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Feminist Theory and the Redefini of Technical Communicatio

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I wrote this article not long after I attended a National Endowment for the Humanities (N summer seminar on women's history at Stanford University and had come back to Cla University to help form a feminist reading group among local faculty. I was quite lucky accepted into that seminar and had to explain my presence to the literature and history pa pants whose disciplinary interests dominated the group. To study gender in the field of tec cal communication was unusual at the time, and I started out by reading feminist theorists f other disciplines, particularly psychology. The local reading group certainly helped, as toge we made our way through complex feminist theories, sometimes focusing for a long time o paragraph or thought.

At the most, in the early 1990s, it seemed that as a technical communication scholar i ested in gender, I could either find links between our field and other fields that were well stu in feminist theory, or I could ask research questions to challenge myself and others to beg look at gender in the classrooms and workplaces that constituted our research sites. I first p sented my ideas about the links between gender and technical communication at a Council Programs in Technical and Scientific Communication conference and was so nervous that I to stand and read my position statement rather than sit among my forty-some colleagues fr other programs. This article then represented my thinking at the time about the connections tween gender and technical communication, and Jo Allen's piece, which followed mine in *Journal of Business and Technical Communication* special issue on gender and professi communication, raised a challenging set of research questions.

Looking back on this article now, it seems quite naïve—and quite brave. I probably made same mistakes that others would who were learning feminist theory at the time and trying apply it to a new discipline. I simplified the complex thoughts of feminist scholars too gre and certainly essentialized what I called "women's concerns." But I am still proud of what I learned at that time and how I demonstrated that technical communication scholars had m to learn from gender studies. This article was published just after I moved to the Universit Minnesota and created an undergraduate and then a graduate course on gender and the rhet of science and technology. I wish that I could attach the syllabi from those courses for the decade to demonstrate how much the discipline of technical communication as informed feminist theory and research has developed. For example, Beth Tebeaux's book has identi decades of technical manuals written by women. Susan Wells's book on women physicists

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medical writing reveals the genres that these women developed to contribute to their fields and the rhetorical strategies they used to negotiate within a male-dominated discipline. My own work, following the attempts of traditional midwives to be licensed in Minnesota and to write collaboratively rules and regulations with the Board of Medical Practice, represents for me the culmination of over a decade of learning all those feminist theories and resulting methodologies. So this article became the catalyst for a new and productive direction in my own work—and I like to think the work of my graduate students now.

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Technical communication scholars take an interdisciplinary approach to their field. In addition to theories and methodologies from linguistics, speech communication, literature, anthropology, science, and rhetoric, feminist theory and subsequent gender studies now also influence technical communication research, as well as other disciplines. Women's experiences have become legitimate subjects for study: Women researchers acknowledge their distinct interests as they generate knowledge; social structures have been scrutinized for sexual bias; and scholars have identified women's ways of knowing, communicating, and leading (see Gilligan; Belenky et al.; Helgesen, all of which attempt to describe the distinct ways in which women make ethical decisions, determine knowledge, and manage others).

How then has technical communication—either directly or through its affiliation with these other disciplines—been affected by feminist theory and gender studies? Defined initially as the objective transfer of information, technical communication has long been privileged in its affiliation with science and technology. Now, however, feminist scholars expose the scientific positivist and androcentric bases for scientific objectivity. The studies from these scholars show the need for a redefinition of technical communication.

Moreover, in the 1980s and 1990s, technical communication has adapted ethnography, an anthropological research method, to explore workplace environments. The most recent ethnographic studies in technical communication parallel the concerns of feminist scholars by acknowledging the subjective point of view of the researcher, looking for messages as well as silences and gaps within communities, and emphasizing group values and lived experience.

The subject of these ethnographic studies in technical communication has often been collaborative writing. Again, feminist theory has much to offer technical writing researchers and teachers in analyzing successful collaboration. Particularly, psychological studies and object-relations theory reveal the familial and cultural roots of women's strong psychological connections with others, and scholars

describe the strategies that women frequently use to encourage that closeness. These strategies, if made available to all members of a collaborative writing team, should encourage effective collaboration.

In this essay, I explore how current views of scientific objectivism and the adoption of ethnographic studies—particularly those of collaborative writing—necessitate a new and, perhaps, revolutionary affiliation for technical communication and feminist theory. Although many scholars mentioned in this essay would readily call themselves *feminists*—those who recognize and wish to correct the unequal treatment of women in our culture—even those who may not feel comfortable with this feminist label have conducted work that exposes sexual inequality. To frame this exploration, I first discuss six common characteristics of feminist theory, as well as three issues that divide feminists. These characteristics and issues from the work of feminist literary theorists, the object-relations area of psychology, and feminist critiques of science will be evident in new definitions of technical writing.

CHARACTERISTICS OF FEMINIST THEORY

Although feminist theorists resist uniformity of definition and methodology, a survey of their theories reveals six common characteristics:

1. celebration of difference
2. theory activating social change
3. acknowledgment of scholars' backgrounds and values
4. inclusion of women's experiences
5. study of gaps and silences in traditional scholarship
6. new sources of knowledge—perhaps a benefit of the five characteristics above.

Discussing the characteristics of feminist theory is difficult. Feminist theorists are often suspicious of traditional studies within history, literature, psychology, and science, because, if these traditional studies address women at all, they portray them as Woman or Other. Feminist theorists then resist a uniform definition of feminist studies to avoid stereotyping women in their roles as scholars or research subjects. Accord-

[illegible] from women's own experience of difference, or our difference from Woman and of the difference among women," and this is a shift to the more complex notion that the female subject is a "site of differences," rather than a subject defined by sexual difference (14). Thus feminists see any unified image of women as reductive: "Instead, having been constrained and divided by definitions imposed upon us by others, we tend to value autonomy and individual development. Definitions, whether formulated by feminists or not, threaten to divide us" (Meese 73; see also Delmar 9). Moreover, according to Harding, not only have traditional theories made it "difficult to understand women's participation in social life, or to understand men's activities as gendered," but also traditional theories "systematically exclude the possibility that women could be 'knowers' or *agents of knowledge*" ("Introduction" 3). Thus the first characteristic of feminist theory becomes resistance to definition and a celebration of diversity.

For many feminists, the insistence on diversity consequently becomes a political or activist stance—the second common characteristic of feminist theory. As Harding stated, in resisting a search for "the one, true story of human experience," feminism may avoid replicating the tendency in the patriarchal theories to "police thought by assuming that only the problems of *some* women are reasonable ones" ("Instability" 284–85). For many, this insistence on diversity is consistent with the larger women's movement (see Kolodny 162). Put simply by Weedon, "Feminism is a politics. It is a politics directed at changing existing power relations between women and men in society" (1). Feminist theorists recognize that change will bring positive aspects to women's lives. More specifically, theorists such as Delmar believe that at the

> very least a feminist is someone who holds that women suffer discrimination because of their sex, that they have specific needs which remain negated and unsatisfied, and that the satisfaction of these needs would require a radical change (some would say a revolution even) in the social, economic and political order. (8)

Most recently, *standpoint* feminist theorists "attempt

empowering the 'subjugated knowledge' of women" (Harding, "Instability" 295–96). Thus the second characteristic of feminist theory is the assumption that new knowledge about women's lives will change and improve those lives—the personal is political.

If feminist criticism and theory are political, the reader should be aware of the feminist writer and feminist critic's beliefs and values. Thus the acknowledgement of scholars' backgrounds and values is the third demand of feminist theory. Moi found this characteristic "one of the fundamental assumptions of any feminist critic to date"; the feminist critic should "supply the reader with all necessary information about the limitations of one's own perspective at the outset" (43–44; see also Kaplan 40). This third feature of feminism places the researcher on the same plane as the subject, particularly within science. According to Harding, "the class, race, culture, and gender assumptions, beliefs, and behaviors of the researcher her/himself must be placed within the frame of the picture that she/he attempts to paint" ("Introduction" 9). This admission comes closer to true, rather than simply asserted, objectivity. As Harding stated,

> We need to avoid the "objectivist" stance that attempts to make the researcher's cultural beliefs and practices invisible while simultaneously skewering the research objects beliefs and practices to the display board. . . . Introducing this "subjective" element into the analysis in fact increases the objectivity of the research and decreases the "objectivism" which hides this kind of evidence from the public. ("Introduction" 9)

Revealing the characteristics of the researcher not only helps eliminate bias, but also places the researcher on a more equal level with the subject of the study.

A unique appreciation of both audience and subject further motivates feminists to reveal their own beliefs and behaviors. Feminist research will be *used* by the audience, because it will "provide for women explanations of social phenomena that they want and need" (Harding, "Introduction" 8). To determine these explanations, the subject matter of feminist research is women's experiences—the fourth characteristic among feminist theorists. Feminists see a definite relation between experience and discourse. "One distinctive feature of feminist research," according to Harding, "is that it generates its problematics from the perspective of women's experience. It also uses these experiences as a significant indicator of the 'reality' against which hypotheses are tested" ("Introduction" 7). The audience of feminist scholarship benefits from linking literature to life, from texts that engage in "nurturing personal growth and raising the individual consciousness" (Moi 43). This encouragement to test text against experience also reveals what is missing within other discourses and theories. "When we begin inquiries with women's experiences instead of men's," said Harding, "we quickly encounter phenomena (such as emotional labor and the positive aspects of 'relational' personality structures) that were made invisible by the concepts and categories of these theories" ("Instability" 284). Thus feminist critics relate to their audiences by acknowledging their own backgrounds, by investigating experiences that their audiences have, and by inviting their audiences to test feminist investigations against their own experience.

Seeking the gaps or silences within traditional scholarship—the fifth characteristic of feminist theory—relates to this appreciation of women's experiences. Gaps or silences have been examined in two ways: the identity of the missing and the potential nature of the study had the missing been included. Feminist critics who seek the identity of the missing must decide if deconstruction is helpful, particularly Derridean *difference.* According to Meese, the deconstructive critic "seeks to temporalize or negate the stasis of 'difference' as a structure of paired opposites inscribed and reinscribed forever in a fixed power relationship within a closed system" (80). The deconstructive process opens the gaps in the structure to reveal what women's natures might be if not defined in terms of the opposite of men. Feminist critics, whether in science, literature, psychology, or other disciplines, also speculate what their disciplines might have studied and what methods and discoveries might be sanctioned if women had been included in these disciplines.

Had women been empowered as critics, as audiences, and as sources of experience throughout the histories of the disciplines, they might have established new theories of knowledge and reality—a sixth common characteristic of fem[illegible]

inists acknowledge that what constitutes self-image is not just a matter of personal experience, but that image is "interpreted or reconstructed by each of us within the horizon of meanings and knowledges available in the culture at given historical moments" (de Lauretis 8). If women's experiences had contributed to those meanings and knowledges, women would have been a source of knowledge, of what culture determines as reality, and of what scholars canonize. Feminists have struggled with the power of the canon. Canonization, said Kolodny, "puts any work beyond questions of establishing its merit and, instead, invites students to offer only increasingly more ingenious readings and interpretations, the purpose of which is to validate the greatness already imputed by canonization" (150). By asserting that women are subjects or sources of knowledge, rather than objects of study as Other or Woman, feminists empower women and change definitions of reality or canonized texts. Feminism, stated Delmar, transforms women "from object of knowledge into a subject capable of appropriating knowledge, to effect a passage from the state of subjection to subjecthood" (25). Feminism then can ultimately initiate changes not only in political, social, and economic structures but also in sources of knowledge.

ISSUES IN FEMINIST THEORY

Before assessing the impact that these six characteristics of feminist theory have on new definitions of technical communication, I must acknowledge three issues of debate among feminists, because technical communication scholars may have to decide where they stand on those issues:

1. Should feminists emphasize similarities or differences among men and women?
2. Should these differences be located in cultural or biological traits?
3. Should these first two issues promote or displace binary opposition?

The first issue of debate involves whether women should emphasize their differences from men or their similarities to men. Should women try to take on traditionally defined masculine traits? For example, should women in the workplace learn the language of power? Or should women celebrate what have been labeled feminine traits? For example, as Rosenthal asked, should women "insist on the 'humaneness' of typical female qualities like compassion, help, nurture, and self-sacrifice—to put these qualities into practice in their professions . . ." (66)? Or should both men and women move toward androgyny, a "non-sex-marked humanity" (66)? The French feminists, such as Cixous, Kristeva, and Irigaray, have chosen the second option to celebrate those traits that have been labeled feminine traits: Moi said that while "extolling women's right to cherish their specifically female values," the French feminists "reject 'equality' as a covert attempt to force women to become like men" (98). Any application of feminist theory to technical communication will have to struggle with the choice of emphasizing similarities or differences between men and women.

The second issue involves controversy about the origins of differences between men and women. Whether or not theorists decide to emphasize the differences or the similarities between gender traits, they recognize traits as biological, social, or a combination of both. Epstein summarized this issue within her definitions of maximalist and minimalist feminist perspectives. The maximalist holds that there are basic differences between the sexes; some proponents ascribe these differences to biology or to social conditioning, whereas others claim the differences are "lodged in the differing psyches of the sexes by the psychoanalytic processes that create identity" (25). "These scholars," said Epstein, "typically believe that differences are deeply rooted and result in different approaches to the world, in some cases creating a distinctive 'culture' of women" (25). Epstein's minimalist position contends that men and women are essentially similar. Gender differences are "superficial" because they are "socially constructed (and elaborated in the culture through myths, law, and folkways) and kept in place by the way each sex is positioned in the social structure" (25). The origin of difference affects the ease with which men or women can assume the traditional traits of the other gender—another issue of importance to the technical communication researcher.

The third issue is whether scholars can and should avoid reinforcing binary opposition in discussions of difference. Moi identified the goal of feminism to "deconstruct the death-dealing binary opposition of masculinity and feminity," for here the feminine is the negative of the masculine, always lower in the hierarchy (13). Feminists such as Epstein warn that by celebrating a woman's culture, feminists may reinforce the opposition and this hierarchy (25). On the other hand, the French feminists emphasize the differences between men and women; for example, they celebrate *jouissance,* a type of sexual and physical joy that can be experienced *only* by women, or as Jones defined it, "the direct re-experience of the physical pleasures of infancy and of later sexuality, repressed but not obliterated by the Law of the Father" (87).

These three issues of debate among feminists are highly related. Although feminist theories promote difference and resist uniform definition of feminist methodology, should they promote difference or stress similarity of experience when studying men and women? Moreover, where should the origin of difference be located, within biology or society? Finally, will the result of exploring difference promote or displace binary opposition? Again, these issues cannot be ignored when applying feminist theory to technical communication.

REDEFINITION OF TECHNICAL COMMUNICATION

These traits and issues of debate within feminist theory inform the pressure to redefine technical communication that comes from exposing the myth of scientific objectivity, adapting ethnographic research techniques, and studying collaborative writing.

THE MYTH OF OBJECTIVITY

Traditional definitions of technical communication affiliate it with the quantitative and objective scientific method, calling technical communication a "data retrieval method" for the specialized audience (Harris 137). Redefinitions of technical communication have been influenced by composition scholars who question the classical distinction made between rhetoric and science. For example, Berlin proposed a "New Rhetoric," which acknowledges that truth is "dynamic and dialectic," and that language "creates the 'real world' by organizing it, by determining what will be perceived and not perceived, [and] by indicating what has meaning and what is meaningless" (774–75). He opposed the popular Current-Traditional Rhetoric, with its link to scientific positivism and the myth of objective reality—the assumption that truth could be discovered through the experimental or scientific method if the individual was "freed from the biases of language, society, or history" (770). Berlin, in some sense, defied the Aristotelian binary opposition of rhetoric and science.

