

did not even have to know the kinds of people who might be helpful—their locations, their organizational positions, their department, and so on. Thus his request and responses to it could be exchanged efficiently. Something else is important about this message. The sender not only did not have to know his audience, but he could not have known his audience, at least not in the same way he would have known them had they been in the same room, or on the telephone with him, or even had he written to them by postal mail. Reread the message in box 2.3. Ask yourself, “Where are the recipients located?” “What is their position in the organization?” “How interested do they seem?” “How likely are they to take the message seriously?” Information about the people who receive the message is lacking. Now consider what the recipients of this message would know about its author. Notice that the message is text alone, as letters or memoranda are, but also that it lacks information about the author’s physical setting, organizational position, hierarchical status, departmental affiliation, race, age, appearance, and even gender. The form and style of the message is neither formal nor informal, project specific nor general. It looks like neither a corporate memo nor a note someone might stick on an office door.

Text exchanges contain no dynamic personal information such as tone of voice. Electronic text exchanges also contain little static information that relates to place, position, and person. From the sender’s side, the large and easily accessible audience is a social hodgepodge. From the receiver’s end, all electronic mail looks pretty much the same. A person receiving a message learns very little about the sender’s social position—not even the information that a letterhead or a signature placed at the bottom right side of a letter conveys. An electronic mail message also contains scant information about a situation’s norms. Reminders of the sender’s setting are unavailable. Of course, people may possess relevant information from other sources, but the message itself provides few cues to evoke that knowledge. Many receivers’ only clues to a sender’s identity and situation are his or her computer name and address. The practice in many computer systems of giving people IDs that computers understand but people don’t removes even this identity cue. Consider the following three computer addresses: AS6Y@ANDREW; DAS@FAS.RI; HAS@A.GP.CS. These are the computer names and addresses of the three employees of our university whose last name is Simon. One is a secretary, one a staff engineer, and one a Nobel prize winner. Who’s who?

2) Ephemeral Communication

Although computer-based communication systems may permanently archive all electronic messages, people perceive the experience of sending and receiving messages as an ephemeral one. The immediate experience is conveyed by fingers moving on a keyboard and phosphor flickering on a screen; messages appear and disappear with the touch of a button. There are no tangible artifacts like someone sitting across a desk or ever growing piles of paper or bulging filing cabinets to remind people of their participation in communications exchanges. The lack of tangible artifacts and perceived ephemerality cause people to lose mental sight of their communication partners. As one participant in a pharmaceutical company electronic conference put it, "When I discuss something on DIALOG, in the back of my mind I know somebody else is going to hear it, but it isn't as obvious as if we were all in one room. It's like I know the tape recorder is running, but I kind of block it out" (Zuboff 1988:370).

When people perceive communication to be ephemeral, the stakes of communication seem smaller. People feel less committed to what they say, less concerned about it, and less worried about the social reception they will get. Testimony in the Iran-Contra hearings shows that while the computer system used by the White House staff automatically saved all message traffic, and staffers knew it, people forgot that messages deleted from their screens had not in actuality disappeared. People such as Oliver North took care to disguise and hide their face-to-face discussions and hard-copy memoranda about inappropriate or illegal activity. They were lax about their privacy when they communicated using the electronic mail system.

3.2 Let Your Fingers Do the Talking

Ordinarily when people communicate, they aren't just exchanging information; they are projecting an image of themselves. This knowledge can make them shy in front of others, especially those whose respect they most desire. Ephemerality and plain text in electronic mail reduce the fear of appearing foolish in front of others. By removing reminders of a possibly critical audience, electronic mail induces people to be more open (Sproull and Kiesler 1986).

(1) Ignoring Social Boundaries

Birds of a feather flock together. This aphorism summarizes both what is right and what is wrong about communication in organizations. Limiting

interaction and information exchange to like-minded colleagues shields people from unnecessary information. It also can lead to organizational disaster by separating people from information they need to know. Cues in organizational settings reinforce social differences that systematically separate people from one another. Office size and decorating schemes are reminders of status differences.² Clothing reminds people of the difference between white-collar and blue-collar jobs. Age, gender, race, beauty, wealth, and composure are “read” from voice and appearance. Reminders of these sources of inclusion or exclusion disappear or fade with computer-based communication.

