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The Gender Gap In Technical Communication: How Women Challenge The Predominant Objectivist Paradigm

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THE GENDER GAP IN TECHNICAL COMMUNICATION: HOW WOMEN CHALLENGE THE PREDOMINANT OBJECTIVIST PARADIGM

by

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ABSTRACT

Women are currently underrepresented in the Science, Technology, Engineering, and Mathematics (STEM) fields. The purpose of this thesis is to explore how this underrepresentation translates to a gender gap in the field of technical communication and how this gap causes women to challenge the predominant objectivist paradigm in the field. Through an investigation of peer-reviewed journal articles, periodicals, critical theory, and articles published in online magazines such as *Slate*, I identify the gendered nature of modern technology and discuss to what extent a shift in the predominant paradigm has occurred in the professional arena. In looking at several theoretical approaches and contemporary examples, I conclude that a significant paradigm shift has not in fact occurred due to an underlying, culturally promoted sexism. Additionally, I conclude that neither new approaches in the technical communication classroom, nor attempts to increasingly include women in the technological fields will result in a significant paradigm change by themselves. I also point to a need for further meaningful research in how sexism influences the professional world as well as a more thorough conversation regarding a fundamental shift in workplace relations between the genders.

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CHAPTER I: INTRODUCTION

The primary subject I address in this thesis is the shift in the field of technical communication from the traditionally objective approach to the more inclusive and subjective. Specifically, the thesis investigates the gender gap in technical communication and how this gap causes women to challenge the predominant paradigm of objectivity in the field. The field of technical communication has come to be associated with a certain male privilege, which has consequently marginalized women's voices. In an effort to combat this marginalization, women have helped the paradigm of objectivity evolve into a model emphasizing actual user experience.

Purpose and Scope

Feminist critics and other theorists have suggested that because the field of technical communication was born of a need for clear writing and communication regarding engineering, that the field has naturally been reflective of a predominantly white, male, middle-class privilege. As technical communication has expanded to comprise many more areas than simply engineering writing, these critics have argued that the objectivist paradigm must now be reflective of a much wider demographic. In this thesis, I explore to what extent this shift in rhetoric has occurred. The scope of the thesis will be limited to an investigation of this shift in rhetoric in the professional arena.

Significance

The need for an exploration of this subject stems from the fact that theorists in the technical communication field are increasingly suggesting that the extant paradigm of objectivity

and scientific positivism, which emphasizes a style of writing that is essentially voiceless, free of embellishment, and is work-centered rather than person-centered, should be replaced, either naturally or through intervention, with a new model designed to reflect the diverse natures of real users and audiences. As noted by Lee E. Brasseur in "Contesting the Objectivist Paradigm: Gender Issues in the Technical and Professional Communication Curriculum," "the rationalist and objectivist tradition of technical communication, in neglecting 'othered' voices, is not, in fact, good communication" (Brasseur 477). As Brasseur's article title suggests, this notion directly contests what the field has been understood to be since its inception.

The significance of the research into the evolving paradigm involves the application of defined theory in technical communication to its broader practice. What begins as a conversation about the roles of women in technical communication inevitably becomes a larger conversation about the predominant paradigm in the contemporary field. One cannot discuss the exclusion of one demographic (women in this case) without ultimately discussing the trajectory of technical communication theory and practice as a whole. The field of technical communication is moving toward a substantially revised understanding of what constitutes a successful end product. Rather than defining "good" work as completely objective in nature, the field is shifting toward an appreciation of good work as audience-centered and written with specific users in mind. Generally, this new understanding appears to require a certain acceptance of technical texts as inherently biased and subjective.

Sean D. Williams encapsulates the new paradigm of technical communication theory and practice:

> In short, we need not be bound to a single discourse or metaphor, either the one based upon communicative rationality or the one based upon expedient rationality. The point—the large point—I'm trying to make is that Technical Communication requires a discursive diversity that it does not currently possess in any substantial way and in building that diversity, our primary value propositions change. Rather than being driven by the normal science that enables us to find better and better ways of doing the same thing—communicating expediently—our new value proposition should be to place methods, ideas, and values in dialogue. The point isn't to get the job done. The point is to enable interaction. (443)

This perspective encourages a conception of technical communication as equal to other forms of communication, especially as it pertains to the written word. Rather than creating, for example, the stereotypically authorless, cold, objective software manual, the practice of technical communication takes on an entirely new form in becoming more subjective. The use of humor or different styles of voice, for example, may potentially transform the user experience in a positive way. Despite prior conceptions of the field as occupying only one side or another of the communication model, the evolving conception of technical communication acknowledges its role in every stage of the communication process. In this way, future technical communication will become a true conversation and a fully involved form of information exchange.

To understand how the field of technical communication has come to be associated with a certain male privilege and how women's voices have therefore been marginalized, we should look at how women have been treated differently by society during the rise of technology. For the purpose of this thesis, I define "technology" as those advancements in contemporary society

such as the personal computer, the Internet, and virtual approximations of human interaction that have contributed to the conception of digital communication as ordinary and commonplace. Women have not traditionally been accorded the same rights of access to these technologies that have always been granted to men, and their opinions and technical contributions have not been equally respected in the professional world. In Chapter Two, I provide examples of how men and women approach both communication and technology differently, making obvious the "gap" that exists between the genders when looking at these subjects.

Differences in Communication

The erroneous perception of women as being less professionally capable is not a new one. The idea of women being "less than" has been a common theme in many popular media outlets over time. In "Chrysler's Most Beautiful Engineer," Edward A. Malone writes:

> One has only to watch the TV show *I Love Lucy*, which debuted in 1951, to see that uncontrolled speech in a woman was a threat to the patriarchal values of the time. The situation comedy genre often allowed that speech to be exaggerated into shrillness and babbling. In many ways, Lucy Ricardo was the satirical antitype of the 1950s' ideal of a housewife, later epitomized by June Cleaver in *Leave it to Beaver*. Despite her subversive potential, Lucy was usually the object of jokes and censure by other characters. (162)

This societal perception of women's voices as insignificant and rather silly established an understanding of professional careers, especially those in the sciences and in technology, as "men's work," which I point to as an early cause of the disenfranchisement of women in the professional arena. Similarly, Malone's point is that in consistently depicting women's voices in

the media as “shrillness and babbling,” public opinion essentially refused to acknowledge them as being in any way qualified to serve as effective communicators.

I suggest that the most basic difference between the ways in which men and women communicate lies in how each gender approaches the task. Each gender may approach the task of communication differently because they view the activity as occurring for different reasons. In “Communication and Gender in Workplace 2000: Creating a Contextually-Based Integrated Paradigm,” Randolph T. Barker and Lisa Zifcak discuss this concept:

> . . . the idea of communities that foster feminine modes of speech which differ greatly from those found in male work environments [15]. Proponents of this theory argue that men communicate with a specific purpose in mind (which is often competitive) while women communicate as a way to connect with other people. (Barker and Zifcak 336)

While each gender may approach the task of communication from a separate perspective and with different ultimate goals, each approach is worthy of merit. This being said, the underlying cause of these differing approaches is most certainly not innate, as there is no biological evidence to which we might attribute the difference. Rather, I suggest that the difference is in fact attributable to men and women being conditioned by the culture to accommodate different social roles. Regardless, effective technical communication must demonstrate both a specific purpose and a connection with the user. So, while men and women may have been culturally preconditioned to specialize in different elements of technical communication, they both offer beneficial qualities to the activity of professional writing.

In addition to communicating for different purposes, research also shows men and women write differently from a structural point of view. In fact, there are definitive qualities

found in the writing of men and women that make it possible to determine the gender of an anonymous writer. In "Using New Technology to Assess the Academic Writing Styles of Male and Female Pairs and Individuals," James Hartley et al. report that "women (mainly student) writers are more likely than men (mainly student) writers to use higher frequencies of references to emotions, personal information, questions, compliments, self-derogatory statements, and apologies. Men writers, on the other hand, are more likely than women to use higher frequencies of opinions, adjectives, and insults" (245). The different approaches taken by men and women suggest that clarity in technical writing might be more easily achieved in adhering to the traditional notion of technical communication as something that should ideally be impersonal and objective in nature, lacking the language necessary to gender determination. Irrespective of the cultural causes for the different approaches taken by each gender, if women are more prone to emotional, personal language, then it would seem that they should strive to eliminate this language from truly effective technical writing. Likewise, if men are prone to opinionated, sometimes insulting language, this language should be removed from a final written product.