Thus technical communication scholars such as Halloran, relating to Kuhn, admit that "in a very fundamental way," science is "argument among scientists," but that technical communication maintains the deceptive ethos of the "dispassionate, disinterested truth-seeker" (85). Miller asserted that technical communication, as commonly taught, is "shot through with positivist assumptions" ("Humanistic Rationale" 613); instead, technical communication should be viewed as a matter of "conduct rather than of production, as a matter of arguing in a prudent way toward the good of the community rather than of constructing texts" ("What's Practical" 23). Samuels, reacting to Halloran, Miller, as well as Kuhn, then defined technical communication as a "recreation of reality for special purposes"; rather than transmitting or inventing reality, the communicator "extends" perceptions of truth (11). Finally, Dobrin decided that technical communication simply "accommodates technology to the user," for any claim of objectivity is based on scientific domination (242; see also Goldstein 25). As the distinctions between science and rhetoric disappear, truth is defined as agreement within a community, not as discoverable and describable reality. Technical communication then offers culturally based perceptions to the audience, rather than objective information and data.

Although gender roles are part of culture, few scholars, so far, have examined the impact of these roles on the technical communicator. Sterkel did a quantitative study that suggests that women have adopted the language of power in business writing. Smeltzer and Werbel found that the type of commu-

nication required makes more difference than does the gender of the writer, and Tebeaux discovered distinct differences among male and female inexperienced business writers. However, if new definitions of technical communication acknowledge the culturally based perceptions within scientific and technical discourse, gender studies of science and technology must change the way technical communication scholars view their field.

Over the last decade, feminist scholars have identified masculine bias within the discovery and discourse of science and technology. These biases, according to Bleier, are both the source of science's "great strength and value" and of its "oppressive power" (57). For example, in Keller's examination of the genderization of science, she traced the mythology that assigns objectivity, reason, and mind to the male, and subjectivity, feeling, and nature to the female (*Reflections* 6–7). This binary opposition limits women's experiences as valid scientific subjects, as well as prevents women from being sources of scientific knowledge. Keller concluded that in the family structure masculinity is associated with "autonomy, separation, and distance" (*Reflections* 79):

> Thus it is that for all of us—male and female alike—our earliest experiences incline us to associate the affective and cognitive posture of objectification with the masculine, while all processes that involve a blurring of the boundary between subject and object tend to be associated with feminine. (*Reflections* 87)

Keller's study of scientist Barbara McClintock's disregard for the traditional separation from her subject reveals a gender-free approach to science (*Feeling* xvii). Rather than using a static objectivity that distances scientists from their subjects, Keller proposed a dynamic objectivity that "actively draws on the commonality between mind and nature as a resource for understanding" (*Reflections* 117). Keller, Bleier, and other feminist theorists expose the biases of the scientist hidden behind the ethos of objectivity and identify women's experiences within the gaps and silences of traditional science.

The resistance toward including women's experiences and employing women as sources of knowledge is particularly strong in science. Perhaps for this reason, acknowledging the connections between feminist theory and technical communication will be difficult for many. Within science and central to the image of masculinity, according to Harding, is the "rejection of everything that is defined by culture as feminine and its legitimated control of whatever counts as feminine" (*Science* 54). In a sense, science has identified the masculine with the human and so has excluded the feminine. Also, science has tended to define femininity by biological, rather than cultural, traits. In particular, a woman's reproductive capacity is seen by science as "an immense biological burden, condemning her to the world of nature, of the body, of emotions, and subjectivity" (Fee 44). And so, many eminent scientists have concluded, as did nuclear physicist Rabi in 1982, that women are "temperamentally unsuited to science" because of their nervous systems:

> "It makes it impossible for them [women] to stay with the thing. I'm afraid there's no use quarreling with it, that's the way it is. Women may go into science, and they will do well enough, but they will never do great science." (qtd. in Gornick 36)

This resistance to women's concerns carries over into technology and the social sciences. For example, Hacker found that engineers often described social sciences as womanly—"soft, inaccurate, lacking in rigor, unpredictable, amorphous" (345). She also found that engineers assign more status to areas that seemed the "cleanest, hardest, most scientific" such as electrical engineering and less status to such fields as civil engineering that were more involved in social sciences (345). In turn, the social sciences, in particular psychology, often assign higher ranking to experimentalists, seen as particularly objective and linked to *hard* science, and lower ranking to developmentalists who might have more *social* concerns. As with engineering, areas in psychology that could take on the appearance of objectivity appear at the top of the hierarchy (Sherif 41–42).

In affiliating with scientific positivism and in defining itself as the objective transfer of data, truth, and reality, traditionally defined technical communication ranks higher than other supposedly *subjective* types of writing, engages in dualistic thinking, and maintains closeness with patriarchal institutions of power. Therefore, to enhance legitimacy for their field, technical communication scholars and teachers

may resist redefinition that divorces technical writing from this source of power. However, feminist theorists affect the recent redefinitions of technical communication as made by scholars such as Miller, Samuels, Dobrin, and Halloran. Feminist theorists challenge technical communicators to reevaluate their fields by exposing the masculine bias of science and technology, insisting that women cease to be the object and instead become the subject of science, and defying the dualism of masculine/feminine, objective/subjective, and culture/nature. This revision, I believe, will be most useful as technical communication scholars employ ethnographic studies, particularly those that study collaborative writing.

ETHNOGRAPHIC STUDIES

With the current emphasis on both the social nature of writing and the ways in which a discourse community produces documents, ethnographic methods have been adopted by technical communication scholars. To use ethnographic methods, technical communicators must study what constitutes a discourse community, what and why interactions take place within that community, what texts are produced, what subjects are considered appropriate within those texts, how genres are evolved, and how methods of inquiry are chosen and approved (Faigley 241). Ethnography is also appropriate because of the interdisciplinary nature of technical communication:

> Because those of us teaching business and technical communication possess a wide range of disciplinary training—from linguistics to literature to business education to computerized-document design, we can bring a multidisciplinary perspective to ethnographic research. (Halpern 30)

The cultures that technical communication ethnographers study within the industrial setting and their respect for subjects "who are, in some ways, far more expert and knowledgeable than are the ethnographers" are most essential to this ethnographic research (Doheny-Farina and Odell 507); in technical communication ethnographies, there is no Other. The technical communication audience tests what the ethnographer says against subjects' own experiences.

Parallels between ethnography and feminism include multiplicity, acknowledgment of the re-

lived experience and new sources of knowledge, a discovery—rather than testing—of meaning. Ka tor's five characteristics of communication ethnogr phy include these parallels: (a) contextuality, researcher as participant-observer, (c) multiple pe spectives, (d) hypothesis generating, and (e) meanir making (72–74). Because ethnography stresses th behavior is expressed and influenced by the grou and the cultures to which individuals belong, th ethnographer spends long periods of time within community to get detailed, concrete records of th community's behavior, including language and con munication. The ethnographer's perceptions becom part of the record: "Typically researchers begin b assessing their own knowledge, experiences, and b ases, and reevaluate those influences as their stud proceeds" (73). This stance of being both participar and observer can be called "disciplined subjectivity (73).

Ethnographers use triangulation or more than or means of record keeping—sometimes a combinatio of interviews, field notes, and diaries—and seek th reactions from other researchers or community mem bers to enhance their interpretations. Within their ob servations, ethnographers generate rather than te hypotheses; they may develop more research ques tions than they answer. The purpose of ethnograph is "to look at ways in which individuals construc their own realities and shared meanings" (Kanto Kirby, and Goetz 298).

In ethnographic thick description, the researche much like the feminist scholar, records the daily de tails of community life. The ethnographer then dis covers within this detail the meanings and values tha people, not just those with power, attribute to phe nomena. By triangulation, the ethnographer seek multiple impressions; the feminist theorist in tur finds multiplicity essential in integrating women, no Woman, into the world picture. Much like femini theorists, the ethnographic observer-participants ex amine and admit their own background and cultura bias, including their gender roles within the observe community and the audience of the ethnographic de scription. Ethnographers share with feminist theo rists the goal of understanding rather than evaluatin a community, seeking new meanings within previou gaps and silences, and finding new sources for tha

cluded Brodkey (48).

In addition to including women's lives in their studies, female ethnographers have speculated recently about the ways their sex affects their assimilation into a community and their consequent research. Again, ethnographic narratives in general "jeopardize the positivist campaign to deny anyone's lived experience, in the name of objectivity" (Brodkey 41). However, female ethnographers face recurring issues, such as protective behavior triggered by their sex and the great difference between their own lifestyles and those of the women they study (Golde; Warren; Whitehead and Conaway).

Feminist traits are inherent in contemporary ethnographic methodology. Ethnographers reject the received view within social science, as Agar defined it, "a view that centers on the systematic test of explicit hypotheses"; ethnography does not claim that anyone using the same methods would come to the same conclusions (11). At the least, ethnographers' varied backgrounds and intended audiences cause different conclusions. The traditional scientific hierarchy between researcher and subject is abolished, and connections are sought:

> Ethnographers set out to show how social action in one world makes sense from the point of view of another. Such work requires an intensive personal involvement, an abandonment of traditional scientific control, an improvisational style to meet situations not of the researcher's making, and an ability to learn from a long series of mistakes. (Agar 12)

Rather than seeking similarities or universals as in traditional science, the ethnographer reacts to breakdowns or differences. These breakdowns are resolved "by changing the knowledge in the ethnographer's tradition" (25), or as in feminist theory, sources of knowledge are not dictated by the power elite. In this way, ethnography has activist characteristics.

In their challenges to the received view within social science, ethnographers question binary opposition or dualistic thinking about qualitative and quantitative research. Firestone characterized ethnosearchers who assume that there are "social *facts* with an objective reality apart from the beliefs of individuals" to qualitative researchers who believe that "reality is socially constructed through individuals or collective *definitions of the situation*" (16; see also Howe). In fact, pragmatists like Goetz and LeCompte suggested that ethnography is more objective than quantitative research because ethnographers admit their subjective experiences (9; see also Hymes; Geertz; North)—a conclusion identical to Harding's. Ethnography, then, is rhetorical because ethnographers must understand and influence their audiences (see Kleine). Thus the ethnographer, again like the feminist theorist, attempts to incorporate into the canon research methods and subjects that were excluded by scientific positivism and a quantitative focus, and the ethnographer questions the binary opposition that excluded these research methods and subjects in the first place.

More particularly, the technical communication ethnographer frequently studies how editors, writers, technical developers, potential customers, and graphic artists collaborate to produce a document. Composition specialists, such as Bruffee, have for over a decade stressed the social nature of writing and questioned the image of the solitary writer. According to Bruffee, texts are "constructs generated by communities of like-minded peers" (774). Some composition researchers, in particular LeFevre, assert that the myth of the solitary writer complements a gender-biased social view: "The persistence of such an ideal of individual autonomy in male-centered, capitalistic culture further explains why a Platonic view of invention, which stresses the writer as an isolated unit apart from material and social forces, has been widely accepted" (22). Therefore, technical communication researchers must attend to how gender roles affect industrial collaborative writing.

Ethnographic studies of the workplace reveal that effective collaborators have good interpersonal skills, the ability to connect and maintain connections with collaborators even in times of conflict over ideas (see, for example, Doheny-Farina 181; Debs 3). Researchers do stress that collaborators "should be reassured that conflict over ideas, over *substantive*

orative process" (Karis 121). In addition, feminist scholars Keller and Moglen proposed, "Under certain circumstances, cooperation may actually be facilitated by differentiation and autonomy" (27). However, this substantive conflict is most productive in solid relationships in which people have developed enough trust to self-disclose and to not feel threatened by criticism. Thus Ede and Lunsford profiled effective collaborators as

> flexible; respectful of others; attentive and analytical listeners; able to speak and write clearly and articulately; dependable and able to meet deadlines; able to designate and share responsibility, to lead and to follow; open to criticism but confident in their own abilities; ready to engage in creative conflict. (66)

Feminist theorists, particularly object-relations theorists in psychology, enhance these ethnographic studies of collaborative writing, because these theorists relate how and why males and females connect and cooperate.

COLLABORATIVE WRITING

Studies reveal that girls and boys in the pre-Oedipal stage of life differ in their urge to connect with or distinguish themselves from others. Because mothers still do so much of the parenting, girls identify with this main parenting figure, whereas boys identify with the father who appears independent and involved in the world outside the home. As Chodorow concluded,

> Girls emerge from this period with a basis for "empathy" built into their primary definition of self in a way that boys do not. Girls emerge with a stronger basis for experiencing another's need or feeling as one's own (or of thinking that one is so experiencing another's needs and feelings). (167)

Girls define themselves as "continuous with others," whereas boys define themselves as "more separate and distinct": "The basic feminine sense of self is connected with the world, the basic masculine sense of self is separate" (169). Boys may develop into men who avoid close connections because these connections threaten their sense of self, whereas girls may develop into women who seek close relationships and assume responsibility for cooperation.

Gilligan, in her study of adult ethics, stated that men may see connections as threatening to their place in the competitive work hierarchy, whereas women fear being "too far out on the edge"—too far from connections with others (43). Building on the research of Chodorow and Gilligan, Belenky and her coauthors distinguished the separate knowing of many men from the connected knowing of many women. In groups, authority or knowing for women is commonality of experience, which requires "intimacy and equality between self and object, not distance and impersonality" (183). Obviously, gender roles, as established in the family structure, influence how men and women relate to the demands of collaboration—a topic of much interest to technical communicators.

Feminist theorists' elevation of women's experiences and knowledge and the feminist debate over the origin of difference inform studies of collaboration. If women more easily *connect*—a virtue when functioning on a writing team—can men learn these connecting strategies too? Minimalists, as defined by feminist theorist Epstein, would see that change as quite possible, although usually feminists have studied the ease with which women have taken on traditional male traits. Because gender roles are socially constructed—created by nurture rather than nature—they can be changed. According to Flynn, "Women share interpretive frameworks and strategies because they have had common experiences, ones different, for the most part, than those of men. Such a position is optimistic in the sense that it posits that different experiences can produce different interpretations" (4). Thus gender roles are not static.

Whether optimistic about this change or not, feminist theorists at the very least can point out *what* makes it difficult for men to balance competitive impulses with cooperative needs. Again, object-relations theorists stress basic differences in masculine and feminine self-identity and the difficulty in overcoming the effects of the family structure: "The boy's repression of the female aspect of himself is one of the reasons men find it hard to be nurturant as adults" (Flax 178). And feminist theorists, who identify themselves as practicalists—or believe that think-

thinking" comes from maternal practice and is accessible to all who practice it (Ruddick 13–14). Knowing why men resist connections and anticipating the effects of men's increasing participation in parenting are the first steps to overcoming this resistance.

Because of these gender roles, men's and women's attitudes toward conflict during collaboration differ. Technical communicators need to learn what feminist theorists say about these different gender roles in order to manage conflict effectively, which helps to ensure the success of collaboration. Women are taught to avoid conflict and may view all conflict as interpersonal and potentially damaging to relationships (Lay 20–22). Men tend to view conflict as healthy competition and as primarily substantive (Hocker and Wilmot 61). In resolving conflict, men and women also use different strategies: "Two males in a conflict typically employ bargaining techniques, logical arguments, and anger to manage the situation. In contrast, two females in a conflict situation focus on understanding each other's feelings" (Putnam 47–48). Again, understanding the cultural and familial origins of these differences through feminist studies is the first step toward effective collaboration.