All communication technologies weaken social differences apparent in face-to-face communication. The telephone eliminates visual cues and therefore reduces one’s ability to deduce the other person’s social position and to grasp the importance of social differences in the interaction. Over the telephone, though, one retrieves some social information in nonvisual form. The secretary who answers or places calls, variations in standard ways of greeting, and pauses and tone of voice all convey social information.

Shoshana Zuboff (1988) describes how a computer conference system in one firm brought together people from different functional areas and diverse social backgrounds. The remote and textural qualities of the computer, she says, eliminated peoples’ advantage or disadvantage over one another. Those who regarded themselves as physically unattractive reported feeling more lively and confident when they expressed themselves in a computer conference. Others with soft voices or small stature felt they no longer had to struggle to be taken seriously in a meeting. One employee said, “DIALOG lets me talk to other people as peers. No one knows if I am an hourly worker or a vice president. All messages have an equal chance because they all look alike. The only thing that sets them apart is their content. If you are a hunchback, a paraplegic, a woman, a black, fat, old, have two hundred warts on your face, or never take a bath, you still have the same chance. It strips away the halo effects from age, sex, or appearance” (Zuboff 1988:371).

As halo effects were removed, peoples’ competence and ability became recognized, independent of their position or appearance. Zuboff claims that DIALOG’s participants built reputations based on the quality of their messages and their helpfulness in being informative. One participant noted that “lots of people have power that is not knowledge-based: it is forceful and based on their personality or position. In DIALOG, the power lies in

the ability to communicate and pass on knowledge. I have extended my power base through my knowledge rather than through intimidation or style. It is strictly now the quality of your ideas, the way you put things in words, or your sensitivity to what others say that now determines your influence” (Zuboff 1988:371).

2) Self-Disclosure

In the mid-1960s an MIT computer scientist wrote a program named ELIZA that parodied a Rogerian psychotherapist. When a person typed in a statement appropriate for an initial visit to a psychotherapist, ELIZA would reply with a supportive response based on simple pattern matching keyed to a response script. For instance, if the “patient” typed a statement containing the word *mother*, the reply might be, “Tell me more about your mother.” The author of ELIZA, Joseph Weizenbaum, was appalled to discover that people found it involving and gratifying to tell their troubles to a computer program.³ He thought that they should know better than to talk to a computer “as if it were a person who could be appropriately and usefully addressed in intimate terms” (Weizenbaum 1976:7). What perhaps he did not realize is that, far from being appropriate and useful, honest self-disclosure to real people can often be inappropriate, offensive, or ego bruising. Perhaps the people “talking” to ELIZA were so intimate precisely because they knew there was no human being who would hear and judge their remarks.

Today organizations are beginning to use computer-based communication as a way to collect information from customers and employees. Unlike ELIZA, there is always a person at the other end of the question-asking program to read and evaluate the collected information. Market research firms, personnel departments, and hospitals are beginning to experiment with electronic questionnaires. The questions appear on a computer screen, and people type their replies directly into the computer. (We distinguish between this method, which includes informed consent to participate, and random-digit-dialing automated telemarketing, which does not.) The advantage of computer interviews over face-to-face interviews is that the computer always treats everyone the same way and never gets tired. The advantage of these interviews over paper questionnaires is that the computer can ask follow-up questions in a branching design based on respondents’ answers. With branching, the questionnaire becomes more like an interview—it can cover more topics tailored to the respondent, is more

fun, and seems shorter even when it isn't (Synodinos and Brennan 1988). Because answers go directly into computer memory, the method also eliminates transcription costs.

Computer interviews, like electronic mail, create a feeling of privacy. This sense of safety makes interviewees somewhat more willing to disclose information than they are willing to disclose in face-to-face interviews or on paper-and-pencil questionnaires. One of our research projects monitored the outcome of an official university poll of students. Among the students randomly assigned to fill out a paper-and-pencil version of the survey, only 3 percent admitted using illegal drugs at least once a week for recreational purposes. Among the students assigned to receive the survey by electronic mail, a significantly greater 14 percent made the same admission. In another study, we asked people to describe themselves. The sample was divided into two groups—one that answered an electronic survey and one that answered a paper survey. The respondents were randomly assigned to each group so that other systematic differences between the groups were balanced out. Each group was assured that the survey would be completely confidential and private. (Technically, anyone answering a computer survey can be traced, but people feel more exposed when answering on paper or in a face-to-face interview.) Table 3.1 displays some ways respondents in the study answered questions about their behavior. A significantly higher percentage of those who answered on paper cared about "looking good."