Hartley et al. elaborate on this concept by delving more specifically into the rhetorical nature of professional writing. They state, "women employ more of the language of the powerless compared to men but argue that this might be an accurate reflection of their situation rather than an enduring character trait . . . . Accordingly, men's writings will be written in a more impersonal manner and women's writings will be more direct" (245). This tendency indicates that the fundamental rhetorical element of ethos differs between the writings of men and the writings of women. I believe it important to note here, however, that Hartley et al. identify the different communicative approaches assumed by each gender as reflective of social situation

rather than some inborn character trait. Again, though the impersonal manner of men's writing and the direct manner of women's writings are clearly different approaches to the same task, both impersonal language and direct language are frequently necessary to effective technical communication.

Differences in Approaching Technology

More recently, research into the ways in which men and women approach the Internet differently has shed light on the fact that this technology primarily caters to a male perspective. For example, while men generally access the Internet for "functional" purposes, women generally access it for "recreational" purposes. This divide between function and recreation appears to affirm the idea of Barker and Zifcak that men approach communication with a specific purpose (function) while women approach the task in order to connect with others (recreation). It also may indicate differing degrees of ease with modern technologies such as the Internet. As Cindy Royal points out in "A Meta-Analysis of Journal Articles Intersecting Issues of Internet and Gender," "A divide still exists in the ways men and women use the Internet, the level of comfort with technology, and the welcoming and openness of the environment of technology" (405). This divide demonstrates that the Internet is but one example of a culture of technology that is largely understood to be "masculine." In the same article, Royal cites research that indicates that "men were found to use the Internet more frequently for accessing political news, making travel arrangements, and checking sports scores. Women were found to use the Internet for health, religious, and spiritual information, and for using online support groups" (405). Statistics such as these indicate a technological culture that is predominantly created for

men by men. This culture perpetuates the inaccurate notion that men accomplish "real work" that "matters," while women endeavor to clearly define their feelings. It comes as no surprise then that women are not afforded the opportunity to contribute equally to discourses concerning science, technology, and engineering.

As a result of the technical fields endorsing a specifically male point of view, technology is now characteristically perceived as masculine in nature. Because much technology is predominantly designed for men by men, it is therefore also primarily used and then redesigned by men. This may be a direct reflection of the overwhelming dominance of males in the STEM fields, who often fail to consider a female perspective in their designs. In essence, male developers of technology may unwittingly design technology that caters to accomplishing functional ("real work") tasks rather than recreational ("irrelevant") ones. In order to break this cycle of biased design and development, John R. Dakers et al., suggest a change in pedagogy. If the practice of technical communication is biased to favor a male perspective, then perhaps a change in how the theory of technical communication is taught can be expected to have an influence in leveling the playing field, so to speak. They suggest "that a pedagogy that incorporates a more normative way of thinking about technology will not only attract more females into the subject area but will enable technology education to fulfill modern curricular requirements by addressing areas such as ethics and sustainability" (386-87). They go on to infer that while undeniable progress has been made, the field still not only fails to include equal numbers of females as males, but that vital elements of theoretical discourse are also missing in many standard technical communication programs of study.

This disparity in gender representation may also have its root cause in the fact that technical communication education is frequently gendered. Because theoretical concepts such as ethics and sustainability are more closely associated with the feminine perspective, they lack a strong presence in modern technical communication education, yet they represent subjects of study that are essential to anyone assuming the role of a professional communicator. An interesting, and clearly gendered aspect of technical communication, is the use of virtual characters. The majority of virtual characters meant to assist modern consumers with activities such as purchasing are female. Rather than indicating a preference on the part of the general public that most people would rather communicate with a female, Sean Zdenek infers that these characters affirm the "idea of the computer as a feminized object, an artifact to be mastered and controlled" (412). Again, much of the literature suggests that a change in pedagogy might have a great degree of influence on the ways in which future designers conceive of technology as gendered. I further explore this concept and its implications regarding the greater paradigm shift in Chapter Three.

Addressing the modern state of the cultural gender gap, journalists such as Dana Goldstein and Lisa Goldman et al. cite statistics pertaining to women in today's workforce that further indicate the underrepresentation of women in computer science, math, and technology. These statistics are supported by studies from other researchers such as Roli Varma that point to a deep cultural bias in the ways that men and women are taught about their potential roles in these fields. This research asserts that from an early age, women are mistakenly led to believe that their abilities do not lend themselves well to careers in Science, Technology, Engineering, and Mathematics (STEM) fields. Further, in a recent *Slate* magazine blog, Will Oremus points

out that though women represent the majority of users on social networking and online shopping sites, they still represent a minority of working professionals in these arenas. It would seem that despite the greater involvement of women in areas emphasizing the technological, greater social forces have prevented these women's voices from being clearly heard in their development. These forces include an ever-present and deeply rooted cultural sexism discussed by researchers such as Cindy L. Griffin, Rosalind Gill, and Jonathan Crowe. This research, addressed in detail later, asserts that this problem may be key to understanding the persistent nature of the gender gap in technical communication and other related fields.

Through an exploration of how women have been treated differently by society during the rise of technology and how men and women have been conditioned to approach communication differently, we may arrive at a greater understanding of how women might be more included in the field. This inclusion speaks directly to the shift from the traditionally objective approach in the field to the more inclusive. The literature can also indicate to what extent this inclusion has occurred and what affect it might have on the future professional practice of technical communication.

In the following chapter, I discuss the gender gap from two perspectives. The first focuses on the gender gap in the STEM fields. The second focuses on how the gender gap in the STEM fields translates to a gender gap in the field of technical communication particularly. I also elaborate on some of the differences between men and women in relation to both technology and communication. Additionally, I further discuss the gendered nature of technology and communication and the consequent double standard faced by women in the professional arena.

CHAPTER II: THE GENDER GAP: THE CULTURAL UNDERSTANDING OF TECHNOLOGY AS MASCULINE

Despite the increasing amount of attention given to the unequal treatment of men and women regarding science and technology, a pronounced "gap" between the genders persists in contemporary American culture. Though no point of view appears to explicitly advocate the exclusion of women from the academic and professional pursuit of equality in these areas, women nonetheless represent a minority of both students and working professionals in the STEM fields. In exploring the gender gap, I address the current involvement of women in these fields, several potential explanations for what will be identified as a lack of involvement, and research into the ways in which men and women have been conditioned to approach technology and communication differently. This exploration illuminates the modern cultural understanding of technology and effective communication as masculine in nature.

The Gender Gap in STEM

Because of the focus in recent decades on increasingly involving women in fields that have been traditionally understood to be "masculine," one might assume that despite a persistent inequality between the genders, current statistics should demonstrate at least a moderate improvement in the numbers of women involved in these fields. In reality, "Women continue to lag behind men in computer science, where their share of the workforce has actually declined over the past 25 years. Today, women hold 27 percent of all CS jobs, down from 30 percent a decade ago, and account for just 20 percent of undergraduate CS majors, down from 36 percent in 1986" (Goldstein). This decline would seem to indicate that women are actually increasingly

choosing not to be involved in the STEM fields despite greater efforts to involve them. Even while we celebrate successful female executives such as Sheryl Sandberg (Facebook) and Marissa Mayer (Google and more recently, Yahoo!), the numbers of women opting to emulate their success are fewer and fewer. Notes Goldstein, "Even among the younger generation of tech companies, including Facebook, Google, and Twitter, fewer than 10 percent of all computer programmers—the field's core job—are women, according to industry insiders."

Also noteworthy, the media consistently recognizes, and perhaps even helps to perpetuate, the underrepresentation of women in technology. For example, a staple of contemporary news and business magazines such as *Time*, *Newsweek*, and *Forbes*, "power lists" repeatedly (and in many cases, inexplicably) ignore the roles and contributions of powerful women. Though these lists are not completely devoid of female figures, the women included in them can be accurately described as "tokens." Writing for *Slate*, Lisa Goldman, Katrin Verclas, and Jillian C. York investigate a recent "digital power index" released by *Newsweek* and *The Daily Beast* and identify that "The Newsweek lists were put together by panels of outside experts, but a closer look at those panels shows something troubling. Of the 10 panels, each of which contained six people, seven included just one woman. Another had no women at all. And in at least one case, a woman panelist has expressed regret for participating" (Goldman et al.). I assert that the underrepresentation of women on these panels points to the fact that not only are women being excluded from society's understanding of power as it relates to technology, but also that rarely are they even being extended the opportunity to substantially affect this perception. If the culture surrounding technology largely defines itself as masculine in nature, and if positions of authority within the field of technology are most often occupied by men, this

lack of female representation indicates that women are more "powerless" than we may have previously realized.

