

CROSS-CULTURAL COLLABORATION

Whose Culture Is It, Anyway?

DEBORAH S. BOSLEY

"I liked working in my group, but the other students expected me to disagree with them. I could never do that publicly; it would embarrass them too much."

—JAPANESE STUDENT

"I never asked questions because if I did it would make the leader seem as if she didn't know what she was talking about."

—VIETNAMESE STUDENT

The quotations that begin this article were spoken to me after a lengthy classroom discussion with students about their group projects. Hearing these two students (privately) was a seminal moment for me. I thought I knew everything about collaboration. After all, I had written my dissertation on the topic, given dozens of presentations on small group interaction, and even received awards for articles on teamwork. Frankly, I thought there was nothing else for me to learn about group work. So imagine my surprise when it was not a journal article, or a new theory, or a conference presentation, or the expertise of one of my colleagues that caused my intellectual world to shift. It was what we like to call "a teachable moment," only I was the one being taught.

After listening to my international students, I could no longer think of collaboration quite the same way again. That shift is what prompted me to write this article. The certainty I had about my knowledge of teamwork vanished, and I had to change the premises that grounded everything I taught about collaborative work: I had to rewrite my individual evaluation forms, rethink the choices I made for putting groups together, and redesign how I evaluated final products. In short, I had to truly realize that people from other cultures actually had different expectations about thinking, living, being, and working together. When this article was published, few textbooks, conference presentations, or articles focused on cross-cultural or international perspectives. Now, almost every technical writing textbook, as well as journal articles and conference presentations, includes international perspectives.

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If I were to write this article today, what would I have to consider? Now, almost ten years later, the events of our own recent past have convinced me that examining cultural assumptions, distinctions, and the limited vision that the illusion of centrality gives us is even more critical than when I wrote the original article. The contrastive value of cultures, putting them side by side to find out how we are different, pushes us outside our ideology; it takes us out of our theories of the world, giving us a new place to stand. September 11, 2001, jolted the world on its axis. In the immediate aftermath, on my campus as elsewhere, we had international students who were afraid to come to classes, who worried about the revocation of their student visas, who feared for their families in the Middle East, and who listened intently to the words from their professors, searching for reassurance that random acts of violence were not part of our vocabulary. Because after 9/11, the world was never the same again, and close to the surface of responsibility and intention were our fixed assumptions that we are at the center of everything. We can no longer maintain that perspective. To do so limits us in profound and dangerous ways.

My shift came ten years ago because of what my students taught me. I continue to be so grateful to the two students I quote because they moved me from my place of certainty, led me to wander around in new intellectual territory, and finally to write my favorite of all the articles I have published. And even now, ten years later, I believe that, like a compass, this article still points us in the right direction.

Deborah S. Bosley

"I liked working in my group, but the other students expected me to disagree with them. I could never do that publicly; it would embarrass them too much."

—Japanese student

"I never asked questions because if I did it would make the leader seem as if she didn't know what she was talking about."

—Vietnamese student

Both of these responses appeared on evaluation forms that students prepared as part of a collaborative report project in an introductory technical communication course. As researchers on collaboration have indicated, individual evaluations are a necessary part of a group assessment process (Bosley; Beard et al.; Morgan et al.; Slavin). However, the criteria by which students are assessed and the way we tend to structure collaborative projects themselves may represent a Western cultural bias that reflects our universalist assumptions about how people should behave in group situations. This essay offers suggestions about how students can be sensitized to the cultural

differences that influence the ways they function in collaborative writing groups.

DEFINITIONS AND CAVEATS

Our culture, like others, suffers from the belief that we can examine and evaluate the behavior of others according to our own values. According to Sondra Thiederman in *Profiting in America's Multicultural Marketplace*, "It is as if our culture is the way of life toward which everyone else is striving . . . [and] everybody's actions have the same meaning and arise from identical motivations" (20). Additionally, we tend to discuss theories of collaboration as if groups were homogeneous. Multicultural communication begins with the position that differences exist. Marlene G. Fine echoes this position by suggesting that we must recognize the "assumption of difference" rather than the "assumption of homogeneity" as the cultural and organizational norm (263). I argue that such an assumption of homogeneity is apparent once

we examine established criteria for effective group work.

At this point, however, four caveats need to be stated: First, calling attention to differences in cultures in no way implies a hierarchy of accepted behavior. All cultures tend to be ethnocentric; that is, all tend to cling to the belief that their own culture is the standard by which others are to be judged. In addition, some subscribe to a "universalist's" notion that purports that people from different cultures nevertheless behave (or *should* behave) the same way; others to a "relativist's" perspective, which allows that differences in cultures can only be understood within the context of that particular culture. In order to understand the kinds of problems international students face in collaborative groups, it is necessary to understand and contextualize their beliefs and understanding within the context of *their* culture. However, to do so, we must first come to some understanding of their culture.

Second, it is difficult to speak of the behavior of any one individual by generalizing to his or her entire culture. However, individuals from different cultures do have tendencies to behave in identifiable ways. Edward T. Hall referred to this process as "the characterization of character." Therefore, when I identify particular behaviors, I am attempting to generalize with the best of intentions: to lead us to further understanding, *not* to simply classify and stereotype cultural behavior. In keeping with this, most of the research on international cultures tends to describe male behavior and male thinking processes. Thus many of the characteristics that I mention may be those affected by the cultural tendency to privilege one gender over another, particularly in research agendas.

Third, in keeping with most of the researchers on collaborative writing, I define collaborative groups as those in which groups of three or more students create one written document and receive both a group grade for the product and an individual grade for their participation in the process (e.g., Ede and Lunsford; Bosley; Beard et al.; Morgan et al.; Forman and Katsky).

Finally, I use the term *Euro-North Americans* to refer to white, middle-class males whose values and cognitive frames are those that dominate educational paradigms. I use the term *international* to refer to

collaborators reared in cultures outside of mainstream America. In addition, I use the term *multi-cultural* to refer to collaborative contexts in which a variety of cultures are represented.

In order to identify multi-cultural values and assumptions and their impact on collaborative groups, I identify cultural differences in behavior in international groups and the ways such differences might manifest themselves in student teams. Then, I suggest pedagogical strategies to prepare students for collaborating with students from many cultures.

CULTURAL DIFFERENCES IN BEHAVIOR

Definitions of "culture" abound, but general agreement exists that culture is an established set of values and a way of thinking and behaving that is passed from generation to generation. Alan C. Purves emphasizes that cultural differences include differing cognitive schemata. Culture is not limited to the private sphere but shapes the behavior of students in classrooms and employees in the workplace. All human behavior can be divided into a multitude of categories: how we eat, walk, and relate to our relatives are merely a few of the behaviors that are culturally bound. For the purpose of this essay, however, I will concentrate on four cultural characteristics that directly influence group behavior: (1) group or individual emphasis, (2) achievement and responsibility, (3) decision-making strategies, and (4) thinking and communication styles.

GROUP OR INDIVIDUAL EMPHASIS

Euro-North American culture places its highest value on the ideal of the individual. We believe that individuals have the ability to shape their destiny, to make decisions in their own best interest, and to provide for their own needs and satisfaction. Furthermore, we believe that one of the purposes of society is to help us achieve our individual goals by providing an environment that is free from restraint; our country was founded on the precept of "inalienable [individual] rights." Gary P. Ferraro, an anthropologist specializing in international business, suggests that children are indoctrinated with this concept of individualism and "are taught to make their own decisions, clarify their own values, form their own opinions, and solve their own problems" (95). Our educational process

expands this doctrine of individuality traditionally by concentrating on competitive rather than cooperative learning (Johnson and Johnson).

However, many cultures decry such an emphasis on individuality and instead validate the collective experience. Thiederman states that "[i]n 70% of cultures throughout the world, the needs of the family, community, and even corporations come before those of any one person" (117). Ferraro concurs by stating, "Whereas Americans assume the primacy of the individual, many third world peoples traditionally, and to a large extent today, assume that the highest goal is conformity to and identity with the extended family" (96). For many, the extended family includes workplace collaborators.

Therefore, we might suppose that non-Western students would function better within collaborative groups. However, other culture-bound behaviors and the expectations we place upon achievement and responsibility as appropriate group behavior work against such success.

ACHIEVEMENT AND RESPONSIBILITY

Euro-North American criteria for success and standards of achievements are not shared in much of the world. Our films, our literature, and our way of life reflect our preoccupation with measurable achievement and goals. Our most distinctive feature is "a demand for the kind of activity which results in accomplishments that are measurable by standards conceived to be external to the acting individual" (Kluckhohn and Strodtbeck 17). In contrast, for people in many other cultures, "the recognition of achievement is not defined in terms of how well the individual distinguishes himself or herself from the rest of the group, but rather in terms of how many contributions he or she makes to the [group's] general welfare" (Ferraro 98).

This ability to exist in harmony with others is considered at least as valuable as what one accomplishes individually. Instead of an emphasis on achievement, many other cultures emphasize simply being (Kluckhohn and Strodtbeck 16). In fact, the Euro-North American emphasis on constant, measurable performance is an anathema to many from other cultures. For example, "Hispanic and Asian clients are not necessarily impressed with our penchant to quantify the virtues of a product. Quality and aesthetic con-

siderations are often more important" (Thiederman 28). Edward C. Stewart concurs by indicating that "[m]any of the actions of people in non-Western cultures can be understood as directed toward preserving and enhancing their particular position within the social structure, whereas consideration about tangible progress and improvement are secondary in importance, if present at all" (61).

