Electronic Meetings of the Minds: Research, Electronic Conferences, and Composition Studies

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Over the past decade two electronic innovations have profoundly influenced writing classes. Although each of these innovations had simply been part of the computer programmer's work environment for many years, for writers and for writing teachers they have been revolutionary, changing not only the way we teach but also influencing our research and our understanding of composition studies. I'm speaking, of course, first of word processing and then of the electronic conference, each of which was uncommon to the writing instructor's life before the advent of the first fullyassembled microcomputer in 1977 and each of which entered our professional lives sometime during the eighties.

These two technological innovations, however, did not grow up in isolation; they emerged as our very theories of writing and writing instruction were evolving. Word processing appeared as a classroom technology at the same time that the process paradigm was establishing itself in composition studies. Electronic conferencing has taken hold of the field at the same time that social constructivist views of language have similarly become prevalent in the profession. Such changes in our views of writing
and writing instruction have allowed us to prize both these technologies as we have come to understand writing as the active creation of meaning, of knowledge.

Yet if our theoretical perspectives have allowed us—indeed have encouraged us—to accept word processing and electronic conferencing, the new technologies have also influenced the ways we think about writing and writing instruction. From word processing, we have learned that text is fluid, ephemeral, and constantly emerging (Balestri, Catano). From electronic conferences, we have learned that it has all these properties and more: text is made by many and is meant to be shared—it is intrinsically communal (Barker and Kemp). Because of our work with word processing and electronic conferences, we are also able to envision a writing class in which most of the learning matter exists not on paper but on-line; we are able to think about what our classes might be like without printed texts. In other words, as a result of our work with computers over the past decade, we can begin to imagine teaching and writing in a virtual age where a meeting of the minds might well occur without the physical presence of students and teachers.

At the moment, more than any other technology, the electronic conference is leading the way in introducing us to virtual environments. Since, unlike hypermedia, it doesn't require the extensive and time consuming development of on-line materials, it immediately lets us see how school learning, how literacy learning, might take place without print. If we choose, we can conduct a paperless writing class, as Edward Jennings did several years ago, with student and teacher contributions all occurring on-line.' Or we can conduct a class in which we use the electronic conference as a supplement to other kinds of writing activities occurring within and outside of classes.2 Yet despite our having these approaches to writing instruction available to us now, important questions remain to be answered: Why should we sacrifice print? Why should we use electronic conferences in our writing classes at all?

By highlighting the major findings and observations aimed at electronic conferences, this chapter tries to provide a basis for answering these questions. In so doing, it explores the connections between social constructivist theory and the electronic conference. By bringing together recent research from a variety of disciplines, it also seeks to establish a small knowledge base from which we might inform our work in composition studies. After discussing the principal findings from recent research, it then returns to a discussion of electronic conferences and social perspectives on writing. Throughout the chapter, I use the term electronic conference to denote computer-mediated communication and modify it with "synchronous" to denote "real-time" or "chat" programs over which
participants communicate at the same time and "asynchronous" to denote electronic bulletin boards or electronic mail that participants can access at any time.

**Electronic Conferences and Composition Theory**

Both synchronous and asynchronous electronic conferences have become increasingly popular in writing classes as the profession has come to understand writing, and hence writing instruction, in terms of the social or social epistemic theories of writing. As Janet Eldred has pointed out, it wasn't until October of 1986 with Lester Faigley's important article, "Competing Theories of Process," that composition studies began to think seriously of social perspectives on writing; later with Karen LeFevre's 1987 *Invention as a Social Act* and James Berlin's 1988 piece on "Rhetoric and Ideology in the Writing Class" social approaches to writing instruction became more common. Kenneth Bruffee's views of the value of collaborative learning were well known before this, but the term "social construction" doesn't begin to appear with any regularity in composition journals and texts much before 1986. I would argue that until the profession accepted and endorsed a view of meaning as negotiated, texts as socially constructed, and writing as knowledge creating, we were unable to value the kinds of talk in writing classes that electronic conferences encourage. In other words, the adoption of the electronic conference as a pedagogy corresponds closely to the profession's evolving theories of what it means to learn to write in the late eighties and nineties.

But what about our research? Does the research of the past few years reflect this move from a process paradigm to a social view of writing and writing instruction? The answer appears to be a tentative yes, but we need to look at the electronic conference in relation to the small body of research that has been conducted so far.