Finally, feminist theorists can help technical communicators provide new models of effective collaboration—models that help collaborators break out of gender roles. These new models would also help collaborators value women's experiences and strategies, because these strategies include interpersonal skills. Such strategies—well documented in communication and feminist theory—include self-disclosure, sensitivity to nonverbal cues, perception of others' emotions, questioning intonations in responses, acknowledgment of previous speakers, and resolution of conflict in nonpublic ways (Knapp, Ellis, and Williams 275; Baird 192; Hall and Sandler 10; Treichler and Kramarae 120).

One of the most recent new models of collaborative writing comes from Ede and Lunsford, who recognized that a dialogic model is articulated mainly by the female technical writers they interviewed. Ede and Lunsford described the traditional model of collaboration as hierarchal, with productivity and efficiency the goal. In the traditional model, "the realities of multiple voices and shifting *authority* are seen

each collaborator may take on "multiple and shi
roles," and "the process of articulating goals is o
as important as the goals themselves and sometim
even more important" (133). Ede and Lunsford
said, "Furthermore, those participating in dial
collaboration generally value the creative tension
herent in multivoiced and multivalent ventu
(133). This dialogic model is predominantly fe
nine, "so clearly 'other,'" and Ede and Lunsf
lamented that there is no "ready language" to
scribe it (133). However, feminist theorists c
supply that language to Ede and Lunsford; Jor
and Surrey label the capacity to move from one
spective to another as "oscillating self-structu
(92). Although Jordan and Surrey applied the ter
the mothering process, the term well represents
process that Ede and Lunsford observe in dial
collaboration. As technical communication schol
explore the collaborative writing process, they
learn much from feminist studies.

Linking technical communication with femi
theory may seem alien to many. However, at the
least, the interdisciplinary nature of technical c
munication will lead the field in the direction of f
inist theory. As feminist theorists attack the last v
tiges of scientific positivism within science
technology, technical communication must also
go of the ethos of the objective technical writer w
simply transfers information and accept that writ
values, background, and gender influence the c
munication produced. As technical communicat
convince their audiences to accept a version of r
ity, they develop persuasion strategies by identify
with their audiences. In many major corporati
technical writers are the customers' representati
and advocates and must discover the fine detail
their customers' experiences.

As technical communicators explore collabora
writing through ethnographies, they again ad
stances similar to feminist theorists. Their own b
grounds and values as ethnographers must be ad
ted to their audiences. They must seek the m
voices of those who witness and experience the
ture they investigate. These technical communica
also expose the gaps and silences in previous stu
and identify new sources of knowledge that

The mission of most technical communication scholars is to prepare future technical writers to enter industry and to improve the industrial processes that produce communications. Because so many documents are collaboratively produced and their effectiveness threatened when collaborative teams suffer interpersonal conflicts, again the work of feminist theorists can show how these conflicts may be affected by gender roles. New models of collaboration, such as those suggested by Ede and Lunsford, recognize the effects of collaborators' gender roles.

In acknowledging these connections with feminist theory, technical communication must wrestle with the issues that confront feminist theorists. In suggesting effective collaborative strategies, should technical communicators stress the similarities or differences between men and women? In doing so, can they avoid the labeling that contributes to dualistic thinking or binary opposition? Should male collaborators know that they are being encouraged to adopt what have been labeled *female* interpersonal traits? Are the sources of these gender traits primarily social or biological? If they are social, collaborators can move more easily toward androgyny. If not, change will be more difficult. How will or how should the industrial setting be affected by these ethnographic studies of gender roles and collaborative traits? Should technical communicators become activists in industrial settings as they explore gender roles within collaboration? The answers to these questions remain for future technical communicators to discover. However, technical communication must be redefined to include these issues.

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11

The Technical Communicator as Author

Meaning, Power, Authority

JENNIFER DARYL SLACK, DAVID JAMES MILLER, AND JEFFREY DOAK

"The Technical Communicator as Author" came together as the articulation of several concerns and circumstances. First, in 1991 and 1992, when it was written, I was serving as the director of the undergraduate program in Scientific and Technical Communication at Michigan Technological University. In that position I found myself deeply involved in arguments about what constituted an appropriate curriculum for technical communicators. Second, David Miller and I, both trained in communication and cultural studies, were working on an independent study with Jeffrey Doak, then a master's student in Rhetoric and Technical Communication. David and I were providing Jeff with what we felt was important and, to our thinking, neglected theoretical background. Jeff was particularly interested in the insight from Horkheimer and Adorno's 1944 *Dialectic of Enlightenment* that "a technological rationale is the rationale of domination itself" (121). To explain that statement we turned to communication and cultural theory, which had long been exploring the ways that language, power, and technology intersected. We worked to apply these insights to technical communication. Third, in the midst of these discussions, Martha and Ben Barton asked me if I would contribute an article to a special issue of the *Journal of Business and Technical Communication* (*JBTC*) on "Power and Professional Communication." I agreed and enlisted David and Jeff to build our conversations into a publishable article. Interestingly, we were working without benefit of Steven Katz's magnificent article on the power of technical discourse in Hitler's practice of extermination, which was published in the same *JBTC* issue as "The Technical Communicator as Author."

In the course of working on the article, I developed a particularly strong passion to demonstrate the applicability of communication and cultural theory in the education of technical communicators. As I pinpointed a particular point of application—the application of the way the understanding of meaning shifts when communication is viewed as transmission, translation, and (what later became) articulation, developed by Larry Grossberg—Jeff and David gave me a largely free hand. Jeff left the graduate program before the article was completed; David continued to provide critical insight.

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I still believe that the fundamental insight of "The Technical Communicator as Author" is the assertion that technical communicators, whether it is acknowledged or not, contribute to the articulation of meaning and are thus implicated in relations of power and authority. However, I quickly became dissatisfied with the misguided strategy that grew out of this insight: to go out in the world and assert authorship. Experience, reports from the field, and continued theoretical exploration make clear that the assertion of authorship offers no guarantee to technical communicators that their work will attain a level of social responsibility they may hope for.

The problem, as I have come to see it, is that "The Technical Communicator as Author," indeed, the field and curriculum of technical communication, has placed far too much emphasis on asserting the identity of the technical communicator as author or professional, far too much emphasis on a curriculum complicit with a corporate model of technical communication as transmission and translation, and far too little emphasis on the complex field of articulations within which technical communicators can do one thing or another, or can have one thing or another done to them. To understand that, yet another interdisciplinary intervention can benefit the field: this time, in a critical postscript to "The Technical Communicator as Author," I propose thinking with the work of Gilles Deleuze and Felix Guattari to develop a cartography of affects. In this way we can connect with the powerful stories and ethnographies of what happens on the job to produce an enriched sense of the limits and possibilities within which technical communicators can struggle to make the world a better place.

Jennifer Daryl Slack

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In his essay, "What Is an Author," Michel Foucault observes that

> in our culture, the name of an author is a variable that accompanies only certain texts to the exclusion of others: a private letter may have a signatory, but it does not have an author; a contract can have an underwriter, but it does not have an author; and, similarly, an anonymous poster attached to a wall may have a writer, but he cannot be an author. (24)

From this, Foucault concludes that "the function of an author is to characterize the existence, circulation, and operation of certain discourses within a society" (124). At its most mundane, this is simply to note the fact that certain discourses are granted the privilege of authorship while others are denied this privilege. It is more remarkable to notice, with Foucault, that this very fact suggests an inversion of the way in which we typically understand the relation between an author and a discourse: Rather than authors producing

o produce authors. To grant authorship to a discourse s to grant that discourse a certain authority. In a peculiar turn of events, this authority comes to reside in he author, the author produced by the discourse itself. Thus it becomes evident that authorship is a manner of valorizing certain discourses over against others. As such, authorship empowers certain individuals while at the same time renders transparent the contributions of others.

The discourses created by technical communicators have not been considered authored discourses; he technical communicator may be a transmitter of nessages or a translator of meanings, but he or she s not—or at least not until now—considered to be n author. We have come to see that technical communicators, as well as other professional communiators, are engaged in the process of what Marilyn Cooper has called *participatory communication.* In "Model(s) for Educating Professional Communicators," Cooper writes:

> I am defining communication as participatory communication and the role of . . . communicators as one of . . . working together to create common interests, to construct the ideals of our society, [and in light of these ideals] to examine the ends of [our] action. Professionals who communicate should be involved in this endeavor too. . . . It is [at least part] of the function of professional communicators—whether they know it or not. (12)

THE RELEVANCE OF COMMUNICATION THEORY

here are striking parallels to be found by comparing escriptions of the technical communicator (descripons and redescriptions of the role, task, and ethos of at communicator) with the progressive development of our theoretical understanding of the communication process itself. The most remarkable of these arallels may well lie in the emerging evidence of a mmetry between disparate images of the technical ommunicator and distinct—although ultimately inrrelated—models of communication. What we pro-

in the study of communication, a new theoretical and practical image of that communicator—the technical communicator as author—can begin to be established. Reflecting on the historical development of communication theory over the course of the past 10 years, scholars in communication have come to acknowledge that, at least with respect to the study of mass communication, two basic models of communication have gained ascendancy and, although this is less widely acknowledged, that a third is now gaining ground (see, for example, Fiske, *Introduction;* Carey). For our purposes, it is more useful to speak of these models not as models per se but as distinct views of communication. This is the case because, at bottom, each of these models seeks to express the morphology common to a collection of theories that otherwise appear more or less disparate. In this regard, the term *model* is misleading. It appears to set one theory of communication over against other such theories rather than gathering a number of specific theories together in a general conceptual classification. We have no interest in a general conceptual classification. We have no interest here in pitting one theory of communication against another. We are concerned with what these views, together, can teach us about the place of the technical communicator.

The first of these views—what we will refer to as the transmission view of communication—can be delimited in terms of a concern, for the most part, with the possibilities and problems involved in message transmission, that is, in conveying meaning from one point to another. The second—what we will call the translation view of communication—can be understood in terms of a primary concern with the constitution of meaning in the interpretation and reinterpretation of messages. The third—what we will call the articulation view of communication—can be grasped as a concern principally with the ongoing struggle to articulate and rearticulate meaning. With respect to each of these views of communication, the place of the technical communicator is located differently. In the first, the transmission view of communication, the technical communicator is a purveyor of meanings; in the second, the translation view of communication, the technical communicator is a mediator of meanings; in the third, the articula-

cator is an author who among others participates in articulating and rearticulating meanings.

Corresponding to variations in the place of the technical communicator as purveyor, mediator, or articulator of meanings, the place of the technical communicator—and of technical discourse itself—shifts in different relations of power. In the transmission view, the technical communicator remains the neutral vehicle facilitating the exercise of power. In the translation view, the technical communicator works to create symmetry within the negotiation of differential relations of power between sender and receiver. In the articulation view, the technical communicator is complicit in an ongoing articulation and rearticulation of relations of power. Ultimately, looking through the lens of articulation—as we do in this article—the different locations of the technical communicator implicate one another. That is, the technical communicator and technical discourse purvey, mediate, and articulate meaning. Likewise, the technical communicator and technical discourse facilitate, sustain, generate, and disrupt relations of power. But only by looking through the lens of articulation can we rearticulate the technical communicator and technical discourse as participating fully in the articulation of meaning and thereby fully empower the discourse as authorial.

CHANGING CONCEPTIONS OF MEANING AND POWER: TRANSMISSION

Of the three views of communication, the transmission view has been the most clearly delineated. It has been extensively critiqued and often maligned such that it is nearly requisite to begin any introductory text on communication theory with an explanation and rejection of it. For the most part, contemporary communication theories are proposed in contradistinction to it. There are, consequently, many different versions of the position and ongoing disagreements about its precise historical and theoretical contours (see, for example, "Ferment in the Field"). In general, however, the transmission view combines three defining characteristics:

1. the conception of communication as the transportation of messages
2. the conception of the message—the meaning encoded by a sender and decoded by a receiver—as a measurable entity transmitted from one point to another by means of a clearly delineated channel
3. the conception of power as the power of the sender to effect, by means of this message, a desired mental and/or behavioral change in the receiver. This power is the power of the sender over the receiver.

The term communication has its origins in the concept of transportation (Williams; *Oxford English Dictionary [OED]*). Communications were the paths of transportation by means of which people at the centers of power could exercise control over those in the peripheries. The ability to move messages in a timely fashion across space by means of such communications was a necessary condition for political, economic, and religious domination. The emphasis in the historical development of new technologies of communication (from walkers, runners, horses, smoke signals, semaphore, print, telegraph, telephone, television, satellites, computers, fax machines, etc.) has been the transmission of knowledge and information in such a way as to *exercise control over space and people faster and farther.*

The implications for how meaning has been understood in communication theory are made clear by examining how communication as transportation gets tied to a theory of transmission. The work of Shannon and Weaver can be credited as a principal determinant in the shaping of such a view. Largely mathematical in character, Shannon and Weaver's conception of communication is as an explicitly linear form: The sender wishes to transmit meaning, but to do so it must be encoded in the form of a message (Shannon and Weaver called this *information*). The message is sent over a channel to a receiver who then decodes it to get out of it the meaning that was encoded. The process, when perfectly executed, results in the receiver's decoding exactly the same message that the sender intended to encode.

This basic model has been amended and elaborated on extensively (see, for example, Fiske, *Introduction;* McQuail and Windahl), but its orientation to meaning remains essentially the same. Meaning is something that is "packaged up" by the sender,

shipped out, and "unwrapped" by the receiver, who can then act or think accordingly. Of course, there are numerous points in the process where difficulties can render the transmission less than perfect. The sender may encode the message poorly such that the message fails to contain the intended meaning. The decoder may decode poorly, not reading the intended meaning properly. There may also be "noise" in the channel that distorts the message so that, consequently, the meaning it contains is not received in the form in which it was sent. (Noise may take many forms, from static on the telephone line to the wandering mind of the listener during the transmission.)

In the transmission view of communication, meaning is a fixed entity; it moves in space "whole cloth" from origin to destination. Communication is successful when the meaning intended by the sender is received accurately, where accuracy is measured by comparing the desired response to the message with the actual response. Communication fails when these responses diverge. In the case of failure, the communicator must locate and correct the source of the failure in the process of encoding or in the noise of the transmission. Power is simply that which is exercised when the communication is successful. The sender has power when the receiver behaves in the intended manner. Power, like meaning, is something that can be possessed and measured; its measure is to be found in the response of the receiver.

Such a view of communication appears to dominate the early stages of the theory and practice of technical communication as it emerged within the college curricula of engineering schools. Based on research done by Robert J. Connors, we would characterize this phase in technical communication as dominating the field from the late 1800s until the 1950s but persisting into the present. In this phase, technical writing and engineering writing are treated as synonymous, and the task of the technical writing course is to teach engineers or their surrogates to encode the engineers' ideas (meanings) accurately and to provide a clear channel for transmission.

Technical writing courses developed this way in response to a series of changes in the practice of engineering and the development of the engineering curriculum. As engineering and its curriculum be-

[illegible] industrialization that followed the Civil War, complaints about the unbalanced education of students in technical schools mounted. Among other deficiencies, engineers, it was claimed, "couldn't write." To correct this imbalance, courses in engineering English (later technical writing; later still, technical communication) were developed. As Connors points out, by this time the notion of the "two cultures" split was so firmly in place that, as we would put it, the kind of meanings that required encoding were sufficiently different to warrant a completely different kind of English course (331). Engineering English courses were designed, among other things, to teach students to encode the special meanings of engineers.

Education in this phase has two components: the education of engineers and the education of surrogate engineers. Both are firmly anchored in a transmission view. The earliest, but again still persistent, effort to inculcate the skill of technical writing is to teach the engineer—as sender—to be a better encoder through the use of proper language, grammar, and style. Through such training, the intent is that engineers will learn to encode messages such that they will match their intentions. Further, in teaching engineers to transmit those properly coded messages using the proper forms, the intent is to ensure that the proper channels are chosen and that the transmission is sent with minimal noise. In James Souther's review of the evolution of technical writing course content, he demonstrates that the first kinds of courses to develop were those focusing on the "effective use of language, grammar, and style" (3), later focusing on teaching the different forms, reports, and letters routinely used in the engineering profession.