Even more curious in considering the evidently growing gender gap in the STEM fields is the indisputable fact that women now represent a dominant presence in technology from a user perspective. "Women have emerged as the majority on social networking, e-commerce, and social gaming sites, and their market power on the Web is undeniable. Women have also launched successful tech firms, founded influential tech blogs, and . . . pioneered digital journalism" (Oremus). This contradicts the notion that women might be underrepresented in technology simply due to their lack of involvement in design and development. If, as modern technical communication curricula would have us believe, the creation of new technologies and the enhancement of preexisting ones are increasingly driven by the experience of actual users, it stands to reason that the male-dominated areas of design and development are somehow failing to recognize women as being representative of "actual use." Affirming this is the apparently little-recognized fact that "In September of 2001, Internet use rate reached gender parity with 53.9% of males and 53.8% of females having access" (Royal 404).

If women and men have had equal access to crucial technologies such as the Internet for at least ten years, and if women in fact represent the majority of actual users in a variety of forums, then why do we still see the staggeringly disparate figures cited by Dana Goldstein and Goldman et al.? Cindy Royal asserts:

> A divide still exists in the ways men and women use the Internet, the level of comfort with technology, and the welcoming and openness of the environment of technology. For example, men were found to use the Internet more frequently for accessing political

> news, making travel arrangements, and checking sports scores. Women were found to use the Internet for health, religious, and spiritual information, and for using online support groups. (405)

So, even though women and men may use the Internet in almost equal numbers, research has established that they tend to use it for fundamentally different purposes. In *Slate*, Goldstein illustrates this idea in discussing the case of Jasmine Gao, a high school student who participates in a program intended to involve young women in technology called the Technovation Challenge. She explains that the program teaches young women "programming and business skills by asking them to develop a real mobile Web app and then 'pitch' it to a team of judges. Jasmine's team developed 'Trending,' an app that shows shoppers fashion trends and directs them to nearby stores or online retailers that carry a specific shoe or skirt" (Goldstein). The problematic element of this example is the subject matter addressed by Jasmine's foray into the development of mobile technology. While nothing is inherently "wrong" with the team's choice to use technology to help women shop, it begs the question of why women might be more "comfortable," as Royal states, operating within these particular parameters. The question becomes not one of why women have been shown to *use* certain aspects of technology more frequently than do men, but why when given the opportunity to create something technological, a young woman with no ulterior specific prompting chooses to conform to what some would all too readily label a stereotype.

I believe that the answer to this question may lie in how women are traditionally told that their skills may be better suited to certain areas of the technological arena than others. While no research has shown that women are any less competent than men, attitudes concerning women's

abilities that may have their foundation in the early days of technical communication still resonate today. For example, "In the 1950s, an anonymous author wrote, 'fairly generally now, employers are finding jobs for women where production continuity is not seriously jeopardized, where particularly feminine traits can be utilized.' These 'feminine traits' were 'patience, neatness, manipulative skill, and color perception'" (Malone 151). Not only does the attitude evident in this example convey a prevailing stereotype about women, it actually goes so far as to insinuate that women might be a danger to the production process. Rather than limiting his statement to a perception of differences in ability between the genders, the anonymous author points to a historical preoccupation with preventing women from being a detriment to technological success. If, as is most certainly the case, these kinds of attitudes carry over to contemporary attitudes about women's work, it comes as no surprise that the female high school student discussed by Goldstein might feel more comfortable dealing with things like shoes and skirts. The culture still tells her that she might present an obstacle to success elsewhere.

Goldstein, Goldman et al., Oremus, Royal, and Malone all suggest that the phenomenon of the gender gap may not necessarily have its primary roots in the *involvement* of women in the STEM fields so much as it might in the *value* and subsequent *treatment* of women in these fields. Where the contributions of women are devalued and hence treated unequally, I suggest that women may either consciously choose to remain uninvolved, or may assume from an early age (and rightfully so) that they are not valued and thus choose other occupations more likely to offer positive professional reinforcement. As Malone states, "Although many women participated in the profession-building activities of the 1950s, professionalization may have necessitated a

distancing of women in order to elevate the field's prestige. These women did not go away, of course, but their presence could be and often was ignored" (177).

Delving more specifically into the theory behind the systematic devaluation of women in the STEM fields, Roli Varma identifies two areas that may greatly affect why women ultimately choose occupations other than in STEM: early introduction to technology and childhood education in the subject. He writes, "Continued research on the reasons behind under-representation of women in computing education has centered on two broad areas: (i) the gendered differences in the socialization of computer-oriented knowledge and (ii) the gendered differences in performance and self-efficacy in mathematics and computing" (302). The ideas of unequal socialization and feelings of self-efficacy relate directly to Malone's assertions regarding the flawed perceptions held by those in the STEM fields of women as being differently abled. Eventually these perceptions, once regarded as biological in nature, imprinted themselves onto the American consciousness and evolved into the gender gap we see as problematic in today's technological professions.

Cultural ideas that label women as differently abled from men are so deeply ingrained that we directly impart these ideas to children beginning at an early age. In a research study by Varma, the author identifies that "society (including family members) has higher expectations for boys than girls, that children are taught by teachers with bias that girls are good in 'soft' fields whereas boys are good in 'hard' fields, and suggested there is a scarcity of role models for girls both at home and in schools for computing" (305). We now know that there is in fact no biological evidence to justify the gender gap, yet the problem persists. States Varma, "biological gender differences simply cannot account for the participation gap. Instead, issues of deeply

seeded [sic] social and cultural ideas lead to an emphasis on the masculine with regard to computing" (302). If it is safe to assume that these higher expectations are not simply an intentional effort on the part of society to disenfranchise women and to unfairly categorize them, we must look at the cultural reasons that may explain why they continue to manifest themselves.

Part of the explanation for society's erroneous belief that men and women are better suited to separate fields lies in a kind of social non sequitur based in findings from previous studies regarding what were seen as being valid differences between men and women. Ingeborg Wender states:

> As studies have shown, girls and boys, women and men have different interests. Women prefer animated content, having something to do with people, having an obvious relationship to everyday life, relating to natural phenomena and of some use to humanity. Men, on the other hand, are less context dependent; they are more readily fascinated by apparatus and machines as such and concentrate on the object at hand. (46)

Because our culture understands the STEM fields as being more relevant to things like "apparatus and machines" and "objects," it comes as no surprise that we might associate what have been perhaps wrongly assumed to be men's natural interests with fields that correlate to these interests. Because what we wrongly assume to be women's natural interests may not be as readily relatable to the STEM fields, the culture arrives at the erroneous conclusion that it makes sense for each gender to gravitate toward areas that apparently complement these interests. This conclusion, sold as inevitable in our educational system, inculcates in women the misplaced belief that they may be less effective in fields based in technology. Wender, in investigating this belief, discusses it in terms of "self-efficacy." She asserts that "Women generally judge

themselves as being less efficacious then men for scientific occupations requiring quantitative skills, such as engineering and computing (typical male vocations where the percentage of women is equal or less than 25%), whereas men judge themselves less efficacious than women for education and psychology" (45). If women and men judge themselves as being more or less efficacious in certain areas that affirm the traditional views of men as good in "hard" fields and women as good in "soft" fields, there appears to be no real incentive to effect change in the professional arena. In essence, we have arrived at (or perhaps have always been at) a cultural standstill. Affirming this idea, Varma's study indicates that

> teachers in elementary, middle, and high schools need to improve their style of teaching so as not to reproduce the mindset that girls should be motivated towards arts, humanities, and social sciences fields and boys towards mathematics, hard sciences, and computing fields. Both boys and girls need to be taught that computers are for them. Most importantly, school teachers need to equally expose both boys and girls to specific uses of computers, and must rid themselves of the view that boys are 'naturally' better than girls in mathematics. The stereotypes regarding computers and good CS/CE students need to be dealt with. (314)

The Gender Gap in Technical Communication

Relating the concept of self-efficacy to the socially conditioned differences between men and women in their approaches to science and technology, the problem of the gender gap in technical communication arises. While the gender gap in the STEM fields manifests itself as a clear lack of women's involvement, the gender gap in those fields in which we *communicate*

information relating to the STEM fields is a different story. Though women have been historically steered away from the "hard" work associated with science and technology, they have not historically been steered away from *writing* and *communicating* about this work. At the conclusion of his article, Malone points out that "in the 1960s and especially the 1970s, as more women moved into the nondomestic workforce, they may have gravitated toward fields such as technical communication that had long been open to women. This phenomenon, more than the others, may account for women's superior numbers in the profession today" (177). So, as opposed to the STEM fields, in which men dominate the design and development of today's technology, the field of technical communication is dominated by women writing about this technology (Malone). In many cases, these women are in fact responsible for teaching audiences how to *use* "masculine" technology. This begs the question of why, as a culture, we are comfortable with women talking to us about technology, but not with women actually creating it. I assert that these differing levels of comfort are an effect of the phenomenon discussed by Malone, where women entering the nondomestic workforce encountered a culture that steered them into the communication field, which was perceived by men already working in the STEM fields as being less important than their own work in design and development.