**Electronic Conferences, Research, and Observations**

A major difference between research aimed at word processing and the current research on electronic conferences is that the research on the conference is occurring across disciplines whereas the interest in word processing research, with the possible exception of human factors research, remained largely confined to composition studies. One might argue that the composition profession's very interest in multidisciplinary approaches, as well as its willingness to accept findings from other research areas, underscores its growing acceptance of social constructionism. In other words, in viewing knowledge as made, not found, the
profession has come to realize the value of multiple perspectives from many different sources and to recognize that studies being conducted across many disciplines can contribute to composition studies. It is also true that although the body of research is growing, as yet there are only a few studies on the electronic conference that have been conducted within composition studies. For a more complete picture, we must look to the studies of those working in distance education, communication research, organizational settings, linguistics, cognitive science, psychology, sociology, and information systems, to mention a few of the fields actively involved.

But regardless of the field, many of the studies converge on similar issues and ask similar research questions. They seek first to identify the characteristics of conference discourse, examine participants' response to such discourse, and then, for those working in educational settings, explore the electronic conference's potential for teaching and learning. Many of the initial findings related to on-line conferences also seem more in the spirit of observations gleaned from experience in working with the medium, not unlike the early exploratory studies in word processing. Many of the interpretations of the findings also seem to reflect social constructivist views of language and learning. Taken together they begin to suggest what writing teachers can and cannot expect when they introduce electronic conferences into their classes.

But questions still remain regarding the advantages and disadvantages of the medium for writing classes. For those working in composition studies the most important findings relate to whether instructors and students can use electronic conferences to accomplish what they want and need to do. Will the medium help teachers teach and students learn? Let me first review the observations and findings that are often construed as advantages and then turn to what some have noted as the disadvantages of the medium, both for synchronous and asynchronous electronic conferences. I'll then come back to discussing how these observations relate to composition theory and writing classes.

**Why Should We Use Electronic Conferences in Writing Classes?**

*Electronic conferences are text-based environments.*

When participants in an electronic conference communicate with one another, be the conference synchronous or asynchronous, they are totally immersed in writing. Based on their research on the social consequences of computerized communication, James Chesebro and Donald Bonsall argue that the electronic conference "possesses the advantage of focusing attention upon the written word . . . [and also] allows or forces users to employ words concretely, vividly, and meaningfully" (118). "Concretely,"
"vividly," and "meaningfully" are all adverbs that call forth the sort of writing that English teachers are thought to want from students. The total immersion in text has also been thought to be a factor that might improve student writing. Because of the heavy emphasis on writing, Starr Roxanne Hiltz and her colleagues working with a writing class at Upsala University are one of the few groups who asked the question that scholars in composition studies asked frequently of word processing environments: Will students' writing improve as a result of this technology and environment? Hiltz and her colleagues could detect no improvement and attributed this finding in part to the short overall time (one semester) spent in the writing environment and to a less than satisfactory holistic scoring system ("Evaluating the Virtual Classroom" 166).3 Within composition studies, Christine Neuwirth, Michael Palmquist, and their colleagues also saw no improvement in student writing when they used a synchronous electronic conference at Carnegie Mellon.

Others within composition studies have noted other advantages of a totally text-based environment to writing classes. Of synchronous networked settings, Trent Batson argues that "since students and teachers write to communicate, they aren't required to move away from the genuine 'feel' of their face-to-face oral exchange and into a seemingly more contrived solo writing exercise" (32). In this setting, students are able to refine their rhetorical skills of persuasion as well as to sharpen their mechanical skills. They are in an environment in which they constantly write and read. Thomas Barker and Fred Kemp have noted that "irrespective of further pedagogical measures, the sharing of text [or line] easily promotes the power of text, which in turn motivates and directs the writer in instructionally effective ways" (18). The importance of having a classroom environment in which people primarily communicate with one another through writing is difficult to underestimate for those of us who teach and study writing.

