ABSTRACT

With the advancements in technology and the rise of the Internet, the requirements of the technical writer have shifted from solely a writing role to a role which requires working knowledge of a diverse library of technological applications. The curricula for technical writers are still housed in English departments, causing professionals and educators to question whether English departments can sufficiently meet the needs of students preparing to enter the technical communication workforce. Knowledge of technology seems to be taking precedence over knowledge of writing and rhetorical principles, leaving professionals and scholars wondering if technical communication as a field of study belongs in a department other than English.

This study takes an in-depth look at the history of technical writing, how it emerged from a technology-based engineering discipline, and why it ended up, primarily, in English departments. The results of this research conclude that rhetorical sensitivity is still a key factor in turning out successful technical writers and that technical communication is a field of study that justifiably belongs to English departments. The study focuses not on the age-old issue of "which discipline" should house technical communication, but focuses instead on how technical communication teachers can adjust current curriculum to incorporate the technologies required by today's industry.

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CHAPTER I

INTRODUCTION

Technical writing as a *practice* is ancient. As an academic *subject*, however, it can be traced back to the engineering curriculum beginning around 1900 (Kynell 144). While aspects of technical writing as a profession still have roots in engineering, the teaching of technical writing is appointed primarily to professors in English departments at most colleges and universities. The shift in curriculum began to take place beginning during World War II, when technical writers were hired to relieve engineers of their writing duties so that they could devote their already limited resources to research and production (Senf 69). The field of technical writing was continuing to grow during the 1960s, when technological advances and other global changes were occurring; it was during this time that technical communication as a field saw its greatest growth. Indeed, the 1960s brought about changes that directly impacted the role of the technical writer.

While the requirements of the technical writer have, in recent history, shifted from solely a writing role to a role which requires working knowledge of a diverse library of technological applications, the curricula for those writers are still housed in English departments. Professionals and educators alike are now questioning whether English departments can sufficiently meet the needs of students preparing to enter the technical communication workforce. It seems we have come to a

crossroads in the field of technical communication. Once again, technology seems to be taking precedence over knowledge of writing and rhetorical principles. The question that existed in the early years of technical writing still exists today: to which department does technical communication belong (Connors 192)?

The impact technology has had on the role of present-day technical writers has been immense. Technology is forcing technical writers to look at issues that they have not considered in the past. The rise of the Internet as a primary mode of communication is forcing technical writers to write for multiple mediums, which requires the use of new technologies and software programs that were formerly used primarily by engineers and developers. More importantly, though, multimodal communication (producing documentation outputs for several mediums and various types of audiences) brings even more issues to the forefront of technical communication, such as considering multiple audiences, rethinking documentation as a genre, and learning the tools required to produce multiple mediums of documentation from one source. If curricula do not change to accommodate the changes in technology, English professors will likely experience condemnation from industry for turning out graduates who are not prepared for the workplace, just as engineering professors of the early 1900s were condemned for turning out graduates who were illiterate (Harbarger 763).

Even though most of the literature on careers suggests that the demand for technical writers is growing and will continue to grow (Senf 69), I argue that if technology is not incorporated into the English department curriculum, future

technical writers will be replaced by graduating students from other technological disciplines who likely have substandard writing skills but the technological aptitude that corporations of today require. My argument is neither implausible nor prejudiced; history tends to repeat itself, and as told by historians writing technical communication articles in the 1980s, employers will generally gamble on the technically trained graduate before gambling on a liberal arts graduate with little technical experience (Brusaw 133).

Many scholars in the field agree that there are inherent disadvantages to focusing a curriculum on only industry trends and standards, as opposed to time-tested traditions for writing, research, and theory in technical communication (Johnson-Eilola 247). Many educators are struggling with the decision to incorporate technological principles into their curriculum and give up some of the traditional principles of writing. While it is vital to current and future professionals in the field to have working knowledge of the trends in technology, I argue that it is far more important for educators to continue teaching the rhetorical principles that cannot be easily learned "on the job." I believe that in order to maintain the field's vitality and growth, we must stop grappling with the question of "which discipline" should house technical communication and focus more on how to adjust the current curriculum to incorporate the technologies required by industry today.

This paper will take an in-depth look at the history of technical writing, how it emerged from a technology-based engineering discipline, and why it ended up, primarily, in English departments across America. It will then trace the trends from

the late 1960s through today to offer suggestions on where the field is going, how educators can better understand and meet the needs of industry, and why educators must incorporate technology and tools into their curriculum while continuing to place the larger focus on traditional practices in writing and rhetoric.

As the title of this paper suggests, I believe that the advancements in technology and the Internet, in particular, have taken technical writing from primarily a writing discipline to a technological discipline, strongly related to engineering. The circle is not closed though; technical writers, generally speaking, do not design products and software, nor do engineers write documentation for their products or design help systems. Writers have now become what can be considered a new kind of engineer, the kind of *writer-engineer* who develops help systems and produces documentation. Today's writer-engineer uses technology to engineer texts, rather than simply put words onto paper. This new type of engineer indeed must continue to develop and learn writing and research skills. He or she must also continue to develop strategies for understanding audience needs and adhere to the standards of clarity, concision, and grace in writing. In this thesis, I will argue against the view, held by many professionals in industry and the corporations that employ technical writers, that technological skills are more critical to a writer's success than the actual writing process itself. I agree that having knowledge of the latest technologies is important, but I argue that rhetorical sensitivity and the knowledge gained in the traditional English department setting is still the vital underlying factor for successful writing. I believe that technical communication, as

a practice, is focused on writing and is appropriately taught in English departments. However, if technical writing is taught by the professionals in English departments, I believe that the curriculum must change in order to maintain pace with the growth of technology.

This thesis, therefore, argues that the technological skills needed for successful technical writing today can be learned inside and outside of the academic institution, but learning rhetorical principles and learning to write with clarity, concision, and grace cannot. In the end, I will agree with many English scholars that writing is still best taught in English departments.

Methodology

There appear to be two schools of thought regarding the placement of technical communication in a curriculum. One point of view is from a scholar's perspective, the other from an industry perspective. While attending the STC annual conference in Baltimore in 2002, I listened to a hiring manager for one of the largest software companies in the United States say that someone who was technologically skilled and had the ability to write had a greater chance of being hired than someone with superior writing skills but lacked a technological background. For many students graduating with an English degree hoping to enter the field of technical communication such a statement is cause for alarm.

The statement by the hiring manager was the early impetus for this thesis, and I began to search for sources of scholarship that gave credence to the general industry belief that technical writing was wrongfully placed in English departments. I believed that with all of the recent advancements in technology, technical writing should be moved to a different, more scientific discipline such as engineering; I was certain I would be able to locate several sources that supported my theory. What I found, however, was that my opinion only seemed to align itself with the opinions held by an industry less familiar with the field than the English scholars who have studied the history, growth, and current trends in technical writing. As this realization set in, I began to notice that many scholars in the field were actively discussing technological growth and the way curricula could change to accommodate industry standards.

This study evaluates sources and scholarship from authors in the fields of technical communication, English, computer science, and engineering. It focuses first on piecing together the history of technical communication, both as a discipline and a profession. This study places the historical details of the technical communication field into the context of the growth of technology in America to show how technology has had direct impact on the role of today's technical writer. I selected research based on authors' discussions of technical writing history, education, and technical writing as they relate to computer science and engineering. Since I believe it is important to discuss the field from both industrial and academic points of view, I selected not only scholarly articles but also articles written by

graduate students and professionals working in the field. Although I did not exclude sources that were more than a decade old, the majority of the sources I selected have been published within the past ten years. I classified my findings into the categories of technical communication (1) history, (2) practice, (3) educational implications, and (4) the rise and impact of technology and the Internet.

Theresa Kynell, Robert J. Connors, and Katherine Staples are the primary experts consulted in writing the history of technical communication as it relates to academe and the workplace; Saul Carliner and Johndan Johnson-Eilola are the primary authors discussed in relationship to the commonly held beliefs regarding the advancements in technology as they relate to the rise in technical communication education.

Of the sources referenced in this thesis, these five scholars share the predominant viewpoints regarding the state of technical communication. They argue that the field of technical communication was once, and is now again, changing at a very rapid pace. These viewpoints suggest that the rise in technology is forcing technical writers to expand their knowledge bases and increase their skill sets in order to be successful in the technical communication field.