In "Gender Differences in the Oral Communication of Technical Information," Rita Marcella and Susan J. Binfield offer a very simple explanation that summarizes the prevailing cultural point of view: "Men were generally thought to be more knowledgeable about computers but less willing and/or able to communicate that knowledge . . . . It appears that a stereotype exists among students which labels males as technologically knowledgeable but lacking in communication skills, and females as lacking in knowledge of computers whilst being better

instructors" (188). Marcella and Binfield's findings relate directly to Wender's assertions that men and women perceive of themselves as being inherently more skilled in certain predefined areas as opposed to others. Again, the erroneous notion of men as more capable and knowledgeable regarding computers is something communicated to young men and women through social conditioning and is a reflection of the values mistakenly assigned to each gender in our culture. Though research may increasingly acknowledge that differing feelings of self-efficacy between the genders are fundamentally baseless, they are still supported by many in our society, including those responsible for educating our youth. It can be easy to forget that the rise of the Internet occurred relatively recently in our society, and while we take it for granted that this crucial technology is now a part of our everyday lives, each gender may not have been given an equal amount of exposure, or even the same kinds of exposure, to it.

Anoush Simon interviewed women regarding their amount and types of exposure to the Internet. Not surprisingly, he found that "their main experience of the Internet had been gained or developed in a work context; especially, those women who worked in the information profession had, or were currently undergoing, various forms of ICT training" (481). This finding suggests that women's exposure to the Internet, perhaps the most ubiquitous of modern technologies, has more often been incidental in nature, rather than something introduced at an early age as potentially useful to a future career path. Granted, the generations currently coming of age will most likely not share this same experience, but I do believe it has an impact on women of previous generations who are still very much present in the workforce.

Cindy Royal's research into women's relationships with the Internet also reveals differences in the ways in which women actually use the medium. She indicates that "research on

representations on personal home pages shows that women's Web pages are typically more revealing, more likely to express an opinion, and more willing to display creative efforts than those of men" (416). This echoes Wender's statement regarding the misperceived differences in the interests of women and men, and also Goldstein's example of Jasmine Gao and the Technovation Challenge. Royal, along with these other researchers, points to the theme of "equal access, yet unequal participation" (417) as key in understanding why women experience a different relationship with technology, and thus communication about that technology, than do men.

As I noted earlier, the gender gap as it relates to the STEM fields manifests itself differently than the gender gap in technical communication. While the number of women participating in the STEM fields is markedly less than the number of men (and falling, according to Goldstein), the number of women involved in technical communication is actually greater than those of men. The gap evident in the STEM fields, however, has an enormous influence on what we understand to constitute the gender gap in technical communication. When we speak of a gender gap in technical communication, we are speaking of a gap in the ways in which women's voices are recognized as valued and important in the communication of technical and scientific information. Because men dominate the STEM fields themselves, I have concluded that their voices also, by default, dominate the communication of STEM-related information. This is not to ignore that there are more women than men working as technical communicators, but rather to highlight the fact that these women are being asked to communicate technical information from a masculine ("rational," objective) point of view. When confronted with concepts such as the "windowpane theory" of communication and the traditional idea of technical writing as totally

objective and free of any real voice, I identify a dilemma with which women are presented in their professional work. For one, it is becoming more and more acknowledged that writing is never actually free of some sort of voice. Even the driest of technical software manuals are written to convey authority, credibility, and other tones that can betray some personal aspect of the author. For another, when being asked to write "objectively," women are really being asked to write in a "masculine" fashion. As Hartley et al. and Barker and Zifcak indicate that women are more apt to express opinion and emotion in their communication, the pursuit of "objective" communication effectively silences women who would otherwise communicate differently. While objectivity is technically asked of men as well, the research indicates that social conditioning lead them to communicate in this fashion anyway. In this way, women are unfairly asked to assume a separate identity as technical communicators; this is not something also asked of men. This double standard is what constitutes the gender gap in technical communication.

In "Communication and Gender in Workplace 2000: Creating a Contextually-Based Integrated Paradigm," Randolph T. Barker and Lisa Zifcak address the different communication styles assumed by men and women. They categorize them as:

> . . . transaction (male) vs. interactive (female) . . . . The two contrasting styles have also been labeled affiliative (female) and instrumental (male) with the former characterized by an interpersonal or relationship emphasis while the latter represents communicating with the authoritative, logical, and aggressive purpose. (337)

In relating the concept of these contrasting styles to technical communication, these separate styles indicate that each gender expects a different outcome from their writing. For men, the expectation is that the audience should absorb the information they have conveyed as being

delivered from a correct and credible source. There is little room left in this style for questioning of either the source of the information or of the information itself. For women, the expectation is that the audience should be involved in a two-way exchange of absorbing information. In this style, the questioning of information, and even the source of the information, is encouraged. This interactive style most often used by women as a result of their cultural experiences emphasizes the communal nature of the act of communication. Amanda B. Diekman, Elizabeth R. Brown, Amanda M Johnston, and Emily K. Clark interestingly point out that "It is ironic that STEM fields hold the key to helping many people, but are commonly regarded as antithetical (or, at best, irrelevant) to such communal goals" (1056).

As the traditionally objective (masculine) style is favored in technical communication, women may have a great deal of difficulty adapting to fit a mold to which they may not readily adhere. Note Hartley et al., "In the United Kingdom, a number of commentators have suggested that the writing of women university students is more cautious than that of men. Spurling [32] and Clarke et al. [33], for instance, maintain that university teachers and examiners favor an assertive, self-confident, and bold academic style when they are awarding first class degrees" (245). This suggestion is certainly also applicable to university education in the United States, and thus translates to the styles of writing that are preferred in the workplace.

I suggest here that men and women are treated differently in the workplace due to cultural ideas of what each gender might be best suited for professionally and how each gender approaches communication. The real, and very problematic, effect of this unequal treatment is outlined by Barker and Zifcak:

> . . . the male/female communication dichotomy contributes to a double standard in the workplace of which most women are all too familiar: the choice of being an effective professional and fitting the stereotypical standard for a woman. Some of these studies echo women's concerns that achieving both of these is just not possible due to the prevalence of gender prejudice [19]. If, for example, a woman is loud, outspoken, and/or assertive, this may be very effective for job success but she may risk the certain negative consequences of deviating from the female "norm." (337)

The authors here outline a cultural phenomenon in which women are "damned if they do and damned if they don't." In some respect, because women are obviously not all identical in personality and approach, they are faced with having to sometimes alter themselves in one of two equally disheartening ways. An assertive and outspoken woman may feel that she has to "tone down" her personality in order to fit the "norm" in a professional setting. In opposition, a woman who is able to assume the desired workplace personality that fits the female "norm", but wishes to be taken seriously and have her ideas heard may feel that she has no choice but to aggressively present her ideas and therefore offend her coworkers and superiors in order to receive equal treatment. This is a conundrum that I believe is not faced by most men in the workplace. In actuality, men may be given a great deal more leeway in presenting their ideas and interacting with coworkers, as deviations from the male "norm" may just be seen as unique aspects of that particular male's personality. These nuances in personality are not generally as accepted in females in the workplace, as they can lead to labels like "overly emotional" and "irrational."

The double standard illustrated by Barker and Zifcak is at the root of the gender gap in technical communication. In essence, women have been systematically told by the culture that

they are not naturally good at careers involving science and technology, but that they may be competent to write and communicate about these fields. When writing and communicating information relevant to these fields, however, women are then told that they must adopt a style that may be in direct opposition to their own in order to be successful communicators. When they adopt this style, women are then told (in not so many words) that they are defying society's traditional understanding of what is normal for a woman and may therefore suffer consequences that may permanently damage their professional careers. Considering this problematic evolution of women's roles in technical communication, it should really come as no surprise to scholars, theorists, and professionals that many in the field now argue for a substantial and demonstrable change to the predominant objectivist paradigm. Without this change, we will continue to disenfranchise an entire demographic and, more crucially, possibly stunt the growth of the field and inhibit the development of effective communication skills in young professionals, both male and female, for years to come.