The self-disclosure induced in computer interviews has more honesty than that in other methods. Researchers in Scotland looked at whether a computer interview could be used to measure alcohol consumption. As judged by actual sales of alcohol, traditional survey methods measure only half of consumption. Table 3.2 displays the consumption of alcohol respondents reported to a computer as compared to answers given to an interviewer. The alcohol consumption reported in the computer survey was higher than that reported in the face-to-face interview. Also the consumption figures from the computer interviews much more closely matched alcohol sales figures than did the consumption figures from the face-to-face interviews.

Advances in artificial intelligence, along with the discovery that self-disclosure can be extremely comfortable for people interacting with a computer, have encouraged the development of computer-administered interviews. There are electronic surveys for doing market research, em-

Table 3.1
Percentages who responded "true" to questions about good behavior

	Paper survey	Computer survey
I am always careful about my dress	50	20
I always try to practice what I preach	79	72
I would never think of letting someone else be punished for my wrongdoings	87	57
I never resent being asked to return a favor	74	59

Source: Kiesler and Sproull (1986).

Table 3.2
Weekly consumption of alcohol reported by a sample of men in Scotland

	Personal interview	Computer interview
Glasses of beer	15.0	19.0
Glasses of wine	1.2	1.7
Shots of whiskey	3.4	5.4

Source: Waterton and Duffy (1984).

ployment and personnel evaluations, tutoring, career guidance, psychiatric and medical diagnosis, and even psychological counseling.⁴ One such program, named *Sexpert*, is designed to provide counseling for couples with sexual dysfunctions. The program carries out a series of interviews with the couple, "talking" to each of them independently and to both as a couple. It keeps a record of their responses and uses the information it gleans to determine its next responses and therapeutic plans, including "homework assignments" and coaching. Box 3.1 displays a segment from one session.

Sexpert is one of the few computer interview programs to be evaluated in controlled experiments. In a recent study (Binik, Westbury, and Servan-Schreiber 1989), people used *Sexpert* for a short time. Before and after this interaction, the researchers administered attitude measures about computerized sex therapy. Two control groups got identical measures but

different experimental manipulations. In one, the control group interacted with a computer program unrelated to sex. In the other, they filled out a sex-related paper-and-pencil questionnaire with questions identical to those asked by Sexpert. The results showed that before the experimental manipulations, all participants believed that using a computer for sex therapy was little better than reading a book and far worse than seeing a human expert such as a psychologist or physician. After the experiment, strong attitude shifts in favor of computerized sex therapy occurred in those who had used Sexpert. No attitude changes occurred in the control groups.

Comments about Sexpert suggest that this program simulates an unthreatening, knowledgeable human, inspiring respondents' confidence. The developers of the program report their "amazement" at videotaped sessions in which couples were "clearly engaged" by Sexpert and "seriously discussed their sex life, relationship, and Sexpert's comments with each other." In describing one couple they say, "The couple reported after the session that they had discussed together for the first time several critical

Box 3.1. Computer-administered sex therapy

This is a "discussion" that a couple had with a computer. Responses of the couple to the computer are given in italics. We do not include a record of what they said to one another:

Rhoda, did your parents talk to you about sex when you were growing up?

no

Children often consciously or unconsciously interpret their parents' silence concerning sex as an indication that sex is bad or at the least is something not to be talked about. Obviously, parents who are uncomfortable talking about sex or who are themselves misinformed may also transmit negative messages. One way or the other, it isn't very useful to blame them for this. I suspect they tried their best and were probably only acting like their own parents. Now it is up to you to improve on it for yourself.

Did you learn about sex from other sources such as books, friends, siblings, school, etc?

yes

Do you feel the information you got was accurate?

yes

I'm really pleased to hear that. Most of my clients do not feel that way. Although accurate information about sex is highly desirable and often helps sexual performance, it is sometimes not sufficient to insure a pleasurable sex life.

Have you experienced any sex related events such as rape or incest that were traumatic for you?

- 1 you have
 - 2 you have not
 - 3 you don't want to talk about it
- 1

[Here the client's answer triggers a "sexual trauma dialogue plan" that temporarily interrupts the dialogue plan related to the discussion of orgasmic concerns.]