CHAPTER II

TECHNICAL COMMUNICATION: THE EARLY YEARS

Technical communication has existed for as long as people have had the need to communicate with one another about technical concepts. The concept of technical writing as a practice is ancient and has roots that can be traced back to long before the 1900s. This essay, however, is concerned with the time from the 1900s to the present, a time when technical writers gained a title in the workplace and the function itself became a field of study and practice.

Roots in Engineering

Unlike engineers today, the practicing engineer of the early 1900s was generally not trained in a university; he, and it was virtually always he, learned the trade through an apprenticeship or by taking random engineering or science courses. Because of their informal training, early engineers were widely viewed as vocational or blue-collar workers, nonprofessional. Many engineers were concerned about the way society regarded their profession, which ultimately led to the creation of the Society for the Promotion of Engineering Education (SPEE) in 1893. The creation of this society generated a fortunate opportunity for the field of technical communication. This society is where the idea of adding writing to an

engineering curriculum began (Kynell 143). Theresa Kynell reports on the irony of this first SPEE meeting; members of the society, sadly, did not seem to recognize the importance of writing in engineering curriculum. In fact, Kynell shares the belief of other historians that writing was only being promoted in engineering departments as a way to repair the fundamental illiteracy problem that was characteristic of graduating engineers.

The lack of SPEE members from English departments in 1905 (there were none) reinforces an assumption that still troubles scholars of today: English was of very little importance to engineering departments. The grumblings about illiteracy, though, from professionals and engineering journals began to gain widespread attention; attention to illiteracy is ultimately what brought English courses into engineering departments. Researchers today believe that the condemnation of the engineering schools was justified. How could engineering schools continue to turn out graduates who could barely read or write, let alone write coherently? In 1915, the *Engineering Record* said, "It is impossible, without giving offense to college authorities, to express one's self adequately on the English productions of engineering students….Most of them can be described only by the word 'wretched'" (Harbarger 763).

As Kynell, Connors, and other historians of technical writing education tell it, the absence of writing courses in turn-of-the-century engineering curricula was a deficiency waiting to be corrected. Connors reports, with some dismay, that no courses existed prior to 1900 that focused on the writing needs of upperclassmen in

engineering disciplines. Unfortunately, educators and students in the early engineering programs did not view technical writing as necessary and seemed to add the writing courses only to correct the illiteracy problem. It was, nonetheless, introduced. Known first as "engineering English," technical writing became an integrated part of the engineering curriculum at the turn of the 20th century and, fortunately for today's technical writer, it has been evolving since that time.

The attitude of engineering educators and students would not change for several decades though. Even when English was an integral part of engineering curricula, students' attitudes toward English courses in engineering curricula were those of acceptance rather than enthusiasm. The early engineering schools, Connors reports, acted as if their students had a need for only technical courses (175), leaving the writing, rhetoric, and composition to the students and professionals in the English departments. What is worth noting about the lack of interest in English in the engineering discipline, even in the early 20th century, is that the early English engineering courses were not claimed by the engineering educators, but neither were they claimed by the English department staff; neither side was compelled to fight for the development of what we now know as technical writing.

The lack of cooperation that existed between the departments was a problem that needed to be addressed; engineering faculty saw English teachers as "dreaming aesthetes," people who felt rhetoric, composition, and creative writing was the master discipline. English faculty saw engineering teachers as "soulless technicians" (Connors 175). It is obvious to Connors and other historians today,

though, that engineering faculty knew something had to be done about the increasing illiteracy rate of engineering graduates, and they turned to the English departments for a solution to their problem. Even though cooperation between departments was limited, the change was not insignificant. Technical writing was slowing becoming part of the core engineering curriculum.

Engineering students still did not perceive technical writing courses as necessary, and something needed to be done to spark the interest of these students. Although Kynell's research conveys that educators in the early 1900s began to realize that English instruction had to be tied to student interests, focused less on literature and composition and more on real-world professional writing (147), this realization did nothing to reduce the already heavy course load of engineering students and, in turn, did not increase student interest in such courses. It was not until the first decade of the 20th century that educators, and one educator in particular, began to understand that engineering writing instruction was going to need to take a different shape than writing courses currently offered in the humanities departments. Simply stated, technical writing was different than other kinds of writing currently being taught; composition courses were simply not suited to the needs and practices of engineering students. The mid-20th century was a challenging time for educators of technical writing. With veterans returning from the war and classrooms being flooded by students taking advantage of the G.I. Bill, colleges and universities had no choice but to develop a curriculum for the increasing number of technical writers (Connors 185).

One such educator, Samuel Chandler Earle, an English professor at Tufts College, known as the "Father of Technical Writing Instruction," turned the desire to have real-world professional writing courses in the engineering curriculum into a reality (Connors 176). Though Earle was plagued by the same problems as other professors of his time, he was adamant about developing courses that were useful to technical writing. He played a key role in developing the first technical writing courses in America. His approach to teaching technical writing to engineering students was one that students, faculty members, and scholars had been waiting for, one that focused on the goals of the engineering students (Kynell 146). As Connors sees it, Earle's commitment to creating an English curriculum for engineering students that was unique to the professional needs of the engineer was ground-breaking. Known as the Tufts experiment, his practices in teaching English to engineering students are well respected by many of today's scholars. The way Earle focused his teaching on the goals of engineering students is a timeless approach, suitable for today's teachers of technical writing. Earle's prototype course was referred to under several titles—*technical exposition*, *engineering writing*, or *engineering English*—and the differences from traditional composition courses were apparent. Earle intuitively knew that the standard composition course in engineering needed to be overhauled. Even when technical writing was considered an innovative practice, he knew that the aims of composition and technical writing were fundamentally different and that the traditional composition courses should be split from engineering curriculum (Kynell 146). Earle referred to four categories of

writing ability that he believed would make English more applicable to engineering students: 1) the ability to put into words an abstract thought, 2) the ability to describe in writing an object not present, 3) the ability to write for different audiences, and 4) the ability to give a concept full treatment by demonstrating understanding in writing (Earle 37).

Earle gained substantial ground in the desperately needed call for cooperation between English and engineering faculty (Kynell 146). Many scholars agree that technical writing could never have flourished without the cooperation of the two departments, and the greater cooperation was due in large part to Samuel Chandler Earle and his early experiment with teaching English courses in an engineering curriculum.

Kynell, Connors, Staples, and others agree that the cooperation between departments did eventually get better and that the curriculum was beginning to show traces of being appropriately developed to meet the needs of engineering students. Still, the quality of the courses was not impressive in the first two decades of the 1900s, with courses being staffed by underqualified and uninterested teachers, ironically similar, some scholars believe, to the way technical writing courses are being taught and staffed today in English departments (Rude and Cook 52-3). Despite the continuing issues, technical writing as a discipline was growing.

World War II and the advancements in technology and weaponry brought about even more changes in technical writing, changes that were focused on the role of technical writing and more specifically *who* was doing the writing (Connors 182).

With these changes and advancements in technology, the argument about who should be teaching English to engineering students was refreshed, along with the question that had seemed to lie dormant for several years: Where does the curricula for technical writing belong? Unfortunately for educators of today, arguments about the educational placement of technical communication curriculum were neither won nor lost during these first years of growth; the discussions around these topics simply decelerated. Now, almost a century later, with the growth of technology and the Internet, the argument has been revived.

The Growth of Technical Communication as a Profession and Discipline

In the 1940s, technical writing grew substantially as a discipline and a profession. In the same way that the Internet and advancement in computer technology have brought about the need for more documentation in recent history, advancements in weaponry and technology during the 1940s produced more jobs in manufacturing and in turn increased the need for technical writing. Kynell, like Connors, suggests that the greater need for technical writers stemmed in large part from World War II. Kynell offers two reasons that the impact of World War II on technical writing was so great: First, manufacturers needed documentation produced for defense-related products and weaponry. Second, a large number of practicing engineers had very few courses in English to help them explain

technically challenging information to the often technologically illiterate (148), which opened up the field to people who knew how to write.