Another often cited benefit of the text-based environment is the ability to print out and to use the transcripts of electronic conferences for a variety of purposes. In Jerome Bump's survey of three writing classes, several of the students found that this feature of the conference was a primary advantage. It allowed them to reflect on both their contributions to discussions as well as on those of their classmates. Student writing from transcripts can also be treated as sources, with students citing one another and their views on a particular subject they have discussed electronically in class. Charles Moran, for example, asked students to write what they thought were the important issues facing the United States after the Persian Gulf War. After printing out the entire transcript of conference responses, students used the written text as the basis for a paper in which they discussed college students' views on these issues.4 Transcripts also allow teachers to review students' work and can be used
as a diagnostic tool. In their study of synchronous conferences, Christine Neuwirth and her colleagues found that the writing instructor viewed the written transcript as the most significant advantage of the conference. Using the transcripts, the instructor was able to discern what sorts of help students needed in developing collaborative skills, a prime emphasis of the course. Thus transcripts can function as supplementary print materials in conjunction with electronic writing activities with advantages for both teachers and students.

Electronic conferences provide real and expanded audiences for writers.

Many have noted the importance of both a real and expanded audience that electronic conferences can provide. Linda Harasim, working in distance education, demonstrates this shift in audience when she writes of interactions that can be one-to-one, one-to-many, and many-to-many in face-to-face contexts ("On-Line Education" 50). In writing classrooms despite our best efforts to create an audience that is more than the "teacher as examiner" (Britton), we often don't get beyond the one-to-one (teacher and student or student and student) or the one-to-many (usually teacher to students) and sometimes for good reason. Unless confined to small groups, many-to-many interactions can be loud and chaotic, but with electronic conferences they are considerably less so. They can also be confusing especially in synchronous settings (see Hugh Burns, chapter 7, this volume), but they are certainly not loud and are often workable and interesting for participants.

Those working in composition studies have been especially taken with this feature of a real and expanded audience for both synchronous and asynchronous environments. Jeffrey Schwartz demonstrates the benefits for asynchronous settings when he describes the BreadNets electronic exchanges between high school English classes in Pennsylvania, Montana, and South Dakota. Students in these classes were drawn from a private school in suburban Pittsburgh, a public high school in Wilsall, Montana, and Little Wound High School, which is on an Indian Reservation in Kyle, South Dakota. Schwartz notes that having an authentic audience of peers encouraged students "to play the scales of discourse, adjusting language to the reader, the topic, the purpose for writing and the image [the students] want to project" (17). The students were also able to learn a great deal about the different cultures of the students with whom they were sharing their writing. In a very different setting, Delores Schriner and William Rice also note the advantages of a real electronic audience with a group of students in a class at the University of Michigan. "Whenever they wrote," argue Schriner and Rice, "they knew they had
an audience beyond the teacher, and as a result their writing emerged as 'real,' 'volunteered,' even urgent" (475).

*Electronic conferences encourage a sense of community.*

Connected to this idea of a real audience and of many communicating to many is a growing sense among participants and researchers that writer participants perceive themselves as part of a community. Cynthia Selfe and Paul Meyer have documented electronic exchanges which suggest that members of Megabyte University, an asynchronous electronic conference for writing teachers, think of themselves as a closely-knit group who "chat away like old friends" (173). Similarly, Chesebro and Bonsall found that messages in such conferences are often more "socially oriented" than "task related" and that they seem to foster a sense of belonging among participants (5). Harriet Wilkin's research supports similar conclusions. She notes that during three months on the network Presbynet, participants came to think of one another as friends. One participant, for example, stated "I am still constantly amazed at the 'companionship' and warmth one can find on a computer terminal" (71). This affective response to the group is also demonstrated in Lester Faigley's observations of students not wanting to leave class but rather to continue their synchronous online discussions. Schriner and Rice also noted students coming early to class and staying late, and Hiltz similarly reported that one of her asynchronous electronic conferences was still going strong a month after grades had been submitted ("Collaborative Learning" 64).

This sense of belonging and comradeship may not emerge when there are only two participants. Sarah Kiesler and her colleagues found that on a synchronous network pairs of people liked one another less than those who met and talked face-to-face initially (Kiesler et al.). Unlike the Kiesler study, there were 56 participants in the Selfe and Meyers' study and 33 in Wilkins' study. For participants to develop a liking for one another there is probably an optimum group size within a range of possible numbers, but as of yet research has not looked carefully at this issue.

*Electronic conferences demonstrate a high degree of involvement on the part of participants.*

Another finding across studies has to do with the high degree of personal involvement invested in the communication, a phenomenon that is more common in face-to-face communication than in written discourse. Using linguistic analysis, Kathleen Ferrara and her colleagues documented participants' frequent use of adverbs and direct questions in the electronic discourse, all features of oral language that indicate involvement. Denise
Murray also noted the high degree of "personal involvement . . . characterized by use of active voice and personal pronouns; emotive and informal diction; hedging and vagueness; paralinguistic cues; and direct quotations" (217). Both the Ferrara and Murray studies focused on synchronous communication between two people.