Ron, are you aware of what happened?

nq

I'm not sure why you haven't discussed this, however there are often valid reasons to avoid such a discussion. The most immediate reason may be that discussing or even thinking about what happened can bring back many of the emotions and fears related to it. I'm a little concerned that I've raised an issue that you might not be ready to deal with. If one or both of you feel this way, it may be better to further delay discussion. It may also be highly advisable to see human help concerning this.

Rhoda, do you want to continue talking about this now?

no

Fine, let me just say that even if we were to discuss the details of what happened, it would be very difficult for me to know how your sex life would have developed had this trauma not occurred. I hope that it is reassuring for you to know that there are many women who experienced a sexual trauma but were able to develop their orgasmic capacity.

Source: Servan-Schreiber and Binik (1989: 254-255).

issues concerning their sexuality and that as a result they felt increased intimacy, openness, as well as comfort with their sexual feelings" (Servan-Schreiber and Binik 1989:257).

It may seem curious that people would answer threatening or sensitive questions more honestly on a computer than in other forms. Nearly everyone knows a computer can store everything one says. Yet people interacting on a computer are isolated from social cues and feel safe from surveillance and criticism. This feeling of privacy makes them feel less

inhibited with others. It also makes it easy for them to disagree with, confront, or take exception to others' opinions.

(3) Flaming

"If you can't say something nice, don't say anything at all" is a common social convention—and one often forgotten in computer-based communication. Electronic messages are often startlingly blunt, and electronic discussions can escalate rapidly into name calling and epithets, behavior that computer buffs call flaming. (According to *The Hacker's Dictionary* [Steele 1983:65], to flame is "to speak incessantly and/or rabidly on some relatively uninteresting subject or with a patently ridiculous attitude . . . Synonym: Rave.") As a consequence of the low level of social information in computer-based communication and its perceived ephemerality, people lose their fear of social approbation. Moreover, they imagine they must use stronger language to get their message across.

Because a person composing an electronic message lacks tangible reminders of his or her audience, the writer can easily forget the norms appropriate for communicating with that audience. Also, the writer lacks paralinguistic resources to help convey his or her ideas. Resorting to ever stronger language is a common result. Box 3.2 displays a message sent by an employee via an electronic distribution list to all the people who worked in his building. It is inconceivable that the writer would have spoken that message to its three hundred recipients had they all been assembled in an auditorium. It is also highly unlikely that the writer would have posted hard copies of the message on all the bulletin boards and exit doors of the building. (By printing this message in a book, we are distorting its original impact by giving it a tangibility that the original did not have.) Each of those acts would have vividly reminded the author of his audience, leading him to temper his language. Flames such as the one in box 3.2 do not go unremarked when they are distributed electronically. The author of that message quickly received several electronic chastisements and sent another message a few hours later apologizing for his language.

The phenomenon of flaming suggests that through electronic mail, actions and decisions, not just talk, might become more extreme and impulsive. Because reminders of settings and kinds of people are weak or nonexistent, decision makers might feel less bound by convention and less concerned with consequences. Research in nonelectronic settings over the past three decades has examined the phenomenon of deindividuation.

Box 3.2. A flame

This example of flaming was delivered automatically to three hundred employees, including a senior vice president, in the sender's division.

Date: 5 May 1983 9:06 am PDT (Thursday)
From: Tom Jones [technical professional]
Subject: Damage to my scooter
To: Div.R and D [building distribution list]
cc: Motorcyclists [interest group distribution list]

Yesterday, some nameless obscenity move my scooter. Since the handle bars were locked, this involved dragging my Vespa sideways. This was done with enough vigor to break off one of the rubber molding strips protecting the foot platform.

Whoever you are, LEAVE MY MACHINE ALONE - LEAVE MY MACHINE ALONE LEAVE MY MACHINE ALONE. I AM ANGRY AT THE M****FER WHO F****KED WITH MY MACHINE.

This is my basic transportation. I don't own a car. If you destroy my machine, you deprive me of my mobility. If I discover anyone tampering with my scooter again, I will cheerfully rearrange your face w/the "generic blunt object" I carry with me.