Developing later, and rapidly growing alongside the engineer writer, the surrogate engineer—the technical writer—has become at least as important in the horizons of technical communication. The conjuncture of the increased demands placed on highly specialized engineers and the growing awareness of the complexity and difficulty of encoding their ideas (meanings), gives shape to the development of technical writing as a discipline in its own right (Connors places this in the 1920s). Course work and textbooks began appearing that were directed toward the techni-

writer is assumed to be a mere surrogate, or stand-in, for the actual (but busy) sender, the engineer.

The technical writer's job in this period dominated by the transmission view of communication is to assure that messages are accurately encoded and that they are transmitted with minimal noise over clear channels. In fact, the professional technical writer, as surrogate engineer, is rendered essentially transparent in the process, ideally *becoming* the clear channel itself. The very definition of technical writing often affirms this commitment to the transparency of the communicator-as-channel. This is often explicit, as Michael Markel writes as recently as 1988:

> Technical writing is meant to fulfill a mission: to convey information to a particular audience or to affect that audience's attitudes in a particular way. To accomplish these goals, a document must be clear, accurate, complete, and easy to access. It must be economical and correct. The writer must be invisible. The only evidence of his or her hard work is a document that works—without the writer's being there to explain. (6)

It is relatively easy to understand the location of meaning and the conception of power as they operate in this phase. Meaning is posited to be in the intentions of the sender, that is, the engineers. Meaning is simply transferred over a clear channel. Technical writers are not seen as adding or contributing to meaning. In fact, if they are, they are not doing their job! After all, they are not engineers themselves; nor are they the source of the meaning to be transmitted. Nor does meaning originate in any sense in the receiver.

Because meaning resides only in the sender's intentions, and the technical writer is merely a surrogate encoder, when communication is successful (i.e., the intended response achieved), the recognition, responsibility, and power is attributed only to the sender. However, if communication fails, it is exceedingly easy to fault the encoding process, that is, the work of the technical writer. *Miscommunication,* as this failure is called, can be attributed to the weak use of language (inadequate encoding), failure to in-

channel) (see, for example, Kostur and Hall).

Power, then, must be understood as possessed b the sender and measured by the ability of the messag to achieve the desired result in the receiver. To com municate is to exercise power. The sender has n power if the receiver does not respond appropriately Miscommunication, the principal measure of failur in this phase, occurs when there "is disparity betwee the message intended and the message received (Kostur and Hall 19). Technical writers, who are ren dered transparent and seen as contributing no mean ing, possess no power (and therefore cannot exercis it) whenever communication is deemed successful To be transparent is, after all, to provide a clear chan nel for the sender to exercise his or her power. Inter estingly, however, if a message fails, technical writer can always be held responsible and called on to do a better job at encoding or transmission. They possess then, a kind of negative power—by virtue of their po tential status as "inadequate surrogates"—to manage the processes of encoding and transmission poorly and take the responsibility for miscommunication.

The persistence of thinking in these terms is evi dent in much of the professional and educational re alities of technical communicators. The extent tha their education focuses on stylistics, the proper use o forms, and skill at operating the technologies of com munication—to the detriment of the kinds of knowl edge and skills we introduce later—is testament to that persistence. Technical communicators are taught, for example, that the highest goal they can achieve is "clarity and brevity," which suggests a transparency that belies what they really do. On the job, the role of surrogate encoder is attested to by the extent that the communicator is treated as low in the organizational hierarchy, as working *for* the rea sender, and as expert mainly in questions of style form, editing, and media management. To transmit the sender's meaning as a perfectly executed message is the role of this communicator.

CHANGING CONCEPTIONS OF MEANING AND POWER: TRANSLATION

The second of the views specified at the outset, the

ized by a fundamental concern over the constitution of meaning in messages in which power is negotiated between sender and receiver, has not been as clearly delineated as the transmission view. There are numerous contenders in the struggle to define the view developed in contradistinction to the transmission view of communication, and the successor has not yet been fully agreed on. There are in our reading several characteristics that the approaches to the second view seem to share

1. the conception of communication as a practice
2. the conception of meaning as produced through the interaction of sender and receiver
3. the conception of power as *negotiated.*

If you look back at our discussion of the transmission view of communication, you will note a conspicuous absence: The receiver in the process of communication is absent in any way other than as passive recipient of the communicated or miscommunicated message. Receivers add no meaning; they have no power. Reception is considered to be essentially unproblematic. If the message is encoded properly and sent over a clear channel, it should have the desired impact on the receiver. In contrast to this view, theorists of the translation view consider the activity of the receiver to be just as constitutive of the communication process as that of the sender. Communication is not a linear process that proceeds from sender to receiver, but a process of negotiation in which sender and receiver both contribute—from their different locations in the circuit of communication—to the construction of meaning. The nature of this process of negotiation can be understood by illustrating its operation in Stuart Hall's elaboration of what he has called a theory of "encoding and decoding."

Hall describes communication as a practice in which sender, message, and receiver are but "different moments" in a "complex structure of relations." Communication is "a structure produced and sustained through the articulation of linked but distinctive moments—production, circulation, distribution/consumption, reproduction" ("Encoding" 128). Each moment has its own distinctiveness and modality and contributes to the circulation that constitutes

> The process . . . requires, at the production end, its material instruments—its "means"—as well as its own sets of social (production) relations—the organization and combination of practices within media apparatuses. But it is in the *discursive* form that the circulation of the product takes place, as well as its distribution to different audiences. Once accomplished, the discourse must then be translated—transformed, again—into social practices if the circuit is to be both completed and effective. If no "meaning" is taken, there can be no "consumption." If the meaning is not articulated in practice, it has no effect. ("Encoding" 128)

The acts of encoding and decoding are thus both active processes in the circuit of meaning production. The sender encodes meaning (meaning 1) based on the frameworks of knowledge, relations of production, and technical infrastructure within which the sender operates. A *meaningful* product is produced (a technical report, for example). But the receiver also actively decodes a meaning (meaning 2) based on potentially *different* frameworks of knowledge, relations of production, and technical infrastructure. There is no necessary correspondence (or symmetry) between meaning 1 and meaning 2, because each operates semiautonomously. It is as though the practices of encoding and decoding are practices of *translation,* from social practices to discourse and then back into social practices.

When there is symmetry between the translation processes, we can talk about equivalence between the two moments—a way of rethinking the concept of *understanding.* And when there is a lack of symmetry, we can talk about a lack of equivalence—a way of rethinking the concept of *misunderstanding.* Misunderstanding cannot be explained fully by inadequate skill at encoding or by the presence of noise in the channel. Any asymmetry can also be understood as an outcome of alternative practices of encoding and decoding (Morley).

Some translation approaches continue to use a concept such as misunderstanding because they persist in privileging the encoding process. Hall, for example, posits the encoded meaning (meaning 1) as the "dominant or preferred meaning" ("Encoding" 134). Then in comparing the symmetry between the

meanings, decodings are determined to be within the dominant, or preferred, code (dominant decoding); against it (oppositional decoding); wildly unrelated to it (aberrant decoding); or in a negotiated relationship to it (negotiated decoding) (Morley).

Some translation approaches have sought to dispense with the privileging of encoded meanings and render both moments as more *equally* constitutive. These approaches, such as that of John Fiske (*Television*), use conceptions of an "open text," conceptions such as polysemy and Bakhtin's heteroglossia. Heteroglossia asserts that "all utterances . . . are functions of a matrix of forces practically impossible to recoup" (qtd. in Fiske, *Television* 89). Polysemy asserts that a text is not merely a bearer of meanings. Rather, a text identifies and limits "an arena within which the meanings can be found. . . . [W]ithin those terms there is considerable space for the negotiation of meaning" (84). The more open a text, the greater the range within which receivers are free to make their own meanings.

Meanings are thus located in several places: in the practice of encoding, in the discursive product, and in the practice of decoding. In the passage of these forms, "no one moment can fully guarantee the next moment" (Hall, "Encoding" 129). Meaning is fluid and elusive, never really fixed at any moment.

Power is displaced and fluid along with meaning. There is power in the practice of making meaning. Because both encoders and decoders generate meaning, both exercise power. This is no longer simply the power of sender over receiver but the differential power of each to bring their own context to bear in the making of meaning (Fiske, *Television*).

Despite the fluidity of meaning, the translation view deals uneasily with differential relations of power. The receiver can work with the product (or text) only as it has been encoded, and that limits the openness of the text. This situation still privileges the practice of encoding. As Hall puts it,

> Polysemy must not, however, be confused with pluralism. Connotative codes are *not* equal among themselves. Any society/culture tends, with varying degrees of closure, to impose its classifications of the social and cultural and political world. These constitute a *dominant cultural order,* though it is neither univocal nor uncontested. This question of the "structure of discourses in dominance" is a crucial point. The different areas of social life appear to be mapped out into discursive domains, hierarchically organized into *dominant or preferred meanings.* ("Encoding" 134)

These dominant, or preferred, meanings must *work* to exercise power—to bring decodings into symmetry with the encodings. But decoders—always active in the decoding process—variously exercise their power to disrupt the circulation of power by decoding differently and articulating meanings differently into practice. Communication is thus *an ongoing struggle for power,* unevenly balanced toward encoding.

Currently, the field of technical communication seems to be struggling with (sometimes against) the implications for the role of the technical communicator as translator. The most obvious marker of this shift is that the technical *writer* becomes the technical *communicator* with the recognition that communicators have something to add beyond skillful encoding and clear channel. But there is much more than a name change here. To be expert in the practice of communication, to be a *communicator* in the process, signifies changes in understanding the power of the receiver as well as of the technical communicator—changes that open a virtual Pandora's box that can never again be closed.

There are a number of new things to attend to now (sometimes old things in new ways): (a) Because the process of encoding is always a process of trying to fix already slippery meanings, it is important for the communicator to understand the context of the sender. Hence familiarity with the technical field of the sender will work to ensure that in the translation process, the preferred meanings are the ones that get fixed. (b) Because the process of encoding is always an imperfect translation, it is important for the communicator to become expert at understanding and manipulating language as polysemic. Hence familiarity with the principles of rhetoric and composition and skill at using their tools will work to ensure that the communicator will know how to fix meanings. (c) Because the receivers of technical communications have the power to decode differently depending on the contexts within which they operate, the communicator must understand how those audiences decode. Hence

rhetoric (as the art of persuasion), composition, audience analysis, and reader-response research will help to ensure that communicators know how to encode such that particular audiences are most likely to decode symmetrically. (d) Further, once it is recognized that there is always a struggle to fix otherwise slippery meanings, the communicator must acknowledge and work with the differential relations of power within which sender and receiver operate. Hence attention to power and ethics is essential.

These concerns all become well represented in the field of technical communication from the 1950s on, although attention to power and ethics seems least represented, for reasons discussed later. The evidence of these changing priorities can be seen in the growing recognition of the unique contribution that can be offered by technical communicators as experts rather than as surrogates. This recognition is self-reflexive, which may account for the developing professionalization of technical communication. Evidence can also be seen in the changing textbooks and instruction in technical communication (Connors; Souther). Although stylistics, grammar, editing, and the use of media still play a major part in the education of technical communicators, it has also become essential to add to their educational repertoire work in rhetoric and composition, linguistics, problem solving, audience analysis, and ethics.

There are still employers, educators, and students whose understanding of communication is linked to the thinking of the first, or transmission, view. They have difficulty understanding the role of all this theory in just getting the job done (see, for example, Vaughan 80). But what they fail to understand is that to execute the job with sophistication—to work toward the negotiation of symmetry between encoder and decoder—the theory must be brought to bear on the practice of communication. That requires attention to the complex and variable contexts within which senders and receivers produce meanings and how those contexts connect in the circuits of meaning and power.

Technical communication education is still in the process of sorting out those connections, establishing the balance between theory and practice. Becoming well established is the need to *go on theorizing,* to recognize that technical communication is not simply a skill but an academic and practical discipline that requires us to push the boundaries of theory if we are to understand what works and why.

But there is more to say about meaning, power, and ethics. The promise (for some the pestilence) released from the Pandora's box of the translation view of communication is the power of the technical communicator as translator. Given the fluidity of meaning and the polysemy of any text, a translator can never be transparent. Lawrence Grossberg describes the position of the translator in this view: "Translation involves the retrieval and reconstitution of two different traditions, of two different sets of possibilities and closures. It always involves us in compromise, not only of the text's language, but of the translator's as well" ("Language" 221). The technical communicator, by virtue of the nature of the language, then, *must* add, subtract, select, and change meaning. This ushers in the recognition that the communicator, too, exercises power, that is, the communicator—operating from within a different context—makes meaning too. That recognition requires attention to ethics grounded in an understanding of how power works.

There seems to be a subtle recognition in the field that the communicator has power, but coming to terms with the nature of that power gets lost in the demarcation of encoding and decoding, of sender and audience, as the principal sites of investigation. Most educators acknowledge that it would be a good idea for students to understand politics, power, and ethics, but there is very little explanation offered to suggest what they might do with that knowledge on the job. But one thing is certain: A technical communicator cannot be just a technical writer anymore. What, then, do technical communicators offer? We think there are some answers suggested if we look ahead through the lens of ongoing theorizing in communication.

CHANGING CONCEPTIONS OF MEANING AND POWER: ARTICULATION

The third of the views specified at the outset, the articulation view of communication, a view characterized by concerns with the struggle to articulate and rearticulate meaning and relations of power, can be delineated in contrast to both the transmission and the translation views. The transmission view acknowledges that senders do have meanings that they desire to encode and that they do often desire a par-

ticular response to that message from the receiver. However, the transmission view limits our recognition of the full fluidity of meaning. The translation view reconstitutes transmission to add an understanding of the receiver's contribution to the constitution of meaning and introduces the constitutive role of a mediator. However, translation based on the model of encoding and decoding limits our understanding of the full authorial contribution and power of the mediator.

The translation view opens the space for the attribution of authorial power (the Pandora's box) but leaves it undertheorized. The opening is evident in Grossberg's assertion (cited previously) that the language of the translator must be taken into consideration. The way through that opening is provided in the very language of encoding and decoding, specifically in thinking through Hall's suggestion that meaning is "articulated in practice" and that meaning and discourse are "transformed . . . into social practices . . . if the circuit [of meaning] is to be both completed and effective" ("Encoding" 128). The articulation view allows us to move beyond a conception of communication as the polar contributions of sender and receiver to a conception of an ongoing process of articulation constituted in (and constituting) the relations of meaning and power operating in the entire context within which messages move. That context includes not just the context of the sender and receiver (the frameworks of knowledge, relations of production, and technical infrastructure) but of the mediator(s) as well. And *mediator* here can no longer be thought of as just the technical communicator but as the channels (including media and technologies) of transmission as well.

