issued his memo to the NSB, the Board formed a Commission on the Future of the National Science Foundation. On November 20, 1992 the NSB's 15-member panel submitted an 11-page report entitled, "A Foundation for the 21st Century." This panel, which was co-chaired by William Danforth of Washington University and Robert Galvin of Motorola, recommended that NSF explore ways to improve linkages between its traditional science support and research tied to national goals. Galvin stated that we ". . . encourage NSF to explore opportunities to create stronger linkages with agencies and institutions that apply science in the national interest" (Hanson).

Applied Research Funding Impacts Technical Communication's Future

Because NSF has been increasing applied research funding opportunities, faculty from applied fields such as technical communication and engineering technology can look forward to increased support. Fortunately, too, if global competition continues to force the U.S. to stay on a conservative and practical fiscal path, our nation will place even more emphasis on research in these fields. Thus, we predict the future looks economically bright for technical communication faculty, particularly if faculty strengthen ties with colleagues in other applied fields. For example, during the summer of 1993, technical communication and engineering technology faculty at Arizona State University collaborated on an NSF-funded program. Because of the program's success, we are developing other interdisciplinary programs that emphasize our similar "applied" philosophies.

Additionally, technical communicators now have a stronger case for working with those in basic research. It seems likely, too, that forming alliances with those in basic research may be important to consider when seeking funding.

Conclusion

Because the U.S. has become less technologically competitive, national funding agencies such as the NSF have been seeking new ways to support applied research, which is directly relevant to industry and, therefore, the nation's performance. Therefore, despite, or perhaps even because of the poor economy and global competition, the applied fields, such as technical communication and engineering technology, will have a brighter economic future for research.

Works Cited

Council on Competitiveness. Competitiveness Index, Washington D.C. 1991.

Deutch, John. "Conversion at the NSF?" Technology Review, February/March 1993, p.62.

Grayson, Lawrence. "Education: The Springboard or Anchor for America's Future." Proceedings from the Twenty-first Annual Frontiers in Education Conference, 1991, pp.19-25.

Hanson, David. "NSF's Future Role: Focus Urged on Basic Research Support." Chemical and Engineering News, 30 November 1993, p.6.

Lepkowski, Wil. "NSF Gears up for Stricter Oversight of Academic Research Support." Chemical and Engineering News, 6 January 1992, p.9-14.

Lewthwaite, Gilbert. ""Economy is Recovering, but Are the Workers?" Arizona Republic, 11 July 1993, pp. F1-F8.

Seltzer, Richard. "Panel to Probe Wider Mission for NSF." Chemical and Engineering News, 24 August 1992, p.6.

Thompson, Dick. "Science's Big Shift." Time, 23 November 1992, pp.34-35.

Courses to Meet the Future

NEW INTERACTION BETWEEN ACADEMIC PROGRAMS AND INDUSTRY: TRAINING STUDENTS IN USABILITY TESTING

Elizabeth R. Turpin
Professor of Technical Communication
Ferris State University

Major additions to academic programs traditionally tend to lag behind the immediate needs of business and industry. However, formal usability testing has been accepted and used in industry for a long time but has not been routinely included as an organized part of many technical communication programs. Informal approaches, of course, are part of all technical communication lab work and some classroom exercises, but formal usability testing requires some physical setups that would educate students in both the theory and the application of usability testing of both documents and manufactured products. From an informal survey of employers that do usability testing, I have found that giving students a formal background and training in usability testing could increase students' opportunities for more interesting internships and ultimate employability.

Several major aspects of usability testing are already covered in other ways in technical communication programs. The ability to analyze and evaluate audiences and audience reactions is being taught through rhetoric, both at the theoretical and applied levels. The abilities to observe, analyze, organize, and use results are likewise taught in several ways in technical communication courses. The importance of individual and group interaction through project collaboration is also present in many different ways in technical communication courses and program applications. Many programs require extensive internships and/or specialized independent study courses. However, as long as these skills are not coordinated and brought together for the distinct purpose of formal usability testing, the student lacks the immediate ability to do usability testing or perform in a usability testing group without additional instruction.

Two types of usability testing as identified by Jeff Rubin (STC 40th Conference) are exploratory and validation testing. To be of specific applied use in developing or altering a document or manufactured product, both must be treated as a formal, repeatable laboratory test in order to develop comparable, usable results. That is, the steps in the process must be planned to gain desired results and should be able to be repeated with different test subjects and the results analyzed and compared.

Selecting suitable topics or objects for usability testing, for both exploration and validation, depends partly on the facilities available. If the instructor has observation rooms available where the test monitor can observe without being seen, a higher level of non-interference by

the presence of the monitor is possible. However, training in basic principles of setting up testing with specific audience analysis and planned users, conducting testing, taking data, evaluating monitor reactions and the data, and applying data to conclusions to reach specific recommendations is an educational unit that could be fitted into a number of technical communication courses in both two-year and four-year programs.

Specific subjects/topics and methodologies for teaching students to conduct basic usability tests under common classroom/laboratory conditions can be developed by teachers according to their individual subject orientation as well as their time and laboratory space and equipment they have available. The accompanying step/list suggests sequential chronology for introducing basic tenets of usability testing. Preplanning is important as students may have received instruction in the necessary tools but not yet integrated their analytical and observational skills. Developing these on a systematic basis is important in order for students to mature in their judgment capacities and to recognize the constraints as well as the opportunities inherent in the usability testing procedure.

As is true of other skills and abilities developed in technical communication students, planned thought processes and applications--such as the ability to conduct professional-level usability testing--can enhance a student's maturity and ability to perform sooner once that student is working in the professional field.

SOME BASIC STEPS FOR STUDENTS TO USE IN USABILITY TESTING

PRELIMINARY

a. Identifying Subject Area
b. Selecting Measurements
c. Planning for Reproducible Results

CONDUCTING THE TEST

a. Carrying Out the Measurements
b. Compiling Comparable Results (including Observations)

EVALUATING AND USING OUTCOMES

a. Comparing Test Results (including (Observations)
b. Applying Results to Feedback Application
c. Evaluating to Develop Recommendations for Change

Team Teaching a Course in Usability Testing with an Industry Expert

Carol M. Barnum
Professor of Technical Communication
Southern Tech

Usability testing is a hot topic in technical communication. Just glancing through the pages of the STC (Society for Technical Communication) annual conference program or doing a subject search in an online library database shows how much interest there is in this expanding area of technical communication. Realizing the need to offer such a course to graduate students in our Master of Science in Technical and Professional Communication program, I also realized that reading the literature alone would not adequately prepare me to teach such a course, especially since our program is geared towards working professionals. In addition, we did not have the lab facilities to teach the course.

What to do? Team teach the course with a usability professional who would provide the applications side of the course to complement the research side (which I would provide). Fortunately, Atlanta has a usability consulting firm, whose president I had earlier recruited for our advisory board. So, the general interest in our program was already there, the president of the firm was enthusiastic about the team-teaching idea, and he was glad to provide his company's lab to the students to conduct usability tests. My colleagues at Southern Tech were happy to have me add the course as a special topics course and, we were able to "hire" the industry professional as a co-instructor. That last point was critical to getting his commitment, I believe, since working strictly in a volunteer capacity for ten weeks of planning and teaching might not produce the same level of commitment as that of being a paid instructor.

Design and Structure of the Course

To prepare for the course, my team-teacher and I met weekly for the ten weeks preceding the start of the course. During those meetings I shared the research on usability testing with him, and he shared the process with me. We mapped out the weekly schedule for the course, which we divided into two segments: (1) research and theory and (2) application and testing.

In the research and theory phase of the course, I divided the key articles from the literature review into several components, beginning with general issues regarding usability and design, proceeding to issues of qualitative versus quantitative research methods and on-site versus lab testing (with the

advantages and disadvantages of each), and concluding with discussions of testing methodology. The students read the articles, which were divided by subject into folders, and took quizzes on the contents each week. During that phase, we also invited several guest lecturers to speak on topics such as the graphical user interface (GUI) and business concerns related to usability testing as part of total quality management.

In the second half of the course, we assigned the project and divided the class into two teams, whose assignment was to develop and test the documentation for a PC-based home design software product that allows users to draw plans and place furniture for room additions or remodeling projects. We provided the software (one package per team), which was an off-the-shelf product purchased at a local computer store. The scenario given to the students was that the product was experiencing problems in beta-testing; the release date could not be changed, so there was no time to change the software. Thus, the documentation had to be revised to make the product easier to use.

The project required that the teams meet and assign tasks for rewriting the parts of the documentation needed to conduct several tests. Each test involved three test subjects in the lab. The results of the first session provided information needed to revise the documentation for the second session, which involved three new test subjects for each group. The final results of the testing process were documented in the final test report written for "management." The teams also presented test results orally to a panel of usability experts recruited by my team teacher from his contacts in industry.

The Results of Our Efforts

By working together, we successfully developed and taught a course that was enthusiastically received by the graduate students and that provided them with the hands-on, real-world experience of planning and conducting a usability test in a lab. In addition, we gained valuable experience from each other in working together to teach the course. I received training in the techniques of usability testing from my industry mentor, and he received information based on the research that will be helpful in his work with clients.

This arrangement can be duplicated in a myriad of ways on a variety of subjects by setting up good working relationships with industry representatives, either through your advisory boards or local contacts. The experience showed me that industry representatives can be enthusiastic about sharing their expertise and their facilities in course planning and teaching.

Medical Writing and the Future

Ronald J. Nelson
Coordinator of Technical Writing
James Madison University

Traditional technical communication programs have gone far in preparing students to contribute to the world of work. But in an increasingly complex world beset by innumerable problems that demand solutions, those responsible for training students of technical communication are being called upon to address topics heretofore ignored altogether or dealt with minimally, like ethics, technopolitics, rhetorical aspects of technical writing, and product liability. One of the crucial topics that will require our best efforts as teachers and administrators in the future is medical writing, the kind of writing that documents everything in the health-related fields.

Medical writing has of course always been vitally important, but it will become increasingly so as educated people have to learn not only about diseases and illnesses, but also about highly sensitive political matters like the health care system in the United States. The demand for people who can provide health care and for those who can document that care will be great. According to Ronald E. Kutscher in "Outlook 2000: The Major Trends," 10 out of the 20 fastest growing occupations by the year 2000 will be in the health-related fields (Occupational Outlook Quarterly, Spring 1990, p. 6). The projections by Kutscher and others, as well as common sense which reminds us that we are an aging population and hence more prone to illness and disease, make it imperative that we prepare our students for meeting the needs of the future.

I suggest that those of us responsible for technical communication curricula design medical writing courses to satisfy the current and projected need. Medical writing programs seem to me impractical in traditional departments that deal with technical writing and communication--viz., English, Mass Communications, Journalism, Rhetoric, and Colleges of Engineering and Agriculture--because of the need to make a major commitment in a time of tight budgets. But technical communications programs could relatively easily include a course in medical writing, even if it were treated only as a special topics course offered on a trial basis at the start.

What would be the content of such a medical writing course, and would we be competent to teach it? With limited

exposure to the field, most of us would have to plunge into the relative unknown. Such ventures, however, can be minimally threatening if we apply "known-new" analysis--using what we know, especially our innate intelligence--to unfamiliar subjects. That, for me anyway, has been one of the allurements to technical writing: that it permits us to explore a rich variety of topics that we might otherwise never consider studying. I am not suggesting that we would become fully capable of comprehending highly technical medical papers or of teaching how to write them, but we could well employ to advantage our knowledge of rational discourse, sentence structure, word choice, audience analysis, purpose, and the multiplicity of other factors that go into effective writing about technical matters. We have been approaching papers on complex subjects like quantum physics in that manner already, so it is a matter of shifting focus rather than jumping into an overwhelming, incomprehensible subject matter. Within limits, we <u>can</u> make order of chaos.

The content of a medical writing course as I see it, would include many--perhaps all--of the following elements, each of which could be researched and organized: (1) the kinds of jobs in the field, (2) descriptions of those jobs, (3) the subject matters of medical writing, (4) the audiences, (5) the formats employed to reach those audiences, and (6) relevant assignments.

To do justice to the content of such a course, we and our students would need to become familiar with the kinds of jobs to be filled presently and in the future. Some of the job titles include the following: health services managers, health and regulatory inspectors, medical and scientific illustrators, medical assistants, medical laboratory technologists and technicians, medical secretaries, occupational health nurses, occupational therapists, nurses (LPN's, nursing aides and psychiatric aides, RN's), nursing home administrators, nuclear medicine technologists, and emergency medical technicians. The <u>Occupational Outlook Handbook 1992-93</u> lists these and other categories by D.O.T. (<u>Dictionary of Occupational Titles</u>) number. The interested reader can go directly to the <u>D.O.T.</u> for job descriptions.

The subject matters of medical writing include a challenging array of topics, including medical care for the aged, medical charities, industrial medical care, medical ethics, nutrition, Alzheimer's diseases, cancer, drug addiction, AIDS, heart disease, and gene therapy. Students will have to write about these timely and important subjects with competence and sensitivity.

To do so will require that students become acutely conscious of audience needs and of the best instruments (formats) for reaching those audiences. A knowledge of general audience categories like expert, technician, operator,

and layperson and the characteristics of each will of course have to be covered, as will as the needs of more specific audiences, like nursing home administrators and cancer or AIDS patients.

Becoming aware of the standard forms or documents that practitioners regularly work with and designing appropriate assignments based on them will be an essential part of the course. A teacher or student might, for example, interview an occupational therapist to learn about the exact kinds of documents that the person is called upon to produce. In addition to standardized forms, there are flexible documents that can engage our students' best efforts, e.g., newsletters, bulletins, marketing literature, regional directories of services, want ads, professional articles, lay articles for popular magazines, patient handbooks, annual reports, orientation manuals, prescription writing, and proposal writing. Other assignments might relate to research tasks, like becoming familiar with the latest CD-ROM resources (for example, CINAHL, the Cumulative Index to Nursing and Allied Health Literature) and with relevant journals (for example, Aids Education and Prevention, Public Health Nursing, and Oncology Nursing Forum). The possibilities are indeed myriad.

Thanks to the work of Elizabeth Turpin and Douglas Haneline, in "Results of the AMWA Higher Education Survey Demonstrate Increasing Link with Academia" (American Medical Writers Association Journal [September 1991]: 10-16), we know that at least 57 institutions have established some type of formal training in medical communication. Of course, much still needs to be done. Considering the projected demand for people in the health-related fields, can we afford not to establish more medical writing courses?

Building Bridges for 21st Century Technical Communicators: A Capstone Course in Theory and Practice of Electronic Texts

Nancy M. O'Rourke
Coordinator, Technical Writing Program
Utah State University

Students in our undergraduate (and sometimes our graduate) technical writing programs often have trouble making connections in their studies, getting the horse attached to the cart and on the road. I hear comments like "I'll never use any of this theory of reading stuff" and "Why am I taking this Shakespeare course?" (Substitute any other literatary genre/work/writer here.) I'm sure you hear similar comments by genuinely puzzled, frazzled students.

Senior level capstone courses, as Elizabeth Turpin pointed out at CPTSC in Boise last year, can help students bridge the gaps they perceive in their disparate coursework. At Utah State University, to help students make these connections as well as to synthesize their work and their skills gained in writing and other courses, a literature colleague, Anne Shifrer, a scholar of modern poetry and contemporary cultural critics, and I designed a course we called "Text Production," piloting it Spring Quarter 1992. In 1993, the name of the course changed to "Theory and Practice of Electronic Texts" for territorial reasons among departments.

Course Rationale

Our stance for developing this course was our perception of a genuine need in the workplace for graduates with sophisticated knowledge of the technology of text production, especially as we move into the electronic age where often texts of various kinds appear and disappear on a computer screen—e-mail the obvious example. It makes a great deal of sense to offer students a course in which they discuss the issues surrounding electronic text production and apply that learning to create, develop, and complete electronic or desktop published projects of their choice. Thus, the course examines the culture and technology of producing texts on the computer, within the framework of professional writing.

We also designed the course to cross the traditional boundaries in undergraduate English studies at Utah State—the technical communication emphasis, the literature emphasis, and the creative writing emphasis.

For technical communication students. Because computer-produced texts are fast becoming the dominant mode of text production, our students must know how to integrate what they have learned in all their coursework to work with and create (a) fluid texts which always change and exist only in electronic form, (b) desktop-published texts, (c) hypertexts which develop multidirectionally rather than linearly, and (d) hypermedias which combine text with other media in ways that differ radically from more traditional technologies.

For literature students. In literature studies, Shifrer cites the recent developments in literary theory which suggest that one very important area of scholarship will be a renewed and renovated historical criticism which will include further study of how the technology and culture of text production determine the form and substance of texts in any particular historical period. She led us to read J. Hillis Miller's short essay "Our Libraries Are Burning!" that sends out an alarm to concerned scholars that our libraries are decomposing and need to be electronically retrieved and recorded.

For creative writing students. Creative writing students may, like our technical communication students, find employment in publishing companies, small presses, and magazine production, for example. The course is thus appropriate for this English studies emphasis. Creative writing students may, also, simply want to have the experience of making a text from beginning to end. Desktop publishing gives creative writers increased control of textual design and quality and could help young writers maintain an independence from market-determined text production and thus encourage creativity and diversity.