CHAPTER III: A NEW APPROACH: THE PARADIGM SHIFT FROM THE OBJECTIVIST TO THE INCLUSIVE

Having identified the nature of the gender gap in technical communication, I now address the ways in which the gap has caused women to challenge the predominant objectivist paradigm in the field. Because the primary goals of technical communication such as an interactive style and a user-centered design align themselves so closely with the skills and abilities currently brought to the field by women, one might expect that a paradigm shift from the traditional objectivist model to a model more reflective of real user experience should occur naturally. In this chapter, I explore to what extent this shift has actually been realized (or not) in the professional arena. I also discuss some pertinent examples of technical communication practice in modern culture as well as theoretical models suggested by contemporary authors.

The Traditional Approach

The traditional "windowpane theory" of technical communication rests heavily on an understanding of the practice of communicating technical information as bluntly scientific and rational, where the role of the author's voice and any sort of subjective approach are treated as irrelevant to the task at hand. As I discussed in Chapter Two, because the approach to communication more often assumed by women has been so closely associated with this perceived irrelevancy, women's contributions to an evolving approach may be difficult to integrate into contemporary professional practice. Lee E. Brasseur explains:

> Since, historically, science and technology has reflected the views of the dominant group within its culture, the viewpoint has been a masculinist model of human experience

> which assigns goodness to certain valued "male" traits such as rational thinking and objectivity. In addition, since its institutions and practices have, for the most part, evolved without much input or critique from subordinate groups, the current understanding of what constitutes rational behavior or objective judgment reflects only this group's ideas about the nature of human activity. (476)

Both because rational thinking and objectivity are so highly valued in the technical disciplines and because these characteristics are commonly understood to be masculine in nature, women have a very limited space in which to influence the direction of the field. If, in practice, we only assign value to masculine characteristics in communication, we do a disservice to not only women, but to the practice of technical communication as a whole. In a sense, the problem is not that aspects of communication such as rationality and objectivity are always wrong and detrimental; rather, it is that the field has largely emphasized these aspects to the exclusion of any others that might also contribute to the effective communication of technical information. Indeed, "while traditional discourse models in technical and professional writing may contribute to successful communication within an organization, they may also promote enculturation to a kind of communication which diminishes peoples' voices, disinherits them from power and, thereby, limits the capacity to affect [sic] change" (478). Brasseur here makes evident that in discussing the traditional discourse, we must be careful to not assign "good" and "bad" qualities to either men or women exclusively, but rather to emphasize the inclusion of voices and approaches from both genders.

The notion that technical communication should ideally exclude all references to emotional appeal reaches as far back as the seventeenth century. In her article, "The Plain Style

in the Seventeenth Century: Gender and the History of Scientific Discourse," Denise Tillery investigates why this conception of language came to be. The Royal Society, being as concerned with Aristotle's rhetorical appeals as they were, appeared to feel that the aggressive use of ornate language could potentially have a negative impact on the act of communication. Tillery describes this attitude: "The fear that appeals to pathos through highly eloquent language would feminize an audience and make true knowledge unpalatable is only one aspect of the Royal Society's gendered anxieties about language. These writers also attributed to eloquence a second, more dangerous power: that overly grandiose rhetoric could actually consume its own meaning" (281). This fear is certainly an understandable one, and helps to illuminate the modern conception of a need for separation between emotional and logical appeals. It stands to reason, however, that a solution involving their complete separation does not comprehensively address the issue. Especially when considering the diverse nature of most contemporary audiences, choosing to focus entirely on logos, to the exclusion of pathos, can be seen as not only foolish, but as decidedly myopic.

Tillery goes on to discuss that the Royal Society's idea of pathos as destructive to the communication of technical information ignores the reality of how audiences comprehend text. She states, "the meaning in text is created by the act of reading, and that reading is a social act, often involving discussions with others to achieve meaning through consensus. Rational meaning, including scientific knowledge, is not something that can be threatened with annihilation by meaningless or purely fanciful worlds" (284). In other words, treating technical communication as a model involving only a one-way exchange ignores the role played by the audience in determining meaning. The meaning of text is not determined solely by the author,

but is rather a two-way exchange of information that necessitates the audience's involvement. Approaching technical communication otherwise creates disparities between those who have information to convey and those who need to receive it. This is how a phenomenon like the gender gap arises. In a culture where "the technical experts are seen as possessing the 'cold hard facts,' and the public's reaction to those facts is seen as only sentimental and emotional, the expert scientists can easily dismiss public concerns, without ever examining biases inherent in their own scientific values" (Tillery 286). This is an important point, as this is how women are disenfranchised in the modern practice of technical communication. When men are seen in culture as being the more rational of the sexes, and when this "value" is then applied to the practice of communication, whereas women are perceived as being overly emotional, men can easily dismiss the concerns of women without ever needing to consider the biases and subjectivity inherent in their own work. Essentially, equating women with the "emotional, unknowledgeable" public strips them of their worth in the technical fields and erroneously positions men as somehow superior in their practice.

Social Role Theory

In looking at how women challenge the traditional objectivist paradigm, social role theory suggests a model through which women might obtain more power for themselves in a professional setting. The theory contends that the gender roles that many in our culture have come to view as either inevitable or even natural in form are really products of socialization beginning at a young age, as discussed in Chapter Two. Rather than any one skill or ability being inborn and unique to one gender or another, social role theory posits that men and women

develop certain skillsets based on society's understanding of "provider" and "domestic" roles. Because the provider role affords a greater degree of power, and because the provider role in our culture is generally associated with being male, women are prevented from obtaining any real power. In using social role theory to possibly shift the predominant paradigm, Isabelle Thompson suggests that these roles can be altered. She states, "regardless of early socialization, women can learn behaviors associated with the provider role through participating in social experiences once reserved for men. The provider role is available for anyone—regardless of sex—who has the power and opportunity to bring home the most money and who controls opportunities for herself and others" (218).

While Thompson may believe that this particular tactic will prove effective in the long term, I believe that the fact that social role conditioning is so deeply ingrained in our consciousness may prevent us from identifying it as such. In a 1991 study published by Elizabeth Flynn, a survey team "reported results from an attitude survey of 43 engineering students where men and women agreed that sex differences had no effect on collaboration. The Flynn team argued that because the students—especially the women—were blinded by their socialization, they could not identify discrimination" (Thompson 222). Other research indicates that as women gain greater experience in the workplace, they take on characteristics generally perceived to be masculine in nature. Says Thompson: "Traditional gender differences in agentic qualities between men and women seemed to disappear as they gained experience and status in the workplace. When in high status positions, women assumed agentic qualities typically associated with men" (225). This assertion supports the idea of social role theory as a potential factor in the paradigm shift from the objectivist to the inclusive. Unfortunately, though this concept is

theoretically promising, I do not see where it has had much of an impact on the modern workforce. Thompson writes: "At present, however, differing gender roles continue to enculturate sex differences in men and women. Sex segregation in the workplace continues, and few women have obtained the power traditionally associated with masculinity" (228). I discuss the reasons why women have failed to obtain this power later in this chapter.

Interpretive Discourse

Another theoretical approach to shifting the predominant paradigm in technical communication is "interpretive discourse." This approach emphasizes gearing the practice of technical and professional writing to the user-centered design and interactive style I mention earlier, and focusing on the diversity that is readily apparent in most audiences. Sean D. Williams asserts that in its current mode, technical communication is stuck in a sort of discursive rut that fails to properly consider the user, and instead overly considers the product. He states that, "the field remains firmly lodged in a single paradigm—a single discourse—that imbues our discipline with values that favor ends over means . . . our field is still firmly rooted in what Communications Studies scholars call 'normative' discourse that focuses on expedience, managerialism, and techno-rationality" (430). It bears mentioning in this instance that expedience, managerialism, and techno-rationality are all qualities typically perceived as being masculine in nature. Relating this to Barker and Zifcak's point that men and women write for different purposes and expect different relationships with their audiences, Williams makes clear that the current paradigm favors the purposes and expectations of men as superior to those of women. The interpretivist approach also relates to Barker and Zifcak's description of women's

styles as being “interactive” in stating that, “The goal, then of an interpretivist approach to Technical Communication would fundamentally change from producing things to enabling human interaction” (Williams 441).