In collaborative groups we tend to evaluate students both by the quality of the product and the quality of their individual group involvement (Bosley; Beard et al.; Morgan et al.). Despite research suggesting that individual responsibility enhances group activity, evaluating students individually may undermine the collaborative experience by placing emphasis on competition. Euro-North Americans believe that intra-group competition increases productivity; other cultures believe that competition among individual members disrupts group harmony and, as a consequence, decreases productivity. Thus, we place Euro-North American students in a situation where we demand group allegiance and action but still reward individual behavior. On the other hand, we place international students in the difficult position of being evaluated on their individual actions. For some students, this dichotomy is impossible.

For example, Japanese students have difficulty accepting individual recognition at the expense of the group. If individuals are singled out for their achievement or promoted because of a group's successes, they suffer shame. When we emphasize individual responsibility, we undermine that person's relationship with and to the entire group. This is also true with Native American workers, many of whom believe that competition and voicing one's own opinions are rude and harm group solidarity. The Euro-North American, on the other hand, is comfortable debating issues with little disruption of individual relationships within the group. Thus, non-Euro-North Americans may withdraw from individual responsibility and, as a consequence, from our forms of decision-making.

DECISION MAKING

Euro-North Americans, with their emphasis on individuality, highly regard people who make their own decisions. This belief in one's ability to make decisions is so strong that even when Euro-North Americans are indecisive or lack the expertise to make a de-

cision, they still value “the illusion that [they are] the locus of decision-making” (Stewart 51). Carl Rogers suggests that this form of solipsism precludes the existence of other value systems: Americans believe they should be their own source of opinions and solve their own problems. “The result is an intense self-centeredness of the individual—so striking that an American psychologist has suggested this as a universal value” (Rogers 166). However, in the Middle East and Asia, it is considered rude and shameful to make a decision on one’s own; to do so is to ignore the importance of collective decisions.

Such differences can be understood in the context of a student group, comprised of two Euro-North American students and one Japanese student. In deliberating between two possible report topics, the American students preferred the topic that “dove-tailed” with work both were doing in another class; they entertained a primarily pragmatic decision. The Japanese student, on the other hand, discussed both topics in terms of what the Americans wanted to select; that is, she was willing to simply reinforce their choice based on the importance of maintaining the harmony of the group. She explained, “I don’t care which one we choose, but I want to do what is best for our group.” During group discussions, the Japanese student agreed with most of her collaborators’

comments despite the fact that they often disagreed with one another. Euro-North American culture would consider her to be indecisive, whereas her responses were shaped by her cultural admonition against individual opinions and her desire to ensure group consensus and harmony.

In recent literature, we are moving from believing that all decisions should be consensual (e.g., Allen et al.; Wiener) to accepting the positive influence of “dissensus” (Trimbur) and “productive conflict” (Burnett). Thus, we encourage our students to confront one another, to challenge group decisions, and to avoid “groupthink.” However, to some international students, for example, such confrontation would be unthinkable. William B. Gudykunst and Mitchell R. Hammer indicate that self-disclosure, active listening, and confrontation are behavioral norms that apply primarily to white, middle-class people (124).

International students employ any of several possible strategies to avoid self-disclosure and confrontation. Such strategies often oppose what we consider as effective group behavior: attributes such as volunteering for tasks, being able to disagree with group members, contributing new ideas, communicating honestly with others, and being capable of evaluating one another’s participation (Bosley; Beard et al.; Raven; Morgan et al.; Sharan). Table 31.1 lists

Table 31.1. Behavior, Rationale, and Implications of International Students in Group Work

Behavior	Rationale	Implication
may not respond with a definite “no” may be reluctant to admit a lack of understanding or to ask for clarification of information	to prevent both parties from losing face to do so might place speaker in position of revealing ignorance	may take on more work than others in group may pretend to understand
may avoid criticizing others	to avoid embarrassing self or others	may not respond critically to other members of group or on evaluation forms; may avoid confrontation
may avoid initiating new tasks or performing creatively	to avoid making mistake and appearing foolish	may accept assigned tasks, but may not volunteer
may avoid asking for promotions or deserved benefits	to protect supervisor from possibly refusing and to protect self from humiliation	may not emphasize own part in group on evaluation form
may feel discomfort with compliments	to avoid the imbalance between parties such compliments create	may not seek verbal approval from teacher or other group members
may avoid complaining about product or service	to prevent other party from feeling a sense of failure	may not indicate problems with group members on evaluation form

these behaviors as well as observations gleaned from solving multi-cultural collaboration.

If we compare the information about behaviors in table 31.1 with what happens in a typical collaborative group context, we see that students from cultures that believe in group harmony and balance may not live up to Euro-North American expectations of appropriate group behavior. Such behaviors are not likely to be rewarded using the current evaluative paradigm. In fact, not only our evaluative methods, but perhaps our entire expectations of collaborative group behavior can be called into question.

THINKING AND COMMUNICATION STYLES

Euro-North Americans tend to be linear thinkers looking for cause and effect in most actions; we generally expect most situations to call upon our problem-solving skills. Small group research consistently describes activities in terms of problem solving (e.g., Cagan and Wright; Napier and Gershenfeld; Tubbs). However, cross-cultural research indicates that even the paradigm of problem solving is culturally based. For example, R. Harrison and R. Hopkins compare the cultural models of problem solving within the university structure. Problem solving by Euro-North American educational standards means that problems are solved when the correct answer has been discovered and verified, whereas a cross-cultural perspective suggests that problems are solved when people apply their abilities to overcome a difficult situation. Thus, Harrison and Hopkins suggest that problem solving in an international context values the social and emotive response, whereas mainstream Americans value a rational approach. Therefore we are privileging a type of thinking that assumes a Euro-North American problem-solving model. We do this particularly when we formulate collaborative writing topics as problem-solving situations, expect that documents will be written to reflect problem identification and recommendations, and anticipate that group discussions will revolve around a pragmatic approach to developing an analytical report.

Students working together in collaborative groups not only are culture-bound by their thinking strategies, but also by their communication strategies. Such differences clearly are apparent in non-verbal messages such as levels of eye contact and physical

proximity to group members. However, for the purposes of this essay, I will concentrate on differences in oral and written communication.

Oral Messages

Oral communication styles vary among cultures and the lack of understanding particular communication styles can be problematic for collaborators. Hall defines cultures by whether they are high context or low context. In high-context cultures (Asia, for example) speakers use context to convey much of the information. More of the message is left unspoken and is accessed through non-verbal cues and interpretations of what is meant rather than what is said. In low-context cultures (the United States, for example), speakers are more specific and direct. Speakers do not rely so much on context to convey meaning, and listeners do not need to interpret so much. Thus, Euro-North American students talk more frequently and provide context through their spoken words. Students from high-context cultures speak far less frequently and rely on context for meaning. Such students are far more comfortable with silence, whereas students from low-context cultures are distinctly uncomfortable with silence. Therefore, students (and teachers) from low-context cultures may incorrectly interpret the quietness of students from a high-context culture as a lack of concern, a disinterest, or a passivity. Because context is critical, students from high-context cultures would tend to rely more heavily on face-to-face, oral communication rather than on written messages (an interesting sidebar to a continued emphasis on computer conferencing among collaborative teams).

As another example, Middle Eastern culture values hyperbole; skill at verbosity is considered an asset. Thus Middle Eastern students (particularly male) might exaggerate their skills and abilities to other group members, as suggested by a Kuwaiti student who, when confronting another’s lack of responsibility, stated, “If I were the leader, I would have written a perfect report, so good that the manager would surely have enacted my recommendations and praised me highly for my abilities.” The two mainstream Americans, unaware of this oral communication style, responded by becoming excessively defensive and stated to me, “He must really

think he's something. He doesn't write any better than we do." In this situation, the team members misunderstood the Middle Eastern student's exaggerated verbal style as an attempt to dominate the group, whereas he was simply using the verbal communication style predominant in his culture.

Written Messages

Cultural variations in communication style also are evident in writing. Mahalingam Subbiah contrasts our verbal organizational style, suggesting that native English speakers begin with a general statement and then elaborate on that point. Romance and Slavic writers, on the other hand, regard digression as an intelligent, creative form of expression; thus, their written documents tend to circumscribe the point (15).

Subbiah contends that "whereas American readers expect that clarity is an important, perhaps the most important, element of technical writing, Japanese perceive beauty, surprise, and 'flow' as desirable measures of good technical writing" (16). He further argues that even how we read is culture-bound by suggesting that "[w]hen reading a manual, for instance, American readers typically read a brief introduction, an overview of the product and its functions, and then a step-by-step tutorial, in that order. But Japanese readers . . . are frightened off by seeing the big picture right away. They prefer to be introduced to the parts one at a time before encountering the whole" (16). If, as these researchers indicate, oral and written messages are culture-bound, then our expectations of the quality of the group report may also suffer from such expectations. Students preparing a group document may find themselves arguing over the appropriate way to structure the documents, unaware that their arguments are based on cultural assumptions about the best way to write it.

STRATEGIES FOR INTERNATIONALIZING COLLABORATIVE GROUPS

If, as I have asserted, the means by which we design and evaluate collaborative groups are culture-bound, what implications does this have for how we design collaborative groups? First, we can design collaborative groups that are cross-cultural by recognizing our differences. Participants in such groups can exchange

information about the communication styles of their culture, can become sensitive to the behavior and thinking strategies of all members of their collaborative group, and learn strategies to recognize and control problems inherent in such cultural interactions (Gudykunst and Hammer 128).