Course Goals

The course is in evolution and will continue to be; major goals currently include six:

- An awareness that the nature of texts can, and has been, changed by the introduction of technologies (e.g., the shift from oral culture to written culture, from scribal culture to the printing press, from hard copy transmission of texts to electronic transmission)

- An awareness of some of the major cultural criticism that surrounds technologies of text production

- To explore the positive **and** negative aspects of electronic texts

- To develop a sense of "textual integrity" through discussion of aesthetic and ethical dimensions of electronic text production

- To design and produce, with desktop publishing or electronic publishing tools, a project for a professional portfolio

- To learn the technical vocabulary used by professionals in text production

Course Content

For the theory component, we assemble a course book of readings organized around 10 issues. To keep abreast of the research and technology, we add and delete readings as the course evolves. We intend the readings to serve as departure points for discussion, to generate questions for students to debate or mull over. Here is the list of topics with a sampling of scholars in each one. The readings are listed in Works Cited.

- Language Technologies: Resistance and Adaptation
  Marshall McCluhan, Pat Sullivan, Jane Tompkins
- Electronic Technology and the Word: An Overview of Possibilities
  Henrietta Nickels Shirk, Stuart Moulthrop
- Issues of Standardization, Reproduction, and the Visual in Text Production
  Walter Benjamin, Jean-Francois Lyotard, Laura Gurak
- Economic and Cultural Formation of Texts
  Charles Newman, Thomas Whiteside, Lewis Coser
- Computer Networks: An Emerging Culture
  Daniel Murphy; CAP-L, Computer Aided Publishing network conversation, Michigan Tech University, Richard L Selfe
- Texts of the Future
  George P. Landow, John McDaid, Jay David Bolter
- Computer Communities
  Janis Forman, Lisa Ede and Andrea Lundsford, Jean Baudrillard
- Ethics of Text Production: Gender Issues
  Ruth Perry and Lisa Greber, Jo Allen
- Ethics of Text Production: Issues of Ownership and Quality
  Donald E. Zimmerman and David Clark, Diane Brunner, Paul Roberts
  STC's Code for Communicators
- Aesthetics and Design
  Charles Stopford, Ken Hulme, David Berry

In the application component, students (1) complete an annotated bibliography on some aspect of electronic texts or desktop published texts, (2) present this research in a panel presentation to the class, (3) work with the software we have in the computer classroom to learn the fine points of designing text—designing with type, for example, (4) use e-mail to write quizzes and to carry out some class discussion, and (4)

complete a desktop published or electronic published project appropriate for a professional writing portfolio.

Collaborative Design and Teaching

As a specialist in technical communication and as a professor of literature, we found that we formed important bridges in our academic community as well as for our students. Collaborating from our different readings, research, and knowledge realms, having to unify these and relate them to students, demonstrated to students and colleagues alike that commonalities exist among areas of emphases and that common ground can be found. We were delighted to find that we **could** create so much common ground and give students a sense that their disparate course work could be melded in a functional and exciting way.

Works Cited

Allen, Jo. "Gender Issues in Technical Communication Studies: An Overview of the Implications for the Profession, Research, and Pedagogy." *Journal of Business and Technical Communication* 5.4 (1991): 371-392.

Baudrillard, Jean. "The Ectasy of Communication." *The Anti-Aesthetic: Essays on Postmodern Culture*. Hal Foster, Ed. Port Townsend, Washington: Bay Press, 1983.

Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproduction." *Illuminations*. New York: Schocken, 1969.

Berry, David. "Reading Space." *Aldus Magazine* Nov./Dec. 1991: 43-46.

Bolter, Jay David. *Writing Space: The Computer, Hypertext, and the History of Writing*. Hillsdale, NJ: Lawrence Erlbaum, 1991.

Brunner, Diane. "Who Owns This Work? The Question of Authorship in Professional/Academic Writing." *Journal of Business and Technical Communication*, 5.4 (1991). 393-411.

"CAP-L: Computer Aided Publishing List." Electronic Network Conversation on Internet. Richard L. Selfe, Michigan Technological University, 1993.

Coser, Lewis A., Charles Kadushin, Walter W. Powell. *Books: The Culture and Commerce of Publishing*. New York: University of Chicago Press, 1982.

Ede, Lisa., and Andrea Lunsford. *Singular Texts/Plural Authors: Perspectives on Collaborative Writing*. Carbondale & Edwardsville: Southern Illinois University Press, 1990.

Elmer-deWitt, P. "Read a Good Powerbook Lately?" *Time*, 18 May 1992: 69.

Forman, Janis. "Computing and Collaborative Writing." *Evolving Perspectives on Computers and Composition: Questions for the 1990s*. Ed. Gail E. Hawisher and Cynthia L. Selfe. Urbana, IL: NCTE, 1991. 65-83.

----------"Novices Work on Group Reports: Problems in Group Writing and in Computer-Supported Group Writing." *Journal of Business and Technical Communication*, 5.1 (1991). 48-75.

Gurak, Laura. "Toward Consistency in Visual Information: Standardized Icons Based on Task." *Technical Communication*, 39.1 (1992): 33-37.

Hulme, Kenneth S. *An Introduction to DesktopPublishing*. Boston: Boyd & Fraser Publishing Company, 1990.

Landow, George P. *Hypertext: The Convergence of Contemporary Critical Theory and Technology*. Baltimore: Johns Hopkins University Press, 1992.

Lyotard, Jean-Francois. "The Postmodern Condition: A Report on Knowledge." *Theory and History of Literature*, Volume 10. Minneapolis: University of Minnesota Press, 1984.

McDaid, John. "Toward an Ecology of Hypermedia." *Evolving Perspectives on Computers and Composition Studies: Questions for the 1990s*. Ed. Gail.E. Hawisher and Cynthia.L. Selfe. Urbana, IL: NCTE, 1991. 203-223.

McLuhan, Marshall. *Understanding Media: The Extensions of Man*. 2nd ed. New York: The New American Library, 1964.

Moulthrop, Stuart. "The Politics of Hypertext." *Evolving Perspectives on Computers and Composition Studies: Questions for the 1990s*. Ed. Gail E. Hawisher and Cynthia L. Selfe. Urbana, IL: NCTE, 1991. 253-271.

Murphy, Daniel J. "Electronic Communication in Small Organizations: Case Analysis from a Theoretical Perspective. *Technical Communication* 39.1 (1992): 24-32.

Perry, Ruth and Lisa Greber. "Women and Computers: An Introduction." *Signs.* From Hard Drive to Software: Gender, Computers, and Difference. 16.1 (1990): 74-101.

Roberts, Paul. Electronic Ethics: Will Our Notions of Art and Ownership Survive the Computer Age? *Aldus Magazine* June 1993: 15-18.

Shirk, Henrietta Nickels. (1991). "Hypertext and Composition Studies." *Evolving Perspectives on Computers and Composition Studies: Questions for the 1990s.* Ed. Gail E. Hawisher and Cynthia L. Selfe Urbana, IL: NCTE, 1991. 177-201.

Society for Technical Communication. *Code for Communicators.* Washington, DC: STC, 1992.

Stopford, Charles. "Desk Top Type: Tradition and Technology." *Technical Communication, 39.*1 (1992): 74-79.

Sullivan, Pat. "Taking Control of the Page: Electronic Writing and Word Publishing." *Evolving Perspectives on Computers and Composition Studies: Questions for the 1990s.* Ed. Gail E. Hawisher and Cynthia L. Selfe. Urbana, IL: NCTE, 1991. 43-64.

Tompkins, Jane. "Scenes from a Conference: Discovering the True Nature of Liberal Conversation." *Change.* July/August 1991.

Whiteside, Thomas. *The Blockbuster Complex: Conglomerates, Show Business and Book Publishing.* Middletown, Connecticut: Wesleyan University Press, 1981. [Out of print]

Zimmerman, Donald E. and David Clark. "Legal and Ethical Aspects of Technical Communication." *The Random House Guide to Technical and Scientific Communication.* New York: Random House, 1991. 367-386.

Involving Professional Technical Communicators in Portfolio Assessment

Dan Jones
Associate Professor
University of Central Florida

Portfolio assessment by both faculty and local professional technical communicators is increasingly becoming an important element in our technical communication program. Portfolio assessment, particularly if also done by professional communicators, can be an effective tool for achieving greater balance in a program and for placing graduates in industry.

Some questions need to be addressed or addressed more fully concerning professionals and portfolio assessment in technical communication programs. Should professional technical communicators be involved in assessment? If so, how involved? Are professional technical communicators as qualified as we are to assess student work? If not, why not? How do we begin to involve professionals in portfolio assessment?

Should professional technical communicators be involved in portfolio assessment?

Most of us who teach technical communication are aware of the concerns about involving professional technical communicators with academic programs. If technical communicators are involved in portfolio assessment, will they eventually be involved in program assessment? If they are involved in program assessment; then will the next step be certification of both students and faculty? Will the Society for Technical Communication (STC), for example, ultimately accredit technical communication programs?

I believe all of these notions are alarmist. Although there has been some discussion of these issues within STC, STC has expressed no interest in certification or accreditation. Besides, if we ever have either certification or accreditation in this field, a good argument can be made that other organizations, namely the Council for Programs in Technical and Scientific Communication and the Association of Teachers of Technical Writing, are more appropriate for initiating such actions.

Whether or not technical communicators should be involved in portfolio assessment is, in many respects, no longer an issue. Many programs have a Board of Advisors, and, if this Board is performing its job the way ours does, many programs and the work done in these programs are continually critiqued and fine tuned by the technical communicators who are on these Boards.

Our Board of Advisors consists of 15 writers, editors, and managers representing a variety of local industries. Over the past 11 years these people have helped us determine which courses to offer, participated actively in our classes as guest speakers, made themselves available to students for interviews, taught some of our special topics classes, set up internships, and, of course, even hired many of our graduates.

Another way of describing what our Board of Advisor does is to say these technical communicators participate in the creation of student portfolios by providing interviews, mentoring, editing student proposals and drafts, and many other activities. In our workshops, for example, these professionals help our students with all phases of the documentation process--from planning to printing--in an effort to produce quality documents ranging from style guides to software user guides.

With their strong participation in our program, these advisors are inherently involved in assessment of many kinds. All I am proposing is that our advisors and other area technical communicators play a more formal role in portfolio assessment.

Are professional technical communicators qualified to assess student work?

Those of us who have taught technical communication for many years can rightfully claim to be experienced editors. We understand the genres of technical communication, and we understand the requirements for effective planning, writing, design, editing, and production. Unlike some of our colleagues in other disciplines, we are familiar with more approaches to a topic than are reflected in a typical research paper or in an essay exam. We are (or at least should be) comfortable with a variety of styles other than an academic style.

Many members on our Board of Advisors and other area technical communicators are also experienced editors. They know what makes a good proposal, report, or manual. They understand the steps of the documentation process from planning to printing to document maintenance. They understand how writing styles must be accommodated to the discourse community in which the documents are written. They continually assess their peers' and subordinates' work in industry, so they are familiar with the demands of document evaluation. Most of our area technical communicators are not educators, but I do not consider this fact a drawback in evaluating most technical documentation. They have the fresh, nonacademic perspective helpful for looking at student work objectively.

In addition to writing proposals, reports, and manuals of all kinds, our students--no doubt typical of students in other technical communication programs--also write some essays, research papers, and essay exams, to mention a few examples, in some classes. Can technical communicators assess the quality of these documents as effectively as I believe they can student proposals, reports, and manuals? Perhaps not. Afterall, academic papers are a peculiar part of our discourse community. Yet academic papers do not present an insurmountable problem to technical communicators. Most technical communicators are college-educated people who know something about the constraints of academic writing, and they are more familiar with its genres than perhaps we are willing to admit. Besides, we can

provide these professionals with general criteria on how to assess essays, research papers, and other types of academic writing.

How do we begin to involve professionals in portfolio assessment?

I have already discussed the necessary first step: active involvement of technical communicators in the creation of student portfolios. I know from talking to other educators in technical communication that many are concerned about ties between technical communication programs and local businesses and industries where technical communicators are employed. Some technical communication programs have little or no involvement with local industry. Students in these programs concentrate almost entirely on technical communication theory and appear to have little experience in writing practical technical documents for the "real world" of business and industry. Imagine students graduating with bachelor or master degrees in technical communication who have never worked collaboratively on a project, never written a document for anyone other than an academic, or never interacted with professionals. Unfortunately, such students are graduating from some programs with these disadvantages every year.

Programs do not need a Board of Advisors or even an internship program to realize the values of portfolio assessment. Technical communicators can and should be invited to help students create their portfolios, and these communicators can be involved by simply inviting them.

For a start, invite local members of the Society for Technical Communication or invite prominent area business and industry leaders. Soon a list of competent technical writers, editors, designers, and documentation managers will emerge. Make every effort to have these people involved in portfolio creation. Typically, they love working with students and sharing their expertise. They are happy to come into the classes, show students around their facilities, look critically at proposals, assist students in working on "real-world" projects, and so on.

After involving technical communicators in portfolio creation, the next step is to set up some criteria for portfolio assessment. The general criteria used by local and international publication competitions for the Society for Technical Communication are helpful. The broad categories include writing, editing, graphics, and integration quality. Any STC chapter can make these criteria available or faculty and technical communicators can create their own. Many helpful sources are also available for document evaluation.

The next step is to teach and to stress continually adhering to these criteria for assignments in the program. Foster an atmosphere of quality and professionalism. Discuss the problems of defining standards versus defining quality. Discuss the difficulty of having a consensus on quality, but stress that we do know what effective standards are for all of the steps of the documentation process.

Next, as a faculty advisor, tell the student how to put all of his or her work, including some draft work, together for a presentation portfolio. Our undergraduates use an expanding

envelope for sample proposals, reports, academic papers, brochures, pamphlets, flyers, and so on. They also have at least three manuals--typically, style guides, software user guides, training guides, and procedures--ranging from 50 to 100 pages each. Together the documents are an impressive amount of work and are a good indicator of the broad range of courses these students take.

Finally, assign at least one technical communicator to assess the portfolio of one student some time during the student's last semester. Ask the technical communicator to look critically at the student's work and to provide a one-page evaluation based upon the criteria. I recommend such a brief evaluation because of the time demands on the professional. The work should not be too time consuming, and it is important to have that professional eager to evaluate another portfolio at some other time during another semester. After this assessment, meet with the technical communicator to discuss the assessment. Then meet with the student and review the assessment in detail. Typically, these assessments provide valuable insights into how industry people perceive the quality of student work, and, typically, these professionals are pleased with what they see.

In our program, we are just beginning this kind of portfolio assessment after years of involving professionals in portfolio creation. We think this next step is necessary and beneficial. Area professionals enjoy being involved with our program and portfolio assessment is one more important way to assure their involvement. A result of involving area professionals in portfolio assessment is that they are even more confident in the work our students do.

Significantly, this confidence contributes to our strong local network for job placement. When job openings occur, we are often the first to be contacted by area companies. These employers know our students are ready to accept the challenges of many different and difficult tasks because they have accumulated a portfolio of "real world" work. In effect, because of involvement by professionals, our students have acquired extensive work experience in the classroom.

We are still phasing in portfolio assessment, and we know doing it well will not be easy (we are still working on the strategy), but we see this addition as contributing to our success and believe it is a good option for other programs as well.

Curriculum, Instruction, and the Future

Establishing the Role of Research in a Master's-Level Technical Communication Program

Brad Mehlenbacher and Carolyn R. Miller

English Department
North Carolina State University
Raleigh NC, 27695-8105
e-mail: brad_m or crm@unity.ncsu.edu
Fax: 1-919-515-7856

Recently, Ken Cook, Jr., Manager of the STC's Strategic Planning Committee, has predicted that, as "advanced programs for experienced technical communicators ... increase," so too will "research . . . continue to increase" (*Technical Communication, 40 (1),* 14). And Frank R. Smith, in a Special Issue on Research in Technical Communication (*39 (4),* pp. 521-522), has argued that research is needed to help technical communicators (1) to "achieve professional status," (2) to keep them from "reinventing the wheel," (3) to help "develop a body of literature," and (4) to keep technical communicators "from working by intuition and guess."

At its most general level, research can be described as the systematic exploration of issues and problems in order to discover new knowledge, refine existing knowledge, or apply knowledge to new situations. Few academics or practitioners would argue against the importance of such efforts to the development of the field of technical communication or to the success of its practitioners. However, given the eclectic nature of technical communication—borrowing from, among others, cognitive science, rhetoric, organizational communication, computer science, design, sociology, and so on—defining just what research we carry out and how we do it is a very real challenge.

But within the context of academic programs at the Master's level, those often referred to as "terminal" or "professional" programs, the role of research is not clear. Since only a few students in programs such as ours will pursue further graduate work and go on to careers in academic or industrial research, some claim that research should not play an important part in the curriculum. However, those who become technical writers, communication managers, document designers, or instructional designers do need to be able to summarize and apply existing research to their particular situations and problems. Learning to read this research critically and to solve practical problems responsibly and creatively can best be taught, we think, through first-hand experience in the research process. The thesis requirement in our program is intended to meet this need, yet it is often misunderstood and devalued by both students and employers.

