Computer conferencing and the Humanities

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Abstract. This paper offers an account of various aspects of on-line teaching based on a humanities teacher's personal experience with several on-line seminars. The paper uses concepts from communications theory to explain the features of computer conferencing most important to teachers in organizing on-line classes.

Computer conferencing makes possible small group interaction through the rapid and convenient exchange of written texts. We are accustomed to experiencing small group interaction only in face-to-face settings. In computer conferencing one essential feature of face-to-face meetings is lacking, the physical presence of the members to each other, but it is replaced to some extent by new forms of textual self-presentation. The fact that interlocutors cannot see each other means they cannot exchange many of the tacit signs that play an important role in resolving ambiguities and establishing social control. Because of this, communication links tend to be more fragile in on-line systems than in a face-to-face setting. This gives rise to a form of "communication anxiety" characteristic of this new medium.

Computer conferences are most successful where they are led by a "moderator" with specific social and technical functions that compensate for the loss of tacit cues in the on-line setting. Teachers can employ the moderating role to organize an on-line equivalent of the classroom. Effective techniques are identified for instructional applications of computer conferencing.

Computers and the Humanities

Few faculty in the humanities expect computers to make a valuable contribution to instruction in their field. As a result, with rare exceptions such as English writing, the liberal arts have not contributed very actively to the computer revolution on campus. This is not necessarily a bad thing if it means that the liberal arts resist the temptation to apply new technology inappropriately at the expense of their traditions, content and mission. On the other hand, the failure of the liberal arts to participate in the process of invention of these new computer based teaching technologies may result in a wider crisis of humanistic learning in the future, when it turns out that the technical infrastructure of the university has been reshaped exclusively in function of the needs of scientific and professional education.

In this context one would expect the liberal arts faculty to be especially pleased to learn of any truly appropriate application of computers to humanities education. I am writing here to describe one such application, called "computer conferencing". It is a new communications medium which can be used to teach

"on-line" classes and seminars.[1] However, computer conferencing has not yet received even the fairly limited degree of faculty attention and support that technologies appropriate for teaching other fields have received.

In large part this is due to the unfamiliarity of the new medium, and the consequent inability of faculty to offer guidance to those in charge of campus computing. But unfortunately there is more to it than that. The two terms, "humanities" and "computers", ring false side by side; the juxtaposition suggests opposition rather than opportunity. Unfair as that association may be, it is a fact that in the humanities suspicion of computers is commonplace and obstructs discussion and change. This state of affairs is not simply due to ignorance; the specific *connotations* of computer technology underlie resistance to it in the humanities. The purpose of this article is to contribute to changing these attitudes through describing, analyzing and evoking the experience of communicating by computer in the hope of exciting the interest of the many potential users of this technology in the liberal arts.

The Medium is the Message

Marshall McLuhan popularized the notion that "the medium is the message", by which he meant that *how* we communicate is at least as important as *what* we communicate. If McLuhan is right, our first step toward understanding the problem of introducing computers into humanities education should be to ask what "message" is implicit in this new technology. Here is one philosopher's analysis, which sums up a whole catalogue of fears about the social impact of computers widely shared by humanists (Lyotard, 1980):

> Knowledge cannot enter these new (computer) channels...unless it is capable of being translated into quantities of information. It is predictable that everything belonging to the constituted body of knowledge that is not so translatable will be abandoned, and that the orientation of new research will be subordinated to the condition that the eventual results be translatable into machine language... Consequently, one can expect that knowledge will be rigorously externalized with respect to the "knower"... The old principle according to which the acquisition of knowledge is indissociable from the education (*Bildung*) of the mind, and even of the person...will fall into disuse. The relation of those who offer and those who use knowledge... will tend to take on the same character as the relation of producers and consumers of goods...Knowledge is and will be produced to be sold...and consumed in order to be amortized in new production, that is to say as an exchange value. It will cease to be an end in itself, losing its "use value" (pp. 13-14).