But levels of high interest and involvement in the computer conference have also been noted by others looking at larger groups of participants in educational settings. Hiltz, for example, in her survey of students having participated in the virtual classroom of a management course notes that active participants often used the word "fun" to describe the class, and she ascribes this in part to the participants' high level of involvement ("Collaborative Learning"). Schriner and Rice also note that the "students' engagement was quite astonishing . . . with each student [generating] an average of 50 pages of double-spaced [network] text" (473). They also report that many students often signed onto the network "as often as twice a day, every day" (473).

Andrew Feenberg ("Computer Conferencing") provides an interesting analysis of the sort of social system that arises in electronic conferences and refers to what I'm calling involvement as "absorption" or "engrossment," terms originally introduced by Erving Goffman. Feenberg writes, "The sociability characteristic of conferencing is like that of sports or games in that we are drawn in by interest in the next step in the process of interaction more than by any other motive" ("Computer Conferencing"). Such gaming intrigues participants and probably in part accounts for why students remain after class to continue both asynchronous and synchronous online discussions: They want to see what happens next. Since the entire game consists of reading and writing, we might say that participants are involved in a game of literacy or as Feenberg has noted "a new form of collaborative writing" ("Computer Conferencing" 182). In the context of the writing class, Barker and Kemp call this form of collaborative writing "group knowledge" and view the whole as a communal text that the students have created.

"Electronic conferences encourage equitable participation.

Another common finding related to electronic conferences is that because face-to-face cues are eliminated, "charismatic and high status people may have less influence, and group members may participate more equally in computer communication" (Kiesler, Siegel, and McGuire 1125). Marilyn Cooper and Cynthia Selfe used this finding to inform their research for writing classes, arguing that when students adopt pseudonyms in such environments the resulting "egalitarian discourse" enables them to speak and think in ways not characteristic of
It enables them, Cooper and Selfe suggest, "to form their own opinions of the experts" (853) and to try out "different perspectives and hypotheses" (857). In electronic conferences, students can also open themselves to the divergent views of their classmates. As Diane Langston and Trent Batson have noted in their discussion of synchronous conferences, teaching and learning writing in the virtual age might have more to do with bringing together multiple perspectives and creating new understandings, rather than in producing something that is thought to be original. Electronic conferences foster an openness to other discourses and to multiple perspectives, making the weaving together of such disparate views possible. Kaye of England's Open University writes, for example, that electronic conferences have "the potential to provide a means for the weaving together of ideas and information from many peoples' minds, regardless of when and from where they contribute" (3). He and Robin Mason have called this phenomenon "mindweave," and have gone so far as to use the term as the title of their text about electronic conferencing in distance education.

Selfe also explored the potential for equitable participation among conference members in her study with Meyer. Since paralinguistic cues are eliminated and participants can't see or hear those with whom they are communicating, the argument goes, they are less likely to react to other participants' gender, social class, appearance, or other status markers. Yet in the exploratory research with Megabyte University, Selfe and Meyer still found that with and without pseudonyms males and high profile participants (those who had published in the field) tended to dominate the electronic discussion slightly. They suggest further research to explore more fully how gender and power relationships function in electronic discourse.7

Although the medium at times may favor some participants over others, student participation does seem to increase in electronic conferences. For both synchronous and asynchronous conferences, teachers and researchers report that a greater number of students take part in discussions and do so more frequently than in traditional classes (Harasim, Faigley, "Subverting" Schriner and Rice). Because electronic conferences obviate the need for taking turns, those who in face-to-face discussions wait patiently for their chance to speak no longer need to hesitate and can contribute frequently to the discussion. Harasim's research also reveals that students tend to cross the traditional time barriers of schooling: Her studies with asynchronous conferences reveal that the only hour students didn't log onto the network was 5 A.M. in the morning. Thus in addition to electronic networks encouraging equitable participation among class members, learning and discussion time can extend virtually to 24 hours a day.8
Directly related to increased participation on the part of electronic conference members is the decrease in leader-centered and leader-initiated discussion (Kiesler, Siegel, and McGuire; Chesebro and Bonsall; Feenberg "Computer Conferencing"; Hiltz and Turoff). In educational settings, this finding often translates itself into the teacher talking less as students participate more frequently and extensively in electronic class discussions both synchronous and asynchronous. It also has the further benefit of no longer emphasizing the teacher as the sole source of knowledge (Hawisher and Selfe). When students can write to one another and read one another's texts, they become very intent on making this electronic space and place their own. Cooper and Selfe, for example, point out that "once students became used to setting their own agenda for the conference—determining the topics, the pace, the tone, and the direction of the discussion—they resisted any suggestions the teacher made in class designed to influence the nature of the conference. The students had assumed power within this alternate forum, and they did not welcome the intrusion of the power structure of the classroom into the computer conference" (857). By disrupting traditional pedagogical arrangements, in other words, electronic conferences demand that students themselves take responsibility for the communal text as the teacher's role moves from evaluator to moderator to occasional participant. Elaine McCreary has suggested that using students to moderate topics gives students important experience with the medium; it also may help them decide on how best to use the conference for their own learning.