For example, Ferraro tells the story of running into three team members from his class. Loaded down with books, he was reluctant to stop. However, one of the team members, a Nigerian, was adamant about carrying the professor's books to class. Although Ferraro at first refused, the student's insistence convinced him to relent. The four walked to class, and he noticed glances passing between the two North American students. When they all arrived at class, Ferraro sat down with the three students and discovered that in Nigeria professors are held in such high esteem that physical labor is considered beneath them. Therefore, it would have been extremely rude if the Nigerian student allowed Ferraro to carry his own books. On the other hand, the mainstream Americans interpreted his behavior as "brown-nosing" the teacher. By uncovering both sets of cultural behavior, all the group members were able to see more clearly their own cultural assumptions and, during subsequent discussions, were able to more easily understand their behavior in cultural terms.

One of the by-products of such interaction is an increased tolerance and understanding of others (Gudykunst and Hammer; Slavin; Sharan; Althen). In describing cross-cultural, corporate training programs, R. G. T. Moran outlines several goals consistent with increasing cross-cultural understanding: cross-cultural understanding increases insight about one's own personality, increases an awareness of one's effect on others, and increases one's interpersonal competence. These goals are consistent with those who assign collaborative writing projects. Collaborative writing projects are often assigned not only for the experience students gain writing together, but for the experience students gain working together.

In addition to Moran's goals, we should add the importance of appreciating the life styles of students from various cultures; of increasing their sensitivity to cultural differences; and of recognizing and resolving such differences to achieve group goals. In

to achieve these goals and to make the collaborative project more responsive to the cognitive needs of Westerners, we could consider the following pedagogical strategies:

1. Discuss cultural differences in general and then have each group discuss the cultural differences of its group members using the four categories discussed earlier in this essay;
2. Develop role-playing situations to show the differences in how various cultures respond to group situations;
3. Assign values clarification exercises to give students the opportunity to see that differences do not mean judgments;
4. Have members of a group keep a journal chronicling the variety of behaviors that are

culture-bound and discuss such differences with each other;

5. Assign projects that require students to interview international employees at local companies to assess differences in school and workplace behavior;
6. Assign readings about cultural differences and have all group members discuss their own sanctioned, cultural behavior; and
7. Be prepared to deal with resistance to cultural integration.

Such pedagogical strategies could enable all students to understand that their "theories of the world" are cultural constructs and that only through learning about and respecting the paradigms of others can more effective collaboration be achieved.

WORKS CITED

- Allen, Nancy, et al. "What Experienced Collaborators Say About Collaborative Writing." *Journal of Business and Technical Communication* 1 (1987): 70-90.
- Althen, Glenn L. "Human Relations Training and Foreign Students." *Readings in Intercultural Communication*. Ed. D. S. Hoopes. Vol. 1. Pittsburgh: Intercultural Communications Network, 1975. 24-36.
- Allen, Nancy, et al. "An Assessment System for Collaborative Writing Groups: Theory and Empirical Evaluation." *Journal of Business and Technical Communication* 3 (1989): 29-51.
- Althen, Glenn L., and Deborah S. "Individual Evaluations in a Collaborative Report Project." *Technical Communication* 37 (1990): 160-64.
- Althen, Glenn L., and JoEllen Jacobs. "Collaborative Writing: A Philosopher's Guide." *Teaching Philosophy* 15 (March 1992): 23-32.
- Althen, Glenn L., and Rebecca E. "Conflict in Collaborative Decision-Making." *Professional Communication: The Social Perspective*. Ed. Nancy Roundy Blyler and Charlotte Thralls. Newbury Park: Sage, 1993. 144-62.
- Althen, Glenn L., John F., and David W. Wright. *Communication in Small Group Discussions: An Integrated Approach*. St. Paul: West Publishing, 1986.
- Althen, Glenn L., Lisa, and Andrea Lunsford. *Singular Texts/Plural Authors*. Carbondale: Southern Illinois UP, 1990.
- Althen, Glenn L., and Gary P. *The Cultural Dimensions of International Business*. Englewood Cliffs: Prentice-Hall, 1990.
- Fine, Marlene G. "New Voices in the Workplace: Research Directions in Multicultural Communication." *The Journal of Business Communication* 28 (1991): 259-75.
- Forman, Janis, and Patricia Katsky. "The Group Report: A Problem in Small Group or Writing Processes?" *Journal of Business Communication* 23 (1986): 23-35.
- Gudykunst, William B., and Mitchell R. Hammer. "Basic Training Design: Approaches to Intercultural Training." *Handbook of Intercultural Training: Issues in Theory and Design*. Ed. Dan Landis and Richard W. Brislin. Vol. 1. New York: Pergamon, 1983. 322-43.
- Hall, Edward T. *Beyond Culture*. New York: Anchor P, 1976.
- Harrison, R., and R. Hopkins. "The Design of Cross-Cultural Training." *Journal of Applied Behavioral Science* 3 (1967): 431-60.
- Johnson, David W., and Roger T. Johnson. *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*. 2nd ed. Englewood Cliffs: Prentice-Hall, 1987.
- Kluckhohn, Florence R., and Fred L. Strodtbeck. *Variations in Value Orientations*. New York: Row, Peterson, 1961.
- Moran, R. G. T. "Personality Correlates and Changes in Worldmindedness After an Intercultural Group Experience." Diss. U of Minnesota, 1974.
- Morgan, Margaret P., et al. "Collaborative Writing in the Classroom." *Bulletin of the Association for Business Communication* 50 (1987): 20-26.

- Napier, Rodney W., and Matti K. Gershenfeld. *Groups: Theory and Experience*. Boston: Houghton, 1985.
- Purves, Alan C. "Introduction to 'Writing Across Languages and Cultures: Issues in Contrastive Rhetoric.'" *Written Communication Annual*. Vol. 2. Newbury Park: Sage, 1988. 9-21.
- Raven, Mary Elizabeth. "A Semester-Long Approach for Creating Related and Relevant Assignments." *Collaborative Technical Writing: Theory and Practice*. Ed. Richard Louth and Ann Martin Scott. St. Paul: Association of Teachers of Technical Writing Anthology Series, 1989. 15-30.
- Rogers, Carl. "Toward a Modern Approach to Values." *Journal of Abnormal and Social Psychology* 68 (1964): 160-67.
- Sharan, Shlomo. "Cooperative Learning in Small Groups: Recent Methods and Effects on Achievement, Attitudes, and Ethnic Relations." *Review of Educational Research* 50.2 (1980): 241-71.
- Slavin, Robert E. "Cooperative Learning." *Review of Educational Research* 50.2 (1980): 315-42.
- Stewart, Edward C. "American Assumptions and Values: Orientation to Action." *Toward Internationalism*. Ed. Louise Fiber Luce and Elise C. Smith. Cambridge: Newbury House, 1987. 51-72.
- Subbiah, Mahalingam. "Adding a New Dimension to the Teaching of Audience Analysis: Cultural Awareness." *IEEE Transactions on Professional Communication* 35 (1992): 14-18.
- Thiederman, Sondra. *Profiting in America's Multicultural Marketplace*. New York: Macmillan, 1991.
- Trimbur, John. "Consensus and Difference in Collaborative Learning." *College English* 51 (1989): 602-16.
- Tubbs, Stewart L. *A Systems Approach to Small Group Interaction*. Reading: Addison-Wesley, 1984.
- Wiener, Harvey. "Collaborative Learning in the Classroom: A Guide to Evaluation." *College English* 48 (1986): 52-61.

CONTESTING THE OBJECTIVIST PARADIGM

Gender Issues in the Technical and Professional Communication Curriculum

LEE E. BRASSEUR

When I wrote this article, I was excited about the class that I describe because it illustrated how a gender-centered pedagogy could inform an entire course in technical communication. At the time I was frustrated with the lack of cultural sensitivity in technical communication textbooks. Other motivations were my own reading of feminist scholars such as Donna Haraway, who examined the work of female physical and social anthropologists who studied primates in the field. These anthropologists initially found it difficult to have their theories of primate behaviors accepted because their interpretations were in direct opposition to the prevailing theory of male dominance hierarchies in primate societies (91).

I was also affected by Beverly Sauer's work on miners and, in particular, her description of women's testimonies in mining disaster trials (73-5). One woman's testimony, for example, included information about the number of times she had to wash her husband's work clothes, indicating that mines were not properly rock dusted (74). Yet because this testimony did not fit within the discourse of the dominant legal culture, it was rejected.

Works like these were influential in leading me to design a course and write an article that focused on issues of gender and technology. Today many technical communication textbooks now include both cultural and ethical issues and at times gender issues. In addition, the early work of technical communication scholars Mary Lay and Jo Allen on gender has been extended with an increased focus on gender and cultural issues in the field's journals and scholarship. My own scholarship and teaching continues to be inflected with cultural issues, particularly as they affect visual communication. For example, I am working on a project that explores the role of women who, throughout history, have made major strides in the visualization of technical and scientific information despite the fact that they had to battle the gender-based prejudices of the dominant culture.