Our paper focused on these and other relevant issues related to the role of research in our MS in Technical Communication program at NC State. Our program, which was implemented in 1988, currently consists of approximately 75 students and admits about 15 students a year. We administered two informal surveys, one to graduates of the MS program and one to potential employers of those graduates.

Eight out of our thirteen MS graduates responded to the first survey. Their responses suggested that

- very little relationship exists between the thesis-writing experience and the workplace experience.
- theses do little to prepare our students for original research, particularly in terms of methodological training.
- theses are useful for preparation for "academic" discourse.

Fourteen potential employers of technical communicators responded to our second, e-mail-based survey (the respondents represented companies such as Dow Chemical, NEC, IBM, NCR, Texas Instruments, etc.). Their responses suggested that

- most saw no value in thesis-oriented research.
- our program should emphasize team-writing, interviewing skills, visual communication, and human factors knowledge.
- most practitioners were overwhelmingly anti-theory, pro-fast-paced "real-world" preparation.

We concluded our paper with a call for more research, having identified what terminal Master's degrees are NOT:

- they are NOT research degrees.
- they are NOT vocational degrees.
- they are NOT enrichment education.

Does anyone know what they ARE?

The Future Role of Scientific and Technical Communication Faculty and Scientific and Technical Communication Programs in Distance Education Initiatives

Laurie Schultz Hayes
Associate Dean, College of Agriculture
Associate Professor, Department of Rhetoric
University of Minnesota

Duning, VanKekerix, and Zaborowski preface their recent book, *Reaching Learners Through Telecommunications*, with the statement, "The advent of new telecommunications technologies and a growing recognition of their potential for meeting educational needs has raised many questions about how to integrate telecommunications with existing educational programs" (Jossey-Bass, 1993, xi). I believe that one question that might get asked has a very easy answer. The question: What ought to be the role of Scientific and Technical Communication faculty and Scientific and Technical Communication programs in these distance education initiatives? The answer: Scientific and Technical Communication (STC) faculty and programs ought to get quickly and actively involved in telecommunication-based education.

The technological revolution brought on by the use of electronic media and information systems is happening fast and everywhere and is tangled in the emotional extremes of fear and passion. I can think of five good reasons why STC faculty and programs ought to move quickly into this seeming chaos.

First, because of their reasonably objective involvement with science and technology (and scientists and technicians), STC faculty tend not to be afflicted by either of two contemporary diseases: techno-phobia and techno-idolatry. STC faculty have the right *attitude*. They view telecommunications technologies as valuable channels for communication, as ways that people can connect with one another. Most STC faculty are not intimidated by a medium's potential, but neither do they see any particular medium or all electronic media as the core of human experience! Distance education needs this kind of participant early in its development.

Second, the rise of telecommunications is being accompanied by the emerging centrality of the learner in the process of education, and STC faculty are trained to ask good, relevant questions about the receivers of communication. Who is your *audience*? What is your purpose for that audience? STC faculty and programs are continually raising the questions

that need to be raised about the appropriateness of technology: Can X be communicated to Y via medium Z? Given medium Z, how should we communicate X to Y? What does Y need in order to learn via Z? STC faculty are prepared to assist the emerging development of distance education by being active in the crucial phases of instructional design.

Third, because STC faculty are accustomed to focusing on the needs of particular message *users*, they can also play key roles in the development of faculty who will deliver education at a distance through telecommunications technologies. To be more specific, someone will have to train teachers to use new technologies. Why must all the planning for training, training manuals, and training be done by "outside educational consultants"? STC faculty and programs ought to be integrally involved with helping those who will use instructional technology.

Fourth, the attention that STC faculty and programs place on effective *collaborative* partnerships will be highly regarded by those who work in distance education. There is no way that distance education can succeed merely on the efforts of a single entrepreneur. Distance education requires partnership-building and long-term collaborations among educators, learners, technical staff, nontechnical staff, institutional leaders, and community leaders. STC faculty and programs can serve valued roles as advocates for and models of collaboration.

Finally, STC faculty and programs ought to move forward quickly because it will be worth their while. In an era of declining resources for higher education, a portion of the remaining *dollars* will still be allocated to telecommunications technologies and the services that support them and make them work. Participation in distance education will not only provide additional opportunities for faculty and student research, but it will also give important visibility to the expertise and vitality of STC faculty and programs. (A corollary lack of participation will also raise significant questions about the function and value of STC faculty and programs.)

Do STC faculty and STC programs have a choice?

Resisting Technological Inertia in Technical Communication Curricula

Stuart A. Selber
Ph.D. Candidate, Humanities
Michigan Technological University

Increasingly, technical communication teachers and directors of technical communication programs recognize that students preparing for jobs in business and industry should be exposed to the range of computer tools used to support writing in the workplace. This range of tools includes electronic publishing systems for document design and production, authoring packages and hypertext systems for creating online documentation and product demonstrations, and groupware and electronic mail for promoting and supporting collaborative work. Despite, or perhaps because of, our enthusiasm to expose students to these computer technologies, little, systematic work exists that examines in critical and reflective ways our approaches to integrating such technologies into technical communication curricula. This presentation begins such a critical examination in two ways: by providing a model for incorporating computer technologies into existing curricula; and by examining several important pedagogical challenges that face administrators and teachers of technical communication who include computers in their classroom instruction.

The model provided for integrating computer technologies into technical communication curricula attempts to balance the complex range of production, literacy, and humanistic issues surrounding computer use. Currently, we may be preparing our students too narrowly, focusing primarily on skill building and ignoring how computer technologies influence and shape—in both productive and unproductive ways—the discursive activities surrounding their use.

The challenges provided attempt to highlight pedagogical issues facing teachers and administrators when they prepare to teach or offer computer-related technical communication courses. For example, perhaps the greatest challenge in this regard is educating both experienced and inexperienced teachers—faculty, staff, and graduate assistants—who include computers in their classroom instruction: "Despite the flurry of books and articles about computers, the effect of computers on our thinking about classroom activities has received limited attention" (Barker 7; see also Apple; Selfe; Kiefer; Hawisher and LeBlanc). Such scant attention to teacher education is clearly shortsighted, particularly as we struggle to understand the increasing complexity of using computers in technical communication classrooms.

The purpose of the model and challenges I provide in this presentation is to generate discussion about issues relating computer technologies and technical communication pedagogy. Possible discussion questions include the following:

Question #1 What constitutes appropriate computer-related instruction for technical communication students at both undergraduate and graduate levels?

Question #2 What does it mean for technical communicators and technical communication students to be computer "literate?"

Question #3 How do we balance technological with literacy and humanistic concerns in our computer-related instruction?

Question #4 How do we re-envision our existing computer-related curricula and instructional goals to achieve more balanced and comprehensive course offerings in our own departments?

Question #5 How do we provide faculty and graduate teaching assistants with opportunities in which to examine pedagogical issues related to computers and technical communication?

Question #6 How do we develop and sustain computer-related courses that are responsive to the concerns of both academia and industry?

Works Cited

Apple, Michael W. *Teachers & Texts: A Political Economy of Class & Gender Relations in Education*. New York: Routledge, 1989.

Barker, Thomas T. "Computers and the Instructional Context." *Computers and Writing: Theory, Research, Practice*. Eds. Deborah H. Holdstein and Cynthia L. Selfe. New York: MLA, 1990. 7-17.

Hawisher, Gail E., and Paul LeBlanc, eds. *Re-Imagining Computers and Composition: Teaching and Research in the Virtual Age*. Portsmouth: Boynton/Cook, 1992.

Kiefer, Kathleen. "Computers and Teacher Education in the 1990s and Beyond." *Evolving Perspectives on Computers and Composition Studies: Questions for the 1990s*. Eds. Gail E. Hawisher and Cynthia L. Selfe. Urbana/Houghton: NCTE/Computers and Composition, 1991. 117-131.

Selfe, Cynthia L. "Preparing English Teachers for the Virtual Age: The Case for Technology Critics." *Re-Imagining Computers and Composition: Teaching and Research in the Virtual Age*. Eds. Gail E. Hawisher and Paul LeBlanc. Portsmouth: Boynton/Cook, 1992. 24-42.

interviewers at the 1993 STC conference in Dallas. Their comments on the preparation of technical communication students were often unfavorable. They included such statements as "We're not going to hire any more English majors--they don't know anything," and "If writers don't know the technology, they can't be more than Kelly Girls."

Our challenge is to prepare technical communication students for a broad range of opportunities, given the vicissitudes of the job market. We must make sure that our graduates <u>are</u> sufficiently educated in science and technology so that they <u>can</u> find good work and be more than "Kelly Girls."

To help our students prepare for their careers, we should distinguish between opportunities that require a background in science or technology and those that do not. For those that do not, we should help students be able to identify opportunities in which their success would be enhanced if they possess a background in science or technology.

Also, we should communicate to students what we hear from employers and directors of internship programs. At Los Alamos National Laboratory, a major in science or technology is soon to be "required" for work as a writer; at Lawrence Livermore National Laboratory, course work in science or technology is considered "critical" for work in writing or editing.

Which subjects in science or technology should technical communication students study? According to Steve Peterson of Lawrence Livermore Laboratory, biology, chemistry, or physics beyond the freshman level, without much emphasis on computer science. Peterson says a background in science or technology is important because the "credibility factor is critical" for writers and editors. He recommends a major in English or technical communication and a minor in science, stressing "people skills" for the technical communicator. The hot new field, according to Peterson, is biology, given the expected growth in medical writing and in research on treatment and disposal of hazardous wastes.

My survey of STC attendees found that 70% indicated that students should have course work in computer science (not surprising, as the respondents were STC attendees and there is such interest in computers in STC); 40% in logic; 40% in physics; and 35% in engineering. In the May 1992 issue of <u>Technical Communication</u>, Saul Carliner suggested three courses in one field for someone pursuing a masters in technical communication, but several programs require much more course work in science or technology. For example, the Master of Science in Scientific and Technical Communication at the University of Minnesota requires 30 undergraduate hours in science, technology, mathematics, and/or engineering.

Science, Technology, and Technical Communication Students

Donald Samson
Associate Professor of English
Radford University

What should we do in technical communication programs to prepare our students for career opportunities in technical communication? To answer that question, we might begin with an old one: What's better for work in technical communication, an English or technical communication major with course work in science or technology, or a major in science or technology with course work in writing?

The answer depends on whom you ask. Several years ago, John Walter discovered that people in industry wanted writers to have degrees in science or engineering and course work in writing. This isn't surprising, as Walter's study predates most scientific and technical communication programs. In a more recent survey of people who attended an annual conference of the Society for Technical Communication, and of heads of technical service firms, 40% told me that most employers have strong or moderate preference for majors in science or technology, and 35% said their employer preferred majors in science or technology. Regarding course work in science or technology, 60% said it was "extremely important" or "very important" for work in technical communication. Asked how much they thought that the technology their writers work with would change in the next five years, 85% of the respondents said "very much" or "substantially."

Other surveys, especially of technical communication program graduates, provide different results, occasionally suggesting that the technical communication concentration is of greater value than a major in science or technology. Again, it depends on whom you ask.

One thing is certain, however: some employers believe that technical communication programs do not prepare students adequately for professional work in technical communication. Said one respondent to my survey, a project leader in the computer industry: "Our company has found that persons with degrees in technical writing cannot write."

To pursue an answer to my question about the proper qualifications for work in technical communication, I asked

Increasingly, employers will want technical writers and editors to have such a background to be able to communicate clearly with technical staff and achieve accuracy in their work. Employers will want an undergraduate minor in science or technology, if not a major.

One of the STC survey respondents, the head of a large technical service firm, said: "We prefer to hire technical communication graduates who have strong writing, editing, and publication skills and have at least a minor (20--30 hours) in technical course work. We are looking for writers who have a strong affinity for and ability to learn science and technology. The course work is a somewhat reliable indicator--experience is better."

How might we determine which courses technical communication students should take to develop technical backgrounds?

- Talk with department heads
- Survey employers
- Survey technical communication programs

How might we determine other ways our students (and we) can learn science and technology? Again, we should talk with department heads in science or technology, who can often identify appropriate courses or publications. (And whose support of scientific and technical communication programs often increases in direct relation to the degree to which they are consulted about such programs.)

How might we advise students about career opportunities? We must know what and where the opportunities are (and will be), and we must encourage them to prepare for more opportunities, a broader range of opportunities.

For our students to have the broadest possible range of career opportunities, we need to inform them of present and future opportunities and consult faculty in the sciences and technology about appropriate course work. For our graduates--and our programs--to be credible, we must make sure that our graduates have strong backgrounds in science and technology. A course or two beyond the freshman level is not enough. It seems that employers will increasingly seek at least a minor in a field of science or technology for work in <u>technical</u> communication.

On Developing Useful Computer Skills in Our Students

Stephen A. Bernhardt
Associate Professor of English
New Mexico State University, Las Cruces

A couple of working graduates from our MA in Technical and Professional Communication program recently wondered aloud in our Society for Technical Communication's newsletter about what machine skills to teach technical communicators. It's a question I've thought about a lot. It's a good question for those of us who direct and work with technical communication programs.

Using machines should be thoroughly integrated throughout our technical and professional communication curricula. Integrated to me suggests daily use in most of the working contexts in which we find ourselves. By this I mean we should expect students to use computers in most, if not all of our courses, and to continually augment and upgrade their skills. As faculty, we should be using computers to do the daily business of teaching, serving, and researching. Like our students, we should be continually upgrading our own skills.

Those who teach second language learning note that adults often fossilize at certain levels of learning. That is, they learn to communicate well enough to get along in restricted settings. My Spanish is certainly ossified if not fossilized. I work with a restricted vocabulary and syntax. I don't know the forms for future tense, for instance, so I construct a future using "*voy a*" paired with an infinitive. It's good enough to get me through most encounters, but it would be better if I really undertook some new learning. Computer skills are similar. People become proficient at certain levels and resist new learning. They use machines in inefficient and restricted ways unless put into situations where getting by on old skills is not enough.

Because many of us live in English departments, we tend to be pretty good at using word processors to do our business. But we need to find ways to push word processing skills to new levels to avoid fossilization. Everyone–students and faculty–should become proficient at complex word processing skills using full featured programs such as Word or Word Perfect (it doesn't matter much whether it's one or both). Many students already have good word processing skills and this will increasingly characterize our students, whether we teach in junior high or grad school. Our job as faculty is to pressure students to continue sharpening skills in the context of classwork.

A real step toward more powerful use of word processors is style sheets. Most word processors offer some type of automated formatting tags, so that each unit of

composition (typically defined by paragraph breaks) can be tagged as a certain style, with defined settings for margins, line spacing, font size and type, borders, and so on. Formatting can then be controlled at the document level. The alternative is formatting "on the fly," using tabs and boldface and font size changes locally as the text is composed. The virtue of style sheets is control. Once a writer develops style definitions, the whole look of documents can be changed with a few keystrokes. Families of documents can be created that share a carefully designed visual identity.

Our work can begin by requiring students to develop style sheets for their research papers, encouraging them to become sensitive to page design through the use of headings, headers and footers, and variation in fonts, font size, leading, and so on. It's surprising how many students from traditional English or liberal arts classes do not even think to put headings into papers to break up solid pages of print. Being systematic about defining two or three heading styles can help students gain control over the ideational hierarchy of their work while beginning to think about the relative meaning of such features as SMALL CAPS, or **bold**, or underlining. A simple initial style sheet might include a header with the student's name, short title, date, and perhaps a horizontal rule. A simple footer style might include only the page number. To create a simple style sheet, students would probably want to define indented body paragraphs, paragraphs indented from both margins for longer quoted material, a hanging indent for bibliographic information, a bulleted list, and a couple of levels of headings. When students learn to base the definition of new styles on previously defined styles, they gain the power of changing the look of a document by making a single change (in font or leading, for example) that ripples through other style definitions in the file. All faculty should expect students to use basic stylesheets to control the layout features that enhance writing.

The pressure can continue in advanced writing classes, as we ask for a variety of kinds of writing in a variety of formats with imported graphics or displayed data. We like Microsoft *Word* on our campus, in part because it has built-in table-generating, charting, and drawing programs. It is a very easy matter to input simple data sets, create a variety of charts, and import the result into a technical report. The tools are handy and critiquing student-generated tables or charts can usefully supplement the often skimpy chapters in textbooks on technical writing that address issues of designing effective visuals. Just learning to control the layout of text with left, center, right, and decimal tabs is a tremendous improvement over trying to use the space bar to push text around a page. Students quickly discover column features and find ways to use tabled text to solve column problems that snaked, newspaper-type columning cannot solve. What happens in a class where students are pushed a little is that they begin comparing work, noticing what others are doing that looks good from a design standpoint. The learning is natural and spontaneous. When one student produces a report in a landscape orientation with three columns, or in a portrait orientation with a wide left margin and two text columns, others notice. Then the c lass can have useful discussion of designing with grids, placing visual elements, styling titles, and so on.