Walter J. Miller and Leo E.A. Saidla, authors of *Engineers as Writers*, a book written in 1953 for the purpose of offering basic materials to aid in the study of engineering composition, give insight to the advancement of writing in engineering disciplines during the time; their words also help us to better understand the role of writing in engineering disciplines and why it was so vital to continue developing the trade of technical writing:

> Gradually, however, throughout the past century the papers written for engineering groups have grown more and more technical and mathematical. Today, the engineer communicates with his fellows and advances his creative and constructive developments in such abstract, mathematical, and technological terms that only competent members of the profession can follow his presentations. It is only when he turns to writing of a historical nature, or when he turns to writing lay boards or for the public, that he becomes less expository and more descriptive. Many engineers write for such publications and, of course, write reports for lay or unspecialized boards. The young engineer who can develop and possess facility in such writing finds it therefore a very useful art. (iv)

It is interesting that half a century ago, and half a century after writing was introduced into the engineering curriculum, people were still grappling with the idea that technical writing was a useful "art" for engineers to grasp. Many people in industry and many educators in engineering still saw technical writing as a frivolous form of the flowery rhetoric that belonged in English departments. Many English educators, and especially those who were drafted to teach the courses even though they were not qualified, knew that technical writing involved much more than what could be taught in freshman composition and introductory writing courses.

Articles—in particular, a much discussed article by J.H. Wilson, published in 1955—began to appear criticizing college technical writing courses for failing to teach what is vital to a practicing technical communicator today: audience consideration (Connors 187). And though functional, user-based rhetoric of the 1950s and 60s is much different today because of more diverse audiences. Still, it was an important advancement of the time, one that reinforced the feelings of many scholars who believed technical communication needed to be a separate field of study and practice.

Technical writing, then, was recognized as a profession toward the end of the 1940s and beginning of the 1950s, when people were actually being hired, specifically, to write. As many historians tell it, technical communication's place in society was secure by the early 1950s, as technical writing became a recognized profession (Senf 69; Connors 185; Staples 155). Though technical writing may have been a recognized profession at this time, much time was still needed in order for technical writing as an academic discipline to mature. Almost three decades later, the Society for Technical Communication (STC) listed only 19 academic degree programs in technical communication (Souther 2).

The growth of the discipline did continue, though, especially as World War II came to a close. The G.I. Bill, following World War II, allowed people who would not normally be able to attend college to enroll in astonishing numbers. The effect of the growth in the overall enrollment was also seen in the numbers of students enrolling in technical writing programs.

The advances in technology that were made during a time of war translated into new technologies for the public to use during times of peace, and this growth only furthered the advancement of technical writing as a discipline. Writers were still being employed by manufacturing companies to write even after the war had ended (Staples 155) and large companies like General Electric, Westinghouse, and General Motors began to create separate departments for their technical writers (Souther 7).

Katherine Staples reinforces the assumption held by Connors, Souther, and others that the 1960s was the time in history when technical writing saw its greatest growth; writers were continually being hired to do the job that engineers had been required to do in the past. She tells us that the STC was growing and showing a substantial increase in enrollment numbers. From 1960 to 1965, STC membership went from 2,564 members to 3,363 members (157). Although the numbers did not continue to grow exponentially to the present day, by the beginning of the 1970s, scholars and educators were sure that technical writing as a discipline was here to stay. Kynell, like Connors, tells us, with a hint of trepidation, that the teaching of technical writing fell primarily to the hands of English professors; it was not until the 1970s, she says, that English teachers bore the necessary but thankless burden of teaching primarily technical communication service courses, rather than courses within a technical communication program (157).

The 1970s and ‘80s finally saw the growth as a discipline that technical writers and educators were hoping for; by 1993, the number of programs in

technical communication reached a staggering 203 (including 11 doctoral programs) (Staples 158). With the majority of the programs being housed in English departments, it seemed that *engineering English* had finally been replaced by *technical writing*. That is not to say that engineers no longer took writing courses as part of their curriculum, they did, but the courses were now being offered as a program of study, and technical writing was being taught to students in nearly every discipline, from English to engineering, computer science, and business.

The 1990s continued to see the growth as a discipline that was afforded to the previous two decades. As Steven and Sharon Gerson discuss in a 1994 article, technical writing was being taught to students in many disciplines as a way to help prepare students for today's workplace. Their article is important because, although their views are similar to those held by many people in industry, they are both scholars in the field of technical communication. Not surprisingly, they suggest that technical communication is a dynamic field in a society that is shifting from an industrial age to a digital age:

> Times have changed. General Motors, Philco, Boeing, and IBM hardware, for example, are no longer the kings they once were. Today's primary business emphasis is information rather than industry. Software has supremacy over hardware; paperwork takes up more of our time than millwork, line work, or mine work. … In today's molecular work place, employees have new responsibilities. They aren't required only to practice their primary job responsibilities, to be good accountants, engineers, architects, or biomedical technicians. They also have to participate in maintaining their corporations' essential goal—quality. (199)

Gerson and Gerson highlight three goals essential to businesses today. They align their assumptions with industry, saying that the goals of corporations in

America today are dramatically different from those of the industrial age. Corporate America has seemed to veer off the traditional path of industrial production to information production. Veering off the traditional industrial information production path has created a greater need for technical documentation than in the past. Today, employers are not searching for only discipline-related skills (such as engineering, accounting, computer science, etc); they are looking for the ability to solve problems, work together as a team, and communicate effectively (200). Although Gerson and Gerson do not directly discuss their position on what discipline technical writing belongs to, their stance supports the claims of scholars like Saul Carliner who believe that tools knowledge is not the key factor in turning out successful technical writers. The three key skills Gerson and Gerson highlight (problem solving, teamwork, effective communication skills) are in no way related to the tools requirements that seem to weigh so heavily on the job requirements of today's technical writer. Gerson and Gerson justifiably claim that technical writing courses can help meet these needs of today's corporate world by helping students learn how to communicate better. Communication is a crucial factor in surviving in corporate America today and continues to be *the* primary tool for successful technical writing.

CHAPTER III

THE RISE OF TECHNOLOGY IN THE UNITED STATES AND ITS IMPACT ON TECHNICAL COMMUNICATION

At the 19th International Technical Communications Conference of 1973, Dr. David Chestnut, a technical writer and employee of Raytheon Service Company, said:

> The future for the technical communicator will be tied directly to the advancement of science and technology. Conversely, advancement of science and technology will depend on the rapid transmission of information in ever increasing volume. Therefore, the technical communicator will be assured a successful future if he increases his expertise by acquiring a broader education in communication techniques and management. (7)

Time has changed the field of technical writing in many ways; as Chestnut recalls (30 years ago), technical writers generally no longer need to act solo as the writer, editor, illustrator, and "sometimes the printer" (8). Generally, there is more than one person to perform all of the required duties, but since all of these responsibilities can fall to the technical writer, he or she must be able to adequately fill the role of any of the positions at a given moment. Today's technical writer is truly a jack-of-all-trades. Although Chestnut's prediction of the future from 34 years ago is not precise, he predicted one detail with absolute accuracy: the future of the technical communicator was to be tied to the advancement of science and technology.

Although the changes in the technical communication profession during the 1950s through the 1980s were immense, due to the increase in product manufacturing, the digital revolution of the 1980s, '90s, and today has brought about even greater changes. Since the field of technical writing was fairly well established by the 1980s, the changes brought about by the digital age were and are being felt by today's professionals and educators. By the 1980s, technical writing had become a support function for engineers, quality analysts, user interface designers, and anyone else who played a role in the development of a product. During the next 20 years, though, technical writers would be forced to change the way they think about and do their jobs, due in very large part to the advancement of technology and the Internet.

Just two years after Chestnut had given the presentation on the future of the technical writer, a rumor began to spread suggesting that army intelligence officers were using the ARPANET (Advanced Research Projects Agency) to monitor certain behaviors of political activists. With that rumor came the public unveiling of the network that was formerly only known to students and scientists in the computer science community (Moschovitis 87). It took a few years, a number of experiments, online discussions and postings, and a serious misuse of the ARPANET, but eventually, the Internet as we know it today was forming and the digital revolution was upon us. Technical writers' roles were about to be forever changed.