At the same time, some of my current undergraduate students and even some of my colleagues do not see gender as an area necessitating an entire course. The students believe, for example, that it is a person's own work, regardless of gender, that will be accepted without prejudice in the workplace. As a result, an issue of gender or the ways in which the dominant culture influences practices is not as important as other themes. Interestingly, however, many of my minority students believe just the opposite—that the dominant culture's practices are an important

factor that must be critiqued. I am also aware that not a month goes by when I do not read about women or minorities who have had problems with the practices of the dominant culture in the workplace. When I teach this course again, I will still focus on the concept of gender because I know how important it is in the workplace. But I will broaden it to include an emphasis on race, an important and needed area of reflection in technical communication.

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WORKS CITED

- Allen, Jo. "Gender Issues in Technical Communication Studies: An Overview of the Implications for the Profession, Research and Pedagogy." *Journal of Business and Technical Communication* 5 (1991): 371-91.
- Haraway, Donna J. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, 1991.
- Lay, Mary M. "Feminist Theory and the Redefinition of Technical Communication." *Journal of Business and Technical Communication* 5 (1991): 348-70.
- Sauer, Beverly. "Sense and Sensibility in Technical Documentation: How Feminist Interpretation Strategies Can Save Lives in the Nation's Mines." *Journal of Business and Technical Communication* 7 (1993): 63-83.

"Moral and political discourse should be the paradigm of rational discourse in the imagery and technologies of vision"

—Donna Haraway [1]

INTRODUCTION

The discourse of technical communication has traditionally rested on a foundation of scientific rationalism and positivism, and, thus, its imageries and technologies have reflected a concern for objective models of truth. Its language practices, for example, reflect expedient aims and manifest themselves in ideals of clarity and conciseness. But these same language practices can obscure or hide the complexity of the social environment and may end up, in many cases, telling only one side of the story. In the conventional philosophy of science there are few resources which permit the articulation and exploration of contradictory understandings [2].

Although the problems inherent in a discourse model which rests on rational or objectivist thinking have been addressed by scholars, particularly by those who seek a realignment of rhetoric and science, in practice, much of the discourse still is informed by

subject/object ideologies [3]. These ideologies, implicit in scientific rationalism, reflect a view of human agency as entirely self-defined and self-motivated; the subject acts upon objects according to his or her desires. From this point of view it is easier to assume that one's position is impartial, disinterested, or value-neutral, when no position is entirely impartial, without interest, or unbiased in its value system [4].

Language practices influenced by this outlook reveal an over-reliance on passive voice, nominalized structures, and the decontextualization of information. These practices, as well as other aspects of oral and written communication within technical and organizational cultures, promote a disregard for the human subject that is problematic for any culture or cultures outside of the dominant one [5]. In any culture, for example, there are particular groups who have attained, through a variety of historical and social means, a position which is superior to other groups in the same culture. As this dominant group makes rules to govern society and its institutions, it naturally imposes an order upon the other, more subordinate parts of the culture.

Since, historically, science and technology has reflected the views of the dominant group within its

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

Despite the entrenchment of these ideas within the discourse of science and technology, there are encouraging signs that the paradigm is shifting, as more and more critics alert us to its problematic theories and practices. James Paradis, for example, has brought to our attention the problems inherent in the assumption, common to many technical and organizational cultures, that certain decisions can be considered "common sense." In comparing the design and explication of a studgun to its ultimate use, for example, he shows how any assumption by a dominant group of what constitutes common sense only serves to separate the ideology and practice of expert knowledge from subsequent human action. Thus, the company-formulated manual which accompanied the studgun reflected how the managers and engineers thought that the public should apply the technology. As Paradis illustrates, their assumptions resulted in written instructions that were preoccupied with accuracy and clarity rather than with the complexity involved in the activity of using a studgun, a factor which contributed to severe injury and death. When moral and political perspectives become homogeneous, rather than heterogeneous concerns, there can be devastating consequences [6].

In a similar critique, Steven Katz points out the problems inherent in an epistemology which positions technical communication as a solely expedient venture without explicitly stated ethical concerns. As he analyzes the technical discourse created by officials in Nazi Germany in World War II, he finds that many of the documents would likely be considered successful by many standards of technical communication, yet they are written to silence human suffering. For example, human beings who were being sent to concentration camps in vans were objectified as "the van's load" [7]. The problem with any idea of objectivity, according to Keller, is that it prematurely

proclaims anonymity, disinterest, and impersonality. By excluding the subject, "it imposes a veil over (scientific) practices" [8].

In addition to these critiques, new texts in the field such as Killingsworth and Gilbertson's *Signs, Genres and Communities in Technical Communication* examine the role of semiotic analyses within the discourse [9]. These kinds of analyses, which examine signs in the culture, provide the kind of theoretical introspection that can open the door for a greater emphasis on cultural contexts within the practice and theory of technical communication. Thus, these critiques of the objectivist model signal a desire to struggle with the moral and political dimensions of a perspective which is increasingly viewed as ineffective and inefficient. They bring to the field an awareness that the rationalist and objectivist tradition of technical communication, in neglecting "othered" voices, is not, in fact, good communication.

Most recently and in larger numbers, feminist critics are contributing their own perspectives to these concerns and, in so doing, they too are examining ways in which to reinterpret the discourse of technology. These critics hope to replace a discourse model which emphasizes expediency at the expense of social and cultural awareness with one that speaks to multiple positions and moves toward a new paradigm for "objective" discourse. One feminist critic who is helping the field move toward this new paradigm is Beverly Sauer, who illustrates the devastating impact of assuming how a "rational man" will act. According to Sauer, the mining industry allows this model of rationality to form the basis for assessments of danger within mines, thus placing workers within untenable positions [10]. For example, miners are expected to order an evacuation of a mining site only if there is "imminent danger," a concept defined by mining companies and congressional bodies. Under actual mining conditions, however, miners find themselves less able to rely on imposed definitions of danger and more likely to develop their own insights about what constitutes dangerous conditions. For example, workers learn to look for signs, such as rats leaving a pit or a cracking sound in the roof supports [11].

In this example, Sauer illustrates how a subordinate culture must struggle, often surreptitiously, to insure its survival within a dominant culture's ideol-

ogy. This important insight about the problems in relationships of dominant and subordinate cultures is only one of many such insights offered by feminists, whose work often gives voice to subordinate cultures and highlights the dangers in a masculinist-informed discourse model. Their insights have appeared in two special issues on gender in the journals in our field and serve notice that the traditional ways of making gendered assumptions about the creation and reception of technical discourse can only result in further distancing of technical expertise from the rest of society [12], [13]. But they also illustrate that technical discourse is moving closer to Haraway's vision of a responsibly moral and political discourse that both implicitly and explicitly acknowledges the complexity of human behavior and the social construction of knowledge [14].

A COURSE ON GENDER ISSUES

In this article, I will be working toward a socially responsible discourse model by discussing a course which I have designed and taught on gender issues in technical and professional communication. With this course, I seek to include pedagogy as a means of communicating to future technical communicators the efficacy of critiquing the traditional technical discourse model and its reliance on gendered assumptions of knowledge.

The need for a course that is exclusively devoted to gender issues within a technical communication program is supported, in part, by this view from Sandra Harding:

As feminists have discovered in every field, when one tries to add women and gender to conventional subjects and conceptual schemes, it quickly becomes obvious that the two have been defined against each other in such a way that they cannot be combined [15].

I do not include this quotation as an argument that only separate courses in gender issues will be successful. Indeed, Jo Allen has provided technical communicators with a multitude of pedagogical strategies in relation to gender issues which can play a key role within traditional technical communication courses [16]. However, I do mean to say that only in

a course in which students can spend an entire semester discussing the variety of complex issues related to gender will they be able to study the kind of complex theoretical and practical information that can strengthen their resolve to change current outmoded and ineffective discourse paradigms. Thus, in a course such as this, students are asked to confront the idea that while traditional discourse models in technical and professional writing may contribute to successful communication within an organization, they may also promote enculturation to a kind of communication which diminishes peoples' voices, disinherits them from power and, thereby, limits the capacity to affect change. In addition, the course provides a place for voices outside of the dominant community that typically find very little entrance granted to them in the syntactic, semantic, and pragmatic language practices of the dominant community. This is why feminist inquiry and an examination of issues of gender are particularly well positioned to critique such discourse; they give voice to ideas of liminality and exclusion. Thus, pedagogy which makes a place for feminist voices allows students the opportunity to critique the production and dissemination of knowledge and to also address the problematic ideas of objectivity in science and technology. At the same time, it allows students to contribute toward what Mary Lay refers to as a redefinition of technical communication [17].

REVIEW OF PEDAGOGY ON GENDER AND TECHNOLOGY

Classroom practice which examines the role of gender in relation to technical and scientific practice and discourse exists in a variety of settings. Joan Rothschild has, for example, documented a number of courses in this genre, including courses which have been situated in technical, humanities, and women's studies programs. These include courses which have been designed to examine the role of gender in relation to architecture and urban planning, robotics, the philosophy of man and nature as well as human values, and, finally, the relation of women to science and technology [18]. More recently, Ladd and Tangum have discussed the design of a course which enables students to explore both culture and gender influences in a variety of student-selected scientific and

technical professions [19]. Similarly, Allen suggests that these kinds of gender issues should be included in mainstream technical communication courses. For example, teachers should create curricula which are specifically concerned with gendered assumptions and discourse analysis, sexual harassment, hiring and promotion practices, and social interaction within the workplace [20].