Articulation is a concept that has been drawn from the work of Antonio Gramsci, considered by Ernesto Laclau, influenced by structuralism (especially Althusser) and postmodernism (see, for example, Deleuze and Guattari), and developed into an identifiable theoretical position by Hall ("On Postmodernism"; "Race"; "Signification"). Grossberg has elaborated on the role of power in this position ("Critical Theory"). Articulation asserts that any identity in the social formation must be understood as the nonnecessary connection between the elements that constitute it. Each identity is actually a particular connection of elements that, like a string of connotations, works to forge an identity that can and does change (Hall, "Signification"). An identity might be a subject, a social practice, an ideological position, a discursive statement, or a social group. The elements that constitute these identities are themselves identities; therefore, they too must be understood as nonnecessary, changing connections between other elements. The way in which elements connect or combine is described as an articulation. As Jennifer Daryl Slack has described, articulations, the connections between elements that forge identities, have the following characteristics:

> (a) Connections among the elements are specific, particular, and non-necessary—they are forged and broken in particular concrete circumstances; (b) articulations vary in their tenacity; (c) articulations vary in their relative power within different social configurations; and (d) different articulations empower different possibilities and practices. (331)

Any identity might be compared to a train, which is constituted of many different types of train cars in a particular arrangement (or articulation). Each car is connected (or articulated) to another in a specific way that, taken as a whole (as a series of articulations), constitutes the identity *train.* Any specific train is thus a specific, particular set of articulations—an identifiable object with relatively clear-cut boundaries. But these specific articulations are nonnecessary; that is, there is no absolute necessity that they be connected in just that way and no guarantees that they will remain connected that way. So, for example, we could disconnect (disarticulate) and reconnect (rearticulate) cars in a different order to constitute a new identity *train.*

To say that articulations vary in their tenacity is to acknowledge that some connections are more difficult to disarticulate/rearticulate than others. Yard police, for example, may or may not let us in to change the order of the cars. Or the kinds of connections between the cars may be variously difficult to manipulate.

Some articulations are more resistant to rearticulation than others; that is, some are more *tenacious* than others. When a connection between elements is particularly resistant, the identity *train* remains intact and effective over a long period. When an articulation is effective, it is said to be powerful in that it de-

lineates what is real and possible from what is not. Different arrangements make possible different possibilities and practices. If we disarticulate the engine, for example, the rest of the train will not move. And, in the process, we may have rearticulated the elements in such a way as to necessitate a new identity. Is a string of cars without an engine a train? Is a single engine a train? We take the answers to both to be maybe. On the other hand, a disarticulated car of the type that usually completes a train will probably not be thought of as constituting the identity *train.* The term "caboose" might have to suffice. But a train without a caboose is usually still thought to be a train.

Articulation thus points to the fact that any identity is culturally agreed on or, more accurately, struggled over in ongoing processes of disarticulation and rearticulation. For example, clearly, one element of what makes a train a train (and not, say, just a caboose) depends on our agreed-on cultural conception of *train.* To stretch this a bit, we could say that we have an ideology regarding what we empower as a train. The ideology of *train* articulates to the arrangement of the cars such that we may call a lone engine a train but not a lone caboose. But that ideology is itself an identity constituted by its articulations, one of which is the past practices of putting trains together. Given changes in those practices, say, for example, giving cabooses their own little engines to get around, we may rearticulate our ideology of *train* such that lone cabooses are more like lone engines and deserve, perhaps, the status, *train.* Alternatively, we may alter the identity *train* by working to rearticulate it on ideological grounds alone. We may, as teachers, for example, decide to teach people a different definition (identity) of *train* so that a lone engine or a lone caboose is rearticulated as constituting the identity. The success of our attempts at rearticulating identities, whether purposeful or not, depends on the tenacity of the various articulations that constitute it at any particular conjuncture.

To extend this now beyond more easily identifiable identities, social practices, ideological positions, discursive statements, social groups, and so on are also articulated identities whose meanings are continually and variously rearticulated. Dictionaries define the most widely accepted (or acceptable) identities, but there are frequently different, alternative

need only read a bit of the *OED* to begin to get a feel for how dramatically articulations can change (although the *OED* only hints at the range of connections that constitute the articulations). Raymond Williams's *Keywords* tracks changing articulations of key identities in Western thought and provides excellent cases of rearticulation.

The concepts of meaning and power are dramatically refigured in articulation theory. Meanings cannot be entities neatly wrapped up and transmitted from sender to receiver, nor can they be two separate moments (meaning 1 contributed by the sender and meaning 2 contributed by the receiver) abstractly negotiated in some sort of a circuit. Like any identity, meaning—both instances and the general concept—can be understood as an articulation that moves through ongoing processes of rearticulation. From sender through channels and receivers, each individual, each technology, each medium *contributes* in the ongoing process of articulating and rearticulating meaning. Power is no longer understood as simply the power of a sender over a receiver or as the negotiated symmetry of the sender's or receiver's meanings but as that which draws and redraws the lines of articulation. As Grossberg has put it, power "organizes the multiplicity of concrete practices and effects into predefined identities, unities, hierarchical categories, and apparently necessary relationships" ("Critical" 92). Power is thus what works to *fix meanings,* that which empowers some possibilities and disempowers others. Grossberg explains that empowerment is "the enablement of particular practices, that is, as the conditions of possibility that enable a particular practice or statement to exist in a specific social context and that enable people to live their lives in different ways" (95).

We can expand our understanding of the role of the technical communicator and of technical discourse significantly by tracking the implications of an articulation view of communication. First, by using the lens of articulation theory, we have here been able to track the changes in the theory and practice of technical communication as themselves rearticulations of elements (or identities) such as technical communicator, meaning, author, channel, sender, power, receiver, and so on. Second, however, that very lens works to rearticulate the location of the technical communicator in the process of communi-

lating meaning in (and variously contributing to or changing) relations of power. To gain access to those rearticulations, we will again consider the question of authorship as raised by Foucault at the beginning of this article.

It is tempting here to begin to lay out all of the elements that articulate to the notion of *author* as it moves through the stages of transmission, translation, and finally to articulation itself. These articulations would include elements such as the conception of authors as individuals, individuals as the source of meanings, the conception of meaning as a fixed entity—the practice of attributing ownership to ideas, capitalist relations of property and appropriation, a notion of the power of ideas, and a particular conception of progress ("if it's new, it's better"). However interesting that task might be, we must limit our treatment here to some very specific articulations that direct our attention to the questions of meaning and power in the theory and practice of technical communicators.

In the transmission view of technical communication, authority is articulated to scientific and technical discourse as an objective and neutral reporting of facts. Humanities types may author meaning, but scientists, engineers, and, by extension, technical writers, merely (albeit skillfully) re-present what is already objectively "out there." These are not meanings, but objective, disembodied facts. Consequently, technical communications (like the posters or contracts mentioned by Foucault) often have no authors. When technical documents are *conveyed* by named individuals, these are again not authors in the sense of originating meaning—these are simply not discourses that produce an author. Even in these cases, however, for reasons considered later, technical communicators are rarely listed among the conveyers.

Technical documents and writing in science and engineering do often name authors (what Foucault calls the writer). In this case, the author remains the sender in the transmission sense but, articulated now to the concept of conveyance of scientific fact, as an authority. Rarely, again, is authorship in these cases extended to the professional technical communicator. In part, the attribution of authorship here to the scientist or engineer at the expense of the technical com-

tific discourse, the practice of attributing ownershi to ideas, a conception of invention as the expressio of individual genius, capitalist relations of propert and appropriation, and the persistence of the eleva tion of the scientific discourse over humanistic dis course (see Horkheimer and Adorno). In other words specific relations of power articulated to a particula conception of science account for the specific iden tity of authorship in the sciences and the exclusion o the technical communicator from that attribution.

To evoke *author* in theory or practice from withi the transmission view evokes, like a chain reaction o connotations, all these articulations, which strug gle—whether purposefully or not—to hide the wor that goes into fixing the identity of that work. Thes articulations are nonnecessary; that is, there is no ne cessity that they be connected in just this way and n guarantee that they will remain connected in this way Indeed, translation works to rearticulate the questio of authorship, although its challenge is incomplete.

Although the translation view suggests a more el evated role for the translator, it does not grant au thority. To put it another way, the translator is seen a an expert, but only in mediating, not authoring meanings. This is even the case in the humanities where debates ensue over whether or not to giv translators the same credit in tenure and promotio reviews as authors. In technical communication, th unique skill of individuals may be recognized as act of mediation, but as an activity, the discourse sti does not grant them authorship. Again, we sugges that this is in part due to the tenacity of some of thos same relations of power discussed earlier: the prac tice of attributing ownership to ideas, the conceptio of invention as the expression of individual genius and capitalist relations of property and appropriation

By resting on the conception of author as articu lated to the contribution of meaning, by challengin the articulation to differential relations of power be tween sender, translator, and receiver as being some how evident, and to the conception of science a objective fact finding, we would advance the rearti ulation of technical communicators (along wit media and technology) as having authorial powe We cannot grant technical communicators status a authors merely in the scientific sense of *conveyers o*

translation view that asserts that the discourse of the translator (whether the translator be scientist, technology, medium, or technical communicator) must be understood as involved in the compromise. Rather, technical communicators are theoretically situated in the process of articulating meaning just as prominently as are the sender and the receiver. The process of communication is then not simply a transmission or a translation but an articulation of voices, much like what Bakhtin has characterized as the orchestration of "heteroglot, multi-voiced, multi-styled, and often multi-languaged elements" (265).

It should be obvious that different articulations empower different possibilities and disempower others. When technical communicators are not articulated to authorship, their possible contributions are severely constricted. Whether they desire it or not, technical communicators are seen as variously adding, deleting, changing, and selecting meaning. Again, whether they desire it or not, they are always implicated in relations of power. Their work is at least *complicit* in the production, reproduction, or subversion of relations of power. This is necessarily the case, even when the acceptance of the transmission or translation view may occlude the nature of the work that they do. Technical communicators *are* authors, even when they comply with the rules of discourse that deny them that recognition. When they are denied that recognition, the measure of their success can only be complete compliance with the articulations of meaning, power, and authorship from the standpoint of the transmission and translation views.

The consequences of extending authorship to technical communicators are significant. With the recognition that the communicator articulates and rearticulates meaning comes the responsibility for that rearticulation. No contribution is really transparent; it is only rendered transparent in relations of power. So, just as the power of technical communicators is recognized (as they are empowered), so too must they be held responsible.

IMPLICATIONS FOR PEDAGOGY AND PRACTICE

We heard recently of an industry recruiter who—venting some frustration over graduates knowing more theory than was good for them on the job—said, "We want robots!" This frustration has, we submit, several sources. First, and most obvious, we take this to be a plea for technical communicators to perform their transmission function well. We would not dispute the need to be able to perform skillfully using effective grammar, editing, media management, and so on.

But there is more in the recruiter's frustration. Second, then, this plea points to the fact that the field is growing rapidly in the tension between transmission, translation, and articulation. Although that tension is generative, it does not result in easily written job descriptions, clear definitions of the technical communicator's role, task, and ethos. Sometimes there is a lack of clear vision and agreement—among practitioners and their employers—about what is expected of a technical communicator and what it is he or she has to offer. In addition, however, that plea for robots suggests that there exists a particularly tenacious articulation between the conception of communication as the transparent transmission of messages, the neutrality of science and engineering, and perhaps even of the ethical neutrality of the ethics of capitalism. In fact, to behave as such a robot is to be complicit with the meanings thus articulated.

It is possible to look at some of the turmoil in the education of technical communicators and some confusions about the work of these graduates in terms of a field trying to come to terms with consequences of the technical communicator as author. The difficulties are twofold: On the one hand, the theoretical development of an articulation view has not advanced far enough to form a firm foundation for pedagogy and models of work. On the other hand, the changes that would result from this rearticulation—although theoretically and practically defensible—are not likely to come easily.

Nevertheless, because professional communicators contribute to the process of articulating meaning, whether they choose to or not, they must be able to analyze critically the ethical implications of the meanings they contribute to. Such knowledge is all the more important given the current tendency to define their work as (ethically) transparent. In a sense, technical communicators need to be shaken from the somnambulistic faith that their work is ethically neutral. Steven Katz's examination of a virtually "perfect" technical document proposing changes in a ve-

hicle designed to asphyxiate prisoners during the Nazi holocaust ought to put an end to any assertion of ethical neutrality. It is not simply *how well* we communicate that matters. *Who* we work for and *what* we communicate matters.

The nearly ubiquitous calls for technical communicators to learn more about the technical content of their work (see, for example, Institute of Electrical and Electronics Engineers), even to participate in the early stages of project design, can be understood as easily articulated to the conception of the communicator as author. Such technical knowledge can provide the backdrop for sound, ethical decision making, as well as for competent transmission and translation.

In addition to ethics and technical knowledge, it seems equally essential that technical communicators have a superior grasp of the relationship between technology and discourse and between science and rhetoric (Horkheimer and Adorno; Miller; Wells; Sullivan; Katz). It is essential that we learn to analyze critically the articulations evoked in the language of technology and science. In a sense, technical communicators need to be shaken from the somnambulistic faith that their work is linguistically neutral.

Finally, we would add to the education of technical communicators knowledge of how organizations operate—in the form of organizational communication or organizational behavior. It is remarkable how little most of us understand the relationship between power, knowledge, and organizations. It is time that we give up the faith that the goal of communication is always clarity and brevity. In practice, the politics of organizations and organizational politics often have as their goals limiting, obscuring, or hiding information (Wells; Katz; Butenhoff). Naïveté about how organizations work articulates well to the myth of the technical communicator as engaging in an ethically and linguistically neutral activity.

To send out technical communicators with this kind of knowledge is to send them out armed.[1] It is impossible for technical communicators to take full responsibility for their work until they understand their role from an articulation view. Likewise, it is impossible to recognize the real power of technical discourse without understanding its role in the articulation and rearticulation of meaning and power. This understanding would thus empower the discourse of technical communicators by recognizing their full authorial role.

NOTE

1. We invite our readers to explore the consequences of this view for the role, task, and ethos of technical communicators as advocates for their constituencies: their employers, clients, and audiences. As advocates, they would be more like lawyers than their current status acknowledges. Although technical communicators have less in terms of codified law or precedent on which to draw, they could be understood as advocating for, counseling, advising, defending, or building cases. This change in status complicates the relationship to their constituents: The counsel of communicators might be accepted, rejected, or resisted (or litigated against!). But just as a lawyer's duty is to inform employers or clients of the possible consequences of their actions, so too should it be the technical communicator's duty to inform employers or clients of the consequences of their rhetoric!

   In addition, this view suggests that the expertise of technical communicators is applicable to the articulation of meaning well beyond the confines of science and engineering (or business). Instead, its scope can easily be understood as encompassing situations in which the transmission, translation, and articulation of specialized knowledge is at issue.

   Finally, we do not offer this invitation with any pretense that advocacy or authorship will *simplify* the role, task, and ethos of technical communicators. We offer no apology, however, for we are advocating here changes that are already underway, even if they are not very well understood.

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12

Relocating the Value of Work

Technical Communication in a Post-Industrial Age

JOHNDAN JOHNSON-EILOLA

For good or bad, my publishing career seems bound up with the recursive activity of fixing (and creating) problems and filling in gaps that I notice in my earlier work. (I can hear my Dad saying, "Measure twice, cut once!") "Relocating the Value of Work" grew out of my early attempts to understand the economies of text in postmodernist culture. In an earlier attempt, "Accumulation, Circulation, and Association," I brought together work in technical communication and management theory to help me think about the functions and values of information and knowledge in flattening corporate and academic organizational structures. The conceptual framework for that earlier article relied on a hazy sense of the history of capitalism, moving through the three key terms of the title, situating technical communicators as experts in the final stage, creating associations among various bits of information.

Whatever the merits of that earlier work, the neatness of the last phase, *association,* bothered me: certainly technical communicators were (or should be) experts at manipulating information for specific audiences and purposes. And certainly (to my mind), technical communication was poised to take a central role in this new information economy. But, just as certainly, while technical communication was increasingly visible in the workplace and academia, the field was frequently cast in a supporting role.