In the 1980s, the Internet included only a small set of networks, most of which still had ties to the military or defense systems. Over the next 20 years,

though, the Internet would grow immensely – in the number of networks, but also in the number of users and in the number of computers being used to access the Internet (Abbate 181). In 1989, the ARPANET formally expired, as some say, "a happy victim of its own overwhelming success" (Sterling). The Internet of the late 1990s was no longer controlled by the military; it had been taken over by civilians for personal and business use: advertising, buying and selling, and trading. Frequent users were beginning to forget that a life without computers and the Internet ever existed.

The early and mid-1990s, and the start of the transition from the Industrial Age to the Digital Age, brought about profound social changes in the United States. Information was suddenly at everyone's fingertips, and the information superhighway, as it has been recently coined, was available to a large sector of the general public. This particular advancement in technology obviously had an impact on the way many professionals did their jobs; the Internet made information gathering easier. The widespread use of computers and the development of new software programs simplified the jobs of many. And though the technical writer has experienced his share of benefits from the advancements in this technology, it is the technology itself that is forcing the technical writers to change in two primary ways: (1) technical writers are being forced to learn new tools and technologies because of the expansion and accepted use of the Internet and other computer technologies, and (2) the Internet has, in general, caused the American public to have an insatiable craving for information. Being accustomed to information constantly at their

fingertips, Internet users expect to find documentation or help at the moment they need it. Our information-starved society is causing the technical writer of today to learn and continually develop a new genre of writing, one that accommodates multiple types of audiences, and one that is continually changing. With these changes to the profession also come implications to the teaching of technical writing in the 21st century.

To show how far the Internet advanced the technical writer, we can simply look at the research on technical writing that was done in the late 1980s and early 1990s. In an article written to share information with others about technical writing as a career, Carol Senf brings to light observations from many people employing technical writers. One such man, Joe Filowat, Manager of the Communications Section for Westinghouse, says, "Technical communicators who do not have backgrounds in engineering or science may come from a variety of academic areas…English, liberal arts, sociology, psychology." Another person, the Director of User Services for New York City, states that "some of the best writers have no technical training" and adds that he prefers to teach "a writer about technical subjects [rather] than trying to teach writing to a technician" (Senf 71). This view, though, was not held by all people in industry or academe. As Brusaw stated in his 1980 article, "The more complex the technology, the more likely the employer is to gamble on the technically trained graduate only" (133). While it is remarkable that two people of the same era can have such polar opposite views on what type of person is better suited to technical writing, Brusaw's point of view from 1980 is

more closely aligned to industry views today, whereas the viewpoints held by the persons from Senf's research no longer seem to exist. The widespread usage of the Internet today requires technical writers to have a greater technological aptitude and stronger technical skill sets than the writers of the past. One merely needs to look at a few job descriptions online today to know that without an education in computer science, English, or engineering, or enough related experience as a technical writer, one will have difficulty obtaining employment as a technical writer. Senf is sure, though, that writing ability coupled with a background of science or engineering is an "unbeatable combination," and many industry leaders as well as educators today agree (Senf 91).

The invention and widespread use of the Internet is cause for the technical writer of today to reconsider their role and knowledge base. Of course, the age-old issues between theory and practice have always existed. But the computer industry has affected the development of the technical writer in a way that is unparalleled to any other point in history, creating opportunities for technical writers to do more than just write and creating opportunities for technical writers to join fields outside of writing, such as computer science (Shirk 305). Writers can no longer simply expect to obtain employment by *only* knowing how to write well; writing with clarity, accuracy, and concision is an expectation. Writers of today must incorporate into their knowledge base technologies that in the past were exclusive to engineers and computer scientists.

Industry continues to place a higher importance on the *technical* part of technical writing while educators, rightly so, are still placing the higher importance on the *writing* aspect of the technical writer role. The workplace can easily justify its stance by assuming that anyone classifying him or herself as a technical writer can write well. The academic world, on the other hand, seems unable to justify the theory that tool knowledge is more important than knowledge of rhetorical principles. I believe that industry's assumption that all persons who classify themselves as technical writers can write well is a faulty one; as I discuss later, some experts in the field of technical communication, Saul Carliner for one, believe that someone with solid technical writing skills can learn technological tools inside and outside of the classroom. On the other hand, I do not believe that the average person can learn how to write well "on the job," and my assumption is supported by experts in the field who continue to believe that teaching rhetorical sensitivity is still crucial to the development of a technical writing student (Carliner, Baresich, Grant-Davie).

As we move into the 21st century and technology and tools become a principal factor of technical writing, industry must realize what academics in English departments already know: writing with concision, accuracy, and clarity is a craft, one that cannot be learned by taking a short course on writing. One can, however, learn a new tool in a matter of hours, days, or sometimes weeks. Perhaps it was because we lacked the technology a century ago that we have today, or perhaps engineering faculty shared the same opinion as the Director of User

Services for New York City – that teaching a writer about technical subjects is far easier than teaching a technician writing principles and rhetorical sensitivity. Either way, technical writing, though some people may disagree, did not end up in English departments by accident (Adams 134). Although the discipline now needs to focus on a curriculum that incorporates today's technologies, writers of the past have graduated with a background in English and gone on to become successful technical writers; the number of technical writers who graduated from English programs far exceeds the number of technical writers who graduated from other disciplines (Souther 2). These writers of the past are the ones who turned technical writing into a field instead of a practice. The exponential growth of the field over the past several decades is a testament to the rightful placement of this discipline in present-day colleges and universities.

CHAPTER IV

TECHNICAL WRITING IN THE 21ST CENTURY

Before the 1990s, most computer users were men working in offices and using computers over their networks. As the 20th century was coming to a close, these statistics were changing. In 1993, research shows that a third of all households in the United States had a computer, and in the fall of 1998 over 35 million adults had accessed the Internet at home within the past month (Kraut et al. 287). This widespread usage of the Internet has forced changes upon the technical writer for a number of reasons. As the growth of the Internet spreads, people are becoming more familiar with computer usage and software applications, and the technical writer is forced to keep up with the profusion of changes. Contrary to popular belief held by people in the industry, the changes are not only technical. Technological advance is the underlying cause for the changes, but writing practices are affected in major ways because of the new Internet audiences and mediums for which technical writers write.

Shirk and others believe that the professional and theoretical roots of technical writing are closely intertwined with the development of computer science. The effects of the growth of the computer industry are felt particularly by writers employed in the software industry. These writers can no longer expect their documentation to survive for a substantial period of time. As Henrietta Nickels

Shirk states, “Neither the widely read nor the unread survive” (306). She notes that especially computer software and its accompanying documentation are “destined for destruction” since it is impractical to keep outdated documentation with an updated product. This is due to the constantly changing environment in which technical writers of today work. Programs and products are continually evolving and changing, and with those changes to the product come a new practice of writing documentation. To pacify the information-starved society of today, documentation must now incorporate visual cues, graphics, enhanced learning tools (such as a technology called *viewlets,* which show users online how to perform a specific function), and hypertext, to name a few. Technical writers, still in the role of a support function, must adhere to deadlines imposed upon them by the engineers and developers of the product.

The Internet is forcing other, more obvious changes on the role of the technical writer. Crowston and Williams tell us what large corporations have known for years: the web is a new way to publish information at a low cost to the corporation (201). Many corporations, both large and small, have used this new publishing medium to their advantage. The printing costs for producing user documentation are becoming obsolete to the corporation; the cost of printing, should a user desire a printed copy, is now being felt in the pocketbooks of the consumer. And this phenomenon is not only associated with computers; many products that consumers can purchase in any retail store now come with skeleton instructions and an offer to provide additional information on their corporate website.

This thesis distinguishes four categories of change to the current role of the technical writer: information design, hypertext, visual rhetoric, and content production. Each of these new forms of producing documentation carries implications for the technical writer learning new tools, as well as implications for changing the way he or she writes.

A New Practice: Information Design

Information design, not to be confused with interface design, is a role that all technical communicators must consider today when producing documentation. It represents a change not only to the tools that technical communicators must be familiar with, but also a change in the way they write and think about the audiences for whom they are writing. As Saul Carliner points out, the demands on technical communicators stem from an increased sensitivity to cultural issues. He states that technical communicators "must not only cross technical boundaries, but also ethnic, socio-economic, gender, and occupational boundaries" (157). Carliner agrees with many other professionals in the field that a technical communicator is no longer a wordsmith who takes existing text from a highly technical group and prepares it for the use of another group. In this way, technical writers' roles have changed from simply producing documentation to becoming authors who are writing for diverse audiences. He or she must learn how to effectively communicate, through whatever means necessary, to convey information to the end user.