While these feminists have contributed important voices to the design of courses and the impact of pedagogical practice, other feminist critics have examined the same kinds of issues by examining the important role that textbooks play in communicating assumptions about gender. Carrell, for example, makes the argument that current professional writing texts, although not as explicitly gender biased as in the past, still carry gender stereotypes:

The view of women as frivolous, governed by their emotions, and existing solely for the service of men has not altogether disappeared, and men are still often perceived as being more logical and more decisive than women [21].

In a related area, feminists have critiqued the role of gendered assumptions which are present in textbooks within science and technology curriculums. In an examination of current texts in molecular biology, Spanier asserts that such textbooks only serve to strengthen the infrastructures of scientific ideology because they continue to promote the creation of false dichotomies of nature and nurture and science and society. In her view, these dichotomies further extend the subject/object ideology which promotes a view of humans as having the right to look on, and consequently, act on nature as a force to be dominated [22]. In another critique of problematic pedagogical tools, Fausto-Sterling contends that one important reason why women and minorities aren't rushing into science is the curriculum:

The science curriculum and the dominant views of science as an a-historical and hyper-rational system of thought makes the science classroom an alien and hostile place for women and people of color [23].

These kinds of critiques bring to light the underlying problems in scientific and technical epistemologies

that are based on scientific rationalism and objective truth. The practices which result from these kinds of epistemologies are particularly troubling when one considers the persuasive effect that pedagogy and pedagogical tools have on students. The nature of these authoritarian practices make it critically important that places be made within the curriculum for pedagogy which critiques this paradigm and offers new ways of creating a better discourse model.

COURSE GOALS

I designed "Gender Issues in Technical and Professional Writing and Communication" as a master's level seminar to provide students with the opportunity to challenge and critique the ideas of objectivity and rationality through reading, writing, discussion and research. The course had two goals. First, students should be introduced to the problems inherent in gendered assumptions about rationality and objectivity, as well as their impact on technical discourse and the role of feminist theory in addressing these problems. Second, students should gain practical experience in addressing these problems by conducting ethnographic workplace studies.

ASSIGNED READINGS

Since feminist critiques of scientific rationality and objectivity are an integral part of the course design, I wanted to include in the course not only those readings which would present oppositional or essentialist views of feminism, but also those texts which promoted situated knowledges. Situated knowledges are those positions that acknowledge the contradiction and paradox within any situation or viewpoint. Oppositional or essentialist views promote the idea that differences between men and women are not only socially situated: men and women also have very different ways of thinking and understanding. I was also aware of the contested idea of gender, as performance and as constructed societal role, and I made sure these kinds of paradoxes were an integral part of the course [24].

Of course, any selections of readings meant that I would have to make some difficult choices. Which feminist theories do I include? Which critiques of science and technology and of language and technical communication? In the end, my choices were de-

veloped out of concerns for the diverse backgrounds of my students. Some of them would be more advanced than others in their coursework; some were full-time technical writers while others were full-time students; some were theoretically sophisticated in some areas but not in others. Thus, because of the diversity I expected within the student population, I included texts which provided both basic and advanced theories and practices. And, since there is no exclusive text on gender issues in technical communication, I chose from a variety of sources, asking students to buy three texts and also to read and copy journal articles and excerpts from books, which I had placed on the library's reserve list.

The required texts included Donna Haraway's *Simians, Cyborgs and Women*, which was most valuable in presenting both theoretical and practical perspectives on the idea of situated knowledges [25]. The second text, Bazerman and Paradis' *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*, allowed students to see the textual practices of scientific and technical discourse communities and to examine the role of texts in socially constructing activities [26]. This same text also provided a number of examples of ethnographic studies, which would serve as additional practical demonstrations of the situated knowledges theory to which Haraway refers. The third text, Frank and Treichler's *Language, Gender and Professional Writing: Theoretical Approaches and Guidelines for Nonsexist Usage*, is the MLA's response to nonsexist language usage issues [27].

I had not originally intended to include nonsexist language issues in my course design (I considered it an already much-discussed topic). However, I decided to include it after being a participant in a discussion of nonsexist language issues on an on-line computer conference. In this conference (CAP92 from Michigan Technological University), students, teachers, and professional writers argued and debated the efficacy and underlying ideologies within nonsexist language issues. At times, the discussion became quite heated, "flaming" to such an extent that I began to realize that this issue could play a good role in bringing underlying epistemologies about gender to the surface. Thus, I decided to include in the course discussions of nonsexist language issues to make ex-

plicit the underlying ideologies that informed societally enforced perceptions of male and female roles. In fact, I used a printed excerpt from part of the conference to initiate our discussion on the first day of class. Later in the class, we turned to Frank and Treichler's text because its essays about the debate surrounding nonsexist language usage within professions presented critical insight into the volatile role of gender within organizational culture. Finally, this text, like the others in the class, illustrated how theoretical concerns about gender can be turned into practice through decisions about language.

In addition to these required texts, I also placed on reserve at the library a number of assigned readings. (The full list, with bibliographic citations, is included in the syllabus at the end of this article.) These readings included overviews of the critique of gender issues in technical communication, including writings by Mary Lay [28], Jo Allen [29], and Beverly Sauer [30]. Readings on feminist critiques of science and technology were provided in excerpts from writers such as Sandra Harding [31], Evelyn Fox Keller [32], and Luce Irigaray [33]. Also included was writing on diverging feminist theories from such writers as Dale Spender [34], Jean Baker Miller [35], Mary Belenky, Blythe Clinchy et al. [36], and Catherine MacKinnon [37].

ASSIGNMENTS

Students responded to these readings both in class discussions and in journal entries. At mid-term and at the end of the semester, I asked them to crystallize the ideas in the readings by responding to one of two questions, which I presented to them as take-home essays. These covered such topics as the social costs of Western society's emphasis on rationality and scientific thought, the theoretical and practical implications of ethnography, and the impact of systems theories on human knowledge. Also, because I knew that through my choice of assigned readings I was pretty much directing how the course would progress, I felt it was important to give students the opportunity to choose their own readings which they would assign to the class. Thus, another assignment was to select a reading or readings (which they would give to me ahead of time to copy and distribute to the class) and then lead the class in a discussion of the reading(s)

for a 45-minute period. (A list of these readings is in the syllabus, included at the end of this article.)

To meet the second goal, I assigned students the task of designing a workplace ethnographic study on a topic related to gender issues, conducting the research, and writing the results in a final paper. These studies, and the theory which informs them, are discussed in more detail later in this article.

OVERVIEW OF THE SYLLABUS

The syllabus of the course served to address the goals of the course by offering detailed units on various aspects of gender issues in scientific and technical communication. (A full syllabus is included at the end of this article.) The first unit concentrated on the larger epistemological problems inherent within models of discourse that privilege objective voices, expert views of "the common man" and communication models which exclude women, minorities, workers, and other subjugated voices. The second unit provided an examination of two central issues underlying this communication model. First, this unit focused on the important role that naming plays in determining how we think of and communicate our sense of reality. According to Spender, "All naming is of necessity biased and the process of naming is one of encoding that bias" [38]. Thus, for example, the encoding of certain behaviors as female or male can not only affect how we talk but also how we think, making an examination of the power of naming in relation to language use critically important to a study of gender issues. Second, the unit focused on how permanent positionings of domination and subordination underlie any problematic subject/object ideologies [39]. As stated earlier, persons in any permanently dominant group place themselves in a position which, of necessity, creates inferiors or subordinates. In so doing, each partner in this unequal relationship takes on societally determined roles to support that inequality [40]. Thus, stereotypical thinking about what men and women can and cannot do as well as institutional thinking about what is right for others represents this underlying permanent state of inequality, upon which the society or organization exists.

The third unit addresses the social construction of the workplace and promotes an examination of the

ways in which traditional forms of oral discourse, long-standing organizational hierarchies and the use of texts in promoting organizational practices all contribute to defining particular workplace cultures. Concurrent with these workplace concerns, another unit addresses issues of oral communication between men and women and its role within collaborative workplace groups. This focus on communication is continued with a unit on language practices which covers nonsexist language issues and those language practices traditionally associated with rationalist paradigms such as passive voice, exclusive language, and rigid writing forms.

In addition to these predefined units, student-selected readings centered on the general topic of women and technology and covered a number of diverse issues including the role of women in the workplace, alternative scientific theories, computers and women, and other gender issues in technical and scientific communication. The following section presents a more in-depth view of the units which I designed to create a bridge between the theory of situated knowledges and the students' ethnographic studies.

FROM THE THEORY OF SITUATED KNOWLEDGES TO THE PRACTICE OF ETHNOGRAPHY

An integral part of the course design is the move from theory to practice of the idea of situated knowledges, a kind of objectivity that accommodates paradox and critique [41]. According to Haraway, this theory epitomizes a very different view of what counts for truth in science and technology:

I want to argue for a doctrine and practice of objectivity that privileges contestation, deconstruction, passionate construction, webbed connections, and hope for transformations of systems of knowledge and ways of seeing [42].

This definition of objectivity is very applicable with a study of gender issues in technical and scientific communication because it allows for a new envisioning of what can be considered objective knowledge. Thus, this unit places an emphasis on how individual perceptions of reality inform the ways in which we

... create within the mind of the technical commu-
cator an acute awareness of the efficacy of making
explicit, both in one's mind and in one's writing, the
particular positionings of different perspectives.