Deindividuation occurs when people have anonymity or when situations lack reminders of societal mores and values. Large crowds wearing uniforms and focused on an exciting event are one situation creating deindividuation. These situations can inspire agitation, feelings of being "part of something else," and freedom from social or moral strictures—feelings that in turn lead to suggestibility. Under heightened suggestibility, people can behave aggressively—or do whatever a leader or strong cue suggests—far more than they would do in their normal milieu.⁵ We speculate that an electronic communication setting could inspire suggestible behavior too if an electronic substitute for the strong leader or cue were present.

3.7 Guiding Behavior

Strong social norms eventually become attached to all common communication technologies and situations; people rely on instruction, experience, and cues in the situation to remind them of those norms. Some "on-line communities" already have strong norms and expectations for behavior. Many of these are to be found in the public dial-in bulletin board systems

that people join for extracurricular reasons (Besston and Tucker 1984). Members lavish attention on their personas and on elaborate codes of behavior in these settings (Myers 1987), yet there is still extremely wide variation in acceptable behavior across electronic situations. In the workplace people have to negotiate this uncertainty while simultaneously trying to get their work done.

Uncertainties arise from the absence of shared rules and norms. Explicit rules and policies for electronic communication differ from organization to organization. For example, some organizations explicitly forbid extracurricular messages; others do not. Some organizations permit people to send electronic mail to anyone with a mail address; others require that mail be sent through channels. Some organizations explicitly designate an employee as censor to read every broadcast message for inappropriate material. Other organizations allow people to police their own behavior. Not only do rules differ but also there are no strong norms common across organizations. Some people use salutations, and some do not. Some copy their mail to superiors, and some do not. Some answer their messages immediately, and some do not. Some talk about intimate personal subjects, and some do not.

In the face of these uncertainties, people adopt various mechanisms to remind themselves and others that they are social actors in a social situation. They add explicit typographic cues to signal attitude and mood, adopt different personas for different groups, and craft etiquette messages. In the future, just as happened with automobile travel, familiarity with the technology will grow, social expectations will evolve, and norms will stabilize. Some unconventional behavior we see today in electronic communication will settle down as the technology becomes more widespread and people gain more experience with it. Still, so long as electronic communication has little social information and seems ephemeral, it will remain relatively open and unconstrained.

(1) **Adding Cues**

Conventions for expressing mood or feelings are emerging within some well-established electronic mail communities. FLAMEON is a common warning that an unrestrained message follows. A smiling face, typed rotated as :-), suggests a joke or happiness. Bad news or unhappiness is conveyed by :-(. Although such cues weakly signal mood, they are flat and stereotyped. The boss's smiling face looks no different from the secretary's. Mild amusement looks no different from hilarity.

It is possible to convey idiosyncrasy, personality, and vibrancy with only plain text. Professional writers have always done so. Some people who belong to multiple electronic groups write messages in a different voice to each group.⁶ Box 3.3 shows how two people alter their persona for different groups. But such literary skill is uncommon among organizational participants.

McGrath and Hollingshead's (1990) analyses of how time-related cues influence work groups suggest that electronic communication lacks many such cues. For example, a group in an asynchronous discussion is usually not timed or warned about time, nor is the sequence of contributions or the total time given to the discussion controlled. Often group members aren't aware of who should do, or is doing, what task at what time. This lack of awareness can contribute to deregulation of social behavior. People don't

Box 3.3. Changing personas in electronic messages

Person A

Message to UserFeatureForum:

I cannot imagine a pathname standard that does not reserve * as a wildcard. It's much more than PHC we're dealing with here - I think most other major operating systems use the same conventions: TOPS-20, RSX-11W... Users of these systems are exactly the few hundred thousand people who are most likely to be our first customers - people who'll be talking to these other operating systems via TTY emulation.

Message to Cinema:

an'I likes Joe Bob. Shucks, I though tall the humorless prigs had already migrated to Review. If'n ya dun lak it, y'all kin CLICK DELETE once a week on any msg with "Joe Bob" in the header. AH HAS SPOKEN! I suggest directing your brickbats, kudos, etc. to me rather than subjecting the whole list to any further meta-discussion.

Person B

Message to UserFeatureForum:

The easiest interface to learn and use would seem to be the multiple click for contention resolution, since it is what most people already do. However, I would think the inevitable small movements of the mouse in the course of clicking would make implementation difficult, with non-redundant ambiguities introduced between an unintentional movement while intending to continue on the contenders list, and an intentional movement to start somewhere nearby.