With help being produced and accessed via the Internet, technical writers must not only learn how to develop web pages but must also take into consideration factors regarding layout and design of pages and the readability of the text for diverse, and often unknown, audiences. Information architecture is a concept similar to information design, although it is geared toward web *site* design rather than web *page* design. In the context of web design, information architecture is defined by the Information Architecture Institute as the "structural design of shared information environments" and as a "community of practice focused on bringing principles of design and architecture to the digital landscape" (http://ianinstitute.org/pg/about_us.php, accessed September 18, 2006). Jakob Neilson, in the foreward to Rosenfeld and Morville's *Information Architecture for the World Wide Web*, accurately depicts what happens to users of poorly designed websites: "A web site must grow from a carefully planned information architecture for users to be successful in finding pages and accomplishing tasks. Confused users, lost users, and dissatisfied users can quickly turn into no users" (Rosenfeld and Morville xii). Technical writers today must be familiar with principles of website design as well as how to properly design text on a page.

The design of information is not exclusive to websites and pages. In fact, in a study done by Lynne Cooke about the growing usage of information design in print, television, and web news sources, she found a direct relationship between all types of media discussed, saying the "spatial mode of communication accelerates the delivery of information by allowing readers, viewers, and users to quickly locate

information of personal interest" (176). Cooke provides three significant implications for technical communicators: First, technical communicators must have more knowledge than simple design capabilities, such as adding HTML tags to a text and posting it on the web. Technical communicators must consider the end user and create user-friendly documentation; they must incorporate design templates and create information models that best achieve the goal of user-friendly documentation.

Second, Cooke believes that information design, within the technical communication field, needs to become "truly interdisciplinary" (179), meaning it requires the expertise of professionals from many disciplines to design a successful web page or site (Rosenfeld and Morville xiii). Today's readers are in search of information, and if they cannot access it at rapid rate, chances are likely that they will not access it at all. Cooke's call for interdisciplinary cooperation is not new; as previously mentioned, the call for cooperation between educational departments has existed since English was introduced into engineering curriculum. With the advancement in technology, though, the need for departmental cooperation is even greater.

Finally, technical communicators must consider how end users use information on a regular basis; understanding our users' interaction with information, Cooke suggests, can help technical communicators "meet the challenges of visually communicating in an age characterized by information acceleration" (175-7).

A New Technology: Hypertext

It may appear to be a simple task for a writer to produce something they have already written and merely upload it to the web for consumer use; however, the assumption of simplicity is inaccurate. Since the Internet allows one to access hyperlinks on different web pages, writers who produce media for the web must now take into consideration the way their users will use the Internet. The Internet is so widely used by audiences that are so diverse that writers can no longer expect their readers to follow texts in linear patterns. Crowston and Williams discuss this type of communication as a new genre that has emerged because of the widespread usage of the Internet. Writers working with hypertext must consider that the end user may follow hyperlinks to several different web pages. There is a strong likelihood that the reader eventually gets lost in the text and cannot navigate back to the starting point (202-3). Writers must consider these issues and find ways to introduce recognizable patterns in their texts. Technical writers must be able to incorporate technology that enables users to navigate back to the web page from where they originally began their search. Additionally, writers must focus their designs on elements that are most important to their readers; they must ensure that information is easy to find and located where users will actually read it.

A New Form of Rhetoric: Visual

The advancement of software technologies has created a greater dependence on graphical images and visual cues. Visual cues have been an integral part of learning since the beginning of time, but the advancement of computer software and technologies has simplified the creation of graphics. Advancement of software technologies changes the types of visual cues that technical writers can provide, and readers now expect visual cues to aid in their learning. Visual rhetoric, as Mary E. Hocks terms it, is used to convey meaning and to persuade much like verbal rhetoric. She admits that visual rhetoric is not a new concept but notes the vast changes that have occurred since "digital writing" environments became part of our everyday existence (630). A number of visual communication theories suggest that visual language is easier to understand than verbal language. Technical writers must acknowledge the complementarity between the two, rather than viewing them as opposites. Technical writers must consider the use of visual cues and gain a deeper understanding of who those users are and how users understand visual rhetoric, or technical writers and educators must find ways to incorporate both forms of rhetoric into their writing in order to satisfy the needs of the larger audience.

A New Way of Producing Content: Single Sourcing

Single sourcing emerged as a result of organizations seeking ways to reuse existing information (Carliner 157) and in the past decade has become a popular term among technical communicators. Single sourcing and the tools used for single sourcing enable authors to write text once and use it multiple times to produce output covering a spectrum of media types.

As with the other changes in the role of the technical communicator, single sourcing not only requires the knowledge and use of additional tools and coding languages but also crosses the boundaries of information design principles. The emergence of XML (extensible markup language) easily enables authors to produce text that can be converted into multiple formats. It is not the tool, though, that technical communicators need to be most concerned with learning. Writers must find ways to write text that can function equally well in printed documentation as well as online documentation; the writer needs to find a connection with both types of audiences and tailor the documents to suit their needs. This seemingly simple and cost-saving solution forces technical communicators to become "information managers." These information managers are doing much more than writing; they are also focused on "well structured content and navigation, on the metaphors used to communicate with users, on meaningful interactions between computers and users" (Carliner 158). Information managers have other responsibilities too, such as performing needs analysis, setting business and performance objectives, developing

evaluations (such as usability tests), developing user-centered designs, and choosing appropriate genres of communication for products, to name only a few (Carliner 159).

Reconsidering these popular trends in technical communication, Carliner and other scholars in the field recognize that technical communicators are seeing an increasing need to develop cases for proposed projects and incorporate management skills to bring their projects in on time and within budget. For these reasons, many technical communicators have "relabeled their work as information design" (157). Carliner's article begs the question: Are these information designers *really* information designers? Or are they just technical communicators with a new name? Are they technical communicators who have had job role changes forced upon them due to the rise in technology? Carliner finds that many job descriptions for designers, and the same can be said for all technical communicators, specify tool knowledge but fail to appropriately focus on other knowledge factors, such as design issues and knowledge management techniques. In the same way, industry job descriptions seem to focus on tools knowledge while forgetting about writing skills (or assuming writing expertise as the standard). Carliner recognizes that technologies, such as XML used for single sourcing, are important to a technical communicator's future, but he fully understands what industry cannot seem to grasp: tools are similar enough in nature today that if a technical writer knows one, he should easily be able to transfer that knowledge to another (156-7). Carliner would likely agree that all technical writers need not be code writers (or software

developers); however, it is becoming more important for technical writers to at least understand computer programming to an extent that they can effectively design and manage information. Carliner's assumption that tools knowledge is easily transferable needs to be a factor that industry begins to consider when hiring technical writers; all technologically adept persons will not be able to learn to write "on the job" the way he or she can learn required tools.

A New Way to Write

Although the previous sections do not uncover all of the new trends and technologies faced by technical communicators today, the sampling provides evidence that the rise in technology and widespread usage of the Internet has, without question, forced technical writers to chart new territory, learn new tools, adjust their writing styles and methodologies, and become managers of information. The role has certainly changed since the days when engineers, at the end of the product creation cycle, hastily produced text to accompany whatever product they had created.

Technical writing is still fundamentally about text and unidirectional communication (Pullman 44); changes to the writing itself are what the technical writer of today often struggles with. Thanks to the Internet, a technical writer's job is never finished, unless a product retires. George Pullman shares Shirk's belief that as more and more companies move to a subscription model of delivery, products

will constantly improve and evolve, including product documentation (44). His ideas are shared by a large number of professionals and academics in the field.