In cross-disciplinary teams in my classes, I routinely noticed that technical communication majors were positioned as recording scribes, relegated to watching while the "experts" worked. In reading workplace research and in talking to working professionals, I heard accounts of struggles to gain voice and responsibility. And in reading outside of technical communication, I saw key and current issues that seemed precisely in the domain of technical communication: researchers in computer science, management, information architecture, among others, were turning their efforts toward standard technical communication issues, even if they remained oblivious to the fact that technical communication had addressed those issues (often decades earlier). So while technical communication seemed to be riding on the coattails of the information revolution, we also seemed destined to never wear the coat.

I had touched lightly on Robert Reich's work on symbolic-analytic jobs at one point in writing the earlier "Accumulation" piece, but I did not recognize its potential until I had reformulated the problem to focus on job classifications and information economies. In light of that reformulation, I pieced together "Relocating" largely from existing notes and conference

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presentations (including two papers given at the Council for Programs in Technical and Scientific Communication annual conference).

As I suggested earlier, my work since the publication of "Relocating" has involved the realization that this article raises more questions than it answers. For example, despite my frequently heavy-handed political statements in other publications, "Relocating" is uncomfortably silent on the politics of information economies and workforce training.

Furthermore, the whole notion of a form of authorship that relies on manipulation rather than creation continues to occupy and challenge me: What does information work look like in this new economy? What new skills and methods will grow from the challenges of information overload? How have changes in interface design contributed to—and been caused by—changes in patterns of work, communication, and living? How will writing—and design—change? I take up such issues in *Datacloud: Toward A New Theory of Online Work* and in "The Database and the Essay," in *Opening > Writing,* a book coauthored with Anne Wysocki, Cynthia L. Selfe, and Geoff Sirc.

And so the cycle continues.

Johndan Johnson-Eilola

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As we enter the post-industrial age, we enter a time of great potential for revising the relationship between technology and communication. Fifty years ago, at the tail end of the industrial age, technological products generated income. Factories produced concrete goods—washers, automobiles, clothing, televisions—that consumers purchased. In that climate, information was subordinate to industry. Information may have supported products, but the highest value was typically in the industrial product. Today, however, we live and work in an increasingly post-industrial age, where information is fast becoming the more valuable product. Products are still manufactured and purchased, but, in a growing number of markets, primary value is located in information itself.

In this article, I argue that rearticulating technical communication in post-industrial terms provides a common ground between academic and corporate models of technical communication, which are notoriously disparate (Scanlon and Coon; Carliner). Robert B. Reich's definition of "symbolic-analytic work" offers a way to relocate value in technical communication contexts, from an industrial to post-industrial relationships. Symbolic-analytic workers rely on skills in abstraction, experimentation, collaboration, and system thinking to work with information across a variety of disciplines and markets. Importantly, symbolic-analytic work mediates between the functional necessities of usability and efficiency while not losing sight of the larger rhetorical and social contexts in which users work and live.

This article begins by exploring some of the problems of technical communication's current service orientation as it affects professionals and users and, recursively, educators and students. Next, I describe other disciplines that have been able to define their work in post-industrial ways. The second half of the article starts by defining symbolic-analytic work in relation to other occupational classes. In the midst of this definitional work, I provide a more productive framework for technical communication by positioning current research and practice in technical communication within specific aspects of symbolic-analytic work. Finally, I describe five key educational projects that might help educators begin better educating students for new occupational positions.

TECHNICAL COMMUNICATION AS SERVICE

Technical communication has traditionally occupied a support position in both academic and corporate spheres. In general, this model encourages communicators to focus on either technologies or on the limited aspects of a user's overall project that require technologies. Although the tendencies are present in varying degrees in most areas of technical communication, they are most visible in documentation, the primary genre discussed later in the paper. By relocating the value of documentation into a post-industrial relationship, we can work to rearticulate technical communication as a post-industrial discipline, with documentation blurring into other areas of our work.

Currently, most technical communication projects enhance other process and products: well-written software documentation allows users to complete their primary work (writing a report on a word processor, compiling a business productivity chart in a spreadsheet). Technical communication, as support, occupies a secondary position to the users' main objective, their "real work" (see, e.g., Carroll; Horton; Bowie; Weiss, "Retreat"). The difficulty here is that real work easily becomes defined in reductive, context-independent ways: small, decontextualized functional tasks rather than large, messy, "real world" projects. Telling a user the menu command for placing a graphic on a page is typically much easier than teaching the user both that functional task and the broader, more complicated basics of rhetoric and page design. Although in one sense the general "task" orientation of technical manuals appears to be a movement away from technology and toward the user's context, that movement is a deceptive one, because the user's tasks are defined almost completely in relation to the technology: the user's contexts are typically invisible.

This service orientation is multiplied, fractal-like, in academia, where technical communication educators frequently find themselves called upon to fulfill wish-lists of skills to industry. This position is readily apparent in a recent issue of *Technical Communication* on education. "The role of industry" in academic/industry collaboration, argue three technical communicators, "is to lend the structure and service of the institution to a design and content shaped by industry" (Krestas, Fisher, and Hackos). Another author cites a 1969 textbook in technical communication (his only bibliographic source) to argue for technical communication as "the presentation of verifiable data" and a renewed emphasis on providing hands-on, skills-based learning in "the latest automated word processing applications" (Merola). I've frequently found myself on the pointy end of such arguments, in virulent disagreements over whether I should be teaching basic rhetorical, usability, and visual design techniques or if I should be concentrating on teaching students application-specific skills in programs such as FrameMaker® 4.0 or Doc2Help®. I even see *typing speed* listed as a job qualification in want ads for technical writers. These things, as you might expect, trouble me greatly.

Focusing primarily on teaching skills places technical communication in a relatively powerless position: technical trainers rather than educators. Responding to the demands of industry, almost by definition, disempowers technical communicators, relegating them to secondary roles in education, industry, and larger social spheres of importance (see laments in Kreppel 603; Zimmerman and Muraski Jones; Steve and Bigelow). A number of theorists have suggested the need to move beyond our current limited status by methods such as integrating technical writing earlier into the design process (Doheny Farina; Conklin; Horton) or by broadening our goal

beyond simple skills (Selber; Southard and Reaves). These calls are useful but they do not go far enough. Although there are obvious (and financial) benefits to describing education in terms of what employees will need to do, there are also values—extremely important values—in taking a broader view, and talking about what technical communication *should be*.

If we truly wish to effect change in our positions, we need to rethink our mission in more fundamental ways than how to make our current practices more efficient. As I argue in the second half of this article, symbolic-analytic work provides a systematic framework for re-understanding the value of technical communication (both current and potential value). This framework is doubly valuable because it can help connect research and practice in useful ways. Prior to exploring this possibility, however, I want to lay out in more detail some of the negative consequences of our current service orientation.

CONSEQUENCES OF THE SUPPORT MODEL FOR PROFESSIONALS

The support model of technical communication encourages corporations to view technical communication as something to be added on to a primary product. Because the value is located in a discrete, technological product such as a piece of software, support becomes easily devalued, added at the end of the project (with too little time or too few staff members), or perhaps omitted entirely. This explains why technical communicators struggle to make documentation a part of the software development process rather than an afterthought (Horton; Doheny-Farina; P. Sullivan; Weiss, "Usability"). Although current textbooks do a good job of teaching rhetorical analysis, task analysis, information organization, and page layout, they do little to help students or professionals learn how to work on teams writing or revising product specifications or how to design a documentation project around rapidly changing and frequently unstable alpha products.

In addition, the workplace power structures implicated in this model downplay the authority of technical communicators even in areas they are qualified to speak to. In an ethnographic study of the document

Mary Elizabeth Horton discovered that over fifty percent of the revisions each writer made were, at least in part, to "maintain good interpersonal relations with one or more of the reviewers" (406). For comparison, the next most frequently cited reason for revision was for accuracy, safety, or completeness with a frequency of nineteen and twenty-six percent for each writer. Overall,

> [w]riters had little control over reviewers who wanted to include content simply because they thought it should be in the book. These reviewers did not listen to arguments about what was appropriate for the audience of the book and they forced the writers to make certain changes that were not beneficial—and may have even been detrimental—to the audience. (406)

Most writers have struggled with reviewers who misunderstand their responsibilities or work at cross purposes, but the interactions described here are symptomatic of the current problems of technical communication's relation to technological products.

Practicing technical communicators themselves also tend to downplay the complexity of their discipline. In a recent survey of practicing technical communicators (Scanlon and Coon) on the content of a college technical communication course, respondents systematically preferred an emphasis on teaching writing as a static, linear process of mechanical discovery and reporting with emphases on audience analysis, outlining, clarity, and mechanics. In other words, the technical communicators in the study emphasized relatively mechanical writing skills that have been, over the last three decades, systematically revised and augmented by theorists and practitioners in not only composition but also communication, rhetoric, management theory, and nearly every other field that studies and practices situated communication. As illustrated later, work in these broader fields is being taken up by technical communicators in both academia and industry. But without a fundamental rethinking of the relationship between technology and communication, that work will remain marginalized or coopted by other fields.

As the next section argues, the subordination of technical communication to technological support limits possibilities for not only technical communi-

sence of discussions about larger, social projects tends to also encourage some users to limit their own thinking and use of technologies to those aspects explicitly allowed and described by technologies and documentation.

CONSEQUENCES OF THE SUPPORT MODEL FOR USERS

Ironically, in carefully limiting technical communication to a support role, we may also end in disempowering users, the group that most technical communicators would claim to be helping. Users, in turn, may be disempowered when technical communication prioritizes its supportive role. Thinking of communication as an auxiliary tool ignores the constructive role that users play in the process. In addition, the support model frequently becomes articulated around the technology (and technical systems), with the user subordinated to an external part (Johnson; Johnson-Eilola, "Wild"; D. Sullivan). The common practice of instructing users in functional but not conceptual aspects of technologies, for example, can adversely or even fatally affect users, as James Paradis has argued in his study of documentation written for construction equipment operators. In a more extreme case, Stephen Katz suggests that the rhetorical emphasis on expediency and decontextualization inherent in technical communication allowed Nazi administrators and engineers to sidestep ethical issues involved in the construction of vehicles for transporting prisoners to death camps and mass executions. But even more everyday instances of technical communication such as interface design (Laurel; Selfe and Selfe) and cartography (Barton and Barton; Wood; Soja) contribute in fundamental ways to how a user thinks, communicates, and acts in the world.

Consider a person using a word processor to write a resume in response to a job advertisement. Computer documentation would traditionally treat the problem by analyzing users' experience with the software in question, their educational level, and their job function. A technical communicator would choose whether to design a tutorial, a user guide, a reference guide, or some other genre of documentation, perhaps even a range of these. Although the ordering and

technical communicator's work would invariabl begin with the program functions: creating a ne document; inserting text; changing margins, spacing and font styles; and previewing and printing a docu ment. Some programs might even automate thi process by allowing users to fill in the blanks on pre-designed resume template.

Here, however, the technical communication usu ally stalls, failing to consider the broader, social pur poses and contexts of the user's work. In this way, th primary task is fragmented and decontextualized s that it can be documented as a set of formal function As business writing teachers (and personnel man agers) know, the primary task here—creating a re sume in order to find employment—is difficult t learn, certainly requiring more than a template for an but the most artificial situations. The complexities o rhetorical purpose, audience analysis, the user's per sonal and professional qualifications, the resum reader's personal and professional experiences an motivations, the specific line of work being sough and so on all combine in ways that make writing an ef fective resume an extremely difficult task to teach o learn. One would expect that documentation abou how to write a resume would either attempt to dea with those issues with some complex algorithm (task not currently computationally feasible) or hel users learn how to understand the complexity of thos issues so that they could make intelligent, informe decisions about how to use the program. But such a approach would shift the focus of computer use fro the computer to the user's communicative situatio the computer would become a secondary compone to the process (taking the role that was currently oc cupied by technical communication). The limiting a pects of the genre of instructional manual are s strong that it is difficult to envision a manual that suc cessfully deemphasized technology use and instea focused on broader issues. So the traditional suppo role for technical communication—in other word education—participates in (or is the scapegoat fo broader reductions that disempower not only the tech nical communicator but also the user.

This narrow focus may begin to broaden in co texts where documentation is produced as the pr mary rather than secondary product, such as in com panies that produce third-party manuals. In a detaile

third-party documentation for software (Walters and Beck), researchers found that manuals included with software concentrated on helping users learn specific software functions; successful third-party books on the same products attempted to cover not only local program functions but also broader issues. For a word-processing program, for example, the third-party book included discussions of writing processes and design guidelines, the qualifications and experiences of the writer of the manual, and more detailed examples of contexts in which the software might be used. Writers of the third-part manuals were positioned less as in-house support for technology use, so could act as teachers rather than technology cheerleaders. In other words, writers were allowed to understand the location of value differently: the user's broader tasks come into focus. Rather than a manual supporting the use of a tool, the manual helps a user create conditions in which he or she undertakes more general forms of work. Technologies are still involved, but they are not the primary focus.

RELOCATING THE VALUE OF WORK: FROM TECHNICAL TO COMMUNICATION

If this shift from efficiency and speed to connection and selection has been largely ignored by technical communication, it has been successfully adopted and adapted in numerous other areas, including such diverse occupations as management consulting and literary theory. In particular, two key shifts can aid our work here: the transformation from an industrial economy to an information economy, and the flattening of corporate hierarchies.

Even corporations that one might commonly think of as producing technological products are in many ways now in the business of producing and selling information. The rapid growth of the computer industry, for example, now relies on the demands made by new software releases in order to drive hardware purchases. Twenty years ago, companies such as IBM and Wang provided customers with "big iron" computing systems as their primary product; support systems such as software and technical assistance were considered valuable by customers, but were clearly subordinated to the hard technology. Today, software [illegible] like Microsoft explicitly dictate standards for major sections of the computer hardware industry. Similarly, software companies now exploit lucrative markets by selling streams of information in one form or another; by providing "tiered" support (higher-paying customers gaining faster and more personalized support); by offering software "subscriptions" (scheduled software updates prepaid with a flat, yearly or quarterly fee); and by negotiating site and enterprise licenses for large, corporate customers (who are offered slightly lower per-copy fees essentially in exchange for requiring every user to adopt the same package). In fact, software itself is rarely purchased outright by customers, because "shrink wrap" agreements (small-print contracts on the outside of the sealed envelopes containing program disks) explicitly state that the software companies continue to own the software; the user has merely purchased the right to run the programs on a specific number of machines. In a growing number of cases, software is explicitly purchased on a short-term or per-use basis. This capability is one of the interesting features of programs written in Java and designed to be distributed to users on the fly over the Internet or an intranet, potentially even to diskless computers which cannot even store programs—users pay for and download programs each time they use them. Many companies have shifted portions of their revenue streams to providing information rather than technological products. In addition, some organizations work specifically in information and produce little or no products of the industrial type. High-profile, Web-based companies such as Yahoo, Alta Vista, and eXcite, for example, excel at arranging, condensing, indexing, and reorganizing information according to the needs of different customers. In one way of thinking, these companies are realizing a possibility hinted at by print-bound indices and encyclopedias. In these Web-based ventures, the index moves out from the back of the book, becomes fluid, customized, and of primary rather than secondary value.

At the same time, we find a shift in workplace structures that flattens traditional organizational hierarchies. Companies such as Ford Motor Corporation reengineer key processes to minimize the amount of times information changes hands (Hammer and Champy 39–44). Such reengineerings, almost as a [illegible] act as bar-

nization (50–64). The focus on processes rather than products does not abandon the value of concrete goods—many corporations are still much involved in the production of concrete goods. But in these post-industrial corporations, traditional, industrial economies of scale are no longer seen as adequate and can in fact be damaging when they prevent a company from reacting quickly to changing technologies and markets.