Because students have read about the back-
grounds, theories, and experiences, as well as the
past stories and current practices of those who partic-
ipate in the scientific and technical discourse com-
munities, they have become aware of the value of
learning about different perceptions of technical dis-
course. For example, in the Bazerman-Paradis text
they read about the constructed realities and resulting
practices of tax accountants, a psychiatrist, entrepre-
neurs, and investors [43]. In a study by Beverly
Sauer, they were made aware of the life and death
consequences of organizational practices based on
masculinist ideals of rationality. For example, in her
studies of the mining industry, Sauer found that the
testimony of women in postdisaster mining trials is
afforded very little status in the discourse of the law
profession and the mining industry. In these trials the
widows of the miners who were killed in the tragedy
testified that they knew there were problems with this
mining company because, when they laundered their
husbands' work clothes, there was so much dirt that
they had to put the clothes through two or three wash-
cycles. This evidence was dismissed by the authori-
ties and the legal profession because it didn't fit in
with the technical discourse of the investigation re-
ports and technical analyses [44].

Through these kinds of studies, students are able
to see the problems inherent in a discourse which
privileges only one view of what constitutes objec-
tive truth. As students learn about the complexity of
technical discourse, they are able to design their own
workplace ethnographic study in which they can gain
personal understanding of the complex nature of
partial perspectives and the problematic role of orga-
nizational ideals of rationality and objectivity.

ETHNOGRAPHIES

Ethnography, as a research method, is an effective
way of granting peripheral voices or subordinate cul-
tures a space within organizational cultures. Because

... which take place in laboratories, outside of the con-
text in which the event would normally occur. Ethno-
graphers are interested not only in events but also in
the significance that can be ascribed to these events.
To understand this significance, ethnographers use a
variety of research methods that emphasize multiple
perspectives as they study both individuals and the
groups to which they belong. They also do not come
to their study with hypotheses to be proved or dis-
proved; instead, they begin with general questions
and allow the research itself to help them later form
more particular questions [45].

As students work on general ideas for a workplace
ethnographic study, they are introduced to such top-
ics as how to ask questions, how to observe workers,
and how to record and analyze their information. To
help them understand these methods, they read from
a variety of sources on the methodology of ethnogra-
phy [46]–[48]. When choosing a topic, students are
encouraged to look at any issues involving gender in
the workplace, whether that is simply examining
women professionals, observing and interacting with
workplace collaborative groups, or investigating any
other aspect of workplace communication. Of
course, the choice of the site for the study and the se-
lection of the overall question which students will
have when first approaching the work site is in-
evitably affected by their student role and its result-
ing obligations. For example, students cannot be full-
time researchers; they have classes, homework, and
other demands on their time. Thus, I stress in the
course that these studies are necessarily limited and
that although studies of longer duration that may take
months and years to complete are almost always rec-
ommended, shorter periods of time spent in study can
also be fruitful, as Halpern has indicated [49].

As students begin their studies, they learn how to
observe and interview participants, examine docu-
ments, and investigate other aspects of the culture. As
their work on the study progresses, they write a pro-
posal for the study, a literature review and method
section, which are all submitted in drafts. The full
study, with results and discussion, is submitted at the
end of the term. Their studies, when completed, re-
flect a complex view of a workplace, and offer a very

... ethnography (Lial V...
... insights, enabling the exploration of new areas
... interest and allowing the field to construct a theo-
...tical basis [50].

STUDENTS' WORKPLACE STUDIES

... each of the students' studies proved extremely help-
... in allowing them to understand the concept of sit-
...-tated knowledges and, at the same time, to facilitate
... their examination of the traditional objectivist para-
...-igm. This unit of the course allowed students to
... focus on those issues of gender which are typically
...-tated little space within the organizational impera-
...-tives of workplace culture. For example, my stu-
...-dents' use of ethnographies provided insight into how
... men and women administrators and managers ana-
...-lyze audiences when writing specifically to women.

One student, a full-time technical writer at a hos-
pital, examined the corporate practices of such a
workplace and its use and promotion of advanced di-
rectives, including living wills and durable powers of
attorney. He was also interested to see the effect that
the legislated patient self-determination act had on
hospital practices in relation to these kinds of med-
ical treatment decisions. Because the hospital be-
lieved that women make the majority of health care
decisions, he hoped to understand how the hospital
administrators and writers went about considering
women in the kinds of written materials on advanced
directives that they produced. He was interested in
exploring such questions as: Are women objectified
by administrators and communicators within the hos-
pital? Is gender even considered in the audience
analysis, or is it ignored in favor of traditional syn-
tactic and semantic structures that might be thought
to speak to "the common man"? How, too, does the
hospital advance its goals in regards to medical di-
rectives and do they clash or coincide with patient
and family interests?

His results reflected, unfortunately, a disregard for
women as audience; and, as he worked through the
study to come to these results, he became aware of

... including discourse, neglected to consider other part
of the culture.

Another student studied the role of women and the
glass ceiling that exists within certain banking cul-
tures. Her original idea was to study a small bank and
try to understand the effects of the social community
on women and men. What she found, however, was a
workplace in which none of the female employees
held empowered positions. In fact, near the begin-
ning of her study she learned that a group of women
who had been long-standing members of the bank
had collectively resigned and written to the manage-
ment about their belief that they could not move up in
the organization. This student researcher, then, found
herself looking at an organization in turmoil—one in
which traditional ideas about what connotes success
have clashed head-on with subject positions charac-
terized within this hierarchic structure as "the other."
An organization with this kind of conflict, according
to Halpern, allows for underlying issues to be made
explicit [51]. Indeed, her work pointed to a number of
factors for the problems in the organization, includ-
ing gendered assumptions about the role of women
and management. For this student, it was apparent
that traditional masculinist culture had defined what
it takes to be of management quality in the bank, and
the definition did not include women.

In other studies, several students investigated how
men and women interacted collaboratively in organi-
zational meetings. The work sites included an orga-
nization where technical writers met and a university
dormitory where resident assistants held regular
meetings on policies. Questions explored in these
studies prompted students to investigate the cultural
roles of women and men as they interacted as well as
the power relations inherent in any man-woman in-
teraction [52], [53].

Several students examined the role that gender
plays within the educational setting. For example, one
student, a media specialist at an elementary school,
looked at the relationship between gender identity and
students' writings. Operating under the belief that lan-
guage provides the basis for understanding gender
in the classroom, the student examined a ma-

viewed students, faculty and administrators. Her results indicated a widespread disregard for issues of gender within the school. For example, both teachers and administrators did not think that nonsexist language was important; thus, it was not part of the curriculum. These findings, as well as others, demonstrated to the student that masculinist traditions are deeply imbedded in organizational attitudes.

A classroom study by another student examined the educational environment at a community college. The student's methods included, but were not limited to, observation of classes and interviews with students, faculty, and administrators. In sum, all of these students sought, through their studies, to come to an understanding of how issues of gender work to construct reality within a workplace. In so doing, they provided insights into women's roles and added to our knowledge about how gender functions within technical and professional communication. The greatest value of the ethnographic studies was that they provided direct examples of the problems in gendered assumptions about knowledge.

STUDENT EVALUATIONS OF THE COURSE

Students' responses to the course, as reflected in their course evaluations, were positive. (Their Likert scale ratings averaged 4.86 on a scale of one to five.) While some students wrote in their evaluations that they would have, at times, liked to have been assigned less reading, most were enthusiastic about the course's design, as reflected by the following written comments:

I strongly recommend this course become a permanent part of the curriculum.

This class should be mandatory for all technical writing students. It is hard to imagine getting a degree without the perspective this course provided.

Other students commented that the course proved valuable because it helped them to see the relation of feminist inquiry and women's studies to technical writing and science. As one student wrote, "This

course has made me more aware of feminist issues in my work and daily life." For these students, the benefits of the course were very much a result of the new perspective they received, a perspective which they had not been introduced to in other classes.

INSTRUCTOR EVALUATION OF THE COURSE

Of course, the first time any course is taught there are always decisions one wishes one would have made differently; no course runs entirely smoothly and students' voices change one's focus. The biggest change I would make in teaching this course again is to include a single textbook on the methodology of ethnography instead of relying on a variety of sources. Such a text would consolidate the materials on research methods and allow for more detailed explanations of the aspects of ethnographic methods. Another textual change I might make is to include full texts that are, in some way, in opposition to Haraway's views. Although I did include excerpts from a variety of oppositional voices, I would probably try to include instead, in a future course, the full text of books such as Sandra Harding's *Whose Science? Whose Knowledge?* or Evelyn Fox Keller's *Reflections on Gender and Science* [55], [56]. Both of these texts present a good overview of the problems with traditional views of science and technology and, at the same time, also offer viewpoints which, in either explicit or implicit ways, present a critique of Haraway's situated knowledge theory. Finally, I would probably encourage students to examine any workplace issues in their ethnographic studies, not just those that focus on gender. Although asking students to explore some issue related to gender is valid, I also felt that it was important not to unnecessarily guide their general questions as they went into their sites. By offering alternatives, then, students could either investigate an issue involving gender directly or they could learn how the ethnographic method allows for situated perspectives to be made explicit. Either way, their ethnographic experience would allow them to contribute toward investigations of traditional models of organizational and technical discourse.