These conclusions are based on an implicit definition of the computer as an analytic tool and a storage depot for information. These are in fact the most prestigious applications of computers today, the ones which shape an image of the technology completely alien to the spirit of humanistic learning. But this image by no means exhausts the variety of social implications of computers. Here, briefly listed, are some counterinstances which suggest entirely different images of the technology: more chips are used in toys than for computation; hand held calculators have banalized computing "power" and reversed the traditional equation of "big" and "better;" electronic mail is transforming office work and linking computers to telephone lines as communication devices; and the growth of the market in domestic microcomputers is altering the leisure activities of millions of people. These examples are significant because they show just how arbitrary is the emphasis on the principal connotations associated with computers. The rapid progress of computer technology and the development of new applications may soon reverse established ideas about the technology, revealing a new pattern in which the relative "share" of the various applications may be very different from the prevailing one. In particular, communications applications are expected to prove far more important than was expected even two or three years ago. Those who fear computers today may have drawn premature conclusions concerning their social implications from the rather narrow range of applications with which the computer revolution has begun.

Computer conferencing

Computer conferencing is a special kind of electronic mail system employed to facilitate group discussion over a computer network. The technology makes it possible to define private groups, usually no larger than 50, with access to a topically defined discussion forum. Participants type messages into their own computer terminal and then transmit the text over phone lines to a central computer where they are classified and stored. The central computer serves as a remote filing cabinet or bulletin board where all participants can see the latest additions to the discussion and respond. Participants can dip in to the file at times of their own convenience, using the central computer as a "meeting place" for an "asynchronous" conversation that may last weeks or months.

As a communications medium useful for group discussion, computer conferencing is the instructional technology through which the liberal arts can apply computers while retaining their identity. None of the "inhuman" connotations of the com-puter, which define it by implication as antagonistic to humanistic learning, are relevant to this application of the technology. This new medium does not replace the teacher but provides an alternative way for teachers and students to meet. Because all communication takes place in natural language, personalities come

through clearly and students and teachers really feel that they are in each others' presence. Because all the students in the class see each others' comments and ideas, a feeling of group membership develops, and students frequently are able to learn as much from each other as from the teacher. In its application to video and correspondence courses, computer conferencing adds group interaction to the other advantages of distance learning, with its potential for self-pacing and continuing education.

Artificial communication

Computers are widely believed to be "artificial" models of human intelligence. "AI", as it is called, has received a great deal of study in recent years. Computer conferencing suggests a different metaphor which may also prove useful. Instead of considering the computer as a model of the mind, one could look at computer mediated communication systems as "artificial" models of the "natural" communication systems in which we are accustomed to participate. The interesting feature of "AC" is not the use of computer hardware, but the conscious construction of new programs and conventions by which to simulate familiar communication systems, and to make possible new systems not previously conceived. Peter and Trudy Johnson-Lenz (1981) call these programs and conventions "Groupware". "Groupware = intentional GROUP processes and procedures to achieve specific purposes + softWARE tools designed to support and facilitate the group's work". The design of groupware is a necessary function in the construction of artificial communication systems much as interior design is necessary to suit a building for the type of work that is to go on within it. Groupware designers and programmers decide such things as who can have access to what material through what procedure, whether comments are filed according to date, topic, or some other system, the powers assigned to discussion leaders, and so on.

It is *conscious design and selection* which distinguishes groupware most significantly from ordinary social conventions. A parallel distinction is at work in the construction of video games, which offer particularly telling illustrations of this point. There are several video games based on the image of a rebounding ball, one of which resembles a pinball game, complete with cushions and flippers. The image of the ball on the screen obeys the laws of Newtonian mechanics just like the real balls in play in an old fashioned pinball game. Yet there is a subtle difference between the moving point of light on the screen and a ball bearing: the latter, as a moving mass, "must" obey Newton's laws by nature, while the former is merely "instructed" to obey these laws by a programmer. Man cannot alter the laws of nature, but the rules we create for ourselves are conventions, and these we can change. Thus one can imagine a program in which the image of the ball on the screen obeys entirely non-Newtonian principles of motion. (There is already a

"zero-gravity" version of computerized pinball on the market) No similar variants of a real pinball game are imaginable, at least not on this earth. There is an interesting analogy between these games and communication systems. The "laws" of communication we obey in everyday life are, of course, deeply ingrained cultural conventions rather than natural laws. They form the horizon of our communicative practice, beyond awareness and decision for the most part, and although they are not natural laws they are so deeply rooted in our consciousness that they are the next best thing. By contrast, we experience computer conferencing as an "artificial" communication system. The most important rules we obey on this system are obvious products of conscious decisions made either by participants or programmers. Usually these decisions aim at constructing a framework that resembles familiar communication settings, such as meetings or classrooms, but there is a limit to how far such analogies can be taken. Computer conferencing always possesses a subtle "non-Newtonian" character no matter what we do because it works only with written texts where we constantly expect to find speech.