But, as with capital itself, it is no longer so much the physical instantiation of money (coins and bills) as the movement of money (stocks and bonds)—moving from corporation to employee then back into other corporations—that has value: knowledge *about* the movement of capital rather than simply static capital. Peter Drucker identifies the roots of the emphasis on knowledge all the way back to the beginning of the industrial revolution itself, as *techné*—practical knowledge—is transferred from the minds and bodies of craft laborers into what Shoshana Zuboff calls "externalized knowledge": training materials and mechanical assemblages capable of either automating or semi-automating what previously took a skilled laborer. For Drucker, contemporary capitalism (what he terms "post-capitalism") is the era in which knowledge does work (50)—in other words, communication. Reengineering guru Michael Hammer likewise places communication processes at the nexus of contemporary organizations (Hammer and Champy; Hammer and Stanton).

But, while the shift to information economies and flattened organizational structures has received much attention in both popular press and management and labor theory, it has been largely ignored by technical communication practice or theory: technical communication still defines itself as an industrial rather than post-industrial enterprise. The following sections begin to sketch the outlines of a model of technical communication suited to the post-industrial age, under the job description "symbolic-analytic worker."

FROM SUPPORT TO SYMBOLIC-ANALYTIC WORK

In addition to participating in (if not causing)

backdrop for a new class of service work, one inh
ently rooted in information space. Symbolic-analy
work, a new classification proposed by U.S. Sec
tary of Labor Robert B. Reich, involves worki
within and across information spaces. Such worke
are highly skilled in information manipulation a
abstraction, critical and much sought-after skills
an age where information overtakes industry in ter
of social and economic value. As the analysis th
follows illustrates, many of the key abilities po
sessed by symbolic-analytic workers are the sa
skills now possessed, in varying degrees, by techn
cal communicators. However, we will need to red
fine our practices and images, both to ourselves a
to the public, to make those connections (and the
value) clear.

To make the differences in classes of service wo
apparent, the following sections work through thr
primary areas of service work analyzed by Reic
Routine Production, In-Person Service, and Sy
bolic-Analytic Work. Importantly, the current broa
definitions of technical communication position th
discipline partially in every class described belo
This ambiguity, although often a vexing proble
when it comes time to write job descriptions
tenure statements, has worked to keep the borders b
tween service classifications open, making the mov
into symbolic-analytic work feasible in theory an
practice, provided we are willing to make that mov
ment.

Routine Production "entail[s] the kinds of repe
itive tasks performed by the old foot soldiers
American capitalism in the high-volume enterprise
(Reich 174). These jobs include traditional blu
collar positions and also a number of white-colla
jobs—"foremen, line managers, clerical supervisor
section chiefs—involving repetitive checks on subo
dinates' work and the enforcement of standard ope
ating procedures" (174). These workers are value
for their ability to follow rules, remain loyal to
company, and work accurately and quickly.

Technical communicators fall into routine produc
tion in cases where their work becomes define
solely in terms of routine manual writing for large
homogeneous software products (the writers, for ex

nined template, vocabulary, and readability level). As Reich points out, "contrary to prophets of the 'information age' who buoyantly predicted an abundance of high-paying jobs even for people with the most basic of skills, the sobering truth is that many information-processing jobs fit easily into this category" (175).

Job advertisements for technical communicators that list familiarity with specific brands of word-processing and page-layout software but do not discuss more complex skills, for example (and these ads are legion), offer visible reminders of the tendencies toward thinking of technical communication as routine production. There are, of course, elements of such work in the practices of many technical communicators, although this job classification prioritizes (and often restricts activity to) such types of work.

Furthermore, the prevalent tendency for the general public to believe that complex rhetorical tasks such as resume writing or Web page design can be easily automated by templates or software wizards illustrates how routine and repetitious some people consider technical communication to be. Although most technical communicators would argue to the contrary, we have done little to convince the public otherwise. And once public perception brackets technical communication in this manner, technical communicators will have a difficult time arguing that they are capable of more complex and valuable (non-routine) activities.

In-Person Service Workers, like those in routine production, complete routine, repetitive tasks and are usually closely supervised. The primary difference between routine production workers and in-person workers is that in-person service workers deal with people directly. So in addition to the skills of routine production, in-person workers must possess what Reich calls "a pleasant demeanor. They must smile and exude confidence and good cheer, even when they feel morose. They must be courteous and helpful, even to the most obnoxious of patrons. Above all, they must make others feel happy and at ease" (176). In-person service workers have replaced much of the historical emphasis on routine production work. There were more in-person service jobs created during the 1980s than there are total workers in the steel, textile, and automobile job classes *combined* (177).

ing freelance or in large companies, may frequent find themselves doing in-person service work. Th common activity of interviewing technologic content-area experts to document software or oth products sometimes falls under in-person servi work, especially in cases where the status differenti between technical communicator and resource pe son are laid bare (Raven). In addition, technical co municators acting as in-person service workers a increasingly located in help desk or help line depa ments, where they answer questions for users o the phone or on the Internet. As most technical co municators have discovered, many users refuse read printed or online documentation. Because of routine nature of the bulk of users' calls to help de or help lines, operators in many organizations f they can answer most questions with a small se stock responses (frequently assembled into a da base for easy reference by staffers). In essence, th workers read documentation to users unwilling to so on their own. In some cases, however, help line erators act as symbolic-analytic workers. If the pr lems are of sufficient complexity or uniquenes prevent a corporation from easily setting u "knowledge base" that matches common problem routine, prescripted answers, these operators begin to work as symbolic analysts.

Symbolic-Analytic Workers possess the abil to identify, rearrange, circulate, abstract, and br information. Their principal work materials ar formation and symbols, their principal product reports, plans, and proposals. They frequently online, either communicating with peers (they r have direct organizational supervision) or manip ing symbols with the help of various compute sources. Symbolic analysts go by a wide varie job titles, including investment banker, researc entist, lawyer, management consultant, stra planner, and architect.

In most ways, symbolic analysts differ fro other job classifications in terms of status, resp bility, geographic mobility, and pay. Unlike r production workers, they are more able to move place to place because of their higher disposal comes and because companies will often pay m expenses for their services. They can also freq telecommute, uploading and downloading inf

tion over the World Wide Web, Internet, and intranets; faxing reports to clients; and conference calling on the telephone. And unlike in-person service workers (who may communicate with customers via phone, fax, or computer network as well as face to face), symbolic-analytic workers deal with situations not easily addressed by routine solutions.

Although the discipline does not yet stress this point, technical communicators do frequently work as symbolic analysts. The ability to manipulate, abstract, revise, and rearrange information is itself one version of the classic task of the technical communicator: someone who takes preexisting knowledge about technology and explains it to others. In an industrial economy, such a job description prioritizes the technology (and technologist) and subordinates the technical communication (and communicator). But post-industrial work inverts the relationship between technical product and knowledge product: symbolic analysts make it clear—to themselves, to their employers, to the public—that in an age of ubiquitous technology and information, knowledge attains primary value. Refocusing on communication also authorizes an expansion of technical communication. If technology use is replaced with broader conceptions of work, then users' "tasks" are no longer simply low-level, machine-reliant functions, but contextualized, real-world projects.

Instances of technical communication as symbolic-analytic work provide some leverage points for rethinking our current disciplinary definitions. Consider the general occupation of developing and maintaining sites on the World Wide Web. Although this role is currently filled by workers in diverse areas of expertise—from computer science and technical communication through advertising, graphic design, and individuals working in their spare time—the work (at least when it is done well) is clearly technical communication, much as writing product specifications or feasibility studies is technical communication done by a wide range of professions. Of particular interest in Web design is the focus on communication (rather than technology) as a primary product and process. In a postmodern sense, these communications are sometimes valued for their collection and arrangement of preexisting information rather than new content creation. In Figure 12.1, Web

nections to other sites on the Web with relevant information, and also broad rather than simply functional advice about designing Web pages. This site acts as an instructional manual for a technology (the computer being used to design and serve Web pages) but focuses on broader issues. "Manuals" such as this (which are increasingly common on the World Wide Web) succeed at making technology subordinate to communication. The typical decontexualized focus of print documentation is replaced by broad-based teaching and learning.

Even though it is certainly possible to translate traditional, decontextualized technical documentation over to the Web, good Web design draws on a wider range of skills and concerns to make it a form of symbolic-analytic work. Unlike industrial models of technical communication (which would prioritize efficient technology use), such forms of Web design blur the boundary between "technology" and "communication" in important ways, without necessarily downplaying the richness of communication contexts. In fact, current forms of Web design provide only a limited view of the ways that technical communicators might reinvent their work. The rapid adoption of communicative links in technologies (from networked computers in home and workplace to cellular telephone links in automobiles, airplanes, and purses) offers the potential to integrate communication into a much broader range of technological contexts. And although most Web sites offer one-way communication (a print distribution model), sites are now beginning to offer better facilities for interpersonal communication, a feature that makes clearer the emphasis on communication over technology. If the printing press engendered a massive increase in the distribution of information, the Web can square that revolution, making literate communication recursive rather than linear.

TACTICS FOR REARTICULATING TECHNICAL COMMUNICATION

Reich outlines four key areas of education for symbolic analysts that we can use to reinvent technical communication education in a post-industrial age: collaboration, experimentation, abstraction, and system. Like the symbolic analysts, Reich evaluates

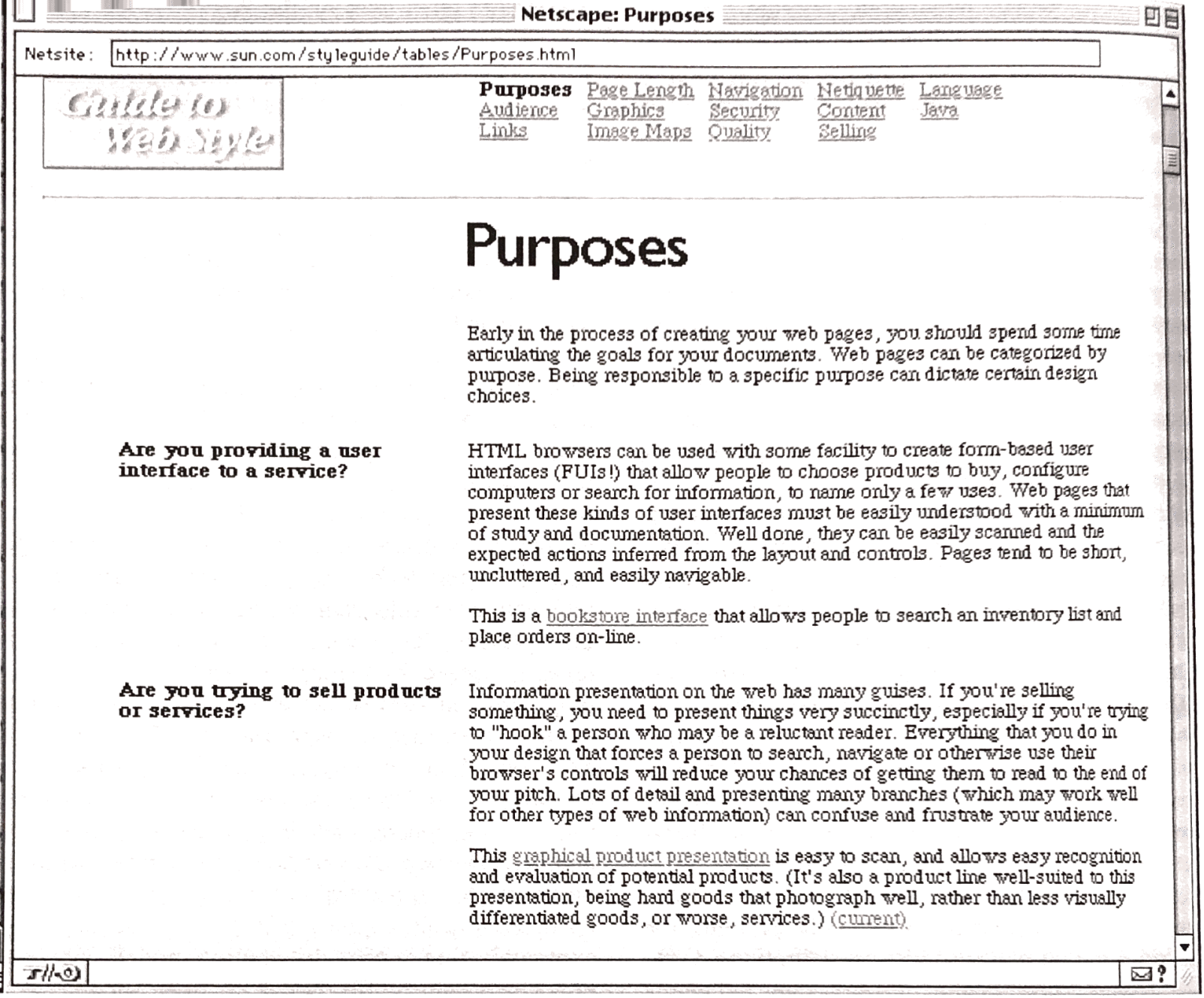

Figure 12.1. Subsection of Web Style Guide from Sun Microsystems.

hemselves and to the rest of the world that technol-
ogy is easy to come by, but understanding and strate-
gic use are both rare and valuable. In each of the areas
isted in the following sections, I note the ways that
he area can be seen to describe existing work in tech-
nical communication. By seeing these activities as
nstances of symbolic-analytic work, we can begin
he process of relocating value in a postindustrial age.

Experimentation involves forming and testing
ypotheses about information and communication.
For symbolic analysts, this experimentation is some-
times formally scientific but also sometimes intu-
itive. Because of the unique nature of most work
done by symbolic analysts, preconceived approaches
are, at best, only starting points. If a class of prob-
lems becomes so common that it can be answered by
reference to a rule book, then the problem moves into
the domain of routine production workers. But in
order to broaden our work beyond isolated technical
functions, we'll also need to expand on our common
use of the term "usability." Even though, as with all
four of the [illegible] technical communica-

ytic work, traditional notions of instructional
mentation tend to orient those skills toward
tionalism, decontextualized uses of technology
er than broader, contextualized communication
esses.

For technical communicators, usability studies
stitute a primary area for experimentation, a place
y out different approaches to problems. Techni-
communication often limits usability studies to
ghtforward checks for accuracy and ease of use
Sullivan), a fact reflective of the common focus on
tionalism over critical interpretation in technical
munication (Selber; Blyler). Lee Brasseur, for
mple, has described the negative effects of default
patterns in computer programs for drawing
hs and charts. Users took advantage of fill pat-
s for charts automatically, resisting the possibil-
of either omitting patterns when they were not
essary or changing patterns used in a chart to
id similar patterns in adjacent areas. The goals of
program and documentation were defined in
ns of basic program functions ("Can the user con-
ct a chart?") rather than more difficult but very
ortant critical perspectives of the user's broader
jects ("Is the chart effective?"). In other words,
software was *usable* in an instrumental, techno-
tric sense: users could successfully construct
rts. But at the broader level, the default settings
omated the selection of chart fill patterns in ways
actually damaged the overall quality and success
he charts. But this distinction becomes apparent
y when users—on their own or with encourage-
nt—learn to step back and think about the broad,
textual purpose of the program rather than the
ow, functional use.