Increasingly important to technical communicators are the skills to design pages and integrate text and graphics. For most writers, this means a new set of skills with drawing and page composition programs. It is useful for technical writers to gain some understanding of how the computer treats objects. There is an essential distinction between objects that are defined as objects and those that are pixilated images. Students need to recognize when they are in a drawing environment (with raster or vector-defined objects) and when they are in a painting environment (with pixilated or bit-mapped renderings). They need a mental model of working with texts that are really layers of objects: text windows layered on top of screened boxes, on top of or next to graphic objects. Conceptualizing how it is that computers treat complex verbal/visual compositions is essential to working with many drawing, composing, and hypertext authoring tools. It is not really important whether one learns PageMaker or Quark, Freehand or SuperPaint. The underlying skills have to do with objects, layers, fields, frames, grids, text windows, graphic file formats, and so on. These concepts translate easily across various applications because they underlie all applications.

Computing skills and concepts can be enhanced though courses in document design or desktop publishing. Such courses can deliver rhetorical or design understanding while engaging students in projects that help them develop software skills. The main emphasis in such courses should be on rhetorical understanding, but there's no reason machine skills can't be developed alongside the theoretical understanding. It may not be appropriate for me to teach a course in PageMaker, but I can and do teach courses in document design that have a significant component of hands-on design work. The hands-on work is balanced by reading and study of the rapidly expanding literature on document design. In my classes, I generally try to establish a rhythm of class discussion, reading, and thinking with microlab practice and production.

I recently taught a hypertext workshop that differed somewhat from my other courses. I wanted to concentrate on producing useful hypertexts, and since the software had a steep learning curve, we spent all our time in the lab. I geared down the scholarly nature of most graduate classes: no papers, no library work, no tests. We used Toolbook from Asymetrix on IBM PCs in a Windows environment. We worked to learn the software and create something interesting through a team approach. The students needed to understand layered objects, graphic and text fields, buttons and links, menu construction, and hypertext scripting. In the process, the students thought about how screens are not pages, about how users navigate, about how to structure for fruitful interaction, about visual and iconic design elements, about how textbases are like and unlike books, and so on. But the theory in this class was emergent. I want to extend this kind of class into multimedia, and will do so the next time I teach the course. Each time the course comes around, the students and I are a little more sophisticated. We've advanced our computer skills and expanded our technological resources.

English faculty do not need to work alone, of course. We encourage our students to take courses in graphic design and typography, both art courses taught in computer design labs. Students can be directed toward computer science courses, too, where courses in interface design and C programming can really increase their technical skills. AT NMSU, we also have a strong engineering psychology and human factors group in our psychology department, where they teach human/computer interaction, language processing, and AI. Our business school has courses in databases, networks, and business applications within their Business Computing Systems program. With all these departments, we send our students out and they send their students to our courses in writing software documentation, designing online and hypertext information, and advanced technical communication. The interaction is good for everybody. Having our students out there performing well in other disciplines has furthered the image of the English Department on our campus.

There's no end to what writers need to learn about computers, so what we really need to do is to encourage students to become comfortable independent (or co-dependent!) learners. We've tried to do that by bringing computers into our building, since convenient access is the first step. I try to give my English colleagues ideas about using electronic communication to augment the more traditional kinds of classroom communication. I'd like to think that we are growing a culture in our building and on our campus where there's a wide range of expertise among students and staff, so that learning is natural and continuous, informal and interactive. That's my notion of how people like to learn.

Students should work to continually expand their skills with operating systems and software across platforms. The savvy technical communicator won't stop at applications skills, but take courses or pursue other opportunities to learn about object oriented programming, networking, telecommunications, management of information systems, database design, and other hardcore skills. There are immense possibilities out there for people with the right mix of understanding and skills. It is all a matter of structuring the learning environment so skills cannot fossilize, so that there is continuous learning across the range of situations in which students find themselves.

Defining the Discipline

Defining our Values:
Lessons of Parallel Disciplines

Carolyn D. Rude
Associate Professor
Texas Tech University

As leaders in technical communication plan for the next twenty years, it is appropriate to focus on specific issues of pedagogy, research, and industry-academe relations. The variety of topics at this conference indicates the rich diversity of these issues and vitality of technical communication. But, as technical communication emerges from a struggle for survival to disciplinary status as marked by a body of knowledge, research methods, forums for sharing knowledge, academic programs, and the respect of both academe and industry, this is an appropriate time as well to consider values. Our values have derived to some extent from our marginal status in the university and in business and industry as well. Values may change as outsiders become establishment. Considering how far we have come in the past twenty years, it is reasonable to anticipate that twenty years hence, technical communication will be establishment both in academic and professional settings.

In some ways, I like the marginal status. Perhaps it explains the collegial way in which we can discuss issues. Although we debate and disagree, we are united in common purposes and recognize that we need the work of a variety of people to solve the problems and accomplish the goals that we set. Perhaps, in our marginal position, we are always building toward a future rather trying to preserve what we already have.

This future will depend a great deal on the ways in which we shape it. Because we don't carry tons of baggage from the past, we have some flexibility and freedom to build as we choose. As we plan for the next twenty years, I imagine our situation to be analogous to that of city architects who can take farm land and plan the city that will grow there, such as those who planned the Washington DC suburb of Columbia several decades ago. As these architects envision the ideal city, they set goals based in part on analysis of the problems of existing cities. With good planning, they hope to prevent the repetition of the problems as well as to design the new city so that it can function effectively in its multiple roles. Among the problems of old cities are the architectural, geographic, and social boundaries that mark enclaves within the community. These boundaries create the racial, social, and economic problems that seem inevitable in established cities. The enclaves too often compete with and exclude the others; instead of celebrating a rich diversity, they may resent and try to stifle difference.

Like city architects who learn a lot from existing cities, leaders in technical communication can learn a lot from parallel disciplines, especially two with which we have connections, the disciplines that study literature and that study rhetoric. Literature represents an established discipline, one that has enjoyed a central place in the college curriculum during this century, while rhetoric represents a discipline still struggling for academic respect and identity. By examining both, we can project where technical communication might be in the near future (the next twenty years that this conference projects) and where it might be in the long term. My analysis will focus on some of the strengths and some of the problems that trouble these disciplines—problems analogous to congested streets and economic and racial patterns of cities. My purpose is to suggest strategies that will minimize these problems and build on strengths.

What are the best and worst of the discipline that studies literature? The best to me is that the discipline has changed over time as new values and a new sense of literature have emerged. Just a half century ago, literature departments were dominated by the study of British literature with American literature a poor cousin. Now the literature written by women and minorities, new methods, and new genres—especially film and nonfiction—have legitimate places in the study of literature. Some people mourn the loss of the past, and any change means a measure of turmoil, uncertainty, and mistakes, but overall the study of literature is enriched by its openness to development.

The worst to me is inability to deal with difference, and the efforts, sometimes subtle, to deny or destroy what is different. This is the dark side of change. Critical judgment gets confused by the need for status and power. Rejection of new ideas or methods may have less to do with what seems intellectually valid than with who has power (and the resources that follow). English departments have typically marginalized writing programs and tried to control their position by controlling their inquiries. In the name of academic standards, they privilege their own methods of single-author critical studies and resist methods and topics of inquiry that writing specialists pursue. Even among the literature specialists themselves are quarrels to establish who most deserves respect that depend on squelching rather than on encouraging inquiry. There's a bullying quality to these quarrels, the assumption that one can only be strong at the expense of someone weaker. The quarrels frequently concern status rather than inquiry. A discipline must find the delicate balance between uncritical acceptance of everything that is new and the repression of anything that is different.

What I like best about rhetoric and my colleagues in rhetoric is excitement about discovery. Rhetoric, perhaps because it has less invested in tradition than literature (at least the university tradition of the twentieth century), seems open to a variety of ideas and methods. The openness is evident in the breadth of fields that rhetoric touches. We hear of the rhetoric of inquiry, the rhetoric of science, and the rhetoric of economics as well as of political rhetoric and rhetoric in the

college classroom. The vitality of the study derives in part from its openness. At its best rhetoric, like literature, casts its net widely.

Rhetoric, like literature, also draws limiting boundaries to define what is valid and valued. I like it least, for example, in the disparagement of technical communication that I sometimes hear and read. The boundary drawing of rhetoric hurts the discipline when it cuts off a source of intellectual energy and inquiry.

Can technical communication fall into self-destructive practices of excluding and limiting? I don't see a newer academic discipline that we can bully in order to feel superior, but I do see possibilities for internal boundary drawing in conflicts between researcher and teacher, quantitative empirical research and qualitative studies, and industry-academy splits, with relationships marked by disparagement rather than by cooperative pursuit of mutual purposes or by fruitful dissent and debate. Whether values based on a sense of community persist or we break into competing enclaves depends in part on the way we respond to change. Change is inevitable. For example, new media will challenge our paper orientation and assumptions about what constitutes publication or even the nature of technical communication. Perhaps groups within a discipline are also inevitable and even necessary in order to debate ideas and standards and to keep people from settling into familiar ruts. Problems occur when the boundaries limit inquiry or encourage hostility to difference or when groups become defined by needs for status rather than as they grow out of pursuit of different contributions to the community as a whole.

In the next twenty years, I would like to see technical communication maintain its excitement and energy and become increasingly vital as it pursues knowledge, refines methods of inquiry, and develops a voice that carries even beyond those who specialize in technical communication. The example of more established disciplines suggests that we will do well to pursue these qualities:

- ability to adapt to change—not to embrace everything new but to welcome new solutions to problems and new technologies; to support exploration and risk taking; to evaluate challenges thoughtfully
- a community perspective—to encourage the sense that any community requires the contributions of a variety of specialists
- respect for inquiry of various kinds—quantitative and qualitative; empirical, theoretical, historical, and pedagogical—so long as the inquiries are based on sound methods and reasoning

If issues of status and position divert technical communication from the priorities of making and applying knowledge, we could cut off the inquiry that keeps a community vital. Building adaptation, a community perspective, and respect for inquiry of various kinds into our community will help us achieve the best of parallel disciplines while avoiding the worst.

Designing Technical Communication Programs for 2020

Marjorie T. Davis, Ph.D.
Chair, Dept. of Technical Communication
School of Engineering
Mercer University
Macon, GA 31207

Technical communication programs are relatively new across the country. Most of them have arisen from English Departments' experiments in professional writing, though a few have developed within schools of engineering, business, or agriculture. Those of us who have made the transition from English professor to technical communication professor find ourselves in what sometimes feels like a strange new land. Standing on the front edge of this development, what can we do to prepare students for the year 2020? Perhaps most importantly, how do we prepare **ourselves**? If we are to claim the full potential of our discipline, we have to become independent enough to reinvision ourselves: how we see ourselves, how we work, and what we stand for.

(1) **How we see ourselves** - As teachers, we must reinvent our paradigms and re-view our roles as technical communicators, understanding both where we have come from and where we may go in the future. We have to become visually literate as well as verbally literate; learn to value elegant practicality and usability as well as we love aesthetics; and incorporate team effort into both our own professional practice and into our syllabi. Learning about excellence in document design, graphical presentation, and hypermedia may require us to leave our text-focused comfort zone. *Communication is more than writing* (easily said, not easily incorporated into our paradigms).

(2) **How we work** - We must reach across disciplinary boundaries to forge partnerships with academic colleagues and with industry. Working with other disciplines requires us to learn new vocabularies and to respect other views of knowledge as equal to our own. For example, the literary world values original insights and new aesthetic or formal concepts. The scientific world values knowledge that extends the boundaries of accumulated facts and proven concepts. The world of commerce is based on the bottom line and accountability. Each world requires some adaptation in order to communicate and collaborate. Accustomed to having our worth accepted as a given in the academic world, technical communicators may not know how to demonstrate our value to others. We must learn to work across boundaries if we are going to be successful.

(3) **What we stand for** - Finally, as technical communicators we must remember the purpose of our discipline. We stand in the breach between ever-changing technology and constant communication values. Even while mastering new technologies, we must stand

apart from them in order to remember people: we must respect all participants in the act of communication, always keeping the human focus. We cannot be swept away by gee-whiz technology, nor can we resist it and deny its impact on our lives.

Technical communication is about empowerment of others; if we keep that purpose foremost, we will be well positioned to greet the future.

To Know Where We're Going We've Got to Know Where We've Been

Michael G. Moran
Associate Professor of English
University of Georgia

In 1985, I wrote that the "history of technical and scientific writing has not yet been written," and to a large extent this statement remains true in 1993 ("The History of Technical and Scientific Writing," *Research in Technical Communication* [Westport, CT: Greenwood, 1985] 25). There has, of course, been more work completed since then, but there are many projects that still need to be undertaken before we have a good sense of the history of our field and the kinds of communication that we study. In a sense, history is an unusual component of technical communication because much of our attention goes to the pragmatics of writing effective discourse in the sciences, business, and technology. Historical studies are somewhat different in that they examine previous discourse of earlier periods to get a better understanding of the communication traditions in these areas. In many ways, these historical studies have much in common with traditional studies in the liberal arts. There are, of course, pragmatic elements in many of these studies (we want in part to understand how our communication conventions developed so we can teach them better), and many of the very earliest attempts at historical studies emphasized this pragmatism. Such studies tended to look at pieces of communication from the past as exemplars of effective writing today. While these studies have their value, they also have their problems, not the least of which they tended to decontextualize the discourse by assuming that the conventions of technical communication remained the same over time. This assumption is false. Many of the better studies recognize this fact by studying the discourse within its own intellectual, cultural, political, and social contexts. Like the literary scholar, the scholar of technical communication can look at the subject matter as worthy of study for its own value.

The purpose of this paper is not to present a systematic discussion of the history of technical and scientific communication. Instead, its purpose is to examine some of the important kinds of projects that might be undertaken to give us a better sense of our field's history. I have therefore identified five general types of studies: curricular histories, genre histories, histories of influence, corporate communication histories, and histories of rhetorical

strategies in technical and scientific communication.

Curricular Histories

Curricular histories invite us to examine the history of technical communication as an academic discipline. Much of even this immediate history, say over the past 100 years, is not explored. Useful studies would examine questions such as how, when, and where technical or engineering writing courses began. It would also examine the forces that caused the courses to be formed. From my own research, it is clear that many professional engineers complained (as they still often do) that their beginning employees could not communicate well. These professionals were instrumental in demanding that engineering schools offer courses in writing specifically designed for the engineering student. But the specifics of these dynamics have not yet been worked out.

A second area of curricular history would be the development of technical writing textbooks. These projects, however, should be more than merely descriptions of the texts. Instead, we need a better understanding of who wrote these texts and why. We also need a better understanding of how these books were related to not only the developing traditions of technical communication but also how they were related to other academic trends, especially in rhetoric and freshman English. We need, for instance, to find archival materials--letters, syllabi, memoranda, etc.--in order to gain a deeper understanding of the trends in the field. This work has just begun.

Genre Histories

Genre histories examine the rise and development of various kinds of technical communication. Such studies would examine anything from the business letter to various kinds of technical reports to the scientific article. This is one area that has received considerable attention. Charles Bazerman's *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science* (Madison: Univ. of Wisconsin Press, 1988) serves as a kind of prototype for this kind of research.

It is important, however, that genre studies be more than merely tracing the forms of various kinds of discourse. Genres function not as mere forms; instead, they are social structures that allow writers and speakers to get things accomplished, to do things in the world. Consequently, researchers should be constantly aware of the social contexts in which genres arise and the social, intellectual, and

political ends that they accomplish.

Nor should we take a narrow view of genre by limiting our attention to those that survived to the present. History is filled with genres that served an important purpose at one time and then either disappeared or changed radically as needs and conditions changed. A good example of this is the Renaissance narrative report of discovery. These reports--Arthur Barlowe's description of the Outer Banks of North Carolina is one of the best examples--communicated some of the first European reactions to the New World and were themselves composed of other genres such as the ship log, the military report, and travel narrative. We need a better understanding of the cultural forces that gave rise to this genre and the effects the genre had of the European conquest of America.

Histories of Influence

Genre histories should contribute also to the study of the influence of technical and scientific communication on the development of Western and other cultures. We should come to recognize, with the social constructionists, that one of technical communication's primary roles is to construct reality. Without the results of scientific research, Western culture would be considerably different than it now is. These developments, including Einstein's theory of relativity, come to us in the form of written discourse on many levels. Scientists communicate to each other in highly technical genres; important scientific information is communicated to the public by science writers and popularizers. Each kind of discourse affects different audiences, and each contributes to our developing sense of the world in which we live.

Other studies of influence would examine how scientific and technical communication influenced the development of history and particular historical events. For instance, the early maps of America, which were often filled with inaccuracies, played a major role in the European understanding of this continent. Many early maps, for instance, indicated that the Pacific Ocean was a short distance from the Atlantic, a mistake that began when Verrazano, an early explorer, thought that he saw an ocean when he sailed by the coast of North Carolina. Other maps showed a Northwest passage to Cathay over the top of North America. Many ships were lost searching for this chimera. There are many studies to be completed that could examine not only the ways that technical communication has provided accurate information, but also the ways that it has provided incorrect information, often with disastrous results.

Corporate Communication Histories

A very different kind of historical study would be the studies of how different corporations and government agencies have produced and used discourse and how that communication has affected the company's growth and development. This work has, to my knowledge, not yet begun. It would include, though, histories of consulting and the roles that consultants have played in corporate communication. In my work on Frank Aydelotte, an early 20th-century English professor at MIT, I learned, for instance, that he was the first outside writing consultant for AT&T. During WWI he designed and implemented a course at AT&T's New York headquarters that taught employees to analyze information about the phone company and write more effectively. Other studies would examine in-house writing manuals to see how they change over time, would trace the development of a corporate style, or would study the role that correspondence played in the company's financial development.