This concept of interactivity is at the core of what should differentiate any new paradigm in technical communication from the traditional objectivist model. Even when we speak of technical and professional writing as being user-oriented, we still are not semantically recognizing our audiences as what they really are: people. Doing this requires that technical communicators take into account all of the various beliefs, cultural values, and predispositions unique to diverse audiences. Because, as pointed out by Diekman et al., women may often concern themselves with these “communal” aspects of technical communication, the interpretive discourse model suggested by Williams appears to be well aligned with the idea of women challenging the predominant paradigm. Williams captures this concept in stating:

> Users vs. people—this encapsulates a fundamental distinction between the normative quadrant and the interpretivist quadrant. Specifically, traditional models of Technical Communication focus on “thinking and performance,” otherwise known as expedience, while newer models recognize the importance of interactions—interactions among individuals, among affect and cognition, among individuals and their cultures. (441)

By emphasizing the interpersonal aspects of technical communication, we enable women to excel in ways that were not previously recognized as “good” communication. This kind of a model expands the field to encompass as many diverse audiences as possible—including women—and therefore could shift the objectivist paradigm ever more toward an ideally inclusive model.

Skepticism

Yet another theoretical approach that may aid in shifting the objectivist paradigm in technical communication is that of skepticism. Posited by Dana Lynn Driscoll, "Skepticism fronts that no research paradigm, process, or study can get to 'Truth' or an objective reality—all are subjectively bound within human experience" (Driscoll 203). This idea is directly at odds with objectivity as defined in terms of positivism. Writes Driscoll, "Specifically, individuals who see composition as a postmodern discipline take issue with empirical research and its principles that appear to be rooted in positivism, or the philosophy that all true knowledge is scientifically based and all things are ultimately measureable (and in some cases, quantifiable)" (197). Similar to Williams and his assertions regarding interpretive discourse, skepticism theorizes, and rightfully so, that looking at the practice of communication from all possible angles and fostering an atmosphere of interactivity among the audience and the author, (thus emphasizing user-centered design) is the key to "good" communication. Rather than advocating any one theoretical mode or paradigm, Driscoll positions skepticism as a sort of theoretical "catch all," where the author does not necessarily eschew objectivity, but rather recognizes that this model cannot possibly account for all of the various factors involved in designing and developing communication products. She clarifies this point in stating, "Although empirical research has been frequently viewed as being positivistic or masculine, a skeptical view of research allows for it to both retain its core goals of systematic inquiry and to peacefully exist within any dominant paradigm" (198). In this way, I assert that Driscoll has identified a way in which a paradigm shift may occur while still accommodating many diverse theoretical perspectives.

The concept of skepticism could certainly be helpful in shifting the predominant paradigm in technical communication because of its emphasis on questioning the status quo. The tradition of objectivity persists as it does due to a sort of passive acceptance of the concept of communication as a means to an end, with an emphasis on the end rather than the means. As Williams points out, this emphasis on the end product rather than the process necessary to achieving that end tends to devalue the interactive experience of the user that could be vital to any sort of significant paradigm shift in the field. Driscoll, in suggesting a skeptical model, affirms that "Paradigm shifts—or radical changes in the way that inquiry is done—can only take place by individuals questioning the paradigm and looking for solutions outside of the accepted norm. In other words, for a paradigm shift to take place, one must question" (201). In considering this, I suggest that the fact that only those who are disenfranchised by the current model really have any sort of incentive to question this "accepted norm" might explain why some women so strongly contest the predominant objectivist paradigm. Because it does not benefit them or serve their interests, but rather devalues their contributions, women have a somewhat personal stake in challenging the status quo in technical communication.

Though researchers such as Thompson, Williams, and Driscoll suggest several different discourses through which the field of technical communication might realize a paradigm shift, the traditional idea of technical writing as purely objective continues to be a difficult one to change. This is due in part to a lack of significant change in the technical writing classroom. Without a certain shift in pedagogy, a substantial shift in the professional arena cannot occur. In his article "A Contrary View of the Technical Writing Classroom: Notes Toward Future Discussion," Jack Bushnell acknowledges that while the way that technical communication is

taught may have changed slightly, it has essentially failed to recognize the fundamental need for technical texts to be approached from a completely different theoretical perspective. He states:

> To the extent that technical communication textbooks have gradually replaced their early emphasis on boilerplate (form and format) with an emphasis on the *social context* for workplace documents, they accurately reflect some of the complexities facing industry writers, including the pressures sometimes resulting from company demographics, the political dynamic surrounding any project, the necessity to set priorities, and the ethical decisions to be made. But those textbooks haven't yet taken the next important step, a step anticipated by some recent theorists in scientific and, to a lesser extent, technical writing: a recognition and discussion of professional documents (and professional discourse in general) as individual and social *constructs*; as anything but neutral, objective writing; as, in fact, worthy and demanding of our attention as bias- (or agenda-) laden *texts*. (177)

Without recognizing technical communication as an activity that is inherently biased and subjective in nature, professional writers will continue to perpetuate a conception of the practice as ideally objective and will, by default, revert to the traditional notion of the field described in textbooks from the last several decades. This, in turn, will continue to ignore the roles of women as equal contributors to a contemporary communication model.

Cultural Examples

Outside of critical theory and the world of academia, our culture provides perhaps the most striking evidence to support the assertion that women in technical communication have not

achieved nearly the level of progress in the professional arena that we might have hoped. In "'Just Roll Your Mouse Over Me': Designing Women for Customer Service on the Web," Sean Zdenek explores the gendered nature of personified software agents, also referred to as "v-humans." His argument centers on the tendency of software developers to design these v-humans as female and how this characterization positions women as objects of use. He writes, "In general, v-human designers prefer virtual women to men, even though their preferences (as well as the preferences of users) may remain unarticulated or unconsciously expressed" (412). This preference, I think, remains unarticulated because of how our culture is conditioned to perceive women's roles as servile.

Though the researchers I have discussed thus far have identified the need for any significant paradigm shift in technical communication to involve a focus on the people who actually constitute audiences rather than simply on the impersonal "user," the modern design of virtual agents meant to assist consumers appears to completely ignore this. In figuring most virtual agents as women, Zdenek asserts that developers "objectify women through a not-so-subtle process of linking technology-as-tool to the idea that women are tools, fetishized instruments to be used in the service of accomplishing users' goals" (398). This objectification may largely be due to the fact that in their never-ending quest to accomplish realism and human-like interaction in their characters, developers unwittingly convey deeply-held attitudes regarding how women actually "are." Considering that, as pointed out by Goldstein, the vast majority of today's programmers are male, "lifelike" representations of digital women are, in many cases, misrepresentations based on preconceived notions of what it means to be female. Zdenek explains, "They persuade users they are humanlike when they reflect (and promote) assumptions,

sometimes deep-seated, about what it means to be human" (400). In particular, preexisting stereotypes of women may be further affirmed in the minds of consumers when they are confronted with a character designed to symbolize a "typical" female role. As discussed by Malone and Barker and Zifcak, these roles tend to emphasize the "natural" ability of women to teach and help users regarding technical tasks, but not to accomplish these tasks themselves. If we do not question these "natural" roles, as suggested by Driscoll, then the gendered nature of technology is increasingly either not recognized, or is recognized as being irrelevant. In order to effect any real shift in the predominant objectivist paradigm, we must instead recognize these roles as culturally conditioned, as suggested by Thompson. Zdenek underscores the necessity of this recognition:

> In the quest to design a natural, intuitive humanlike system, designers may lose sight of the ways in which gender and gendered interactions are not natural but socially constructed. The appeal to nature serves to justify an entire philosophy of design (in short, that interfaces should interact with us in very humanlike ways) that can, among other reasons, excuse and make invisible design decisions based on sexist assumptions. (405)

I assert that the quest to design lifelike virtual characters is not, in and of itself, problematic. Issues arise, however, when the majority of virtual characters are designed to be female, yet are almost never designed by females, and therefore reinforce stereotypes regarding how women function within a modern technological society.

A good example of a personified virtual agent that reinforces gender stereotypes is VALERIE, a character designed to function as a receptionist at Carnegie Mellon University.

Writes Zdenek, "According to VALERIE's official website, she talks on the phone a lot, agonizes about her love life, aspires to be a singer, worships Barbara Streisand, is comforted too often by her 'motherboard,' and relies on her shrink for endless support. VALERIE's designers seem unwilling to reflect on the ways in which their artifact is inscribed with cultural values" (419). As none of these attributes is in any way related to assisting a human consumer, but rather to cause the consumer to feel as though they are interacting with a lifelike portrayal of a receptionist, VALERIE ends up affirming fallacious cultural assumptions of women as unstable communicators and as prone to becoming overly emotional, even irrational and off-topic. Considering that virtual characters such as VALERIE are designed most often as women, and are also simultaneously designed to never argue, to always understand, and to perform continuously without complaint, it is safe to assume that these personality attributes are those that most of us actually prefer to see embodied in not just virtual women, but in real, live women as well. One can imagine that virtual characters designed as men, in mimicking the social roles we perceive as being "natural" to them, might reflect much different personalities and evoke much different user responses. In other words, it might not be a coincidence that while Apple offers iPhone users a male voice assistant as an option, the default option is Siri, a pleasantly voiced and always helpful female persona.