Writing and personal presence

The strangest thing about computer conferencing is the combination of rapid iterations, almost rapid enough to recall spoken conversation, with the restriction of all communication to written messages. This combination of features violates many deeply ingrained cultural assumptions we make about communication.

In our culture face-to-face communication is the ideal paradigm of the meeting of minds, compared with which all other modes of communication are felt to be defective. Communication seems to us most complete and successful where the speaker is physically present "in" the message. This physical presence is supposed to be the guarantor of authenticity: you can look your interlocutor in the eye and sense the tacit signs of truthfulness or falsehood, the context and tone which permit the correct interpretation of the content transmitted in the communication. Computer conferencing helps us to see the limitations of these culturally determined assumptions. A negative view of writing is already clearly expressed by Plato, who argues that writing is an imitation of speech, while speech itself is an imitation of thought. Thus writing would be an imitation of an imitation and lowly indeed in the Platonic hierarchy of being, based on the superior value of the original over the copy. For Plato the essential point is that writing detaches the message from its author. In speech the author is directly present in the message, while no one is present in a text. The message, once detached from its author and become a text can cross time (written records) and space (mail), acquiring objectivity, permanence and mobility, while losing personality (Derrida, 1967).

That we still think about writing much as did Plato is shown by our sense of the different values of face-to-face, written, typed and printed forms of communication. These different ways of communicating form a continuum, going from the

most to the least personal. It has been said that the computer represents a final step toward total impersonality. For example, authorship seems to disappear altogether when texts entered into the computer's memory can be accessed in an order determined by the recipient rather than the writer, in accordance with the recipient's interest rather than the writer's agenda. But is it true that computer communication is a kind of imitation cubed of thought, radically subversive of the personal touch? This expected outcome of the application of computers to communications does not correspond at all to the feelings users have about the medium. Instead, they often have the impression that through computer conferencing they gain a more immediate access to each other's thought processes, undistracted by the status signaling and social games that are played simultaneously with speech in face-to-face encounters.[2]

It turns out that ordinary individuals possess the "literary" capability necessary to project their personalities in written texts. The loss of the interlocutor's bodily presence does not signify impersonality, but freedom from undesirable social constraints. Thus it is possible to use computer conferencing for such intense interactions as learning, "meeting" and even partying. Accustomed roles and relationships reappear in this new communications setting, but subtly changed, sometimes for the better.

Communication anxiety

Entering and exiting face-to-face conversation involves fairly complex forms of politeness called "phatic" functions by semiologists. When we say "Hello, how are you?" we signify our availability for substantive communication. We close the communication line with another set of rituals, such as, "It's time I get along, see you around". Throughout our conversation, we are continually sending phatic signs back and forth to keep the line open and to make sure messages are getting through. For example, we say such things as, "What do you think of that?" or reply, "Yes, go on". Looks and facial expressions tacitly reassure interlocutors that they are still in communication. All such phatic signs are elided in computer conferencing. Even standard codes for opening and closing conversations are lacking. (For a discussion of the emergence of new codes, see Bezilla and Kerr (1979).)

In terms of ease of withdrawal, computer conferencing resembles letter writing, another medium in which phatic functions are quite weak. It is far less rude to fail to respond to a letter than to refuse to answer a direct question in face-to-face conversation. This is excusable because of the delays and uncertainties associated with ordinary mail. Correspondents do not know when, or even if their letters are received, and in any case the technical delay between sending a letter and receiving a response is long and unavoidable, lowering expectations and calling for reserves of patience we quickly lose under the much better technical conditions of computer

conferencing. With this new technology, messages are never "lost in the mail" but are delivered instantly to the central computer, and many conferencing programs allow participants to find out when their messages are received by the addressee. These technical improvements, which make rapid exchanges possible, also mark unusual delays negatively as a possible sign of rejection or indifference since there is no technical excuse for silence.

Paradoxically, then, speeding up and improving asynchronous exchange causes unexpected distress. This is because commenting is a minor but real personal risk, and response is generally interpreted as signifying success while silence means failure. As a sender of a message one needs to know not only *that* it was received, but still more *how* it was received. It is disturbing to lack even tacit signs of approval such as nods of the head, smiles, glances, which in everyday conversation often take the place of explicit response. A participant writes that he finds himself "almost begging this machine to recognize me". This perhaps explains the curious fact that computer conferencing seems to amplify certain social insecurities that no doubt were always there, but which come to the fore in this new medium as what I will call "communication anxiety". The problem arises from the asynchronous character of the medium which works against feeling the full force of the other and weakens the informal, tacit social controls of everyday face-to-face conversation. As a result, messages are frequently left unanswered without the embarrassment we would certainly feel if, for example, we were greeted by an acquaintance on the street and failed to respond. Thus, corresponding to the anxiety we feel about the reception of our own communication, there is an unprecedented casualness about responding to the communication of others.