Histories of Rhetorical Strategies

Finally, another kind of study would examine the development of particular rhetoric strategies used in technical and scientific discourse. Such projects would bring to bear the history of rhetoric and rhetorical analysis. Some historical periods and some kinds of discourse have received much attention--the rise of the plain style, for instance. But others have received little. In 18th century England, for instance, many scientist used the method of analysis to report experimental findings. Several rhetoricians of the period, including John Lawson, George Campbell, and Joseph Priestley, among others, discussed analysis, which was a method of thinking through a problem inductively to arrive at a final proposition that possessed truth value. Useful projects could be undertaken to examine not only the history of the concept in English rhetoric but also the concept's use in various branches of science, including early work in astronomy, chemistry, and physics.

Conclusion

If research were begun in all of these areas, we would soon develop a better sense of the history of technical and scientific communication. This work, however, will take more than one generation of scholars and the task will not be easy. One of the weaknesses of much work so far has been that it has relied almost entirely on published texts for its evidence. We need to begin searching archives for information on technical writers and their work. This is time-consuming work

and requires money for travel. But the work is worth doing and worth doing well. A sense of history will make our field stronger and deeper; it will also make us better teachers when we understand that many of the conventions are just that, conventions of this time and place and not absolutes. Finally, the study of our history connects us explicitly to the other liberal arts and encourages us to ask liberal questions about technical communication: how did it develop and how did it affect our culture?

Classical Theory in Modern Context: One Source of Generative Power for Technical and Scientific Communications Programs

Ann Brady-Aschauer
Graduate Student
Miami University of Ohio

Alliances between technical and scientific communications programs and the workplace have proved beneficial in a number of practical ways. For instance, programs are able to offer students valuable internship experience which prepares them to find full-time employment at the same time it increases their understanding of the roles and responsibilities that they will undertake as professional communicators. In addition, these partnerships have yielded a variety of on-site research projects which have provided invaluable insights into the composing habits of professionals who write on the job and made it possible for technical writing instructors to enrich what they teach in the light of industry practice. Looking back, then, we can conclude that the academic-industrial alliance, with its very practical perspective, has been a productive one.

As we look ahead, I propose that technical and scientific communications programs consider taking into fuller account additional perspectives, such as the theoretical and historical. I maintain that perspectives such as these can lead students to think productively about workplace experiences and provide the tools with which to interpret and explain those experiences in useful ways.

My interest in this area comes from my own work as a graduate student taking classes that have offered me the opportunity to re-consider practice from a theoretical perspective. I'd like to briefly illustrate my position with one example which focuses on how research I did in the workplace gained new meaning for me when I thought of it in terms of classical rhetorical theory.

Four years ago, a colleague and I conducted an ethnographic research project at a mid-sized engineering firm (McIsaac & Aschauer). As we conducted our research, we were struck by how uncomfortable many engineers were with persuasion even though they regularly wrote competitive proposals. One engineer used the phrase "that motherhood and apple pie stuff" to refer to proposals. Another claimed that "it's sinful to persuade because truth is its own persuader." While these attitudes may not be particularly surprising, they did suggest how much the engineers resisted thinking about their purpose as proposal writers as well as their audience's needs as potential customers.

Given these attitudes, we were puzzled by the way these same writers came to welcome the services of a newly introduced Proposal Operations Center (POC) whose mandate it was to manage proposal writing efforts and to introduce engineers to strategies for collaborative audience assessment and document review. Although initially the common complaint was that "the people at the POC are just a bunch of editors," by the time we ended our study, most proposal writers agreed that they had come to rely on and even look forward to certain proposal activities that the POC offered. In particular we noted how much writers valued the Red Team review which anticipated customer questions and expressed those questions in antagonistic and confrontational terms. When we reported our observations, however, we made no connection between the role that conflict played in red team reviews, the writers' positive attitudes toward those reviews, and the company's increased proposal success rate.

It was not until I was enrolled in a seminar in classical rhetorical theory and learning about stasis that I began making a few tentative connections. Stasis, I was learning, was a set of questions that allowed classical rhetors to identify points of conflict, points that were to be argued. Once those points had been identified, opponents could begin to examine the alternative solutions together. By so doing, they were able to prepare the way for further communication and ultimately resolution of the conflict. As I considered the red teaming procedure at the company we had studied, I began to think of it as essentially a stasiastic procedure. That is, it provided a method by which proposal writers could turn conflict--that is audience questions, concerns, and disagreements--into an opportunity for action--that is a sale. Further, I came to appreciate more fully the confrontational nature of the Red Team as a means of forcing writers to acknowledge their audience's needs by identifying their points of disagreement.

In fact, as I thought back, I realized that Red Team members were chosen not only for their technical expertise and writing abilities, but for their critical abilities as well. Once Red Team members were selected, they were reminded by POC staffers to ask "the hard questions," to be "ruthlessly honest." In fact, Red Teamers were described as those who "come to the battlefield after the fight is over to bayonet the wounded" (Consulting Resources Inc., 1986, p. 8.14). Terminology like this pointed graphically to the part conflict played in this particular procedure the POC had sponsored.

If the proposal writing environment was a battlefield, those who lay dying on it were those without rhetorical defenses, and in order to regain the field, the writers would have to engage the opposition again, this time with a better understanding of their opponents' weaknesses as well as with a keener appreciation of their audience's needs. I realized that if the proposal writing process was thought of in this way, the Red Team naturally assumed a powerful stasiastic function. That is, by forcing company writers to confront points of weakness and potential disagreement in proposal drafts, the Red Team could help them break through rhetorical impasses and move on to stronger proposals. Suddenly practice and theory came together and I realized that theory had been operating tacitly in this particular workplace setting.

What I am suggesting, then, is that as we plan for the future, technical and scientific communication programs might find ways to include theoretical perspectives in their courses. Since these perspectives can lead students to become more aware of tacit theory as it is practiced, but not necessarily acknowledged, in workplace settings, it can lead them to think productively about the principles that inform practice and drive rhetorical change in the workplace. In addition, an increased awareness of classical theories and a broader applications of them to modern practice will better prepare all of us to raise questions aimed at providing direction for designing programs and developing relationships with industry.

Works Cited

Consulting Resources Inc. (1986). Managing competitive proposals [brochure]. Sunnyvale, CA: Author.

McIsaac, C. M., & Aschauer, M. A. (1990). "Proposal writing at Atherton Jordan, Inc.: An ethnographic study." *Management Communication Quarterly*, 3, 527-560

Curriculum Design: The Workplace and the Academy

Ensuring Quality in "Non-program" Programs

Rita Reaves, Assistant Professor of Industrial Technology
Sherry Southard, Associate Professor of English
East Carolina University
Greenville, North Carolina

For those who teach courses in technical communication as professional or area-specific core courses, CPTSC members must provide a vital link for curriculum and program development. The courses differ from those traditionally labeled service courses: introductory or intermediate courses designed to provide students in various majors with basic written technical communication skills and taught by persons usually housed in English, journalism, or another communication department.

These "non-program" programs can include up to four courses (written communication, oral communication, graphics or technical illustrations, and research skills) as integral components of both undergraduate and graduate curricula in fields such as construction, industrial technology, engineering, and health occupations. Few, if any, of the students in these courses will be professional technical communicators, although their programs contain several courses designed to develop the communication skills required for professional success.

In this brief paper, we discuss the "non-program" program currently existing in the School of Industry and Technology at East Carolina University as well as the challenges that these programs present for those who teach courses in technical communication as professional or area-specific core courses, challenges especially for CPTSC members.

Case Study

The School of Industry and Technology at East Carolina University currently offers five concentrations at the undergraduate and graduate level: Manufacturing Construction Management, Electronics, Design and Drafting, and Industrial Distribution (technical sales and services). The manufacturing concentration is the only one offering a Master's degree as of the Fall of 1993.

The School offers the following technical communication courses:

Technical Writing	3000 level
Technical Presentations for Industry	5000 level
Research in Industrial Technology	6000 level

The undergraduate, 3000-level course (Technical Writing) is required for students in all five concentrations. The 5000-level course (Technical Presentations for Industry) is required for all majors in Industrial Distribution. Currently an elective for graduate students pursuing the Master's Degree in Industrial Technology (MSIT), it may soon be required. The 6000-level course (Research Applications) is required for all MSIT students.

Also enrolled in these classes are undergraduate and graduate students from the following programs: geography, environmental biology, biochemistry, computer science, community/commercial recreation, biotechnology, marine biology, therapeutic recreation, pre-medicine, interior design, urban and regional planning, applied physics, physical education, molecular biology, environmental science.

Thus, the persons teaching the technical communication courses described are faced with challenges similar to those faced by anyone teaching technical, business, and scientific communication courses, particularly introductory and intermediate courses which enroll primarily non-English majors. These persons, however, are very likely to be the only faculty member in the department given the responsibility of teaching these courses, and they are housed in departments not traditionally associated with communication subject areas, such as English, journalism, composition/rhetoric, and language and literature.

Challenges Presented by "Non-program" Programs

During the next twenty years, as more fields demand that their graduates be able to communicate effectively, the number of these area-specific core courses in technical communication will continue to grow. Teachers in the courses often feel isolated. They are not technical experts in the content area of their students or their colleagues in the department; furthermore, they may lack the support of a professional program in technical communication. CPTSC members must contribute the support needed by, first, helping these teachers find others who face the same challenges and, second, by providing the necessary resources for them to develop and maintain quality curricula.

Some challenges facing us include the following:

(1) Who will teach these courses -- technical communication experts or technical area experts? Should a key determiner of who should teach the courses be a matter of how technical the area is? This challenge facing us is a variation of the old "TECHNICAL writer" vs "technical WRITER" debate.

Practically, the who may depend simply upon whether the department already has a faculty member with some training in technical communication theory who can develop the curricula or whether new/old faculty hired to teach subject area courses will agree to also teach communication courses.

(2) How can CPTSC members help better prepare those persons teaching area specific communication courses?

What resources can CPTSC provide technical experts who teach such courses, even though they have no academic background in communication or in teaching communication? How can those knowledgeable about communication theory, but not the technical content area teach their students to communicate with experts?

(3) How can teachers, even those grounded in communication theory, be prepared to teach written and oral communication as well as technical illustrations and research skills?

(4) What implication does the development of such programs have for graduate programs in technical communication? Should we and, if we should, how do we educate persons specifically to teach in these programs?

CPTSC members must decide what role CPTSC will play in preparing and supporting people who teach in "non-program" programs" -- perhaps a new program of the future.

Resources

For a useful CPTSC resource of the past, consult Cunningham, Donald H. "Report from the Discussion Group on Technical Communication Service Programs." Proceedings 1988. Council for Programs in Technical and Scientific Communication. Minneapolis: CPTSC, 1988. 23-27. The service programs discussed differ from those described in this position paper; however, some of the challenges faced by faculty members are the same.

Another useful resource is a white paper evolving from a joint industry-academic workshop hosted by the Society for Technical Communication Board of Directors at its January 1993 meeting: Hayhoe, George, Larry Kunz, Sherry Southard, and Freda Stohrer. "Growing to Fit the Future: An STC White Paper on Academic Programs in Technical Communication." Technical Communication. Forthcoming late 1993 or early 1994. 8pgs.

International Dimensions of Technical Communication

Deborah C. Andrews
Professor of English
University of Delaware

Science and engineering have long been activities that cross national borders. Take the aqueducts. Take Marco Polo and Columbus. Take the steam engine.

That international (not to mention historical) context for technology, however, rarely draws attention when we teach technical writing. US textbooks and teachers have tended to emphasize American standards and tastes as universal. Thus audiences, for example, are classified mainly by their differences in skills (expert, technician, lay) or importance (primary, secondary, etc.). While skills and status matter, an equally significant factor is culture: people in different cultures read differently and expect different things in a document. The widespread use of English in scientific journals does not negate the need to study such differences. People use English differently and writing for nonnative speakers entails special constraints.

As both technology and an increasingly global economy are intensifying and accelerating communication among scientists and technologists world wide, we need to adjust our lenses to see technical writing from that perspective. In an editorial summarizing the results of a high-level Society for Technical Communication workshop on strategic planning, Ken Cook (15) noted as major trends in the industry: "increased awareness of international issues in technical communication," continuation of the "increase in non-North American technical communications," and "increased demand for multicultural and multilingual products." Moreover, Nancy J. Adler, a Canadian authority, points to an enticing opposition: "Organizations worldwide are growing more similar, while the behavior of people within organizations is maintaining its cultural uniqueness." (46) Thus, for example, the growth of multinational corporations comes at the same time as the breakup of nations in Eastern Europe.

Textbooks and journals are indeed beginning to recognize the implications of an international context. That's good. But authors and teachers need to avoid merely waving the multicultural flag. Instead, here are some issues to rethink from this new perspective:

International audience analysis
Expectations for and forms of visuals internationally

Document design across cultures
Effects of technology: convergence of digital forms
Patterns of evidence and argument across cultures
Collaboration on international teams

Works Cited

Adler, Nancy. International Dimensions of Organizational Behavior. Boston: Kent, 1986.

Cook, Ken, Jr. "Guest Editorial: Trends and Issues in Technical Communication." Technical Communication 40 (1993): 14-15.

The Politics of Post-Hierarchical Organizations: Questions for Technical Communication Educators

Johndan Johnson-Eilola
Director of Technical Communication
Humanities Department
New Mexico Institute of Mining and Technology
Socorro, New Mexico 87801

In academia, business, and industry, it's become commonplace to talk rather happily about the coming of post-hierarchical organizational structures: what Peter Drucker describes as "post-capitalism" (Drucker, "New Society") and Ram Charan calls the "network" corporation. As Peter Drucker put it five years ago, companies are moving "from the command-and-control organization, the organization of departments and divisions, to the information-based organization, the organization of knowledge specialists" ("Coming" 53; see also, Kanter; Sproull and Kiesler ; Lyotard). As post-hierarchical organizations continue to gain acceptance in business and industry, technical communicators can expect to move into important positions as experts in constructing and working within these communication networks (Bosely; Doheny-Farina; Slack, Miller, and Doak; Selber).

But even as we begin restructuring our classrooms and programs to prepare our students for their newly valued roles, we need to also begin questioning the mechanisms by which this new workplace structure have arisen and, in particular, the politics of these new communication networks. In addition, as companies begin to reduce their workforces—"downsizing" or "rightsizing" (Steve and Bigelow; Horton; Smudde)—technical communicators may find themselves with different types of mobility: either the increased range and type of activities inherent in smaller technical communication staffs (who must now range wider in the corporate structure) or, unfortunately, the hypermobility of the freelance or contract worker who can assume multiple, temporary positions in different companies. We need, as a profession, to begin taking simultaneously active and critical roles in this reorganization process in order to not only respond to these changes, but to help design and take advantage of them.

We can begin by asking ourselves why this shift is happening. The old structure of the workplace, which segmented people into given and static positions and functions, encouraged individual achievement, competition, and top-down communication as well as top-down communication and control (Killingsworth; Zuboff ; Feenberg). The difficulties of this model are numerous: inability to respond rapidly to market conditions and technological advancements; propensity for employees to work against each other in order to gain individual recognition; tendency of the boundary layers between levels to be only selectively permeable to communication and, therefore, prohibiting important information from flowing freely between interested groups and employees (especially via computer-supported channels). The development of the post-hierarchical structure is in part a response to these pressures.

The shift to networked structures of increased information movement corresponds to what cultural theorists term "disorganized capitalism" (Lasch and Urry) or "postmodern capitalism" (Jameson): fragmentation and circulation, an apparent dispersal of control. One problem of postmodern capitalism and the post-hierarchical workplace is how quickly issues of power and politics seem to disappear. Discussing the roles of technical communicators in these new structures, Deborah Bosely suggests that integrative corporate structures should develop "[a] mechanism for involving all of those with a stake in the issue" in order to "avoid the problems of power" (507). But in many ways, post-hierarchical structures are more open to control precisely because they appear to be less authoritarian (Foucault; Zuboff; Poster; Mosco and Wasko; Kramare).

Identified by Peter Drucker, among others, as one of the primary technologies of communication in post-hierarchical organizations ("New Society"), electronic mail systems simultaneously promote non-hierarchical communication and open those communications to unseen (and often unconsidered) surveillance. In a case documented by Shoshanna Zuboff, e-mail conversations in one corporate site were monitored by supervisors even though the conversations were publically claimed to be private and closed to outside surveillance. "Private" conferences that were intended to replace the physical hallway and office chat of coffee breaks (a previously approved activity) took on a new status: where hallway conversations are ephemeral and apprently less formal, the relatively more permanent texts of the "Computer Coffee Break" appeared as a misuse of company resourses. In a vivid example of postmodernity, what is most real is what is textualized. In cases such as this—which are increasingly common—a Foucauldian structure is set up in which those who exert power become hidden from the observed. The whole range of issues of power is hidden, the watchers forgotten, as communication increases.

Although technical communicators may indeed possess a more important role in post-hierarchical, workgroup settings than they did in the era of isolation we are now emerging from, we must not be afraid to introduce issues of power—power is always already there.