If VALERIE, Siri, and other female v-humans are not examples of a malicious attempt to disenfranchise women, but are rather simply a reflection of our culture's perceptions of women's roles, the audience is as much to blame for the perpetuation of the objectivist paradigm as are designers. This idea again comes back to the traditional conception of technical communication as only a means to an end rather than a social construct that promotes stereotypical thinking.

Here, Williams' and Driscoll's suggestions become significant in helping us to reimagine our communication paradigm. The "discursive rut" discussed by Williams is evidenced by the culture's continued preference for positioning women in roles where they dutifully serve, and this rut may perhaps only be successfully addressed by questioning the status quo and making substantial change, as suggested by Driscoll. Realizing that the audience and designers of modern technology are merely reflecting the culture's gender assumptions back at one another, Zdenek makes this recommendation:

> Getting the audience involved as an "actual participant" in the design process (Johnson, 1997, p. 363), while an important objective for our field, may interfere with the technical communicator's social responsibility to design inclusive (antisexist) technologies. Rather than simply explore whether personified interfaces are more effective or usable than traditional interfaces (Lester et al., 1997), technical communicators need to be willing to question the design of technologies that are usable but nevertheless continue to reinforce sexist assumptions about gender and labor. (423)

Essentially, it is the technical communicator's responsibility to provide the user with products that represent the nature of that specific user. Regardless of the user's tendency to operate based on cultural conditioning, the technical communicator must assume responsibility for recognizing this conditioning for what it is and take special care to design for the actual audience rather than the imagined audience. This is particularly important in considering Wender's research regarding self-efficacy. If "believing you have innate qualities that make you good or bad at something—called 'entity theories'—can change the way you handle a difficult task" (Severns), then females

who are exposed to v-humans like VALERIE and Siri may absorb their stereotypical attributes as generally representative of what women "should" be.

Another cultural example that illustrates the lack of a shift in rhetoric towards a paradigm in technical communication that is fully inclusive of women is that of the clothing retailer Weekenders. In "A Visible Ideology: A Document Series in a Women's Clothing Company," Kirstin Cronn-Mills investigates a seeming rhetorical shift towards the feminist within a company (like Mary Kay) intended to empower women. In 1997 and 1998, Weekenders conducted a major redesign in their marketing and sales documents that was intended to convey a more modern and powerful image for women. Because the company is run by women selling their products to other women, one might assume that the company is an example of the approaches to social role theory discussed by Thompson where women obtain power for themselves by stepping into roles that were historically understood to be male. Unfortunately, Weekenders appears to be more of an example like the one introduced by Goldstein of Jasmine Gao and the Technovation Challenge. Writes Cronn-Mills:

> The Weekenders opportunities support women because the hours are flexible, family life can come first . . . . However, the more I examined Weekenders, the more accepting they seemed of traditional women's roles. No real attempts were made to encourage women's power except for looking good and expressing "individual flair." (126)

So, while Weekenders' outward image may have changed to appear to be more feminist, the underlying cultural perception of women's roles remained unchanged. I relate this point directly to Zdenek's recommendation that technical communicators must not only focus on the usability and technical efficiency of their products (as a means to an end), but should rather focus on

developing products that are inclusive and nonsexist in nature. Focusing on the inclusive, questioning the status quo, and then reimagining how we design products for various audiences is the only way in which a real shift in the predominant objectivist paradigm might occur.

VALERIE, Siri, and Weekenders are but a few examples of how a fundamental paradigm shift from the objective to the inclusive has not yet occurred in the field of technical communication. If, as stated by Bushnell, many technical writing textbooks have not yet taken the step of recognizing technical writing as socially constructed and inherently biased, it is essentially impossible that this step could have been taken in the professional arena. The v-humans discussed by Zdenek are evidence of this. Indeed, they are also evidence of the real problem preventing the paradigm shift from occurring: that of deep-seated, culturally promoted sexism. This cultural sexism, I believe, is the real reason that women have failed to attain equal footing with men in many areas relating to technology and communication, but especially in the workplace. Thompson notes that sex segregation in the workplace is continuing and that women, though afforded equal opportunity in theory, have not obtained the professional power so long associated with masculinity. This is because changing the way we approach the issue on the surface does not ultimately change the overall trajectory of cultural perception. Illuminated by Royal as a central theme in the debate surrounding the paradigm shift in technical communication, equal access does not result in equal participation or in equal recognition. Women's real voices are not heard so long as VALERIE and Siri represent women in the technological discourse. So, I determine that women may challenge the predominant objectivist paradigm by attempting to grab power for themselves and assuming the provider role (Thompson), but that this attempt will consistently prove futile unless technical communicators

begin to truly value the interactivity emphasized by Williams and really question the status quo by viewing the practice through a skeptical lens as advocated by Driscoll. Only by taking these steps will we see a substantial shift toward a more inclusive paradigm in the field.

CHAPTER IV: CONCLUSION

The theory and critical research I have cited in the preceding chapters demonstrate that while the issues surrounding the relationship between women and technology have been debated for decades, a clear gap between the genders continues to persist both in the way the culture approaches technology and in the way it approaches communicating about technology. Despite the best efforts of feminists and researchers in the field of technical communication, we find ourselves contending with the discursive rut described by Williams. Essentially, though I have posited a number of reasons for why the gap persists, we as a culture have perhaps failed to address the larger issue at hand.

As I discussed in Chapter Two, women now represent the majority of users on sites dedicated to social networking, e-commerce, and gaming (Oremus) and have also reached parity with men regarding internet usage (Royal). These researchers, in addition to Goldstein, Goldman et al., and Malone, indicate that the gender gap does not appear to be based simply in the involvement of women in the field, but rather in the value and subsequent treatment of women's voices. Varma affirms this emphasis on treatment in pointing out that society has higher expectations of boys in relating to technology than it does of girls. These differing expectations then contribute to a decreased sense of self-efficacy in women regarding technology and what are perceived to be the "hard" sciences (Wender). Because women are less valued by many in the STEM fields, they have historically taken the culture's advice and gravitated towards communication and other fields that allow them to use what society has labeled as being their "natural" abilities. Even this approach has not provided a safe haven for women, however, as Barker and Zifcak have asserted that cultural ideas of women as being less professionally able

still manifest themselves in these fields. They also point out that gender prejudice is alive and well in the workplace and that women may even be punished for deviating from the accepted female "norm."

In Chapter Three, I addressed theories and approaches such as social role theory, interpretive discourse, and skepticism that might help in shifting the predominant objectivist paradigm toward a more subjective and inclusive model. Though I believe that these ideas, as suggested by Thompson, Williams, and Driscoll, are certainly worthy of further study, I do not have confidence that they have been implemented in any sort of culturally significant way. The cultural examples I have provided of the biased design and development of v-humans (Zdenek) and the document redesign of Weekenders (Cronn-Mills) affirm that while women may challenge the predominant paradigm, and may even inspire attempts to substantially revise it, the professional arena is slow to adopt change as it continues to perpetuate antiquated notions of gender and professional ability. As I have previously suggested, despite much theorizing and research, attempts to drastically shift the predominant paradigm have largely been unsuccessful due to a failure to address the larger, and more critical issue at hand: that of a culturally promoted sexism. This sexism is what ultimately has prevented women from being seen as professionally equal to men in the field of technical communication.

Sexism: The Larger Problem

In a study by Isabelle Thompson and Elizabeth Overman Smith concerning the number of articles published about feminism and technical communication, the authors found that "technical communication scholars' interest in feminism and women's issues has declined over

the past 15 years, but articles on the topic continue to be published" (196). This echoes a seeming inability on the part of researchers to effectively solve the problem I have discussed throughout this thesis. Indeed, the approaches suggested by theorists in an effort to combat the larger issue have changed over the years due to an eventual realization that these approaches have failed to have any significant impact on the field. Thompson and Smith state that "Since 1989, feminist discussions of language in technical communication have moved from advocating gender-neutral word choice to acknowledging that sexism is so deeply rooted in our society that inclusive vocabulary may mask current discrimination" (192). In other words, recommendations that changes in language usage fail to address the problem of cultural sexism because they offer communicators what is essentially an "easy way out." Simply substituting pronouns does not address the deeper convictions of today's writers and most certainly does not result in a more person-centered product.