In educational settings, researchers and teachers often react to this decentering of authority by calling for teachers to assume the role of a strong moderator (Feenberg, Hiltz and Turoff, Batson, Kremers) who can lead and facilitate a productive discussion or by viewing the electronic conference as a liberating force for students' resistant discourse in the school environment (Cooper and Selfe; Faigley "Subverting"; Bump). Feenberg takes the first stance, believing that a strong leader is essential to online discussion. He cites, for example, the importance of the "art of weaving" in electronic conferences ("Computer Conferencing" 180). Weaving comments are those that unify the discourse, summarizing major points, pulling together the various threads, and integrating the various participants' contributions. By advocating that the leader judge the purpose of the discussion and then choose a role, such as that of "chairperson," "host," "teacher," "facilitator," "entertainer," and so forth, Feenberg does not advocate that the leader assume a position of authority so much as one of a reassuring moderator. Marshall Kremers sums up this position nicely when he says of his basic writers, "Rather than use the network to dominate my students, then, I use it to help them..."
find ways to channel their energy. The problem is how to help them to work productively—to become authors . . . ("Sharing Authority" 35).” The "synergy," the tremendous amount of group energy generated in both synchronous and asynchronous conferences but perhaps more immediate in synchronous settings, is one of the most cited characteristics of the medium (e.g., Cooper and Selfe, McCreary, Bump), yet it also remains one of the most troublesome. As teachers, we are not always sure as to how we might best use it to the students' advantage—how we might make productive use of this "constantly moving stream of communication" (Faigley "Subverting").

Why We Shouldn't Use Electronic Conferences

Electronic conferences encourage flaming

Many of the findings that researchers and teachers interpret as advantageous to learning environments can also be construed as disadvantages. Although Cooper and Selfe, for example, suggest that one reason students thrive in conferences has to do with "the liberating influence of the electronic medium," (857) others find the freedom less desirable. Related to a feeling of liberation is conference members' tendency to sometimes use "emotionally-laden language" and to demonstrate uninhibited behavior, a phenomenon that has come to be known as "flaming" (Kiesler, Siegel, and McGuire 1129; Kiesler, et al.). Flaming can include impoliteness, swearing, charged outbursts, and often a high use of superlatives. An explanation for this type of behavior over networks often focuses either on the sometimes anonymous relationship among the participants or, once again, the lack of paralinguistic cues. (Not seeing someone's physical reactions to your remarks fails to temper the response). Regardless of its cause, however, flaming can be disturbing. Marshall Kremers relates the story of how a group of his writing students mutineed, so to speak, and took over the synchronous electronic conference ("Adams Sherman Hill Meets ENFI"). The students' behavior was not only rude and rife with sexually offensive comments but also abusive to women.10) Although Bump noted that some of the language in the electronic conferences of the students he surveyed paralleled flaming, he viewed it more as "emotional honesty" and saw it as an asset to class discussion rather than as a deterrent (57). There seems to be a range of flaming behavior as well as a range of teacher acceptance of its potential danger or worth. The phenomenon itself, however, has been documented in both synchronous and asynchronous settings and in the workplace as well as in educational contexts (Sprout and Kiesler).

Some contend that the more focused the task, the less flaming is likely to occur. In their research looking at synchronous communication, Ferrara and her colleagues observed no inflammatory language, a finding
that might have something to do with the communication being focused very narrowly on the services of a travel agent. Denise Murray in a study of synchronous and asynchronous communication in a business environment also found no evidence of flaming ("The Context of Oral and Written Language"); nor did Neuwirth and her colleagues in their study directed at the writing class. In each of these cases, however, the activity was goal oriented, with the roles of participants being clearly defined.