Message to Rowdies:

By the way, there's this convention on TV that flashers run around in raincoats with no pants. Now, if memory serves, the men I've seen more of than I would normally expect were generally just hanging around near the bottom of the subway steps or something, with their fly open and their whatever hanging out. So what I want to know, is whether There really are flashers that run around without any pants on, or whether that's just something someone made up for TV so people would get the idea without getting the picture, so to speak. Anyone know? Anyone have personal experience in the matter? ~1492~

Source: Finholt and Sproull (1990: 58).

establish or enforce deadlines; they lack norms for smooth teamwork; they fail to resolve inefficient or inequitable time demands. Adding temporal cues and controls in computer-based communication might greatly increase social information and guides to behavior.

Among the time-related social information that influences behavior is information about what time it is now, when a piece of work or meeting is supposed to start and be done, whose time is more (or most) important, and how time should be allocated to different projects or topics. Outside the electronic forum, most organizations respond to these questions with physical reminders such as clocks and bells, notices about agendas, deadlines, and requested work commitments, procedures synchronized according to time, and norms for behavior regulation over time. People respond by monitoring their own time and behavior, by making time commitments, and by tuning in to the flow of tasks and to discussions.

Adding cues such as clocks, dynamic gauges and calendars, scheduling programs, and so forth to electronic mail would reintroduce some of the temporal controls that organizations and groups use. Adding restrictions and rules, such as limited participation and agreements on how much input any individual is allowed to make, would do so also. Yet many would resist such changes. The lack of temporal cues encourages electronic interactions to wander and explore indirect paths and creative solutions. Ample time causes groups to use all the time available but also allows them to improve the quality of their interactions and to give more emotional support to one another. It also encourages wider participation.

The addition of sound and pictures to computer-based communication will dramatically increase social information in computer-based communication. Already visual information close to the quality of hard-copy documents is becoming available. Voice will be next. The abortive history

of the picture phone suggests that there are limits to people's eagerness to invest in ever-richer social information, yet the general trend is toward more bandwidth, not less. There are both advantages and disadvantages in including more social information in computer-based communication. (In chapter 9 we discuss these trade-offs.)

12) Instruction and Etiquette

People usually convey norms by example. Only when groups are new, take on many new members, or have conflict do people discuss norms explicitly. Box 3.4 displays an example of a frequent occurrence in electronic mail communities. It is a message offering a series of suggestions for how to write "civil and useful" messages. Notice that a flame preceded it ("my recent outburst against two frequent contributors") and that it references chastising responses ("numerous private responses") to the flame. In an interesting twist, it is the transgressor who proposes the guidelines.

The specific suggestions from the message in box 3.4 or the hundreds of other similar etiquette messages found in computer-based communication systems can be elevated to a general code of etiquette for electronic mail, a version of which has been offered by Shapiro and Anderson (1985). The code contains sensible advice for senders of messages: assume that any message you send is permanent; have in mind a model of your intended audience; do not insult or criticize third parties without giving them a chance to respond. It also offers advice for recipients of messages: avoid responding while emotional; assume the honesty and competence of the sender; avoid irrelevancies. Someone who had never used electronic mail (or who had not read this chapter) might think it peculiar and condescending to offer such obvious advice to grown men and women. By contrast, we believe it is appropriate, but ironically, the features of computer-based communication that make such advice appropriate also make it unlikely to be remembered when people most need it.

3.4 Conclusion

Some organizations consider electronic mail a way to increase the transmission accuracy of information that otherwise would be conveyed more haphazardly. The assumption is that the same message can be delivered with fewer errors than through other means. By contrast, we suggest that the means by which a message is conveyed affects the meaning of the message. In the case of electronic mail, plain text and perceived ephemeral-

Box 3.4. Electronic etiquette message

Date: Wed, 9 Aug 89

From: S. Marks

Subject: [Statistics distribution list] etiquette

To: Multiple recipients of [Statistics distribution list]

I have received numerous private responses to my recent outburst against two frequent contributors to this list...I would, however, like to publicly apologize for my rather strong language in criticizing their postings. To avoid such useless exchanges in future, may I suggest some guidelines for keeping postings to the list civil and useful?