In "Women as Communicators: Mary Daly's Hagography as Rhetoric," Cindy L. Griffin further illuminates the idea that the involvement of women in the field alone does not equate to a fundamental change in the predominant paradigm. She writes, "In 1987, Spitzack and Carter suggested that, although women's visibility has increased in the communication discipline, the simple fact of their presence has not necessarily corresponded to increased knowledge about women's unique or distinctive forms of communication" (Griffin 158). She goes on to infer that men have taken advantage of society's unequal treatment of women in the professional world through a concept she calls "the foreground." She explains that "The foreground is maintained and perpetuated by numerous strategies and constraints that function to keep women separated from their experiences and perspectives and, ultimately, unable to recognize their real selves"

(162). In essence, the foreground can be seen as similar to the maintenance of the predominant objectivist paradigm in that it presents for women a lens through which to view themselves that prevents them from being treated equally. If women only see themselves through a masculine lens (objective in nature), it is very difficult for them to challenge the status quo.

Further, I believe that Griffin accurately describes several methods used by the culture to perpetuate sexism that paint a picture of an intentional effort on the part of men to suppress women's voices and to prevent them from altering their privileged status in society. She explains:

> This constraint is perpetuated in four different ways—through depreciation, particularization, spiritualization, and universalization. Depreciation involves asking the question, 'Are you on that subject of women again when there are so many important problems—like war, racism, pollution of the environment?' (1985a, p. 5). With depreciation, the fact that sexism is 'the basic structure underlying the various forms of oppression is masked' (1984, p. 320). Particularization occurs in the use of phrases such as, 'Oh, that's a Catholic problem,' so that individuals are led to believe that patriarchy exists in only a few institutions (1985a, p. 5). Spiritualization is the refusal to look at facts of concrete oppression. With this technique, women are constrained by the proclamation, 'in Christ there is neither male nor female' (1985a, p. 5). The effect of spiritualization is that even if there were no sex assigned to Christ, we are led to believe that there is no patriarchy anywhere else (1985a, p. 5). A final technique available for clouding the issue of the dominance of the foreground perspectives is that of universalization, represented by the question, 'But isn't the real problem human

> liberation?' As Daly suggests, 'the words used may be 'true,' but when used to avoid confronting the specific problems of sexism they are radically untruthful.' (163)

The final sentence of this excerpt from Griffin is particularly important in connecting the problem of sexism to the gender gap in technical communication. With so many techniques of constraint in play, theories and approaches recommending simply the greater involvement of women or only changes to language usage truly miss the larger point: women are being systematically disenfranchised in our culture, and this has wide-ranging impacts on the way they are valued and treated in the professional arena.

At the same time that feminist theories and suggested approaches are constantly evolving, so too is sexism itself. The ways in which sexism is manifested in today's culture are not the same as they were even 20 years ago. The fact that women are no longer treated in exactly the same way as was "Chrysler's Most Beautiful Engineer" does not indicate that the situation has necessarily improved. In her article "Sexism Reloaded, or, It's Time to Get Angry Again!," Rosalind Gill describes the malleable nature of cultural sexism:

> This ideology is not fixed or static, but dynamic and changing, and varies across time and place. Sexist ideas that held sway in Western Europe even a few decades ago—such as the idea that boys are cleverer than girls—no longer have the force they once did. Meanwhile new forms of sexism emerge. Witness, for example, the way that the meaning of cosmetic surgery has changed in less than a generation from being seen as an extreme pursuit of the super rich and/or super vain, to a normatively demanded practice in which most British and North American young women now expect to participate at some point in their lives. (66)

This passage illustrates that not only is sexism continually evolving, but that it is perpetuated by both men and women alike. I do not mean to suggest that either gender consciously aims to disenfranchise women, but rather that the ideology of sexism is deeply rooted in a sort of power struggle that positions men and women against one another in a battle for equal recognition. Cosmetic surgery, for example, is often justified as something that can be empowering to women—allowing them to control the ways in which they are perceived. This echoes Isabelle Thompson's assertion that positions of power may be attained by women if only they make the effort to grab them for themselves and assume the "provider" role. The opposition to this point of view, as stated by Gill, is understandable. Merely assuming positions of power does not necessarily change the underlying ways in which women are expected to adapt themselves to a phallocentric culture. Gill states:

> But it is not simply a matter of *integrating* sexism with other axes of power and difference, but also—as noted in relation to the debates about sexualisation—facing up to the complex dynamics *and complicities* in play in the current moment. This involves recognising that one reason why the term "sexism" has seemingly disappeared as a category of analysis or a political claim in the Western Academy is precisely because of the West's comforting liberal fiction of itself as 'egalitarian.' (67)

This passage highlights a general theme of the current efforts to shift the predominant objectivist paradigm as being self-defeating. If we do not acknowledge the true nature of sexism in relation to why women are essentially non-existent in the STEM fields and not equally respected in technical communication, nothing will ever significantly change. Thinking of ourselves as egalitarian and suggesting that equal opportunity is available to women if only they would take

advantage of it is ultimately problematic to addressing the larger issue of sexism in technology and communication. Both our approaches to, and our understanding of, women in technical communication must adapt in a more or less synchronous fashion.

It is inarguable that in order to effect any real paradigm shift in the field, men and women must be equally important in the process. This is especially crucial in considering the back-and-forth nature of the argument over the last several decades. In "Men and Feminism: Some Challenges and a Partial Response," Jonathan Crowe explores the unique relationship of men to the feminist cause. He asserts, "Men are aware that feminism is not about them. This is difficult for many men to grasp, simply because they are not used to it. They are used to everything being about them, because mainstream discourses are designed to accommodate and value male points of view. A discourse, such as feminism, that is not interested in their problems therefore appears at first as hostile and alien" (Crowe 49). This idea explains the very oppositional nature of affording equal value and treatment to women in technical communication because the argument can be seen as unnecessarily confrontational and one-sided. Men may be blamed for women's problems without the recognition that men also have problems and a sometimes difficult relationship to the field of communication. Likewise, "Whether men's views are heard and considered within feminism depends on whether women think they are worth hearing. And, quite often, feminists are not terribly interested in what men are saying; they would rather hear from women, since their main focus is on advancing women's interests and concerns" (49). So, I conclude that before technical communication products can be really subjective and accurately reflective of their diverse audiences, the subjects of feminism and sexism must first be equally addressed by both men and women.

Opportunities for Further Research

In identifying the nature of the gender gap in the STEM fields, and how this translates to a similar gender gap in the field of technical communication, I have outlined how each gender is perceived differently regarding talent and ability. While some may argue that the "natural" abilities of each gender are inborn and unavoidable, the research I have cited points to the contrary. What our culture often perceives as the inevitable course of the natural world is actually the product of generations of gendered socialization and the consequent influence of this socialization on each gender's feelings of self-efficacy and value. Gendered socialization has positioned technology as a masculine field—designed and developed for men by men with little concern given to the wants and needs of women. This has resulted in both technology and communication products reflecting a supposed male privilege.

I have also presented several theories such as social role theory, interpretive discourse, and skepticism that have been suggested by researchers as potentially helpful in the effort to effect a substantial shift in the predominant objectivist paradigm in technical communication. These theories, however potentially useful, have failed to bring about any significant shift in the paradigm because of what they fundamentally ignore: the larger problem of deeply-held beliefs regarding feminism and sexual roles in modern society.

In discussing the various elements of the gender gap in technical communication and how it causes women to challenge the predominant objectivist paradigm, I have perhaps inevitably pointed to a need for further *meaningful* research in feminist theory and how sexism influences the professional world. Much of the existing research simply emphasizes inequality and, as Crowe demonstrates, lacks a sense of collaboration between the genders. I also identify a need

for further meaningful discussion in the field of technical communication regarding not only how we write, but also how we interact with one another. The research should not only explore how gender relations influence the final written product, but also the interactive process through which the product is created. New approaches in the technical communication classroom that emphasize an interactive style and a user-centered design may be well intentioned, and attempts at increasingly including women in the technological fields may be well advised, but neither of these endeavors will result in a significant paradigm change without first addressing the subjective nature of how men and women both interact and perform in the workplace. I conclude that if the paradigm shift is to occur, it will first require a conversation regarding a fundamental shift in workplace relations between the genders. Through this kind of a conversation, in addition to the application and synthesis of several of the theories and approaches I have discussed, we will potentially be able to move in the direction of eventual professional equality between men and women in technical communication.

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