Electronic conferences contribute to "communication anxiety."

For those of us in computers and composition studies who are already familiar with "writing anxiety" and "computer anxiety," it should come as no surprise that there is also "communication anxiety." In some respects such an anxiety seems to be the exact opposite of the kinds of feelings that lead to flaming, grounded as it is in fear rather than in freedom. Yet communication anxiety, a term coined by Feenberg ("Computer Conferencing"), is every bit as real among participants as the uninhibited behavior of flaming. Feenberg explains that to comment in an asynchronous conference "is a minor but real personal risk, and response is generally interpreted as signifying success while silence means failure" (175). Whether or not participants interpret others' comments as important or interesting enough to respond to, then, causes anxiety and may lead to the "lurking phenomenon." That is, a conference member may refrain from participating—from contributing his or her ideas on a particular topic under discussion. When one doesn't lurk, when one participates, electronic conferences foster an intense need for response and to be ignored is to be rejected. In educational settings, communication anxiety caused by fear of rejection can be as detrimental to learning as phobias associated with writing and computers in that it can lead students to avoid the opportunity to learn interactively.

Electronic conferences can cause sensory overload.

When participants do contribute their share to a conference, a great amount of text is generated, so much in fact that James Levin and his colleagues warn researchers that studies in electronic communication result in "a massive number of pages of messages" (186). So while it may be advantageous to have printed transcripts for both research and teaching purposes, the sheer bulk of the printed text can be daunting. It is also daunting in electronic form. In addition to great quantity, there are many different strands or threads of discussion for participants to hold in their minds at the same time. Langston and Batson, in describing a synchronous setting, note that the medium encourages multiple perspectives on many issues from many participants. In trying to give readers a feel for it,
they portray the participants as "prowling wolves" wandering around ideas. The ideas themselves, Langston and Batson argue, are "immediately evident in the seemingly chaotic computerized display of multiple and disparate written contributions.... It is as if many of the thoughts in one social context were present at once" (156). How to process this huge amount of information while at the same time making sense of it is one of the challenges of both synchronous and asynchronous settings.

*Electronic Conferences can be every bit as ineffective as traditional forums for learning*

Despite the enthusiasm that has greeted electronic conferences during the past few years, they are not always successful. Harasim notes that Haile in analyzing a distance education course found "that the activities were teacher-centered and [showed] little evidence of student interaction" ("On-line Education" 52-53). Hawisher and Selfe have suggested that instructors sometimes use networks to keep tabs on students and, inadvertently perhaps, end up creating as oppressive a learning space as might occur in traditional classrooms. Neuwirth and her colleagues found that students perceived the on-line conference only as somewhat helpful in improving their writing compared with face-to-face encounters. And Annette Lorentsen, reporting on her research at Jutland's Open University in Denmark, reminds us of the importance of integrating the conference fully into coursework, or students will not use it. It's that simple. She also reminds us that training teachers for this new environment is essential. As Cynthia Selfe has argued in this volume, it is not enough to prepare teachers as we have in the past: We must, in addition, educate them to be critics of the virtual spaces in which they conduct their writing classes.

**Electronic Conferences, Research, and Social Constructionism**

As with the research on word processing in the last decade, these early studies on electronic conferences reveal an array of findings that have, for the most part, been interpreted in a positive light. I found many more reasons why we should use electronic conferences than why we shouldn't. Like the early word processing research, there are also several surveys that query students for their opinion of the value of the new technology (e.g., Hartman, Neuwirth et al., Neuwirth, Palmquist, et al., Bump Hiltz). The surveys, along with the studies and more informal observations, point to researchers, teachers, and students seeing electronic conferences as holding great promise for writing classes and for educational settings in general. The research itself, primarily exploratory in emphasis,
is also sensitive to the context into which electronic conferences are being introduced. The studies in the main seek to examine the conference as a contextual change that ripples through the whole of the environment rather than as a treatment that creates a particular effect.