This is why on-line communities place such an emphasis on obtaining active participation and minimizing merely passive reading of the conference by members who are often pejoratively called "lurkers". The concern with participation may become obsessive, revealing the surprising depths of anxiety often experienced by authors who feel present in their texts but who are not protected by strong social controls from unceremonious withdrawal by their interlocutors.

The imperative of explicitness

In ordinary conversation, when we do not understand what is being said, we are likely to communicate that fact tacitly by facial expression. The speaker will usually pick up our distress immediately and, by adding a sentence or two on the apparent subject of confusion, resolve the problem before explicit and possibly embarrassing notice of it need be taken. Complete withdrawal in the face of minor communication problems is thus relatively unusual because it is perceived as far more rude than bringing into play the sort of tacit corrective measures that generally suffice to straighten out misunderstandings.

Computer conferencing places a higher premium on clarity and explicitness because these tacit correctives are unavailable. It is embarrassing to concede confusion in writing, and the delay between message and response compounds communication problems. As a result, one commonplace way of dealing with unclear and ambiguous messages is to keep quiet. When a message succeeds only in reducing the interlocutors to silence, it has clearly failed in its purpose, but it may be some time before the writer becomes aware of the problem and can take explicit corrective action. The tenuousness of computer conferencing thus imposes a degree of clarity and willingness to discuss communication problems that is rarely experienced with any other medium.

Participants frequently respond to this situation by adopting the sort of techniques typically employed by writers, such as the use of redundancy, which reduces ambiguity by narrowing the range of meanings and connotations of terms. The multiplication of slightly different ways of presenting the same ideas, using synonyms and different encoding schemes, increases the likelihood of the message getting through. But these techniques have the disadvantage of violating another important rule of computer conferencing, the imperative of brevity, which responds to the constant danger of "information overload". A clear message that is so long no one bothers to read to its end may be even more demoralizing for conference participants than a short, ambiguous message that can be ignored.

While it is generally clear that in all communication length must be matched to complexity, it is not always easy to find the right trade-offs between brevity and clarity in particular cases. Two models of effective on-line communication obey each of these two imperatives. They are the telegram and the memo, each of which corresponds to the needs of a different type of on-line group.

Many computer conferences work well with brief messages of half a dozen to a dozen lines. Telegraphic messages represent an extreme trade-off of clarity against brevity. They are inherently more ambiguous than other forms of communication because they completely eliminate redundancy. Some computer conferences achieve quasi-telegraphic solutions to the clarity/brevity dilemma through using technical language to discuss a very sharply defined theme. Technical languages are designed to restrict the semantic range of terms, thereby reducing the need for redundancy.

The memo model supplies a clear context for the ideas presented and uses an outline format to organize points, helpful techniques of group communication. The memo model yields comment lengths in the hundreds of words rather than short bursts of a few lines. This is particularly appropriate in educational conferences which, at least in the humanities, have a fairly fluid context and participants with very different backgrounds. In these conferences one cannot assume a shared technical language but must use ordinary language to introduce and explain the technical content. Long messages tend to be the rule for the moderator at least and, where the students are well qualified and interested, for them as well.

The moderating role

Like other small groups, those organized through computer conferencing are most successful when skillfully led. The basic technical conditions for exercising leadership are usually defined in the conferencing program itself as a "moderating function" to which various powers are assigned: to set up groups of participants as "conference members", to establish and name a file in the central computer in which to store the discussions which make up a conference, and sometimes to delete irrelevant messages from the file or perform other related tasks of conference management. These technical powers represent, however, only a small part of the moderating "groupware", which Hiltz and Turoff (1978) describe as follows:

> In order for a computerized conference to be successful...the moderator has to work very hard at both the "social host" and the "meeting chairperson" roles. As social host she/he has to issue warm invitations to people; send encouraging private messages to people complimenting them or at least commenting on their entries, or suggesting what they may be uniquely qualified to contribute. As meeting chairperson, she/he must prepare an enticing-sounding initial agenda; frequently summarize or clarify what has been going on; try to express the emerging consensus or call for a formal vote; sense and announce when it is time to move on to a new topic. Without this kind of active moderator role, a conference is not apt to get off the ground (pp. 23-24).[3]

These are critical social functions which cannot be installed in a computer program. In the next few sections, I will propose some hypotheses about the nature of these functions, but before passing on to that discussion I would like to offer one further remark on the general problem of on-line leadership, which is undoubtedly *the* crucial problem of conferencing (Feenberg, 1986; Kerr, 1986).