- Who takes responsibility in an age when, as Drucker argues, information has "relevance and purpose" ("Coming" 46)? Is it possible for this newly recognized entity to also develop its own sense of ethics and morals? Is this a new form of technological determinism? What are the social structures in which specific information units develop, and what are the effects of downplaying those social structures?

- If communication is open and visible, is privacy disappearing? What are the functions of privacy in corporate communication? Is privacy necessarily a sign of deceit, or is it a basic human necessity? How is the nature of informal communication changed as it's textualized?

- As middle-level management disappears, will the status, responsibilities, and pay of lower-level workers (now given new responsibilities) rise? Or will the gap between upper management and worker merely widen? If a worker moves across hierarchical boundaries with great frequency, who is in a position to decide the worker's overall effectiveness and value; who determines pay rates, responsibilities, and structural advancement? (For that matter, what *is* a "promotion" in a networked company.)

- Will the constantly changing structural positions of (net)workers keep them from developing an important sense of community, except with the organization as a whole? If workers are isolated and rapidly moved around a company, will they more increasingly say (as one of my students did last week), "What's wrong with just doing what your boss wants you to do?"

None of this is to say that we should oppose these new structures and work to re-establish hierarchically organized workplaces and corporations. Post-hierarchical structures probably *will* offer technical communicators more important roles in business and industry, as Bosely suggested; we must therefore begin helping our students learn to work productively within the ranges offered by the these new organizational structures and to act ethically in terms of their own power. But we must also insist, if not explicitly then in our actions and decisions in the classroom and the workplace, that shifting power structures from hierarchical to decentralized does not make power issues go away. These shifts may, in fact, intensify the game. As Zuboff observes, the transformation of communication into network data "creates the fantasy of a world that is not only transparent but also shorn of conflict" (349). We need to develop new ways of thinking about power.

Works Cited

Bosely, Deborah S. "Designing Effective Technical Communication Teams." Technical Communication 38 (1991): 504-512.

Charan, Ram. "How Networks Reshape Organizations—For Results." Harvard Business Review (Sept. - Oct. 1991): 104-15.

Doheny-Farina, Stephen. "Writing in an Emerging Organization." Written Communication 3 (1986): 158-185.

Drucker, Peter F. "The Coming of the New Organization." Harvard Business Review (Jan. - Feb.1988): 45-53.

-----. "The New Society of Organizations." Harvard Business Review: (Sept. - Oct.1992): 95-104.

Feenberg, Andrew. Critical Theory of Technology. New York: Oxford University Press, 1991.

Horton, William. "Let's Do Away With Manuals . . . Before They Do Away With Us." Technical Communication (Feb. 1993): 26-34.

Jameson, Fredric. Postmodernism: Or, the Cultural Logic of Late Capitalism. Durham, NC: Duke U P, 1991.

Kanter, Rosabeth Moss. "The New Managerial Work." Harvard Business Review (Nov. - Dec. 1989): 85-92.

Killingsworth, M. Jimmie. "Product and Process, Literacy and Orality: An Essay on Composition and Culture." College Composition and Communication. 44 (1993): 26-39.

Kramare, Cheris. Gotta Go Myrtle, Technology's at the Door. Technology and Women's Voices. Ed. Cheris Kramare. New York: Routledge, 1988. 1-14.

Lash, Scott and John Urry. The End of Organized Capitalism. Green Bay: University of Wisconsin Press, 1987.

Lyotard, Jean-Francois. The Postmodern Condition: A Report on Knowledge. Trans. Geoff Bennington and Brian Massumi. Minneapolis: U of Minnesota P, 1984

Mosco, Vincent and Janet Wasko. The Political Economy of Information. U of Wisconsin P, 1988.

Poster, Mark. The Mode of Information: Poststructuralism and Social Context. Chicago: University of Chicago Press, 1990.

Selber, Stuart A. "Beyond Skill Building: Challenges Facing Technical Communication Teachers in the Computer Age." Technical Communication Quarterly, in press.

Slack, Jennifer Daryl, David James Miller, and Jeffrey Doak. "The Technical Communicator as Author: Meaning, Power, Authority." Journal of Business and Technical Communication 7.1 (1993): 12-36.

Smudde, Peter M. "Downsizing Technical Communication Staff: The Risk to Corporate Success." Technical Communication 40.1 (1993): 35-41.

Sproull, Lee and Sara Kiesler. Connections: New Ways of Working in the Networked Organization. Cambridge: MIT P, 1991.

Steve, Mike and Tom Bigelow. "Coping with Downsizing as a Writing and Editing Group." Technical Communication (Feb. 1993): 40.1 (1993): 20-25.

Zuboff, Shoshana. In the Age of the Smart Machine: The Future of Work and Power. New York, NY: Basic Books, Inc., Publishers, 1988

Technical Communication: Preparing for the Twenty-first Century

Herb Smith
Associate Professor
Humanities and Technical Communication
Southern College of Technology

In 1991, McDowell reported the results of a survey exploring the attitudes of technical communicators and educators toward undergraduate and graduate curricula. The study points out the importance of surveying both industry and academia to identify critical curriculum elements. This type of study is indeed important for it can identify areas where industry and academia can work together for the betterment of all involved. One of the more useful forums for exchanging viewpoints is the industry advisory board. In addition to supplying students with internships and helping faculty with valuable onsite projects, industry advisory boards help us develop and modify our curriculum to better meet the changing workplace that technical communicators will find in the twenty-first century. This article summarizes the survey results taken from Southern College of Technology's Industry Advisory Board and tries to suggest what these findings indicate about preparing undergraduate students for technical communication positions in the twenty-first century.

Make-up of Southern College of Technology's Industry Advisory Board

Our advisory board consists of 12 members representing a cross-section of Atlanta companies. The largest segment of board members comes from large computer companies; other board members represent large defense contractors, power companies, public utilities, and environmental engineering companies. All hire or employ technical communicators.

Methodology

Advisory Board members were given a 12-item questionnaire on our recently approved bachelor of science degree in technical communication. The questionnaire asked board members to identify the types of communication skills that technical communicators need on the job. Perhaps of greater importance, board members were also asked to identify the technical areas, or technical skills, that industry seeks from entry-level technical communicators. Finally, in addition to assessing the educational value of internships, board members were asked to identify the skills that they felt necessary for technical communicators to have for the twenty-first century. Six out of 12 board members responded to the survey. The questionnaire employed a ranking scale; each number was to be used only once. The 1 ranking was listed as most desirable (important) with the ranking of 10, 9 ,8, 7 (depending on the number of choices per question) was listed as least desirable. For

example, a checklist item that received rankings of 1, 3, 5, 7, 9, 7 from the six respondents would receive an average ranking of 5.33.

Ranking Writing Skills

Board members ranked 10 writing skills as they would look for these skills in entry-level technical communicators. As shown in Table 1, training in desktop publishing, an ability to write manuals, and familiarity with online documentation/hypertext ranked highest. The skills perceived least in demand at these companies were communication graphics and corporate publications.

Table 1
Response to Writing Skills

SKILL	RANKING
Desktop Publishing	3.33
Writing Manuals	3.66
Online document-ation/ Hypertext	3.83
Writing Technical Reports	4.33
Editing	4.83
Document Design	4.83
Letter Writing, Memos, Reports	5.16
Proposals	5.83
Communication Graphics	6.33
Corporate Publications	6.33

Other Communication Skills

In addition to writing skills, our advisory board was asked to rank the importance of nonwritten communication skills on a scale of 1 to 8 (1 being most important and 8 being least important). Interpersonal skills received the highest ranking while research skills (problem-solving skills) and project management skills were also ranked high.

Table 2
Nonwritten Communication Skills

SKILL	RANKING
Interpersonal Skills	1.33
Research Skills	2.33
Project Management Skills	2.83
Organizational Communication Skills	3.83
Usability Testing	4.8
Oral Presentations	5.16
Multimedia Skills	6.00
Ability to Make and Produce Videos	7.66

Technical Subjects

Because background in some technical subject is important for technical communicators to have, our advisory board was presented with the technical majors our school presently offers and asked to rank these majors in order of importance to technical communicators. Computer science, engineering, and technical management were ranked equally important as technical subjects for students to have.

Table 3
Technical Subjects

SKILL	RANKING
Computer Science	2.2
Engineering	2.2
Technical Management	2.2
Math	4.5
Physics	5.75
Chemistry	6.0
Construction	6.0
Architecture	7.25
Apparel Technology	8.66

Internships and Skills for the Twenty-first Century

All six board members indicated that internships were a vital part of any undergraduate degree program in technical communication. Board members believed that internships would provide students with critical real world experience. Each member also felt that his or her company would be willing to offer an internship in the future.

Commenting on what skills technical communicators need for the twenty-first century, board members listed a range of skills--most focusing on a blending of technical experience and strong communication skills. Specifically, the following skills were noted:

- excellent communication skills
- computer skills
- audience analysis skills
- interpersonal skills
- three to four years of technical experience followed by a degree in engineering, computer science, or technical communication
- enthusiasm

Conclusions

Although the survey sample was small, certain conclusions can be made. The responses seem to suggest that technical communicators who are generalists

will do better than technical communicators who are specialists, although training in the new technologies is important for everyone. In addition, technical communicators need to be flexible and adaptable with good interpersonal skills and problem solving skills. Finally, technical communicators need to be able to negotiate project needs and requirements, and they also need to be able to set priorities.

Works Cited

McDowell, Earl. "Surveys of Undergraduate and Graduate Technical Communication Programs in the United States." The Technical Writing Teacher 18.1 (1991): 29-36.

20th Annual Business Meeting

Business Meeting
The Council for Programs
in Technical and Scientific Communication

University of North Carolina-Charlotte
Charlotte, North Carolina
September 30-October 2, 1993

Call to Order

Old Business

Minutes of the 1992 Annual Meeting

Report on Publications
Dan Riordan

Secretary's Report
Steve Bernhardt

Treasurer's Report and Membership
Laurie Hayes

Report from the Ad Hoc Committee on the Program Development Advisory Board
Sam Geonetta

Report on Liaison with ATTW, NCTE, SCA, and STC
Sam Geonetta and Jim Zappen

Report from the Ad Hoc Committee on Archives
Laurie Hayes

Report on ATTW/CPTSC/STC Display
Katherine Staples

Report on Publicity
Jim Zappen

Report on Job Descriptions of Members of the Executive Committee
Jim Zappen

New Business

Location, Format, and Theme of the 1994 Annual Meeting

Registration Fee for the 1994 Annual Meeting
Announcements

Adjournment

The Council for Programs in Technical and Scientific Communication

20th Annual Business Meeting
October 2, 1993
Charlotte, North Carolina

The meeting was called to order by Jim Zappen at 9:08 a.m.

1. **Approval of Minutes:** Without copies in everyone's hands (the minutes were printed in the *Proceedings*), the approval was dispensed with.

2. **Publications:** Dan Riordan noted that we had published our *Proceedings* during spring 1993 and published both a spring and fall newsletter. Members are encouraged to submit items of interest to Dan for the newsletter. The *Proceedings* from past annual meetings are now all in ERIC.

3. **Secretary's Report:** Steve Bernhardt noted that there seemed to be enough stationery and brochures for the time being. We will assess the need for new brochures after Laurie does her January membership mailing.

4. **Treasurer's Report:** Laurie Hayes reported good financial health and presented a budget summary. She noted that we have 96 individual memberships and the NCR corporate membership, with 11 additional memberships from this annual meeting.

5. **Ad Hoc Committee on the Program Development Advisory Board:** Sam Geonetta reported on the Ad Hoc Committee's work. The current committee includes Sam as Chair, Henrietta Shirk, and Bill Karis, with Deb Bosley a newly appointed member. Sam presented their plan for the membership's approval. The key elements are:

   1) to implement Program Review on a one-year trial basis and report back next year;
   2) to offer the service to CPTSC members during the trial year;
   3) to distribute a questionnaire to CPTSC members who can then indicate their desire and qualifications to serve as consultants to programs under review;
   4) to coordinate requests for review primarily by sending the self-study questionnaire and offering a list of suggested review consultants, and
   5) to let the consultants work directly with the institutions/programs within a confidential arrangement.

   On a suggestion from a member present, it was further decided that the Ad Hoc Committee should develop guidelines for the consultants and client institutions that detail appropriate procedures, purposes, and uses of these reviews. It was also suggested to drop the reference to $50/day and allow the consultants and institutions to work out arrangements for honoraria. Katherine Staples moved approval of the Committee's plan with a second from Carol Barnum. The motion passed unanimously.

6. **Report on Liaison with ATTW, NCTE, SCA, and STC:** Jim Zappen noted the ongoing communication with other professional organizations. He described ATTW as interested and supportive of our Program Development work, though not desirous of direct involvement. Ken Rainey noted the importance of involving STC with the Program Development effort. SCA sent a letter indicating interest in cooperation. CPTSC continues to be well represented on NCTE's Committee on Scientific and Technical Communication and within SCA.

7. **Report from the Ad Hoc Committee on Archives:** With Marion Barchilon's absence due to illness, Laurie Hayes reported that the University of Minnesota has agreed to store the archives and needs only direction on what needs to be stored under what categories. Laurie noted the Ad Hoc Committee's report (see attached).

8. **Report on ATTW/CPTSC/STC Display:** Katherine Staples noted that it did not appear likely that purchase of a co-sponsored display rack for conferences would be pursued. It was a good idea sabotaged by complicated logistics.

9. **Publicity:** Jim Zappen reported mailing information to academic programs in technical communication identified by STC's survey of programs but not represented at CPTSC. We will continue to contact these programs and also continue to publish announcements of our organization and its activities in such professional publications as *College English, The ATTW Bulletin, Intercom,* and *Technical Communication Quarterly.*

10. **Report on Job Descriptions of Members of the Executive Committee:** Jim Zappen announced the newly available job descriptions, noting the documentation should help ease transitions of leadership in the organization.

11. **Location, Format, and Theme of 1994 Annual Meeting:** Both Michigan Tech and New Mexico State indicated interest in hosting the 1994 meeting. On a motion from Sam Geonetta with a second from Alice Philbin, a ballot of present members resulted in a close vote favoring Las Cruces, NM, with a tentative date of either October 6-8 or 13-15. Steve Bernhardt will host the meeting at NMSU.

    It was then moved by Mary Coney with a second from Sam Geonetta to hold the 1995 meeting at Michigan Tech in Houghton, America. The vote passed unanimously. Mary Coney then moved, with a second from Deb Bosley, to consider Miami University of Ohio for 1996. The vote passed unanimously.

    Various suggestions were made for themes and subthemes. It was decided to pass the suggestions along to the Executive Committee who would come to a decision on the specific theme for the meeting.

    Stuart Selber asked for greater student involvement in CPTSC's meeting, perhaps through a panel of students at the Las Cruces meeting.

12. **Registration Fees for Annual Meetings:** Deb Andrews moved to continue to base fees for annual meetings on actual costs rather than attempting to use the meeting to raise funds for the organization. With a second from Sam Geonetta, the motion passed unanimously.

13. **New Business**

Sam Geonetta agreed to serve as chair of the CPTSC nominating committee. He asked members to suggest themselves or to nominate others for positions of service to the organization

Carol Barnum suggested a formal action toward STC protesting the high registration fees for the STC Convention. After prolonged discussion, Mary Coney moved to Carol Barnum's second the following resolution:

> The membership of CPTSC wishes to state that we value our relationship with STC . We are concerned that most of our members are not able to attend the STC Annual Conference because of the high registration fee. We request that STC offer a reduced registration fee for academics more in line with those of other academic conferences.

The motion was unanimously passed. Jim Zappen agreed to forward the resolution in a letter from CPTSC to STC. His letter will elaborate on the cost of academic conferences (CCCC, NCTE, ABC, CPTSC) and request an action from STC.

Thanks: CPTSC extends its gratitude to North Caroline State University at Charlotte for serving as host institution; to Deb Bosley, Meg Morgan, and Greg Wickliff for conference arrangements; to Katherine Staples and Mary Coney for chairing the program; to Rensselaer and especially to Susan Katz for support of CPTSC; and to those in Dan Riordan's department at the University of Wisconsin-Stout who helped with publications.

Respectfully Submitted,

Stephen A. Bernhardt, Secretary

encl: Financial Report, Sept. 30, 1992-Sept. 30, 1993
Ad Hoc Committee on Archives Memo

CPTSC Financial Report
September 30, 1992 to September 30, 1993

BALANCE FROM SEPTEMBER 30, 1992				$1739.00
CREDITS/INCOME				
Interest on checking account (10/92 through 8/93)		41.07		
Memberships -- 1992 (11 individuals)		215.00*		
Memberships -- 1993 (96 individuals)		1920.00		
(1 corporation)		100.00		
Registrations -- 1992 Annual Meeting		1590.00		
Registrations -- 1993 Annual Meeting		2600.00		
Sale of Proceedings		108.00		
total:		6574.07	+	$6574.07
DEBITS/EXPENSES				
1992 Annual Meeting				
hotel	159.71			
Boise State University	646.90	806.61		
Stationery		289.42		
Newsletter -- Fall 1992				
printing	52.99			
postage	27.26	80.25		
Newsletter -- Spring 1993				
printing	53.86			
postage	24.65	78.51		
Proceedings -- 1992				
printing	430.83			
mailing	243.90	674.73		
Renewal notices -- 1993		29.00		
Executive Committee meeting -- 1993		212.73		
Miscellaneous administrative costs				
Xerox at annual meeting	18.27			
postage for Proceeding sales	25.00			
copying/postage (Riordan)	33.10			
copying/postage (Zappen)	53.82	130.19		
total:		2301.44	-	$2301.44
BALANCE				$6011.63

Respectfully submitted,

Laurie S. Hayes

Laurie S. Hayes, Treasurer
September 30, 1993

Executive Committee Meeting

CPTSC
Meeting of the Executive Committee
October 2, 1993
Charlotte, NC

Present: Jim Zappen, Mary Coney, Chris Velotta, Dan Riordan, Laurie Hayes, Katherine Staples, Sam Geonetta, Steve Bernhardt
Guests: Meg Morgan, Deb Bosley, Greg Wickliff

The CPTSC Executive Committee met at the annual CPTSC meeting in Charlotte at 6 p.m. on October 2, 1993.