CONCLUSION

In the end, my decision to teach this course rested on the belief that a course which focuses entirely on issues of gender in a technical communication program can help address the complexities and problems within technical communication, as traditionally practiced. The practice of this course did, indeed, succeed in providing a framework which allowed students the opportunity to come to the kind of consciousness which actively embodies "permanently partial identities and contradictory standpoints" [57]. Students who do not have the opportunity to be introduced to this perspective may not be aware of the forces which guide and influence their discourse practices. Since the masculinist tradition of scientific rationality and objectivity has such a major impact on technical discourse, students should be able to examine its history and its effects. If an explicit place is made for this examination in the curriculum, students may be in a better position both to critique problematic communication models and contribute their own visions to a redefinition of the discourse. In fact, this process has already begun as four students from the course have decided either to turn their ethnographic studies into master's theses or to use their theses to investigate issues of gender. Finally, the value of such a course can be seen in the comments of another student, a full-time technical writer, who spoke of the excitement he felt about a class which presented a very different perspective than that which he had previously seen in his other classes. As he said to me at one point in mid-semester in reference to these classes, "No one has every truly said that there was a different way." This class presents that different way.

SYLLABUS

Note: The format of this syllabus has been deliberately modeled on the presentation of course syllabi in Rothschild's *Teaching Technology from a Feminist Perspective: A Practical Guide* [58].

Course Title: Gender Issues in Technical and Professional Writing and Communication

Course Level: Master's, doctoral

Prerequisite: None

Method of instruction: Seminar format. Discussion

Required Texts:

1. Bazerman, Charles and James Paradis. *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*. Madison: University of Wisconsin Press, 1991.
2. Frank, Francine Wattman and Paula A. Treichler. *Language, Gender and Professional Writing: Theoretical Approaches and Guidelines for Nonsexist Usage*. New York: Modern Language Association, 1989.
3. Haraway, Donna J. Simians. *Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991.
4. Reserve pack of Articles and Books on Reserve at Library

Methods of evaluation: Journal entries/reading responses, major paper which discusses limited ethnographic workplace study, midterm and final essay exam, class presentation.

Brief course description: Course offers a forum to discuss issues related to gender in the technical and professional writing and communication area. These include examination of (1) feminist inquiry into the production and dissemination of knowledge, and, in particular, how situated knowledges can address traditional ideas about objectivity in science and technology and (2) the language of professional writing as well as issues related to gender roles within organizational collaborative writing groups and the role of ethnographic research in the workplace.

Schedule of Assignments and Topics:

Week 1:

Introduction

Theory and practice of feminist inquiry into technical and scientific communication
Nonsexist language issues

Week 2: Feminism and technical and scientific communication.

READINGS*

Articles on Reserve:

- Lay, Mary M. "Feminist Theory and the Redefinition of Technical Communication." *Journal of Business and Technical Communication* 5:4 (October 1991): 348–370.
- Allen, Jo. "Gender Issues in Technical Communication Studies: An Overview of the Implications for the Profession, Research and Pedagogy." *Journal of Business and Technical Communication* 5:4 (October 1991): 371–391.
- Sauer, Beverly. "Introduction: Gender and Technical Communication." *IEEE Transactions on Professional Communication* 23:4 (December 1992): 193–194.

Excerpts to Be Read from Books on Reserve:

- Harding, Sandra. "Feminism Confronts the Sciences: Reform and Transformation." *Whose Science? Whose Knowledge?* Sandra Harding. Ithaca, NY: Cornell University Press, 1991. 19–50.
- Keller, Evelyn Fox. "Introduction" and "Gender and Science." *Reflections on Gender and Science*. New Haven: Yale University Press, 1985, pp. 3–13 and 75–94.

Week 3: Naming and Dominance/Subordination; Social Construction of Workplace; Ethnography
READINGS*

From Bazerman/Paradis (required text)—Ch. 13, 15.

Excerpts to Be Read from Books on Reserve:

- Spender, Dale. "Extracts from Man Made Language." *The Feminist Critique of Language*. Ed. Deborah Cameron. London: Routledge, 1990. 102–109.
- Miller, Jean Baker. "Domination-Subordination" and "Conflict—The Old Way." *Toward a New Psychology of Women*. Jean Baker Miller, M.D. Boston: Beacon Press, 1986. 3–20.

Articles on Reserve:

- Halpern, Jeanne W. "Getting in Deep: Using Qualitative Research in Business and Technical Communication." *Journal of Business and Technical Communication* 2:2 (September 1988): 22–43.
- Sauer, Beverly. "Sense and Sensibility in Technical Documentation: How Feminist Interpretation Strategies Can Save Lives in the Nation's

Mines." *Journal of Business and Technical Communication* 7:1 (January 1993): 63–83.

Week 4: Communication/Collaboration in the workplace; Ethnography

READINGS*

Articles on Reserve:

- Flynn, Elizabeth, Gerald Savage et al. "Gender and Modes of Collaboration in a Chemical Engineering Design Course." *Journal of Business and Technical Communication* 5:4 (October 1991): 444–462.
- Tannen, Deborah. "Community and Contest: Styles in Conflict." *You Just Don't Understand: Women and Men in Conversation*. Deborah Tannen. New York: Ballantine, 1990. 159–187.
- Rifkind, L. J. and L. F. Harper. "Cross-Gender Immediacy Behaviors and Sexual Harassment in the Workplace: A Communication Paradox." *IEEE Transactions on Professional Communication* 35:4 (December 1992): 236–241.
- Halterman, Carroll, Jody Dutkiewicz, Even Halterman. "Men and Women on the Job: Gender Bias in Work Teams." *Journal of Business and Technical Communication* 5:4 (October 1991): 469–481.
- Doheny-Farina, Stephen and Lee Odell. "Ethnographic Research on Writing: Assumptions and Methodology." *Writing in Nonacademic Settings*. Eds. Lee Odell and Dixie Goswami. New York: Guilford, 1985. 503–535

Excerpts to Be Read from Books on Reserve

- Agar, Michael H. *Beginning Fieldwork: The Professional Stranger: An Informal Introduction to Ethnography*. Michael H. Agar. New York: Academic Press, 1980.

Week 5: Social construction of workplace; impact of texts, operational forces of texts. Students discuss their ethnographic studies

READINGS*

From Bazerman/Paradis (required text)—Ch. 1, 2, 6, and 11

Articles on Reserve

- Sauer, Beverly. "The Engineer as Rational Man: The Problem of Imminent Danger in a Non-Rational Environment." *IEEE Transactions on*

Professional Communication 35:4 (December 1992): 242–249.

Week 6: Students discuss the sources they have read in preparation for their literature reviews for the ethnographic study paper

Week 7: Diverging feminist theories and situated knowledges

READINGS*

Excerpts to Be Read from Books on Reserve

- Belenky, Mary Field, Blythe McVicker Clinchy, et. al. "Subjective Knowledge: The Inner Voice." *Women's Ways of Knowing: The Development of Self, Voice and Mind*. Belenky, Mary Field, Blythe McVicker Clinchy, et al. NY: Basic Books, 1986. 52–75.
- MacKinnon, Catherine A. "Method and Politics" in *Toward a Feminist Theory of the State*. Catherine A. MacKinnon. Cambridge: Harvard University Press, 1989. 106–125.

From Haraway text, Pt. 1 (Chapters 1, 2, 3)

Week 8: Situated knowledges

READINGS*

- From Haraway (Required text), Pt. 2 (Chapters 4, 5, 6)

Week 9: Situated knowledges

READINGS*

- From Haraway (Required text), Pt. 3 (Chapters 7, 8, 9, 10)

Week 10: Language Issues

READINGS*

Articles on Reserve:

- Cameron, Deborah. "Introduction: Why is Language a Feminist Issue?" *The Feminist Critique of Language*. London: Routledge, 1990. 1–28.
- Irigaray, Luce. "Is the Subject of Science Sexed?" trans. Carol Mastrangelo Bove. *Feminism and Science*. Ed. Nancy Tuana. Bloomington: Indiana University Press, 1989. 58–68.
- Irigaray, Luce. "Women's Exile." trans. Couze Venn. *The Feminist Critique of Language*. London: Routledge, 1990. 80–96.

Week 11: Critique of the language of professional writing; Nonsexist language issues

READINGS*

- From Frank and Treichler (Required text), Pt. 1

Week 12: Discussion of critique of the language of professional writing

READINGS*

- From Frank and Treichler (Required text), Pt. 2

Week 13: Women and technology

READINGS*

Student-selected articles. Students lead discussion.

- Martin, Joanne. "Deconstructing Organizational Taboos: The Suppression of Gender Conflict in Organization." *Organization Science* 1:2 (November 1990): 339–359.
- Kramarae, Cheri. "Gotta Go Myrtle, Technology's at the Door." *Technology and Women's Voices*. Ed. Cheri Kramarae. New York: Routledge, 1988. 1–14.
- Turkle, Sherry. "Computational Reticence: Why Women Fear the Intimate Machine." *Technology and Women's Voices*. Ed. Cheri Kramarae. New York: Routledge, 1988. 41–61.
- Harding, Sandra. "Strong Objectivity" and "Socially Situated Knowledge." *Whose Science? Whose Knowledge?* Sandra Harding. Ithaca, NY: Cornell University Press, 1991. 19–50.

Week 14: Women and technology

READINGS*

Student-selected articles. Students lead discussion.