More often than not, when conferences fail it is because the person in charge is unable to overcome the initial difficulty of transposing leadership skills acquired in face-to-face settings to the on-line setting. The usual way in which we learn to play dominant roles is through our experience in dominated roles. Thus the ability to chair a meeting is widespread among people who have attended meetings; and the ability to teach is readily cultivated by many who have been taught. It is in the course of these experiences that participants acquire an understanding of the implicit codes on the basis of which the group communicates. But since so few people have participated in computer conferences, it is often difficult to find an experienced leader who knows the on-line equivalents of the codes operative in face-to-face groups. Furthermore, the codes of on-line activity are still very much in formation and to some extent each moderator contributes to inventing them. These are transitional problems, but for the moment they are very real and suggest the need for specialized conferences on every conferencing system where moderators can exchange experiences and pass down lore.

The contextualizing and monitoring functions

To understand the need for moderating, one must begin with an appreciation of the total strangeness of group communication without a tacit dimension. What I will call the "contextualizing" and "monitoring" functions are explicit substitutes for the massive flows of tacit information concerning appropriate and relevant communication that guide talk in everyday face-to-face settings. These two functions complement each other. Contextualizing functions concern the establishment of a general context of communication through explicit statements by a moderator authorized to bring the group into existence by speaking in its name. Monitoring functions offer explicit verification of the accuracy of each participant's judgments about the nature of that context, implied in the way the participant addresses the group. The skillful performance of these functions is a precondition for effective computer conferencing.

In order to have a successful computer conference, the moderator must choose at the outset what I will call a "communication model" for the group. The basic human relationships of communication (the "pragmatics" of communication) differ in characteristic ways from one type of communication model to another, for example, in meetings, courses, informal conversations, parties, doctor's visits, and so on. As soon as we enter a room, we orient ourselves more or less consciously in function of tacit cues we notice in the context of the communication process we are about to join. These contextual cues establish a shared communication model from which flows norms, roles and expectations. Since no tacit cues visible in the environment can establish a communication model for participants in on-line discussions, moderators typically must make an explicit choice for the group they lead, reducing the strangeness of the medium by selecting a familiar system of roles and rules imitated from everyday life (Vallée *et al.*, 1975).

The contextualizing function has the unusual semiological property of proceeding largely through the use of what are called "performative utterances". These are statement which bring about the very reality they describe. An example would be the Principal's statement to the assembled scholars to the effect that "School is now open for the new term". Such an utterance effectively "opens" the school and so is called "performative". Performative utterances appear frequently in the contextualization process by which activities are initiated with a shared understanding of norms and purposes (Austin, 1962).

In face-to-face interaction, performatives play a relatively small role because so much tacit contextualizing information is available to establish the communication model. In computer conferences, on the contrary, explicit contextualization is required to indicate to all participants the communication model that will govern their interactions. Unless someone opens the conference by saying "This is a meeting", "This is a class", or "This is a bull session", the participants have no

way of being sure what kinds of contributions are relevant and appropriate to the essentially imaginary "situation" in which they find themselves. The moderator's contextualizing functions are therefore all-important in relieving some of the anxiety participants experience in a communication setting that is undefined by tacit contexts.

Once a communication model has been chosen, the moderator must play the specific leadership role implied in that model, such as chairperson, host, teacher, facilitator, entertainer, and so on. In large part, this role will consist in reassuring participants that their contributions to the discussion really fit the model. Conferencing participants are haunted by the lack of tacit signs of approval, which, in a face-to-face setting, would normally assure them that their remarks were appropriate in the context. The resulting communication anxiety may silence individuals who would speak if only they had the minimum feedback necessary to feel welcome and at home in the conversation. It is the moderator's function, shared to some extent with other members of the conference, to insure that everyone receives this feedback.

Reflexive communication

The term "metacommunication" refers to communication about communication. Metacommunication is particularly important as a means for re-establishing a threatened communication link by calling attention to problems in the communication process. Once again, the moderator has the heaviest responsibility for this function, although others may metacommunicate as well and often do so in typical conferences.