The studies and the interpretations of the studies also tend to reflect social perspectives on writing and learning. One of the hallmarks of social constructivist theory is the notion of intertextuality, "the principle that all writing and speech—indeed, all signs—arise from a single network . . ." (Porter 34), that no text exists totally independent of another. As James Porter argues in his important article, "Intertextuality and the Discourse Community," this view of text allows those of us in composition studies to shift our emphasis from the individual to the "the writer [as] simply a part of a discourse tradition, a member of a team, and a participant in a community of discourse that creates its own collective meaning" (35). Although Porter wrote his article before the widespread introduction of electronic conferences to composition studies, his words call forth the dynamics of the conference, with its text-based environment making intertextuality almost visible at a glance—indeed almost palpable. In synchronous and asynchronous conferences, students view one another's networked words at the same time that they are borrowing and using one another's ideas and writings to create their own contributions, their own syntheses (Langston and Batson, Kaye, Feenberg). In this way, the notion of intertext corresponds closely with some of the research findings that are emerging from computers and composition studies as well as from other fields studying the conference.

And certainly the social constructivist view of the "discourse community" relates to early research findings on electronic conferences. Kenneth Bruffee notes that "social construction understands reality, knowledge, thought, facts, texts, selves, and so on as community-generated and community-maintained linguistic entities . . . that define or 'constitute' the communities that generate them . . ." (774). Over time, as members participate in an electronic conference, linguistic norms and conventions come to be established by conference members (Wilkins). The corresponding feeling of community that arises, the fact that participants perceive themselves as a closely-knit group of friends (Selfe and Meyer) who create their own intellectual spaces (Cooper and Selfe), parallels a social understanding of the power of language. Bruffee also points to the importance of the notion of community knowledge to social constructionist in citing Thomas Kuhn's conception of scientific knowledge as "intrinsically the common property of a group or else nothing at all" (201), Bruffee echoes recent observations of the conference. Barker and Kemp have used these views to help them make sense of their observations of synchronous conferences and have coined the term "group knowledge" (15) to describe the textual contributions of a networked class. This idea of
group knowledge demonstrates such a striking correspondence to what happens in electronic conferences that Mason and Kaye, using other words, also draw our attention to it. Their concept of "mindweave," where the ideas of many are brought together in an electronic environment, is in fact one way to depict this notion of community knowledge, a hallmark of social constructionism.

A view of language as socially constructed also tends to see the teacher as one learner among many within the writing class rather than as the prime authority among the members of the class. In describing a class informed by Ira Shor's notions of critical teaching and one that James Berlin believes to be congruent with social epistemic rhetoric, Berlin writes, "This is a place based on dialectical collaboration—the interaction of student, teacher, and shared experience within a social, interdisciplinary framework—and the outcome is always unpredictable" (492). In such a class, there is a decentering of authority where the students' contributions are as valued as the teacher's and, like Porter's and Bruffee's social views of language, Berlin's words evoke the feel of the electronic conference that teachers and researchers continue to document. The majority of the studies of conferencing in educational environments see learning as the result of active engagement and interaction among the participants where no one person or instructor dominates the discussion (Feenberg "Computer Conferencing," Hiltz, Kaye). It is also interesting in the context of Berlin's statement that researchers have remarked on the "serendipitous" nature of the medium where nothing is predictable but many things possible (McCreary, Feenberg "Computer Conferencing"). All these observations seem to support a strong connection between research findings dealing with electronic conferences and social constructionism.

I don't want to imply from this discussion, however, that social constructionism or social views of composition studies are fixed phenomena that can be described as succinctly as Maxine Hairston earlier described process approaches to writing instruction. As Faigley has noted, the social view "is less codified and less constituted . . . because it arises from several disciplinary traditions" ("Competing Theories" 534). Among these traditions, Faigley identifies poststructuralist theories of language and ethnography, all of which have influenced the work of those of us in computers and composition studies. Using poststructuralist theory to inform observations and thinking about electronic conferences (e.g., Cooper and Selfe, Hawisher and Selfe, Barker and Kemp), employing a "situated evaluation" to examine writing classes that use synchronous conferencing (e.g., Bruce and Peyton), and examining the social processes through which participants negotiate meaning (e.g., Faigley "Subverting," Langston and Batson, George), compositionists continue to choose the lens of the social constructivist through which to examine
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electronic writing classes. As teachers immersed in the social theories of writing, we have come to understand the conference as an electronic meeting place of the minds where—with our students—we move ever more steadily toward the virtual age in our thinking and our teaching.