- Neeley, K. A. "Woman as Mediatrix: Women as Writers on Science and Technology in the Eighteenth and Nineteenth Centuries." *IEEE Transactions on Professional Communication* 35:4 (December 1992): 208–216.
- Bernhardt, S. A. "The Design of Sexism: The Case of an Army Maintenance Manual." *IEEE Transactions on Professional Communication* 35:4 (December 1992): 217–221.
- Carroll, David. "Gender Scripts in Professional Writing Textbooks on Reserve." *Journal of Business and Technical Communication* 5:4 (October 1991): 463–468.
- Paglia, Camille. "The M.I.T. Lecture: Crisis in the American Universities." *Sex, Art and Amer-*

ican Culture: Essays. Camille Paglia. New York: Random House, 1992. 249–298.

Week 15: Women and technology READINGS*

Student-selected articles. Students lead discussion.

- Penelope, Julia. "The Place of Women in English: Today." *Speaking Freely: Unlearning the Lies of the Father's Tongues*. Julia Penelope. New York: Pergamon Press, 1990.

- Postman, Neil. "Invisible Technologies." *Technopoly: The Surrender of Culture to Technology*. New York: Alfred Knopf, 1992. 123–143.
- Postman, Neil. "Scientism." *Technopoly: The Surrender of Culture to Technology*. New York: Alfred Knopf, 1992. 144–163.

***Please note:** In future classes, some of these READINGS* may be replaced and others added.

REFERENCES

1. D. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991, p. 194.
2. S. Harding, *Whose Science? Whose Knowledge?* Ithaca, NY: Cornell University Press, 1991, 10.
3. M. M. Lay, "Feminist theory and the redefinition of technical communication," *J. Business and Technical Communication*, vol. 5, Oct. 1991, p. 355.
4. S. Harding, *Whose Science? Whose Knowledge?* Ithaca, NY: Cornell University Press, 1991, 11.5.
5. B. Sauer, "Sense and sensibility in technical documentation: How feminist interpretation strategies can save lives in the nation's mines," *J. Business and Technical Communication*, vol. 7, pp. 68–72, Jan. 1993.
6. J. Paradis, "Text and action: The operator's manual in context and in court," in *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*, C. Bazerman and J. Paradis, Eds. Madison: University of Wisconsin Press, 1991, pp. 256–278.
7. S. Katz, "The ethic of expediency: Classical rhetoric, technology, and the Holocaust," *College English*, vol. 54, 1992, pp. 255–275.
8. E. F. Keller, *Reflections on Gender and Science*. New Haven: Yale University Press, 1985, p. 12.
9. M. J. Killingsworth and M. K. Gilbertson, *Signs, Genres and Communities in Technical Communication*. Amityville, NY: Baywood Publishing Company, 1992.
10. B. Sauer, "The engineer as rational man: The problem of imminent danger in a non-rational environment," *IEEE Trans. Professional Communication*, vol. 35, pp. 242–249, Dec. 1992.
11. ———, p. 247.
12. B. Sauer, Ed., Special Issue on Gender and Technical Communication, *IEEE Trans. Professional Communication*, vol. 35, Dec. 1992.
13. Special Issue on Gender and Technical Communication, *J. Business and Technical Communication*, vol. 5, Oct. 1991.
14. D. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991, p. 194.
15. S. Harding, *Whose Science? Whose Knowledge?* Ithaca, NY: Cornell University Press, 1991, ch. 20.
16. J. Allen, "Gender issues in technical communication: An overview of the implications for the profession, research, and pedagogy," *J. Business and Technical Communication*, vol. 5, pp. 371–392, Oct. 1991.
17. M. M. Lay, "Feminist theory and the redefinition of technical communication," *J. Business and Technical Communication*, vol. 5, pp. 348–370, Oct. 1991.
18. J. Rothschild, *Teaching Technology from a Feminist Perspective: A Practical Guide*. New York: Pergamon Press, 1988.
19. M. de Armas Ladd and M. Tangum, "What difference does inherited difference make? Exploring culture and gender in scientific and technical professions," *IEEE Trans. Professional Communication*, vol. 35, pp. 183–190, Sept. 1992.
20. J. Allen, "Gender issues in technical communication studies: An overview of the implications for the profession, research, and pedagogy," *J. Business and Technical Communication*, vol. 5, pp. 371–392, Oct. 1991.
21. D. Carrell, "Gender scripts in professional writing textbooks," *J. Business and Technical Communication*, vol. 5, p. 467, Oct. 1991.
22. B. Spanier, "Gender and ideology in science: A study of molecular biology," *NWSA Journal*, vol. 3, Spring 1991, pp. 167–198.
23. A. Fausto-Sterling, "Race, gender and science," *Transformations*, vol. 2, Fall 1981, p. 5.
24. J. Butler, *Gender Trouble: Feminism and the Subversion of Identity*. New York: Routledge, 1990.
25. D. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991.
26. C. Bazerman and J. Paradis, Eds., *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*. Madison: University of Wisconsin Press, 1991.
27. F. W. Frank and P. A. Treichler, Eds., *Language, Gender, and Professional Writing: Theoretical Approaches and Guidelines for Nonsexist Usage*. New York: The Modern Language Association of America, 1989.
28. M. M. Lay, "Feminist theory and redefinition of technical communication," *J. Business and Technical Communication*, vol. 5, pp. 348–370, Oct. 1991.
29. J. Allen, "Gender issues in technical communication: An overview of the implications for the profession, research, and pedagogy," *J. Business and Technical Communication*, vol. 5, pp. 371–392, Oct. 1991.
30. B. Sauer, "Introduction: Gender and technical communication," *IEEE Trans. Professional Communication*, vol. 35, pp. 193–195, Dec. 1992.
31. S. Harding, *Whose Science? Whose Knowledge?* Ithaca, NY: Cornell University Press, 1991.
32. E. Fox Keller, "Introduction" and "Gender and science," in *Reflections on Gender and Science*. New Haven: Yale University Press, 1985, pp. 3–13 and 75–94.
33. L. Irigaray, "Is the subject of science sexed?," translated by Carol Mastrangelo Bove, in *Feminism and Science*, Nancy Truana, Ed. Bloomington: Indiana University Press, 1989, pp. 58–68.
34. D. Spender, "Extracts from man made language," in *The Feminist Critique of Language: A Reader*. London: Routledge, 1990.
35. J. Baker Miller, *Toward a New Psychology of Women*. Boston: Beacon Press, 1986.
36. M. Belenky, B. Clinchy, et al., *Women's Ways of Knowing: The Development of Self, Voice and Mind*. NY: Basic Books, 1986.
37. C. MacKinnon, "Method and politics," in *Toward a Feminist Theory of the State*. Cambridge: Harvard University Press, 1989, pp. 106–125.
38. D. Spender, "Extracts from man made language," in *The Feminist Critique of Language: A Reader*. London: Routledge, 1990, p. 108.
39. J. Baker Miller, *Toward a New Psychology of Women*. Boston: Beacon Press, 1986, pp. 3–12.
40. J. Baker Miller, *Toward a New Psychology of Women*. Boston: Beacon Press, 1986, pp. 9–10.
41. D. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991, p. 188.
42. D. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991, pp. 191–192.
43. C. Bazerman and J. Paradis, Eds., *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*. Madison: University of Wisconsin Press, 1991.
44. B. Sauer, "Sense and sensibility in technical documentation: How feminist interpretation strategies can save lives in the nation's mines," *J. Business and Technical Communication*, vol. 7, pp. 63–83, Jan. 1993.
45. S. Doheny-Farina and L. Odell, "Ethnographic research on writing: Assumptions and methodology," in *Writing in Nonacademic Settings*. L. Odell and D. Goswami, Eds. New York: Guilford, 1985, p. 505.
46. J. W. Halpern, "Getting in deep: Using qualitative research in business and technical communication," *J. Business and Technical Communication*, vol. 2, pp. 22–43, Sept. 1988.
47. S. Doheny Farina and L. Odell, "Ethnographic research on writing: Assumptions and methodology," in *Writing in Nonacademic Settings*, L. Odell and D. Goswami, Eds. New York: Guilford, 1985, pp. 503–535.
48. M. H. Agar, "Beginning fieldwork," in *The Professional Stranger: An Informal Introduction to Ethnography*. New York: Academic Press, 1980.
49. J. Halpern, "Getting in deep: Using qualitative research in business and technical communication," *J. Business and Technical Communication*, vol. 2, Sept. 1988, p. 31.
50. J. W. Halpern, "Getting in deep: Using qualitative research in business and technical communication," *J. Business and Technical Communication*, vol. 2, pp. 38–39, Sept. 1988.
51. J. Halpern, "Getting in deep: Using qualitative research in business and technical communication," *J. Business and Technical Communication*, vol. 2, p. 31.
52. D. Tannen, *You Just Don't Understand: Women and Men in Conversation*. New York: Ballantine, 1990.
53. B. Thorne, C. Kramarae, and C. Henley, "Language, gender, and society: Opening a second decade of research," in *Language, Gender and Society*. Rowley, MA: Newbury House, 1983, pp. 7–24.
54. Jeanne Bradley Giroux, "Feminist theory as pedagogical practice," *Contemporary Education*, vol. 61, Fall 1989, p. 8.
55. S. Harding, *Whose Science? Whose Knowledge?* Ithaca, NY: Cornell University Press, 1991.
56. E. Fox Keller, "Introduction" and "Gender and science," in *Reflections on Gender and Science*. New Haven: Yale University Press, 1985.
57. D. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991, p. 154.
58. J. Rothschild, *Teaching Technology from a Feminist Perspective: A Practical Guide*. New York: Pergamon Press, 1988, pp. 95–160.