One of the originalities of computer conferencing is the intensely self-conscious character of the new medium. Typically, both participants and moderator are involved in reflection on the meaning of the conference and the communication problems it engenders, and they share these concerns with each other explicitly. The need for explicit metacommunication is particularly great among new users, whose interactions are often nearly contentless at first. Although the frequency of metacommunication declines with experience, it remains a salient feature of the medium. A face-to-face conversation as self-consciousness as a typical computer conference would be a strange experience indeed.

Most metacommunication in face-to-face interaction is tacit although occasionally we engage in explicit metacommunication, as for example, when we ask our interlocutor to speak up or to come to the point. However, tacit signs, cues we give with our bodies and tone of voice are so effective that we can often carry on quite complex conversations without ever employing explicit metacommunication. Not only can we get along most of the time without making our meta-messages explicit, it is often embarrassing to do so. But in computer conferencing

we no longer have the luxury of tacit cueing. The only such sign that we can still transmit is our silence, a message that is both brutal and ambiguous, far more so than the subtle uses of tone of voice, expression and gesture on which we normally rely for tacit metacommunication. Thus our only means of dealing tacitly with communication problems is itself a major source of problems.

The solution to this dilemma is explicit metacommunication. Whenever communication problems arise, participants must overcome their inhibitions and send comments that ask for further explanation of unclear remarks, call attention to problems of information overload, request clarification of emotional tone and intent, suggest changes in the rules of the conference, and so on. In this way communication lines can be kept open during difficult moments by avoiding the recourse to silence as a particularly destructive form of tacit metacommunication.

The art of weaving

Meta-comments oriented toward the content of discussion are called "weaving" comments.[4] These are messages which summarize the state of the discussion, identifying its unifying themes and underlying points of disagreement. These comments represent an extreme case of the reflexivity of computer conferencing. The task of writing them involves a relation to discourse which is characteristically literary, a command of the language world "from above".

The writing of weaving comments is particularly difficult and time consuming. Many conferences lack weaving because no one has the time or the talent required to perform the function for the group. This is a pity since, as a written medium, conferencing offers unique opportunities to use weaving to advance the agenda of the group. The conference moderator can go over printouts carefully, refreshing the memory of earlier discussions, clarifying confused expressions, identifying the themes, making connections, "indexing" the material mentally.

The weaving comments written on the basis of this sort of review then supply a unifying discourse, interpreting and integrating participants' contributions, and periodically "retotalizing" the unfolding discussion by drawing its various strands together in a temporary synthesis that can serve as a starting point for the next round of debate. Only the most brilliant conversationalists can do this sort of thing in face-to-face settings. Our memories are not organized to manage huge blocks of spoken language "from above" but "from within". We navigate a flow in spoken language, but can distance ourselves from written text enough to translate it into our own terms and categories.

Weaving comments are essential to giving on-line groups a sense of accomplishment and direction. They supply the group with a code for framing its own past, and thereby establish a common boundary, shared by the whole group, between past, present and future. These comments mark satisfying discontinuities in

the time of the conference, comparable with the repeated adjournments and beginnings of meetings or classes that make it possible for us to simplify our lives by shoving outdated material back into the past where it can rest on the penumbra of our awareness, while focussing themes that require concentrated attention in the future.

Absorption

What kind of social system arises in the on-line space created by computer conferencing? Conferencing is frequently said to build community, and often it does so, but the idea of community is too narrow as a general definition of the sociability that holds together the participants in a shared on-line activity. A group of intensely involved individuals may succeed in writing a successful conference whether they *also* form a community or just a temporary gathering. In fact communities sometimes fail at conferencing while people who scarcely know each other succeed. Rather than focussing on the concept of community to explain the type of social cohesion characteristic of conferences, it would make sense to study the dynamics of conferencing on its own terms. This may open a way to understanding the specificity of the groups that form and flourish in this medium.

Conferencing dynamics are essentially a matter of the management of time, both the personal time of the participants and the overall time of the conference. To some extent these dynamics are reducible to such extrinsic factors as job requirements or the need to accomplish a mission. But conferences are surprisingly fragile and no amount of external necessity seems able to save hopelessly mismanaged on-line groups. One observes something similar in face-to-face meetings, which require not only an extrinsic *raison d'être* but also the kind of skillful management that makes real accomplishment possible in the framework of the meeting as a communication system. The key question about the social cohesion of conferences therefore concerns the sources of participant motivation to sign on day after day whatever the extrinsic reasons for which the on-line activity was initiated. Related to this is the question of how the framework of the conference empowers its members to contribute comments that motivate others to sign.