Patricia Bizzell, in a 1986 review of research on composing, notes that when a particular theoretical perspective prevails in a discipline, research results are interpreted in light of the assumptions that the particular view embraces. (At this time she was arguing that research was persistently interpreted with expressive—what she called "personal style"—pedagogical assumptions or with an emphasis on what goes on within the writer's head, the cognitive assumptions.) In arguing that this sort of interpretation is unavoidable, she writes: "Scholars writing up their research, like students struggling with their first essay assignments, must work within the language-using practices of a particular community, which are in turn shaped by its social, cultural, and political circumstances" (68). As social constructivist views have taken hold in composition studies, this argument is perhaps more readily accepted today than it was five years ago. Yet even when we accept this argument and also acknowledge that theory and technology are interactively dynamic—that correspondences between a predominant theory of language and an electronic technology, an artifact of our culture, are inevitable—the similarities remain striking. As the decade progresses, it will be interesting to see the ways in which we continue to study electronic conferences and to interpret the observations, findings, and conclusions that other scholars report. How we go about this work—how we adapt our teaching and research to meet the demands of electronic writing spaces—will largely determine the success with which we are able to serve coming generations of students in the virtual age. 12

Notes

1. Edward Jennings might well be the first writing instructor to conduct such a paperless class in the field of composition studies in the spring of 1985. It was, in any case, the first experiment in a virtual environment to be published in composition studies. Andrew Feenberg points out that David Hughes of Colorado College was the first to use electronic mail for a writing course in 1981 ("The Written World"). See the Works Cited section for a complete citation of Jennings's article "Paperless Writing: Boundary Conditions and Their Implications."

2. In another early experiment, Mark Mabrito used electronic conferences for peer group work. See his dissertation for a complete description.

3. For an interesting discussion of how electronic technology is transforming our understanding of writing to the extent that our definitions (and hence evaluation) may no longer be valid, see Nancy Kaplan's "Ideology, Technology, and the Future of Writing Instruction."

5. See William Wright's chapter in this volume for additional descriptions of the BreadNet electronic exchanges.

6. This is an issue that is especially important for classroom settings. For an interesting discussion of Paul Levinson's desire to teach a class "with as many people in the world as were willing to register" (34), see Harasim's *Online Education: Toward a New Paradigm for Distance Education*.

7. In an unpublished study in which she tried to replicate the findings in a graduate class, Selfe and her colleagues found that gender and status did not predict dominance (Selfe, Pellar-Kosbar, Meyer). She also found that three foreignborn students participated significantly more in the electronic conference than in face-to-face discussions. Karen Hartman, Christine Neuwirth, and their colleagues found in their study of undergraduates that the less able students reported communicating more with teachers over the network than did other students. These last two findings hold promise for us who as writing teachers hope to encourage all our students to participate as equals in class discussions.

8. See Charles Moran, chapter 1, in this volume for a description of how current classes might evolve into 24-hour on-line environments.

9. Although I have tried to distinguish synchronous from asynchronous conferencing, at times I have treated the two as though they were one form of computer-mediated communication. Those working with electronic conferencing know that there are many differences. Synchronous or real-time exchanges are very fast and provide for less reflection than the asynchronous environments. Some might argue that they also need stronger or at least different leadership, if indeed leadership is possible or desirable. I am not aware of any articles that suggest ways in which one type of conference should be used in contrast to the other.

10. For an excellent feminist perspective on electronic conferences, see E. Laurie George's "Taking Women Professors Seriously: Female Authority in the Computerized Classroom," 7 (Special Issue): 45-52.

11. A thoughtful ethnographic investigation that focuses on writing and learning as social activities is the "situated evaluation" that Chip Bruce and Joy Peyton carried out for ENFI, Electronic Networks for Interaction. (ENFI, a synchronous approach for using electronic conferences for writing instruction, was developed by Trent Batson at Gallaudet University in 1985.) For their evaluation, Bruce and Peyton recognized that the introduction of a synchronous electronic network is "but one small addition to a complex social system" (5). Their intent wasn't so much to assess ENFI per se but to observe what happens when teachers try to implement an innovation.

12. I am much indebted to many colleagues who continue to help me understand more about teaching and learning in the virtual age. Among those whose comments and insights have been invaluable are Paul LeBlanc, Springfield College; Ron Fortune, Illinois State University; Patricia Sullivan, Purdue University; Janet Eldred,
University of Kentucky; Robert Yates, Central Missouri State University; and Charles Moran, University of Massachusetts at Amherst.

(Joe Essid can provide copies of Hawisher's bibliography)