1. **Plans for 1994 Annual Meeting:**

   The theme for the 1994 meeting in Las Cruces will be "Challenging Assumptions in Technical Communication: New Answers for Old Questions." Papers will be invited that address issues of 1) Institutional Restructuring, 2) Innovative or Expanding Curricula, 3) Cross Disciplinary Efforts, 4) New Delivery Systems (distance education, mediated courses), and 5) Meeting Student Needs (program design, school-to-work transitions, mentoring, professionalization).

   We will plan to maintain a Thursday evening session, perhaps with more substantial victuals. We will make sure to have name tents and large lettered name tags, so people can interact personably.

2. **Treasurer's Report:** Laurie raised several issues related to conference registration and membership. It was decided to continue to do business as usual, making our expectations clear about paying for membership in CPTSC and paying for attending the meetings, but not forcing the issue. The Committee felt the local host should have some discretion about allowing host institution faculty to attend the no-cost portion of the meeting (though it was stressed that full participation is desirable). The local host might also make some exceptions or special arrangements for students who help with conference planning or who participate on panels. Discretion is the keyword; no one wants to see the meeting's tenor change radically because of extraordinary participation by host institution faculty and students.

3. **Archives**: Laurie will see that the archives are taken care of. She has the Committee's permission to hire a student to help with the task of establishing the archives.

4. **Spring meeting:** Since many Committee members will not be at CCCC, it was decided to carry out our tasks via e-mail and telephone conferences. Katherine indicated her willingness to help set up the telephone conferences as necessary.

Task List:

Most of the discussion centered on the tasks of the officers, as follows.

Jim Zappen-President:

Write to STC about registration fees for convention. Include language from minutes of full session of CPTSC.

Write a letter to those who attended this year (only the new attendees?) thanking them for their participation. Ask if the meeting met their needs. Ask them to forward suggestions for next year to Katherine Staples or Steve Bernhardt.

Work with Sam on liaison activities with STC and other groups.

Do not send letter to institutions with programs who are not members. Wait until next year.

Dan Riordan-Treasurer:

Issue first newsletter with call for papers during November/December.

Issue second newsletter in April/May with call for papers.

Publish *Proceedings*.

Steve Bernhardt-Secretary; Meeting Host 1994

Send abbreviated minutes from Charlotte to Dan for newsletter by late October.

Send letterhead and envelopes to Jim.

Nail down arrangement for meeting in Las Cruces and circulate information on dates, times, costs so members can plan to attend.

Laurie Hayes-Treasurer and Membership

Send Jim a mailing list of new attendees at this year's meeting.

Establish archives for Council materials at University of Minnesota.

Katherine Staples-Member at large; Program Planner

Head up Program for next year's meeting in Las Cruces. Work with Steve Bernhardt. Fix theme and program strands and submission dates. Convey information by late October to Dan for the newsletter. Prepare announcement for distribution.

Be prepared to set up teleconference this spring as needed for Executive Committee business.

Chris Velotta-Member at large

Get announcements of meeting in Las Cruces to journals. Include an announcement for TETTYC (*Teaching English in the Two Year College*) helping them understand CPTSC and welcoming their participation. Post notices on appropriate e-mail conferences.

Mary Coney-Member at large

Help other Committee Members as needed. Help Chris with publicity.

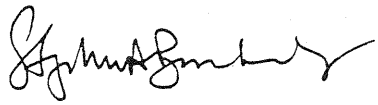
Sam Geonetta-Immediate Past President:

Follow up on program development liaison with STC, ATTW and SCA. Work on strategy for follow-up with Jim.

Implement trial year of program development review.

Form nominating committee and draft slate.

Respectfully submitted,



Stephen A. Bernhardt

Appendices

The Council for Programs
in Technical and Scientific Communication

List of Conferees
20th Annual Conference
October 2, 1993
Charlotte, North Carolina

CPTSC Registration September 30- October 2, 1993

Jo Allen
East Carolina University
Rt. 14 Box 68-B
Greenville, NC 27834

Nancy Allen
Dept. of English
Eastern Michigan University
Ypsilanti, MI 48197

Betsy M. Aller
Dept. of Chemical Engineering
Michigan Tech University
Houghton, MI 49931

Paul Anderson
English Dept.
Miami University
Oxford, OH 45056

Deborah C. Andrews
735 Stevens Avenue
Portland, ME 04103

Ann Brady Aschauer
Miami University
5650 Brown Road
Oxford, OH 45056

Dianne Atkinson
Purdue University
148 Creighton
Lafayette, IN 47406

Marion Barchilon
Arizona State University
Dept. of Manufacturing &
Industrial Technology
Tempe, AZ 85287-6806

Carol M. Barnum
Southern Tech
705 Elkmont Dr. NE
Atlanta, GA 30306

Charles Bazerman
Literature, Communication, and Culture
Georgia Institute of Technology
Atlanta, GA 30332-0165

Stephen A. Bernhardt
Dept. of English Box 3E
New Mexico State University
Las Cruces, NM 88003

Deborah S. Bosley
Dept. of English
University of North Carolina at Charlotte
Charlotte, NC 28223

Mary B. Coney
University of Washington
1047 Belmont Place E.
Seattle, WA 98102

Marilyn Cooper
Michigan Technological University
402 W. South Avenue
Houghton, MI 49931

Marjorie T. Davis
School of Engineering
Mercer University
Macon, GA 31207

Pamela S. Ecker
Cincinnati Technical College
3520 Central Parkway
Cincinnati, OH 45223-9984

William A. Evans
Literature, Communication,
and Culture
Georgia Institute of Technology
Atlanta, GA 30332-0165

Bertie E. Fearing
English Dept.
East Carolina University
Greenville, NC 27858-4353

Sam Geonetta
University of Cincinnati
3318 Meadow Green Ct.
Amelia, OH 45102

Judith L. Glick-Smith
Integrated Documentation
1001 College Parkway
Lewisville, TX 75067

Laurie S. Hayes
University of Minnesota
College of Agriculture
277 Coffey Hall
1420 Eckles Avenue
St. Paul, MN 55108-1030

Christine W. Heilman
Cincinnati Technical college
3520 Central Parkway
Cincinnati, OH 45223

Susan Hilligoss
Dept. of English
Clemson University
Box 341503
Clemson, SC 29634-1503

Russel Hirst
Dept. of English
University of Tennessee
Knoxville, TN 37996-0430

Dottie Howell
Dept. of English
University of North Carolina at Charlotte
Charlotte, NC 28223

Johndan Johnson-Eiola
Humanities,
New Mexico Tech
Socorro, NM 87801

Dan Jones
University of Central Florida
427 Timberwood Trail
Oviedo, FL 32765

Bill Karis
Clarkson University
15 LeRoy Street
Potsdam, NY 13676

David Kaufer
Dept. of English
Carnegie Mellon University
Pittsburgh, PA 15213

Lucy Langworthy
323 Haynes Haven Lane
Murfreesboro, TN 37129

Thomas L. Long
Thomas Nelson Community College
Hampton,VA 23670

Carl R. Lovitt
Pearce Center, 402 Strode
Box 341504
Clemson University
Clemson, SC 29634-1504

Brad Mehlenbacher
English Department
Box 8105
North Carolina State University
Raleigh, NC 27695-8105

Carolyn R. Miller
English Dept.
Box 8105
North Carolina State Univ.
Raleigh, NC 27695-8105

Mohsen Mirshafiei
California State University
Dept. of English
Fullerton, CA 92634

Michael G. Moran
University of Georgia
193 Mell Street
Athens, GA 30605

Meg Morgan
Dept. of English
University of North Carolina at Charlotte
Charlotte, NC 28223

Nancy M. O'Rourke
Dept. of English
Utah State University
Logan, UT 84322-3200

Don Payne
Iowa State University
5021 Emerson Drive
Ames, Iowa 50014

Alice I. Philbin
Bowling Green State University
716 Normandie Avenue
Bowling Green, OH 43402

Kenneth T. Rainey
Southern Tech--Humanities
1100 S. Marietta Parkway
Marietta, GA 30060-2896

Rita Reaves
East Carolina University
School of Industry and Technology
Greenville, NC 27858-4353

Dan Riordan
University of Wisconsin at Eau Claire
1215 Wilson Avenue
Menomonie, WI 54751

Carolyn Rude
Dept. of English
Texas Tech University
Lubbock, TX 79409-3091

Don Samson
English Dept.
Radford University
Radford, VA 24142

Marilyn S. Samuels
Case Western University
3068 Warrington Road
Shaker Heights, OH 44120**

Ann Martin Scott
PO Box 186
Cecilia, LA 70521

Stuart Selber
Michigan Technological University
308 W. Houghton Avenue
Houghton, MI 49931

Sherry Southard
East Carolina University
390 Claredon Drive
Greenville, NC 27858

Katherine Staples
Austin Community College
508 Park Blvd.
Austin, TX 78751

Elizabeth R. Turpin
Ferris State University
19418 Golfview Dr.
Big Rapids, MI 49307

Janice Tovey
East Carolina University
Rt. 8 Box 757
Greenville, NC 27834

Chris Velotta
NCR Corporation
8900 Willowgate Lane
Huber Heights, OH 45424

Greg Wickliff
University of North Carolina at Charlotte
Dept. of English
Charlotte, NC 28223

James P. Zappen
Rensselaer Polytechnic University
9 Tamarack Lane
Clifton Park, NY 12065

Herb Smith
Southern College of Technology
1100 South Marietta Parkway
Marietta, GA 30060-2896

Appendix B

Annual Meetings, Sites, and Dates

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

Appendix C

1992-1993 CPTSC Officers

President:	James P. Zappen	Rensselaer Polytechnic Institute
Vice President:	Daniel Riordan	University of Wisconsin-Stout
Treasurer:	Laurie S. Hayes	University of Minnesota
Secretary:	Steven Bernhardt	New Mexico State University
Members at Large:	Mary Coney	University of Washington
	Katherine Staples	Austin Community College
	Chris Velotta	NCR Corporation
Past-President:	Sam Geonetta	University of Cincinnati

The Council for Programs in Technical and Scientific Communication

List of Members

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Susan K. Ahern	U of Houston-Downtown Department of English One Main Street Houston, TX 77002	3107 Deal Street Houston, TX 77027	713-221-8113 713-660-0384 skahern@uhdbit
o Allen	East Carolina University Department of English Greenville, NC 27858	Route 14, Box 68-B Greenville, NC 27834	919-757-6041 919-752-9549
Jancy Allen	Eastern Michigan U. Dept. of English Ypsilanti, MI 48197	3051 Roundtree Blvd. Apartment BK Ypsilanti, MI 48197	313-487-4220 313-996-3985
etsy M. ller	Michigan Tech. Univ. Dept. of Chem. Engr. 1400 Townsend Drive Houghton, MI 49931-1296	216 Hubbell St. Houghton, MI 49931	906-487-3338 906-482-8498 bmaller@mtu.edu
erald J. lred	University of Wisconsin-Milwaukee Department of English Milwaukee, WI 53201	3555 N. Cramer St. Shorewood, WI 53211	414-229-4511 414-964-4472
aul nderson	Miami University Dept. of English Bachelor Hall Oxford, OH 45056	1316 Dana Drive Oxford, OH 45056	513-529-3418 513-523-1548 anderson@miamiu.acs.muohio.edu
eborah C. ndrews	University of Delaware Dept. of English Newark, DE 19716	735 Stevens Ave. Portland, ME 04103	302-831-2361 207-797-0236 dandrews@brahms.udel.edu
nn Brady schauer	Miami University Dept. of English Oxford, OH 45056	5650 Brown Road Oxford, OH 45056	513-559-5221 513-523-5733
ianne tkinson	Purdue University School of Mech. Engr. Building 1288 West Lafayette, IN 47907	148 Creighton Road West Lafayette, IN 47906	317-494-1363 317-497-0835 dla@ecn.purdue.edu

CPTSC Membership - 1993

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Marian G. Barchilon	Arizona State University Department of Mfg. and Industrial Tech. Tempe, AZ 85287-6806	2153 East Minton Drive Tempe, AZ 85282	602-965-8669 602-820-0464 atmgb@asuvm.inre.asu.edu
Carol Barnum	Southern Tech. Humanities Dept. 1100 S. Marietta Parkway Marietta, GA 30060	705 Elkmont Dr. NE Atlanta, GA 30306	404-528-7201 404-881-8136 cbarnum@sct.edu
Charles Bazerman	Georgia Inst. of Tech. Dept. of Literature, Communication and Culture Atlanta, GA 30332-0165	148 Waverley Way Apt. 5 Atlanta, GA 30307	404-894-6201 404-892-1826
Stephen Bernhardt	New Mexico State U. Dept. of English, 3E Las Cruces, NM 88003	4583 Sandalwood Drive Las Cruces, NM 88001	505-646-2027 505-521-4961 sbernhar@nmsu.edu
B. Christiana Birchak	U. of Houston Downtown Dept. of English One Main Street, #1045-S Houston, TX 77002	3902 Cypressdale Spring, TX 77388	713-221-8480 713-353-8674
Virginia Book	University of Nebraska Dept of Ag Comm Rm 25 FIC Lincoln, NE 68583-0924	7300 Old Post Road #4 Lincoln, NE 68506	402-472-3034 402-488-4117
Deborah S. Bosley	University of NC at Charlotte Department of English Charlotte, NC 28223	824 Heather Lane Charlotte, NC 28209	704-547-2708 704-523-1282 fenøødsb@uncccvm.bitnet
Pamela Estes Brewer	Terra Technical College 2830 Napoleon Road Fremont, OH 43420-9670	256 Williams Street Bowling Green, OH 43402	419-334-8400 419-352-0233 Fax: 419-334-3667
Mary Fran Buehler	Jet Propulsion Lab 4800 Oak Grove Drive Pasadena, CA 91109-8099	410 Churchill Road Sierra Madre, CA 91024	818-354-2295 Unlisted Fax: 818-354-2842

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Rebecca E. Burnett	Iowa State University Department of English 203 Ross Hall Ames, IA 50011-1201	112 North Riverside Drive Ames, IA 50010-5971	515-294-5654 515-233-4506
Wilma Clark	U. of Wisconsin-Eau Claire Engineering Dept. Eau Claire, WI 54702	9376 Wentlock Road Woodbury, MN 55125	715-836-5384 612-731-4995 clarkwj@cnsvax.uwec.edu
Mary Coney	University of Washington Department of Tech Comm. 14 Loew Hall, FH-40 Seattle, WA 98195	1047 Belmont Place East Seattle, WA 98102	206-543-4557 206-323-4200 mary@uwtc.washington.edu
Marilyn M. Cooper	Michigan Tech. Univ. Department of Humanities 1400 Townsend Drive Houghton, MI 49931-1295	402 W. South Avenue Houghton, MI 49931	906-487-2016 906-482-7834 mmcooper@mtu.edu
Patricia L. Cornett	Lawrence Tech. University Humanities Dept 21000 W. 10 Mile Rd. Southfield, MI 48075	31651 Auburn Drive Birmingham, MI 48025	313-356-0200 Ext. #3527 313-258-9214
Jennie Dautermann	Miami University Dept. of English 303 Bachelor Hall Oxford, OH 45056	727 Martin Luther King Drive Cincinnati, OH 45220	513-529-6519 513-961-7140 dauter@miamiu.bitnet dauter@miamiu.acs.muohio.edu
Majorie T. Davis	Mercer University School of Engineering Macon, GA 31207		912-752-2430
Pat Dorazio	Suny Institute of Technology School of Arts & Sciences 5215 Donovan Hall Utica, NY 13504-3050	518 Meadow Dr. Utica, NY 13502	315-792-7315 315-793-0823 fpad@sonyit.edu
Priscilla Dorr	Clovis Community College 417 Schepps Blvd. Clovis, NM 88101		505-769-4117