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. Every comment has a double goal: to communicate a content, and to evoke the (passive or active) participation of interlocutors. If computer conferencing were to be conceived as a game, then playing it would consist in making moves that keep others playing. The goal would be to prolong the game and to avoid making the last move. This is why computer conferencing privileges open-ended comments and forms, which invite a sequel, as opposed to whatever is closed and complete in itself. Erving Goffman introduced the term

"absorption" or "engrossment" to describe the force that draws us into an encounter such as a game (Goffman, 1961). The concept of absorption refers to the typical concentration on a shared purpose among people who do not form a community but have accepted a certain context of common work or play for an intense but temporary relationship. The term in fact evokes very nicely conferencing participants' feelings about an exciting conference. They are "absorbed" in the activity as one might be in a game of poker or bridge.

Textual production

The comparison of conferencing with a game is suggestive but omits the strangest aspect of the activity, the fact that the "game" consists in writing and reading texts. Computer conferencing is in fact a new form of collaborative writing. From this point of view, a completed conference forms a single text with several authors rather than a collection of singly authored texts. Naturally, there are conferences which have no real unity, and which are in fact anthologies of texts by individual authors but these "monologic" conferences do not employ the medium to its fullest capacity. One of the most exciting things about computer conferencing is its power to achieve something more than this, a real "meeting" of the minds, if not necessarily agreement between them.

How does a conference acquire the kind of coherence we associate with a text? Normally, when several authors collaborate they revise each others' contributions, and it is this which makes a collective product of the resulting text. In conferencing the order of production bears no necessary relation to the order of the final product. Participants generally lack a commonly agreed on plan or outline and cannot modify each other's contributions. The order in which messages are deposited in the conference is fixed and no final revision brings the ideas of each to bear on the others' actual formulations. A large measure of contingency and unpredictability is intrinsic to this process, far more so than to ordinary collaborative writing. The work of giving coherence to a conference might be called "textual management" to signify the kind of collaborative relationship characteristic of this medium. The various moderating functions discussed above are the means of textual management available in computer conferencing. As we have seen, these functions include requesting comments from participants, setting an agenda for the conference and pulling the conference together periodically around a common theme. This list suggests yet another metaphor for conferencing since these means might be better compared with those at the disposal of the leader of a jam session rather than with those employed by the editor of an article or book. Each participant takes his or her turn at "improvising" a contribution to the group's performance under the loose direction of the moderator.

Games, writing and jazz improvisation each supply a piece of the puzzle that is computer conferencing. These pieces come together in the idea of the conferencing as an *improvisational game played with text.* From the world of writing conferencing borrows the unique property by which texts propel us forward from the first to the last line. Texts establish patterns of expectation and deploy suspense and surprise to generate intrinsic motivations for continuing to read. In conferencing these motivations are transformed in the course of "play" into the cement of a continuing social interaction that consists in the exchange of "improvised" texts.

Conferencing genres

Computer conferences differ according to the "generic" rules which govern their production. The term "genre" is used here in much the sense that a literary critic would use it to distinguish between the novel, short story, tragedy, and so on, with the paradoxical difference that here textual analysis is sociological analysis. A rudimentary classification of genres employed for teaching on-line seminars would include: narratives, which tell a story; expositions, which follow a linear logic, for example, passing from premise to conclusion or from general to particular; dialogues, based on a question/answer format; and essays, which develop general ideas out of an "occasion" of some sort, an incident for example that is particularly rich in implications.

The various conference genres each have their own way of evoking participants' continuing interest. The story genre uses suspense to create a "reading machine" that keeps participants checking in day after day. The story begins with "set ups", materials that awaken expectations, which must eventually be satisfied in "pay offs" at the end. However, story telling seems to discourage interaction, which interrupts the flow of the narration, and therefore diminishes the element of surprise so frequently supplied by participants' unexpected encounters with each other.

Expositions motivate participation by proceeding logically to the solution of a problem posed at the outset. This is a technique which works well in the classroom and most lectures employ it, but it is less successful in conferencing because it suppresses both the elements of suspense and surprise. To follow a logical exposition one normally needs to know where it is going. Thus it is customary in an expository lecture to begin by posing a problem and suggesting the solution to which the remainder of the lecture will lead. But if participants know the conclusion in advance, they experience no suspense and may even consider the exposition redundant; and in any case they are discouraged from interrupting the logical flow of the exposition with contributions that express their own unique "take" on the problem. Purely expository materials are therefore best distributed to participants on paper to serve as part of the context of the conference, rather than introduced as the main content of the conference.