In addition to the core changes in writing, such as evolving text, audience consideration plays a key role in almost every area of change that is caused by technology. And although audience consideration was mentioned in articles of the late 1970s and early 1980s (Connors 187), the need for audience consideration is now much greater because we have the technological capabilities to reach a more widespread audience. Michael Baresich supports the beliefs of many scholars in the field: "Efficient information flow in technical communication depends upon accurate audience analysis" (125). Audience consideration, I argue, is not like a technological tool that can be learned by performing a task; knowing how to understand your audience and tailor your writing for that audience is an art form. And although experience will certainly help develop one's ability to know his or her audience, this type of knowledge cannot be easily acquired "on the job" without proper rhetorical training. Baresich supports my argument, saying, "Writing for audiences presents rhetorical problems we cannot afford to ignore" (125). It is vital to the success of a technical communicator that he or she understands where to find shared frames of reference in their audience; it is vital that he or she is able to distinguish between clarity and condescension. In each of the sections in this chapter, audience consideration is an underlying factor – technical communicators, especially those who work with online help, often do not know exactly for whom they are writing. Writers are not only required to consider the *ethos* of their

audiences, the term Kirk St. Amant uses to define credibility, but they also need to consider issues such as nationality, race, and gender (133-34). This affects the way a technical communicator thinks about writing, but also the way a technical writer actually writes.

Since the unidirectional mode of communication is beginning to see changes, with the introduction of server and client-side scripting (which allows users to interact with websites by adding, removing, and changing text), our writing pedagogies also need to change (Pullman 46). Pullman suggests that we introduce what he terms an "object-oriented writing pedagogy," which would teach writers to produce content to accommodate information that does not yet exist, and once it does exist will change on a regular basis. This type of writing represents a substantial change from technical writing of 20 years ago and is a cause of concern for many technical communicators. Pullman adequately sums up these fears, saying:

> Given the rate of technological change, the amount of specialized knowledge required to write for online delivery—visual rhetoric, usability, multiple software packages all of which are regularly changing, and, as I am now asserting, server-side scripting, to say nothing of automated creation of user assistance—it is tempting to want to return to the language skills-based technical and professional writing class. In this kind of class, one teaches prosaic virtues, such as "clarity," brevity," and "the given/new distinction," along with the "genres" of technical and professional writing—the white paper, the annual report, the technical report, the design specification, and so on. (47)

Pullman is not alone in his fears; he mentions many of the changes to technical writing that are causing concern to professionals in the field: rapid technological changes, increased requirements for specialized knowledge,

automated user help, to name a few. The temptation to return to the language skills-based technical and professional writing class that Pullman mentions is likely a temptation, but not one to which technical writers can afford to succumb. As technology continues to grow, so do the requirements and knowledge bases of technical writers. I believe the "prosaic virtues" Pullman mentions *must* continue to be taught to technical communicators, but in order to accommodate the rise in technology, the academy must address the technological changes by providing students with a curriculum that better meets the technological demands of industry.

CHAPTER V

INDUSTRY AND EDUCATION:

CURRENT TRENDS AND A CALL FOR CHANGE

It is impractical to think that professionals in the field of technical communication will have all the necessary skills and abilities required by all employers or industries within the field, but technical communication educators must find ways to incorporate the most predominant knowledge and skill sets, along with the current written and rhetorical theories, in order to help the field advance and to turn out graduates who are well prepared for a future in technical communication.

The question of whether technical communication belongs in English departments is still a topic of debate among professionals and educators in the field. As this thesis has shown, though, this argument is invalid. The valid question is: How can English departments accommodate a field where tools knowledge is a necessity but rhetorical knowledge and sensitivity are critical to successful writing? Industry may hire graduates into their companies based on their technical knowledge, but they will be the first to terminate employment when they discover their lack of writing skills and knowledge.

Technical Writing in the Present and Future

Even though technical communication has grown and evolved as a discipline over the past several decades, there is still no comprehensive definition of what exactly it is that technical communicators do (Durak 257). There is a reason for the lack of a comprehensive definition. Since technical communicators are often classified as a support function, they are often given more tasks and projects that go beyond the realm of writing documentation. This type of supporting role has allowed technical communicators to go beyond writing and producing documentation and enabled them to explore other job functions like those mentioned in this paper: usability, interface design, graphic design, information architecture, etc. The primary problem with this evolution, though, is that the definition of a technical communicator, or any subset included in the definition of a technical communicator, is that each person is now expected to have a host of knowledges beyond those required of traditional writers and editors.

Even in the late 1980s, technical writers often held degrees in journalism, public relations, and/or computer science and had some type of technological training (Senf 71). The role of the technical writer has evolved much more since that time. In a recent study looking at trends in technology and communication skills, the Secretary's Commission on Achieving Necessary Skills (SCANS), formed by the U.S. Department of Labor, found five competencies needed for successful job performance: resources; interpersonal skills; ability to acquire and

evaluate data; the ability to understand social, organization, and technological systems; and the ability to select and apply tools and technology to specific tasks (North and Worth 146). These five competencies are unquestionably part of the requirements for today's technical writer, and there has been a great focus in recent history on the technological skills and tools that students in technical writing must obtain prior to entering the workplace. Authors like Johnson-Eilola warn, though, that focusing on technical writing as a support function while focusing on service orientation in academia places technical communication educators in a relatively powerless position, a position in which they become technical trainers rather than educators (247). Johnson-Eilola's argument is solid, one with which he himself has battled, saying, "I've frequently found myself on the pointy end of such arguments…over whether I should be teaching basic rhetorical, usability, and visual design techniques or if I should be concentrating on teaching students application-specific skills in programs such as FrameMaker® 4.0 or Doc2Help®" (247). Like other scholars in the field, Johnson-Eilola disagrees with the basic industry belief that tools knowledge is key to a technical writer's success. Instead he argues that responding to the demands of industry disempowers technical communicators, "relegating them to secondary roles in education, industry, and larger social spheres of importance" (247).

While Johnson-Eilola's claims that technical communicators must consider the larger picture, investigating broader forms of usability studies (260), considering their own documentation as more than an afterthought added on to a primary

product (248), and considering broader social purposes and contexts (252), he fails to place a great importance on those skills that industry *requires* of writers seeking employment. I believe that Johnson-Eilola's arguments—connecting education to work; questioning educational goals; questioning educational processes and infrastructures; building metaknowledge, network knowledge, and self-reflective practices; and rethinking interdisciplinarity—are valid, but industry needs undoubtedly must be considered when providing education for students hoping to join the field as professionals.

Educating the Educators

Many professionals in industry view the current assignment of technical communication courses to English departments to be a mistake. Many people believe technical communications courses began "as reactions to a new college curriculum in which most students would become versed in a specific discipline, but not in writing" (Adams 147). Others believe that technical communication courses were created as "experimental offerings in English departments" over a century ago, and they never were relocated to the appropriate department (Adams 147). For a period of time, after engineers stopped doing their own technical writing but before the Digital Age, the English department seemed the appropriate place to house a curriculum that involved, primarily, writing skills. However, the Digital Age brought about so many changes to the role of the technical writer that writing skills

alone are no longer sufficient. Russell Rutter, in an article attempting to define technical communication, recalls an encounter with a project manager who agrees that writing skills alone do not produce successful technical writers:

> Last year a project manager at a large electronics firm told me over coffee that writers, to succeed at his company, have to do more than just write fluently. Technical writing, he said, is one third writing proficiency, one-third problem-solving, and one-third ability to work with other people. Writing proficiency is essential, he told me, but by itself it is not enough. (20)

Interestingly, the project manager's statement, which Rutter felt was worthwhile enough to include in his article, did not mention anything about the tools that industry seems to place such a large importance on. Instead, the view of this particular project manager seems to fall in line with the three principles Gerson and Gerson found most important to technical writers (the ability to solve problems, work together as a team, and communicate effectively). Rutter supports my argument that learning rhetorical principles, those principles that teach one to consider audience, human values, and past experience, are vital to the success of the technical communicator. Rutter says, "Technical communicators, because they depend on both knowledge and practice, because they rely on learning as a guide to experience, and because they need to bring eloquence, empathy, and imagination to the world of work are—and should be expected to be—rhetoricians" (41). Rutter, like Johnson-Eilola, does not discount the need for skills-based technology; he does, however, suggest that the university holds unfounded biases against rhetoric, literary criticism, and the history of science and technology (including technical

communication). Rutter states that these subjects must continue to exist as part of college curricula.