Technical communicators must continue to inves-
te broader forms of usability studies, such as
kplace ethnographies. The growing popularity of
n work is a positive sign. In such work, re-
chers are less concerned with discovering univer-
static truths about users than constructing shared
ounts of situated understanding and social action
yler 340–42) and maps that can help both techni-
communicators and users negotiate and navigate
al realms (Sullivan and Porter). Rather than em-

stand and assist users in ways consistent with thei
existing work and to help them reinvent that work i
helpful ways (Beabes and Flanders 411). Contextual
ized research and practice makes it clear that com
municators cannot focus simply on applying simple
universal principles to documents but must instea
begin a recursive project of expansion and contrac
tion, in which they investigate concrete local context
and, in doing so, think about the broad projects i
which those users are engaged.

Beverly Sauer's study of risk communication i
mine construction provides a striking example of th
value of such broad, situated inquiry. Comparin
commonly used texts on roof control between Britis
and U.S. mining professions, Sauer notes the way
different rhetorical maneuvers are used in each. I
texts for miners in the United States, discussions o
roof control methods are presented as a straightfor
ward, relatively uncontested decision in favor of roo
bolting due to both economic and technological su
periority. The text then deals unproblematically wit
the proper procedure for installing roof bolts. I
British texts, however, the discussion is much mor
complex, admitting that different methods may b
applicable in different situations, attempting to la
out a broader range of situations and possibilitie
without selecting a single, universal solution. A
Sauer notes, one likely reason for the richer (if les
easy) approach of the British manual can be traced t
political and social concerns of miners who worr
about the tradeoffs between cost cutting and safety a
well as the U.S. origination of the roof-boltin
method. Because of the political, economic, and so
cial aspects of all technologies, technical commun
cation should not limit itself to simple functionalism
but must also include broader and more complicate
concerns.

Clearly, the type of experimentation afforded b
narrow versions of usability studies—accurac
speed of use, and so on—are only a limited (and pe
haps limiting) version of what Reich suggests as
core skill for symbolic analysts. Insisting on broade
forms of usability serves a double purpose for tech
nical communicators: it helps us produce documen
tation and assistance more attuned to a user's broade

a discrete technology and toward communication and learning.

Collaboration helps symbolic analysts work together to solve problems while crossing complex disciplinary domains. Software projects, for example, typically require not only programmers but user interface designers, marketing experts, usability testers, technical communicators, and graphic artists. Team members brainstorm ideas and solutions, critique each other's work, and provide support and feedback to the teammates. Collaboration marks one area that technical communication has entered into relatively quickly, both responding to and critiquing workplace processes and structures for writing (see, e.g., Paradis, Dobrin, and Miller; Burnett; Thralls and Blyler; Doheny-Farina). By attempting to both learn from and change existing collaborative practices, we position ourselves and our students as socially responsible experts—in other words, we help students learn to be both effective participants and responsible community members (Rymer). Such skills are valuable not only within the confines of the classroom and workplace but in reenvisioning users as fuller participants in communication processes.

In terms of rearticulating technical communication as symbolic-analytic work, it is crucial that we increase our research and teaching into issues of power in group dynamics. As numerous accounts have illustrated, technical communicators are frequently in positions of low power in workplace teams (see, among others discussed earlier, Raven; Doheny-Farina). With better understandings of these situations, students can learn to negotiate these difficult situations and develop tactics for avoiding the nearly automatic subordination of communication to technological values. Continuing the emphasis on collaborative work—and strengthening current approaches and emphases—is important in the quest to rearticulate technical communication as symbolic-analytic work. Furthermore, we must strengthen our current work in computer-supported collaboration such as e-mail, synchronous and asynchronous conferencing, and World Wide Web development.

Abstraction requires students not merely to memorize information but also to learn to discern patterns, relationships, and hierarchies in large masses of information. A paradigmatic example of this skill can be found in one of the most common tasks in software documentation: rethinking a series of system commands so that it coincides with a user's task representation and context. Current approaches to this activity, however, tend to oversimplify the task to one of straightforward audience analysis. Textbooks such as Woolever and Loeb's *Writing for the Computer Industry* provide chapters on defining audiences and objectives, on getting information, and on organizing information—each crucial aspects of writing software documentation—but do not explicitly attempt to bridge the gap between *getting* information about either program or users and *structuring* that information in ways appropriate for specific types of users in certain contexts. In practice, most technical communicators develop skills in abstraction based on modeling existing documentation, frequently under the guidance of more experienced technical communicators (who themselves probably learned abstraction through similar methods).

As with other aspects of symbolic-analytic work, the low profile of abstraction relates partially to notions of authorship that prioritize the creation of "original" content and subordinate work that seems derivative and functional (Foucault). As cultural theorist Jean-François Lyotard among others has argued, originality in a postmodern era is of declining value. Technical communication theorists have recently begun applying this worldview to technical communication theory and practice (Porter; Freed). In order to validate our work as symbolic-analytic work, we can make such concerns and approaches commonplace in our teaching and research.

System thinking works at a level above abstraction, requiring symbolic analysts to recognize and construct relationships and connections in extremely broad, often apparently unrelated domains. Systems thinking works *beyond* problem-solving approaches in order to understand (and remake) systemic conditions. In other words, where traditional approaches to technical communication rely heavily on breaking a problem into small, manageable parts to be solved by short, simple help texts, a symbolic analyst would step back to look at larger issues in the system to determine how the problem develops and in what contexts it is considered a problem.

cause we systematically define our work in limited ways. (Contributing in fundamental ways to this absence is the narrow conception of usability discussed above.) Although many aspects of our work do involve high-level system thinking, they are not addressed formally in our education or research; in many cases, these difficult activities occur unseen and unvalued. As long as technical communication is defined in decontextualized, functional ways, thinking in terms of broad systems is virtually prohibited. In the academic world, however, researchers and theorists possess the freedom (some would say the ivory tower atmosphere) to attempt thinking at the system level. Recent work in issues of gender and technology (see, e.g., LaDuc and Goldrick-Jones; Lay) offers one useful starting point. Researchers have begun to question masculinist assumptions not merely in technical communication but in technological development itself. As Laura Gurak and Nancy Bayer's survey of feminist technology critique argues, the high percentage of women working as technical communicators constitutes both a problem and an opportunity: a problem for women working to overcome masculinist assumptions and processes; an opportunity for women, as technical communicators, now increasingly involved in the design process for technologies, a position in which they can contribute in positive ways to developing technologies accessible to women. This critical insight relies on the ability of technical communicators not only to construct abstract representations of complex data sets (the overwhelmingly limiting technological contexts in which many women work) but also to bring together abstractions and key concepts across other areas (technological development, changing roles for technical communicators, social perceptions of gender roles in general, the statistical makeup of engineering teams, etc.).

Because of the complexity and broad reach of system thinking, this skill has proven extremely difficult to carry over into technical communication practice—such concerns are external to models that prioritize technology over communication and learning. In fact, advocates of minimalist documentation argue that computer documentation should abandon the attempt to provide broad, conceptual materials for users

short-term, disempowers users by assuming as a ru
that they already know how to complete their gener
tasks (writing a memo, composing a presentatio
etc.) (Brasseur; Redish; Johnson-Eilola, "Wild"
Furthermore, the decontexualized, functionalist pos
tion prevents consideration of sociopolitical terms.
model of communication that presents technology
neutral and discrete makes invisible the social repr
duction of gender bias inherent in technological d
velopment and use. As we shift the value of technic
communication away from discrete technologic
products and toward contextualized communicatio
the social aspects of technological use are mo
amenable to critique and change.

The shift into symbolic-analytic work will not b
an automatic one; it will probably be extremely diff
cult to make given the cultural and economic capit
involved. But without a concerted effort on the part
our field, our positions will certainly be entrenched i
routine production or in-person service. Despite fr
quent and loud announcements by futurists of th
coming leisure age and by management theoris
about empowering workers to take responsibility, th
workplace continues to increase the distance betwee
upper-level and lower-level workers. As Reich note
in-person service work has increased at an astoun
ing rate over the last decade. The largest employer i
the United States today is Manpower, which specia
izes in providing companies with temporary emplo
ees, primarily in the clerical classes. If technic
communicators do not take action to change the
current situation, they will find their work increas
ingly contingent, devalued, outsourced, and aut
mated. It is not impossible for technical communica
tors to do well in contract and freelance situations; i
fact, symbolic-analytic workers are frequently i
such positions. But a major distinction between sym
bolic-analytic work and other service work lies in th
location of value.

Recent initiatives in organizations like the Societ
for Technical Communication to standardize techn
cal communication by providing certification proc
dures as well as academic program guidelines wi
probably do little to change our status—they may i
fact entrench the discipline in the support model. Th

are often based on surveys of existing technical communication practice, they are primarily descriptive, defining the status of a job classification that currently places itself in increasingly devalued service areas. And such studies quickly become prescriptive, because they provide a highly visible record of what a technical communicator does. If the discipline wants to enact broad changes in the discipline, improving the status and the areas of work open to technical communicators, it must take a critical stance and use gathered data to illustrate the problems and limitations of current definitions and practices.

TECHNICAL COMMUNICATION EDUCATION: FIVE KEY PROJECTS

Technical communication must begin by making it clear that its work is not secondary to the product, but sometimes primary. Studies of the value added by technical communicators such as those described in Redish and Ramey provide a useful beginning to this rearticulation. But such studies, although important, fail to rethink the project in the fundamental ways necessary to shift technical communication into the realm of symbolic-analytic work. The position of "value added" necessarily posits an original object that the technical communication somehow relates to—it is this original object that holds primary value. At best, in such situations, technical communication can show that it enhances value or provides a return on investment. At worst, the "support" position limits the potential value of technical communication by encouraging both customers and managers to focus on the technology rather than the transformative knowledge potentially contained in the communication.

If we truly wish to effect change in our positions, we need to rethink our mission in more fundamental ways than how to make our current practices more efficient. As a method for strengthening the symbolic-analytic skills discussed in the previous section, educators can address five key projects that might help our students become better educated for their new roles:

1. Connect education to work
2. Question educational goals
3. Question educational processes and infrastructures
4. Build [illegible] network knowledge, and self-reflective practices
5. Rethink interdisciplinarity

1. CONNECT EDUCATION TO WORK

I mean connect education to work in a critical rather than accommodating way. Not only do we need to investigate how to fulfill the traditional roles of technical communicators, but we also need to look to the types of research going on in management theory, information management, interface design, and labor theory. Some of the most advanced and powerful work in such areas is actually technical communication: Hammer and Champy's "re-engineering," one of the latest fads in the corporate world, is at its lowest level a critical focus on the processes of communication within corporations. We need to investigate such movements and participate in them rather than be acted on by them. Hammer and Champy's work is groundbreaking precisely because most companies do not understand communication, information, and knowledge. Technical communicators do.

2. QUESTION EDUCATIONAL GOALS

Similarly, we need to take on the difficult task of questioning educational goals at a variety of levels. These are questions many technical communication educators have already begun asking: Should we be filling job and skill slots determined by industry? For that matter, are more corporate-oriented organizations such as the Society for Technical Communication shaping roles for technical communicators, or are they themselves filling slots dictated by industry? A more productive position (but a more difficult one) would be to take the tack described in the first project and apply it to education. Educating students as symbolic-analytic workers is an important step in this direction.

3. QUESTION EDUCATIONAL PROCESSES AND INFRASTRUCTURES

This is one project that many of us are already beginning to undertake, albeit in a sometimes haphazard way. Computer networks provide the opportunity for nonstandard teaching, learning, and working situations. Such situations provide students, teachers, and

despite geographical and temporal [illegible]. At the same time, this is one area in which we must exercise the most care: in the long run, some forms of distance learning may tend to isolate learners by physically separating them from their peers and mentor. Paying for college is always a burden; given the opportunity, many families faced with the choice between sending their offspring 500 miles away and having them stay at home may choose the distance education route. We need to make it clear what the benefits are of residence learning; we need to insist on defining education in broad terms that must include more than just seat time and test scores. At the same time, we need to understand ways that networked communication can positively affect education and work and to create additional positive environments.

4. BUILD METAKNOWLEDGE, NETWORK KNOWLEDGE, AND SELF-REFLECTIVE PRACTICES

Perhaps more importantly, we must move beyond the idea that the network is a medium for transmitting knowledge. A more radical notion is that the network is also an environment for learning, working, and living. Put in a different way, we need to think about new formations for knowledge that rely on network organization, metaknowledge and metawork that act at a level above current knowledge structures. This is another way of saying we need to redefine technical communication in broader terms than functional skills: we should be *teaching* rather than *training*. We have already begun to research the dynamics of learning and working as a way of improving those activities in areas such as critical literacies (Selber), usability (P. Sullivan), and economics (Johnson-Eilola, "Accumulation"). Now we can take the next step: collapsing distinctions between teacher/student/user in an attempt to help all of us understand the potential richness of crossing over those functional roles in broad communication contexts.

5. RETHINK INTERDISCIPLINARITY

Finally, we must struggle to overcome disciplinary boundaries. Many of the things I've suggested here are drawn from other fields, work I've discovered by backtracking threads from popular accounts back to professional journals and publications. Too frequently, we merely take what we're given. The task

of software documentation, for example, typically starts with the end product, a piece of late-beta or even golden master software. We build our documentation on what we're given. We are blocked out of the formative stages—where we might make productive changes in the dynamics and the form of software in order to increase usability and efficiency—because we are not able to speak the discourse of software development. It is crucial that we encourage, even require, our students to gain the fundamentals of their respective specialty fields, perhaps multiple fields. Furthermore, we may wish to require classes in rapid field learning that help students develop strategies and tactics for picking up the basics of new fields quickly so that they can enter into the formative stages of those conversations.

CONCLUSIONS

Technical communication has long suffered from an accepted emphasis on the "technical" portion of the disciplinary title. As we enter the information age, we face the possibility of rearticulating the value of what we do to emphasize the "communication" half of our work.

Technical communication can begin transforming the location of value by rethinking what it means to teach, to practice, and to research technical communication. Symbolic-analytic work offers a potential common ground between the broad, conceptual and social issues frequently espoused by academics and the pragmatic, functional concerns of practitioners. As I argued earlier, the industrial model of technical communication is outmoded in terms of value, but continues to work as long as technologies and technocentric corporations are allowed to redefine user tasks. If "good writing" is cast as template filling, for example, then automation is a viable solution. Technical communicators will find their work increasingly devalued as industrial labor, even as other disciplines learn to take on the roles of communicators in the post-industrial workplace.

If we wish to shift that value to the post-industrial emphasis on communication, we'll need to make clearer why this model must be rejected even though it works. In effect, we can argue that the symbolic-analytic or post-industrial model subsumes the functional or industrial model: the technology does

valuable concerns.

Technical communication education has traditionally centered on teaching practical, immediately useful skills at the expense of broader forms of learning (Selber). While certainly such skills assist technical communicators in gaining ready employment, this limited focus traps the discipline in the very support positions critiqued above: useful but only infrequently valued. Reich's descriptions of symbolic-analytic work offer one strategy that technical communicators and educators might adopt in rearticulating our shared (and publicized) visions of what technical communicators do.

By rearticulating technical communication as symbolic-analytic work, we might use our professional diversity and flexibility to empower ourselves and technology users. The examples provided here are admittedly sketchy, at best. But the general model provided should suggest numerous points for re-

ways: shifting the focus on communication beyond the technology and toward social contexts and processes, coupled with an emphasis on considering technical communication as one form of symbolic-analytic work, provide a general strategy for not merely critiquing current practices but also for changing them. This disciplinary movement will not be an easy one, given our diversity and size. But failure to attempt this rearticulation will likely move technical communication into the realm of two less attractive types of service work—routine production and in-person (areas we have already begun to occupy, if somewhat unwillingly). By centering our teaching and research on primary skills for symbolic analysis—collaboration, experimentation, abstraction, and system thinking—we can make it clear to ourselves, to our students, and to the world at large the true value of technical communication in the twenty-first century.

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