Dialogue conferences are indispensable for certain purposes such as technical support, but they have the disadvantage of focussing all attention on one-on-one exchanges between the teacher and the individual students. The students do not interact among themselves and so a part of the potential interest of the conference is lost.

The genre most suited to teaching is the essay. Essay conferences begin with an example, an "occasion" that has been selected because it is particularly rich in general implications. The occasion serves as a point of entry into the theme of the conference, and participants are encouraged to comment on it and to draw their own conclusions about it. The moderator too enlarges on the occasion, offering his or her own interpretation of its meaning. As the conference proceeds, the moderator may advance the agenda by introducing more such occasions. Thematic unity and interaction are reconciled in the essay by the fact that a single concrete instance, the occasion, is used to discuss a general theme.

The essay conference invites many-faceted and open-ended discussion because the occasion on which it is based can be approached from as many different angles as there are participants. Since by its very nature the essay consists in "comments" on its occasion, this genre suits the existing conferencing software remarkably well, and offers opportunities to use weaving to deliver a great deal of information without stifling discussion. While the linear narrative or expository logic of the other genres is interrupted by participants' comments, the fragmentary form of the essay is enhanced by interactive uses of the medium. There is room here for both suspense and surprise, the two sources of intrinsic motivation to participate.

Conclusion: Computer conferencing and literary culture

In this article I have presented an analysis of computer conferencing as a communication system increasingly available for educational applications. The discussion supports the hypothesis with which I began, namely, that computer conferencing is uniquely suited for liberal arts teaching.

Computer conferencing as an instructional medium requires dialogue not simply as a desirable pedagogical approach, but as a condition for the very possibility of successful on-line teaching, which can only flourish where much of the content is supplied by students. The on-line teacher therefore leads most effectively by encouraging personal viewpoints and diversity of opinion rather than through offering authoritative solutions to the problems posed in the course. Students are encouraged to develop and apply their own ideas: to "play the game", they need to have an individual viewpoint to express. At the same time, the conference creates a public space in which the viewpoints can be confronted and tested under the direction of an informed discussion leader.

The moderating abilities required by conferencing pedagogy involve precisely those skills developed by liberal arts training, such as interpretive skills, the ability to synthesize, to offer criticism and analysis of opposing viewpoints, to enlarge contexts of discussion, and so on. Computer conferencing is, on these terms, an essentially literary medium particularly apt at developing individuality and offering a privileged terrain for the application of humanistic skills to teaching.[5]

Acknowledgements

Notes

1. The Western Behavioral Sciences Institute offered a distance learning program based on computer conferencing as of January, 1982. It appears to be the first institution to adopt computer conferencing as the principal means of delivering an educational program. Courses are now offered at several other institutions, including the New Jersey Institute of Technology, the New York Institute of Technology, and the New School for Social Research.

2. Douglas Strain, a participant in my first course, substituted computer conferencing for face-to-face interaction for certain purposes in his firm. The results were surprising, as he reported: 'Preoccupation with another person's physical presence may be both intimidating and distracting rather than helpful, as is often supposed. Lack of physical presence is a characteristic of this medium that I find helps me concentrate on the content of the message itself. I am reminded of one of the younger women in our plant who remarked to me after a few weeks of interfacing with her (primarily) male superiors on her terminal, "I thought I was a liberated woman until I got up on this terminal and found out what real liberation was like!" For an extremely useful study of the human side of teleconferencing, see S. R. Hiltz and M. Turoff, The Network Nation (Reading: Addison-Wesley, 1978), Part I, Chapter 3, pp. 76 - 130.

3. For interesting examples of the effective and ineffective use of computer teleconferencing, see Johansen, Vallée, and Spangler (1979), pp. 59-84. This book contains a valuable bibliography of early research in the field of computer conferencing.

4. Leif Smith of the Denver Open Network first introduced the term "weaver" to describe a person who "sees patterns and can make connections". A weaver "organizes serendipity". Weavers may connect people to people or to information.

5. Lyotard's concept of "paralogic legitimation" (Lyotard, 1980, pp. 103-108), with its emphasis on the value of dialogue without consensus, lies precisely at the intersection of the "old" humanities and "new" technologies.

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