Rutter presents an argument that is agreed upon by many scholars and discounted by few. Carolyn Miller, for one, would likely agree with Rutter that rhetoric is a key part of technical writing. Miller would likely comment that rhetoric and technical writing should remain together as a discipline, focusing on the rhetorical principles rather than tools knowledge. Miller discounts what she calls the "positivist view of science" (611), a view in which science and rhetoric are mutually exclusive, a view where technical writing is concerned with only facts and interpretation of facts, a view where technical writing focuses on "exactness rather than elegance" and where the point of view is "scientific: objective, impartial, and unemotional" (611). It seems that this positivist view that Miller alludes to is the view held by many people in industry, especially those doing the hiring who consider tools knowledge an advantage over rhetorical sensitivity and ability. Expectedly, it seems that this positivist view has been revived from the early 1900s, a time when engineering educators felt English teachers were dreaming aesthetists and were viewed by the same as soulless technicians. Industry must realize, though, that even with all of the technological changes and all of the new tools requirements being forced upon technical writers today, the most important issue, one that crosses every segment of technical writing (graphic design, usability, single sourcing, etc.), is understanding audience. Persuasive rhetoric would not often be used in writing about technical matter, but rhetoric itself is founded on principles that required one

to understand his or her audience – and that factor is still important to the technical writer today.

Obviously, there is still a conflict in opinion between academics and practitioners about the academic programs for technical writing (Johnson-Eilola and Selber 405). Johnson-Eilola and Selber point out that few fields have experienced the level of growth that technical communication has over the past two decades. In the 1900s, it was crucial to the state of technical writing that English and engineering faculty begin working together. Today, as technical communication becomes a function that is considered a "key commodity" rather than a supporting documentation function, academics and practitioners need to work together to find a middle ground where both industry and academe can both benefit (406).

A Call for Change

Education plays a key role in the future growth of technical communication. And although the current requirements of the technical writer include technologies that did not exist in the past, Johnson-Eilola and the other authors are right in promoting a focus on the larger picture. The one thing that has not changed in the role of a technical writer over the course of history is the requirement that they write with clarity, brevity, and accuracy. The technical writer still writes for audiences, though the audiences of today are vastly diverse and much larger than audiences in the past. The technical writer's primary goal, regardless of the method or

technology he uses to attain that goal, is to convey technical matter to the often non-technical reader. For this reason, the circle, as suggested by the title of this paper, has not come to a close. A technical writer can learn new technologies and tools and continue to learn these skills as a professional in the field. I believe that one cannot, however, learn to be a good writer without the proper training; he cannot learn to consider audience "on the job." For this reason, technical writing, as a discipline, must remain in English departments, where communication, both written and verbal, is taught.

English departments, in turn, must begin to place a greater importance on the demands of industry and the changing needs of their students. The gap between industry and academe will be filled only when technical communicators obtain the traditional rhetorical and writing skills along with the required tools skills and industry knowledge.

Programs in technical communication *must* provide opportunities for students to gain real-world experience; whether the experience comes through internships, client projects, or in-class projects, students must gain exposure to the necessary skills sets (tools) required by industry. In addition to the call for change in curriculum, another important factor that must be considered is the training of the educators.

Many people agree, even outside of technical communication departments, that it is beneficial to students and professors to have real-world experience in what they are teaching (Kelly and Barnum 79). Recent studies show an imbalance

between demand for faculty in technical communication and those being hired to fill the positions.

In a study of the academic job market in technical communication in 2002 and 2003, Carolyn Rude and Kelli Cook report, astonishingly, that a majority of colleges and universities are filling technical communication positions without ever considering whether the person had sufficient experience in industry, or even the appropriate educational training. Rude and Cook studied job ads for technical communication faculty, both full time and part time, and compared the requirements to the staff that were eventually hired. They say, "Approximately half of the positions (51%) that we identified through the job ads named technical or professional communication as a primary qualification. Not all of the positions for specialists, however, involved full-time teaching in technical communication, with one extreme requiring the person hired to teach three literature courses and one technical communication course each semester" (52-3). These are truly frightening statistics, especially when these educators turn up in MA programs where the students they teach are likely to be working in the field as technical writers and communicators.

Most professionals and educators in the field agree that this type of training, or lack thereof, is simply not sufficient for one who teaches technical communication. Other scholars believe that teachers of technical writing should be "hybrids – members of academe and writers in business and industry" (Kelly and Barnum 77). There are many advantages for bringing real-world experience into the

classroom, one of which is the ability to "speak convincingly to students about communicating among the different levels of an organization" (Kelly and Barnum 79). Also, if educators have real-world experience in technical communication, they can better understand what industry is asking of them; they can be better prepared to teach their students about the common practices and requirements of today's industry, and most importantly, they can begin to bridge the gap between the technical communication in industry and technical communication in the academy by understanding exactly what needs to be incorporated into course curricula.

Summary and Conclusion

When the writing and research for this thesis was in the initial stages, technical communication, as I knew it, no longer belonged in the English department but was better suited to engineering or computer science departments because of the expansive growth of technology. However, scholars in the field made me realize that the potential for a communication crisis in technical communication is not caused by technical writers' incapability of learning tools of the trade; the potential for a communication crisis in technical communication, I now realize, exists because with the expansion and widespread usage of the Internet came the reality of writing for extremely diverse audiences. As a professional writer working in the software industry, I was certain that I would be able to back up what some scholars of the past believe about technical writing, that "technical

writing, done correctly, meets the strict definition of an engineering discipline" (Harney 210). I was certain I would be able to create a supportable argument for bringing technical writing back into engineering departments since technical writers of today perform so many functions that only engineers performed in the past. However, the technical writer and engineer, I have realized, are inherently different and will always be inherently different from one another. Although technical writing has evolved from a support function that produced documentation never considered to be at the "center of important work" (Johnson-Eilola and Selber 39) to a function that is now required because of the information economy in which we now live, it is indeed still a support function. And the principles of writing and rhetoric, the principles of oral, written, and visual communication, all of which are still part of technical documentation, are best taught in English departments.

Technical communication practices have changed dramatically because of digital technologies, and while working professionals have been forced to live through these changes, the growth as an academic discipline has been moving at a slower pace. "Secure servers, encryption, standard interfaces for e-commerce, powerful search engines, standard naming conventions for URLs, cheaper computers, the move in most government agencies toward Web information, [and] PDF [creation] " (Gurak and Duin 187) are now all inherent characteristics of technical communication. Living documentation, documentation that does not cease to be developed until the product ceases to develop (Gurak and Duin 188), has brought about a new way of practicing written communication. It is the

responsibility of educators in these departments to understand the needs of their students, and that means understanding and incorporating into their curriculum the needs of industry. This does not mean that students should take an introductory course in FrameMaker or CSS. In fact, most scholars would agree that while tools are important for the technical writer of today, unless technical communicators ever want to become "more than tools jockeys" confined to a "servant role," we must "complete the evolution from a craftsperson to a professional" (Davis 139). That being said, it is obvious that the future of technical communication is tied to future technologies (Davis 139), and English professors can no longer simply teach writing practices and rhetorical theory. It means that in addition to writing and communication, English teachers themselves must learn about current industry tools and trends and require these tools to be used in projects by their technical writing students.

Technical communication can be successful as a discipline residing in English departments if a number of issues are addressed. First, the gap between industry practice and education must be bridged. English departments must place a larger importance on the value of hiring faculty with real-world experience. These faculty members must take their real-world experience into the classroom, where they can teach students to use the tools required by industry in client projects and internships. The persons responsible for hiring faculty in English departments must understand what Samuel Chandler Earle revealed more than half a century ago: there are inherent differences between the kinds of writing technical communicators

do and the kinds of writing learned in literary studies and composition courses. Technical communication teachers who have the proper training and experience must be hired to properly train their students for the workplace. They must begin to understand that technical communication, while it can exist within an English department, will only thrive when faculty understand the vast difference between technical writing and academic writing. Second, cooperation across the disciplines must happen with even greater frequency than in the past. Educators must utilize the knowledge of their colleagues in other departments such as computer science and engineering in order to meet the needs that industry is placing on professionals.