CPTSC Membership - 1993

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
David Dyrud	Oregon Inst. of Tech. Klamath Falls, OR 97601-8801	2027 Leroy Klamath Falls, OR 97601	503-885-1393 503-883-2365
Pamela S. Ecker	Cincinnati Technical College 3520 Central Parkway Cincinnati, OH 45223	1320 Grace Ave. #2 Cincinnati, OH 45208	513-569-1722 513-321-6928
Kate Evans	Portland Community College P. O. Box 19000 Portland, OR 97219-0990	2398 Hillside Lane Lake Oswego, OR 97034	503-244-6111, Ext. 7258 503-635-6540
William Evans	Georgia Inst. of Tech. Dept. of Literature, Communication and Culture Atlanta, GA 30332-0165	1301 Cimarron Parkway Dunwoody, GA 30350	404-894-2730 404-394-5118
Bertie E. Fearing	East Carolina University English Dept. Greenville, NC 27858-4353	205 Greenbriar Drive Greenville, NC 27834	919-757-6041
Susan Feinberg	Illinois Inst. of Tech. Humanities Dept. 3101 S. Dearborn Chicago, IL 60616	4007 Rutgers Lane Northbrook, IL 60062	312-567-3465 708-564-8364 humfeinberg@iitvax.bitnet
Pamela Fridie	Grambling State University Dept. of Mass Communication P.O. Box 45 Grambling, LA 71245	P.O. Box 695 Grambling, LA 71245	318-274-3270 318-247-8618
Sam Geonetta	U. of Cincinnati Dept. of Humanities 2220 Victory Parkway, ML 103 Cincinnati, OH 45206	3318 Meadow Green Ct. Amelia, OH 45102-1144	513-556-6562 513-753-5449 geonetsc@uc.edu
Judith L. Glick-Smith	Integrated Documentation 2995 LBJ Freeway Suite 200 Dallas, TX 75234	1001 College Parkway Lewisville, TX 75067	214-241-3537 214-436-7039

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
John Harris	Brigham Young U. 3164 JKHB Provo, UT 84602	243 South 400 E Springville, UT 84663	801-378-2387 801-489-4047
Mark Haselkorn	U. of Washington Dept. of Tech Comm. FH-40 Seattle, WA 98195	2125 East Interlaken Seattle, WA 98112	206-543-2577 206-325-4468 d5878@u.washington.edu
Laurie Hayes	University of MN. Dept. of Rhetoric 202 Haecker Hall 1365 Eckles Avenue St. Paul, MN 55108-1030	2280 Folwell Falcon Heights, MN 55108	612-624-4212 612-645-1355 lhayes@maroon.tc.umn.edu
Christine W. Heilman	Cincinnati Technical College 3520 Central Parkway Cincinnati, OH 45223-09984	919 Grand Ave. Cincinnati, OH 45205	513-569-1735 513-251-6426
James M. Henry	George Mason University Dept. of English 4400 University Drive Fairfax, VA 22030-4444	3 Cedarwood Lane Beachwoods II Lewes, DE 19958	703-993-1188 302-644-1441 jhenry@gmuvax.edu
Susan Hilligoss	Clemson University Dept of English Box 341503 Clemson, SC 29634-1503		
Russel Hirst	University of Tenn. Dept. of English Knoxville, TN 37996-0430		615-974-6952 615-539-4765 615-974-5401 (secretary) hirst@utkvx.utk.edu
Helen E. Hodgson	Westminster College of SLC Dept. of Communication 1840 S. 1300 E. Salt Lake City, UT 84105	1328 E. Laird Avenue Salt Lake City, UT 84105	801-488-1691 801-581-0707 h.hodgso@whitewater.wcslc.edu
Renee B. Horowitz	Arizona State U. Dept. of Mfg. and Ind. Tech. Tempe, AZ 85287-6806	6257 E. Calle Camelia Arizona State University Scottsdale, AZ 85251	602-965-3625 602-941-3099 aarbh@asuacad

CPTSC Membership - 1993

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Tharon W. Howard	Clemson University Dept. of English Strode Tower Clemson, SC 29634	215 Mulberry Avenue Clemson, SC 29631	803-656-3488 803-653-5999 tharon@hubcap.clemson.edu
Robert R. Johnson	Miami University Dept. of English Bachelor Hall Oxford, OH 45056	218 N. Campus Avenue Oxford, OH 45056	513-529-7340 513-523-7607 brjohns@miamiu.acs.muohio.edu brjohns@miamiu.bitnet
Simon S. Johnson	Oregon State University Scientific and Tech. Comm. Program Corvallis, OR 97331-5302	1210 S.E. Park Ave. Corvallis, OR 97333-2130	503-737-1650 503-753-0234
Johndan Johnson-Eilola	New Mexico Tech. Humanities Socorro, NM 87801	Route 2, Box 21A Socorro, NM 87801	505-835-5200 505-835-3891 johndan@prism.nmt.edu
Dan Jones	U. of Central Florida Dept. of English Orlando, FL 32816	427 Timberwood Trail Oviedo, FL 32765	407-823-2212 407-365-2627
Kurt N. Judeich	Power Safety International 177 Northview Estates Indiana, PA 15701	325 Ferguson Road Homer City, PA 15748	
William Karis	Clarkson University Dept. of Tech. Comm. Box 5760 Potsdam, NY 13699-5760	15 Leroy Street Potsdam, NY 13676	315-268-6484 315-265-7113 karis@craft.camp.clarkson.edu
Judith Kaufman	Eastern Wash. University English Dept. MS-25 Cheney, WA 99004-2415	West 2407 Pacific Ave. Apt. C Spokane, WA 99204-1164	509-359-2811 509-624-5737
Patrick M. Kelley	Analysts Int'l Corporation 3030 LBJ Freeway Suite 820 LB52 Dallas, TX 75234	2225 Branchwood Drive Grapevine, TX 76051	817-961-8005 817-421-0938

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Maria Curro Kreppel	U. of Cincinnati 105A Administration Cincinnati, OH 45221-0631	3267 South Woods Lane Cincinnati, OH 45213	513-556-4692 513-631-0616
Gisela Kutzbach	U. of Wisconsin-Madison Dept of Engr. Prof. Development (EPD) 1527 University Avenue Madison, WI 53706	1138 Shorewood Blvd. Madison, WI 53705	608-262-4817 or 262-2472 608-238-0420 kutzbach@engr.wisc.edu
Tom Lang	Cleveland Clinic Foundation Dept. of Sci Publications 9500 Euclid Avenue Cleveland, OH 44195	13849 Edgewater Drive Lakewood, OH 44107	216-444 1260 216-228-6957
Lucy Langworthy	323 Haynes Haven Lane Murfreesboro, TN 37129		615-898-1433
Carol Lipson	Syracuse University Writing Program 239 HBC Syracuse, NY 13244-1160	100 Enfield Place Syracuse NY 13214	315-443 9315 315-446-3779 cslipson@mailbox.syr.edu
Sherry Little	San Diego State U. English Dept. San Diego, CA 92182	2482 Valley Mill Road El Cajon, CA 92020	619-594-5238 619-448-1219 slittle@ucsvax.sdsu.edu
Thomas L. Long	Thomas Nelson Community College English Department Hampton, VA 23670		804-825-3663 804-855-8722
Carl R. Lovitt	Clemson University Pearce Center, 402 Strode Box 341504 Clemson, SC 29634-1504		803-656 5418 803-654-3867
Nancy Mackenzie	Mankato State U. English Dept. Mankato, MN 56002-8400	621 Grant Avenue North Mankato, MN 56003	507-389-1166 507-387-1679 nmackenzie@vax1.mankato.msu.edu

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Mike Markel	Boise State University Department of English 1910 University Drive Boise, ID 83725	2077 Springbrook Lane Boise, ID 83706	208-385-3088 208-338-7837 renmarke@idbsu.edu
Brad Mehlenbacher	North Carolina State U. English Department, Box 8105 Raleigh, NC 27695-8105		919-515-4138 919-833-8436
Carolyn R. Miller	North Carolina State U. English Department, Bx 8105 Raleigh, NC 27695-8105		919-515-4126 crm@unity.ncsu.edu
Dennis Minor	Louisiana Tech. U. Dept. of English Ruston, LA 71272	1102 Glenwood Ruston, LA 71270	318-257-3563 318-255-6045
Mohsen Mirshafiei	Cal. State U. - Fullerton Dept. of English & Comp. Literature Fullerton, CA 92634	425 E. Rockaway Drive Placentia, CA 92670	714-773-3163 714-572-3474
Michael Moran	University of Georgia English Department 193 Mell Street Athens, GA 30605		706-542-2128 706-548-3003
Margaret Morgan	U. of North Carolina Dept. of English Charlotte, NC 28223	9001 Nottoway Drive Charlotte, NC 28213	704-547-4211 704-549-5728 fenpsmpm@uncevm.uncc.edu
Ronald J. Nelson	James Madison University English Dept. Harrisonburg, VA 22807	1095 Misty Ct. Harrisonburg, VA 22801	703-568-3755 703-433-3880
Nancy O'Rourke	Utah State U. Dept. of English Logan, UT 84322-3200	PO Box 3833 Logan, UT 84323	801-750-3647 801-753-7755 ckvnmo@cc.usu.edu

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Celia Patterson	Pittsburg State University English Department Pittsburg, KS 66762	2025 Pin Oak Circle Pittsburg, KS 66762	316-235-4643 316-231-6007
Don Payne	Iowa State University Ames, IA 50011-1201	5021 Emerson Drive Ames, IA 50014	515-294-3584 515-292-6777 si.hdt@isumvs.iastate.edu
Thomas Pearsall	651 Landings Way Savannah, GA 31411		912-598-8827 Fax: 912-598-8827
Alice Philbin	Bowling Green State University Dept. of English Bowling Green, OH 43403	716 Normandie Bowling Green, OH 43402	419-372-6864 and 372-7242 419-352-3503
Nell Ann Pickett	Hinds Community College Box 1266 Raymond, MS 39154		601-857-3361 601-857-5165
Kenneth T. Rainey	Southern Tech. Dept. of Humanities 1100 S. Marietta Parkway Marietta, GA 30060	1194 Robert Lane Marietta, GA 30062	404-528-7209 404-971-6157 krainey@sct.edu
ita eaves	East Carolina University School of Industry and Dept. of Technology Greenville, NC 27858	200 Evanswood Drive Greenville, NC 27858	919-757-4142 919-355-0296
iana eep	U. of Akron Dept. of English Akron, OH 44325-1906	750 Mull #3A Akron, OH 44313	216-972-7470 216-864-6113
aniel iordan	U. of Wisconsin-Stout 150B Harvey Hall Menomonie, WI 54751	1215 Wilson Ave. Menomonie, WI 54751	715-232-1344 715-235-7002 driordan@uwstout.edu

CPTSC Membership - 1993

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Carolyn Rude	Texas Tech. U. Dept. of English Lubbock, TX 79409-3091	3312 75th Street Lubbock, TX 79423-1308	806-742-2517 806-793-3542 ditcr@ttacs.bitnet
Don Samson	Radford University English Department Radford, VA 24142	5317 Curry Ford M-201 Orlando, FL 32812	703-831-5284 703-633-0506 Florida Home: 407-282-8487
Marilyn S. Samuels	Case Western Reserve Dept. of English Guilford House Cleveland, OH 44106	3068 Warrington Road Shaker Heights, OH 44120-2461	216-368-2340 216-752-9334
Dave Samuelson	Cal. State U. - Long Beach Dept. of English 1250 Bellflower Blvd. Long Beach, CA. 90840	17 Silverfern Irvine, CA. 92715	310-985-4245 714-854-1292
Karen A. Schriver	Carnegie Mellon University Department of English 500 Forbes Ave. Pittsburg, PA 15213-3890	33 Second St. Extension Oakmont, PA 15139	(412) 268-6456 (412) 828-8791 ksøe@andrew.cmv.edu
Ann Martin Scott	U. of Southwest LA English Dept. Drawer 44691-USL Lafayette, LA 70504	PO Box 186 Cecilia, LA 70521-0186	318-231-5485 318-667-6414 ams8950@ucs.usl.edu
Stuart Selber	Michigan Tech. Univ. Dept. of Humanities Houghton, MI 49931	308 W. Houghton Ave. Houghton, MI 49931	906-487-3252 906-482-0913 sselber@mtu.edu.
Jack Selzer	Penn State U. English Dept. Burrowes Building University Park, PA 16802	719 Glenn Road State College, PA 16803	814-865-0251 814-234-2935 jls25@psuvm
Carol M. H. Shehadeh	Florida Inst. of Technology 151 W. University Blvd. Melbourne, FL 32901-6988	P. O. Box 510725 Melbourne Beach, FL 32951-0725	407-768-8000 Ext. 8082 407-727-8747 shehadeh@roo.fit.edu

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Henrietta Shirk	Boise State University Dept. of English 1910 University Drive Boise, ID 83725	698 N. Hearthstone Drive Boise, ID 83702-1820	208-385-3983 208-336-3691 aenshirk@idbsu.edu
Charles H. Sides	Fitchburg State College Dept. of Communications and Media Box 6317, 160 Pearl Street Fitchburg, MA 01420	P.O. Box 546 Westminster, MA 01473	508-345-2151 508-874-2397
Barbara Smith	Alderson-Broaddus College Box 2158 Philippi, WV 26416	16 Willis Lane Phillippi, WV 26416	304-457-1700 Ext. 301 304-457-3038
Herb Smith	Southern Tech. Dept. of Humanities Marietta, GA 30064	278 Pam Lane Marietta, GA 30064-3681	404-528-7475 404-432-7209
Sherry Southard	East Carolina University Dept. of English GCB2129 Greenville, NC 27858	390 Claredon Drive Greenville, NC 27858	919-757-6041 919-355-0796 enssouth@ecu.vmi
Katherine Staples	Austin CC Northridge Campus Tech Comm Dept. 11928 Stonehollow Drive Austin, TX 78758	508 Park Blvd. Austin, TX 78751	512-832-4831 512-467-8012
Stephen Stedman	Tennessee Tech. U. Dept. of English Box 5053, Tech Comm Program Cookeville, TN 38505	2675 Lakeland Drive Cookeville, TN 38501	615-372-3763 615-528-3820 sjs8081@tntech
C. Gilbert Storms	Miami University Dept. of English Oxford, OH 45056	126 Country Club Lane Oxford, OH 45056	513-529-5262 513-523-5109
Judith B. Strother	Florida Inst. of Technology 150 W. University Blvd. Melbourne, FL 82901	305 Dartmouth Ave. Melbourne, FL 32901	407-768-8000 Ext. 8073 407-724-4271 strother@roo.fit.edu

CPTSC Membership - 1993

Name	Business Address	Home Address	Office Phone Home Phone E-Mail
Janice Tovey	East Carolina University Route 8, Box 757 Greenville, NC 27834		919-757-6695 919-355-5653
Elizabeth Turpin	Ferris State U. Dept. of Language and Literature Big Rapids, MI 49307	19418 Golfview Drive Big Rapids, MI 49307	616-592-3988 616-796-7672
Jan M. Ulijn	4610 Eubank Blvd. NE #709 Albuquerque, NM 87111	Eindhoven U. of Technology Postbus 513 5600 MB Eindhoven NETHERLANDS	Netherlands: 31-40-47-45-69 janulijn@urc.tue.nl
Chris Velotta	NCR Corporation c/o Chris Velotta Brown and Caldwell Sts. EMD-3 Dayton, OH 45479	8900 Willowgate Lane Huber Heights, OH 45442	513-445-6552 513-667-2461 chris.velotta@daytonoh.ncr.com
Billie Wahlstrom	University of MN. Rhetoric Dept. 202 Haecker Hall St. Paul, MN 55108	703 Lincoln St. Paul, MN 55105	612-624-7750 612-292-0598 bwahlstr@mailbox.mail.umn.edu
Thomas Warren	Oklahoma State U. English Dept. Morrill 205 Stillwater, OK 74078-0135	920 W. Cantwell Stillwater, OK 74075	405-744-9474 405-624-3025 twarren@vm1.ucc.okstate.edu
Merrill Whitburn	Rensselaer Polytech Dept. of LLC Troy, NY 12180-3590	11 North Hill Road Ballston Lake, NY 12019	518-276-6569 518 877-5310
William C. Willmot	1630 Venus Street Merritt Island, FL 32953-3162		407-494-4066 407-452-2090
Kristin R. Woolever	Northeastern U. English Dept. 360 Huntington Ave. Boston, MA 02115	350 Bedford St. Concord, MA 01742	617--437-2512 508-369 5195

CPTSC Membership - 1993

ne	Business Address	Home Address	Office Phone Home Phone E-Mail
role e	New Mexico Tech Humanities Dept. 518 School of Mines Socorro, NM 87801		505-835-5323 505-835-3765 cyee@nmt.edu
ng	Clemson University Dept. of English Clemson, SC 29634-1503	106 Monaco Circle Clemson, SC 29631	803-656-3062 803-653-3208 apyoung@clemson.edu
es P. pen	Rensselaer Polytech Dept. of LLC Troy, NY 12180-3590	9 Tamarack Lane Clifton Park, NY 12065	518-276-8117 518-383-3749 Fax: 518-276-4871 zappcj@rpi.edu
ald E. merman	Colorado St. University Dept of Tech. Journalism Communications Research Lab Fort Collins, CO 80523	1716 Carriage Road Fort Collins, CO 80525	

THE CONSTITUTION OF THE COUNCIL FOR PROGRAMS IN TECHNICAL AND SCIENTIFIC COMMUNICATION

As Amended
By Mail Ballot
Spring 1992

ARTICLE I
NAME:

The name 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 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 calendar 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 of 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 organization 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 at each annual meeting.