In 2001, Grice and Krull, guest editors of *Technical Communication*, commented on the many changes technical writers in today's industry are experiencing:

> Writers are predicted to become usability testers, visual designers, trainers, and technology mavens, and all at once. For us academics, this is the scary part. First, how does one wedge concentrated coursework on all these topics into one curriculum? Second, how does one staff a university program with people knowledgeable in these fields? This is not your father's English department. It isn't even your own English department. It may not be any single kind of English department. (135)

The communication crisis topic will no longer be discussed when the goals for cross-disciplinary interactions, introductions to industry tools usage, and hiring properly trained faculty are achieved.

Teaching the new modes and genres of communication that have stemmed from the rise in technology is where the gap between education and industry exists. Like many scholars of today, I agree that it is in the best interest of the technical

writing field to implement strategies, such as internships and co-ops, that partner with industry to educate upper management about quality measures, ways to measure quality in the workplace, and "promoting technical communicators to the strategic role of organizational gatekeepers of quality" (Spilka 207). It is extremely unlikely that industry is going to make the first move toward cooperation with academe; therefore, it lies in the hands of educators and university faculty not only to adjust curricula but to find a way to develop relationships with and gain knowledge of industry that is allowing technical writers a place in the workforce.

This thesis does not intend to discredit English faculty of the past; technical writing education has certainly come a long way from 1939, when teaching technical writing was considered professional suicide (Connors 192). I believe, as others do, that technical writing is thriving, but it is not without problems. The ever-changing and technologically advanced world in which we live requires the academy to find ways to properly prepare students for a successful career in a field that will continue to evolve for as long as the field remains in existence.

WORKS CITED

Abbate, Janet. "Popularizing the Internet ." Inventing the Internet. Cambridge: The MIT Press, 1999. 181-220.

Adams, Katherine H. A History of Professional Writing Instruction in American Colleges: Years of Acceptance, Growth, and Doubt. Dallas: Southern Methodist University Press, 1993.

Baresich, Michael J. "The Relativity of Communication: Albert Einstein as Technical Writer." Journal of Technical Writing and Communication 10.2 (1988): 125-132.

Brusaw, Charles T. "Dismantling the Tower of Babel in Computer Documentation." Journal of Technical Writing and Communication 10.2 (1980): 133-142.

Carliner, Saul. "Emerging Skills in Technical Communication: The Information Designer's Place in a New Career Path for Technical Communicators." Technical Communication 48.2 (2001): 156-67.

Chestnut, David J. "The Technical Communicator-His Future." The 19th International Technical Communication Conference Proceedings. May 10-13, 1972. Washington DC: Society for Technical Communication, Inc., 1972. 7-9.

Connors, Robert J. "Landmark Essay: The Rise of Technical Writing Instruction in America." Three Keys to the Past: The History of Technical Communication. Ed. Theresa Kynell and Michael G. Moran. Stamford: Ablex Publishing Corporation, 1998. 173-95.

Cooke, Lynne. "Information Acceleration and Visual Trends in Print, Television, and Web News Sources." Technical Communication Quarterly 12.2 (2003). 155-181.

Crowston, Kevin, and Marie Williams. "Reproduced and Emergent Genres of Communication on the World Wide Web." The Information Society 1.6 (2000): 201-15.

Davis, Marjorie T. "Shaping the Future of Our Profession." Technical Communication 48.2 (2001): 139-144.

Durak, Katherine T. "Gender, Technology, and the History of Technical Communication." Technical Communication Quarterly 6.3 (1997): 249-260.

Earle, Samuel Chandler. "English in the Engineering Schools at Tufts College." Proceedings of the Society for the Promotion of Engineering Education 19 (1911): 33-47.

Gerson, Steven M., and Sharon J. Gerson. "Meeting Corporate Needs: How Technical Writing Can Prepare Students for Today's Changing Work Place." Journal of Writing and Communication 24.2 (1994): 197-206.

Grant-Davie, Keith. "Teaching Technical Writing with Only Academic Experience." Journal of Technical Writing and Communication 26.3 (1996). 291-305.

Grice, Robert, and Robert Krull. "2001, A Professional Odyssey: An Introduction to This Special Issue." Technical Communication 48.2 (2001): 135-138.

Gurak, Laura J. and Ann Hill Duin. "The Impact of the Internet and Digital Technologies on Teaching and Research in Technical Communication." Technical Communication Quarterly 13.2 (2004): 187-198.

Harbarger, S.A. English for Engineers. New York: McGraw-Hill, 1923.

Harney, Mick. "Is Technical Writing an Engineering Discipline?" IEEE Transactions on Professional Communication 43.2 (2000): 210-212.

Hocks, Mary E. "Understanding Visual Rhetoric in Digital Writing Environments." College Composition and Communication 54.4 (2003): 629-56.

Johnson-Eilola, Johndan. "Relocating the Value of Work: Technical Communication in a Post-Industrial Age." Technical Communication Quarterly 5.3 (1996): 245-70.

Johnson-Eilola, Johndan, and Stuart A. Selber. "Sketching a Framework for Graduate Education in Technical Communication." Technical Communication Quarterly 10.4 (2001): 403-33.

Kelly, Rebecca, and Carol Barnum. "A Foot in Both Camps: Academe and the Workplace." The Technical Writing Teacher 14.1 (1987): 77-85.

Kraut, Robert, et al. "Information and Communication: Alternative Uses of the Internet in Households." Information Systems Research 10:4 (1999): 287-303.

Kynell, Theresa. "Technical Communication from 1850-1950: Where Have We Been?" Technical Communication Quarterly 8.2 (1999): 143-51.

Kynell, Theresa. "English as an Engineering Tool: Samuel Chandler Earle and the Tufts Experiment." Journal of Technical Writing and Communication 25:1 (1995): 85-92.

Miller, Carolyn R. "A Humanistic Rationale for Technical Writing." College English 40.6 (1979): 610-17.

Miller, Walter J., and Leo E. A. Saidla. Engineers as Writers: Growth of a Literature. Freeport: Books for Libraries Press, 1953.

Moschovitis, Christos, J.P. History of the Internet: A Chronology, 1843 to the Present. Santa Barbara: ABC-CLIO, 1999.

North, Alexa Bryans and William E Worth. "Trends in Entry-Level Technology, Interpersonal, and Basic Communication Job Skills: 1992-1998." Journal of Technical Writing and Communication 30.2 (2000): 143-154.

Pullman, George. "From Wordsmith to Object-Oriented Composer." Technical Communication and the World Wide Web. Ed. Carol Lipson and Michael Day. New Jersey: Lawrence Erlbaum Associates, 2005. 43-59.

Rosenfeld, Louis, and Peter Morville. Information Architecture for the World Wide Web. Sebastopol: O'Reilly & Associates, Inc, 1998.

Rude, Carolyn, and Kelli Cook. "The Academic Job Market in Technical Communication, 2002-2003." Technical Communication Quarterly 13.1 (2004): 49-71.

Rutter, Russell. "History, Rhetoric, and Humanism." Journal of Technical Writing and Communication 21.2 (1991): 133-53.

St. Amant, Kirk. "Online Ethos and Intercultural Technical Communication: How to Create Credible Messages for International Online Audiences." Technical Communication and the World Wide Web. Ed. Carol Lipson and Michael Day. New Jersey: Lawrence Erlbaum Associates, 2005. 133-65.

Senf, Carol A. "Technical Writing as a Career." The Technical Writing Teacher 14.1 (Winter 1987): 68-75.

Shirk, Henrietta Nickels. "Technical Writer's Roots in Computer Science: The Evolution from Technician to Technical Writer." Journal of Technical Writing and Communication 18.4 (1988): 305-23.

Souther, James. "Teaching Technical Writing: A Retrospective Appraisal." Technical Writing. Ed. Bertie E. Fearing and W. Keats Sparrow. New York: MLA, 1989. 2-13.

Spilka, Rachel. "The Issue of Quality Documentation: How Can Academia Make More of a Difference?" Technical Communication Quarterly 9.2 (2000): 207-20.

Staples, Katherine. "Technical Communication from 1950-1998: Where Are We Now?" Technical Communication Quarterly 8.2 (1999): 153-64.

Sterling, Bruce. "A Short History of the Internet." *The Magazine of Fantasy and Science Fiction* (1993). Retrieved from *http://undergraduate.csse.uwa.edu.au/units/231.312/internet-history.html* on 6/4/2006.