1. No one is obliged to reply to a question. If you find a question too trivial for your trouble, just ignore it. But don't tell the world that it is too trivial: that only puffs you up and humiliates the questioner.

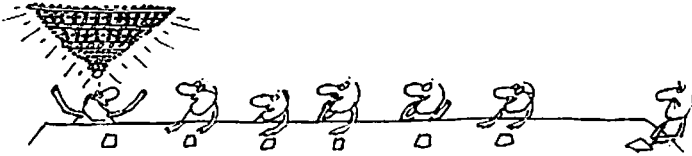
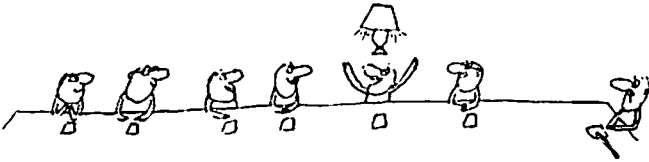
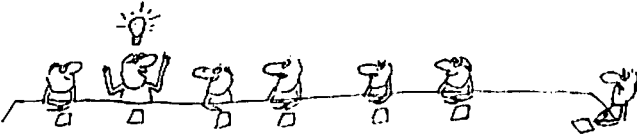
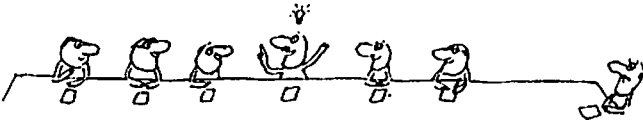
. . .

4. Refrain from attacks on a contributor's intelligence, competence, patience, or diligence. It is, however, permissible to attack a *solution* as being incorrect, clumsy, unworkable, or unclear. Such an attack should be worded and interpreted in such a way that these attributes are not to be ascribed to the person who proposed that solution. And of course, it is always permissible to criticize the [organization] and its personnel, as long as the statements are truthful and tasteful.

5. Make sure that your answer will be useful to the person requesting help, or to other subscribers. Don't post something merely to show off your erudition or wit. (Of course, this doesn't mean that useful postings can't also be witty.) In short: "If you can't post something useful, don't post anything at all."

This message was sent to an electronic distribution list for exchanging information about statistical procedures. It is subscribed to by over a thousand people in more than three hundred different sites. The actual readership may be much larger because each subscriber may duplicate the messages for others in his or her organization.

ality induce relatively open and blunt remarks, little influenced (for better or worse) by social niceties. An important point here is that the change is relative. We do not suggest that electronic communication turns employees into beasts. We do suggest that in comparison with other forms of communication in a given organization, the electronic communication will be relatively franker and will demonstrate relatively less audience awareness.



Blechman

Drawing by Blechman, Courtesy of Punch Publications, Ltd.

People in organizations spend much time in meetings and group discussions; managers spend most of their time in this way (Mintzberg 1973; Sproull 1983). Most meetings follow a predictable course. Participation is unequal; one person or a minority clique dominates the floor. Member status predicts who will dominate. Managers speak more than subordinates; men speak more than women; the person at the front of the room speaks more than those at the back. People are polite and considerate, and they avoid controversy. If a decision is necessary, the group converges on a decision over time by narrowing and discarding options through discussion. People prefer options that have obvious popularity. Often we can predict the decision by knowing who dominates the discussion.

The predictability of meetings is often useful. Efficiency is served if one person dominates. When that person has high status, the meeting's outcomes have legitimacy. Mental effort declines if everyone knows how the meeting will come out. Four decades of research on group behavior have documented and described some ways that groups are predictable.¹ *Cohesiveness* is the tendency for group members to stick together. *Egocentrism* is the tendency to reject outsiders and outside ideas. *Group extremization* describes groups' tendency to adopt more extreme positions than do their individual members. *Groupthink* encompasses egocentrism, conformity pressures, group extremization, and illusions of invulnerability and morality in groups (Janis 1972). These predictable processes often describe competent groups—but they also can produce disasters. Group decisions ending in lost lives and national confusion led to the 1961 Bay of Pigs invasion of Cuba, the 1980 mission to rescue American hostages in Iran, and the 1986 explosion of NASA's Challenger space shuttle. Bad decisions are not the prerogative of government groups, of course. In 1978,

nine hundred members of a religious sect who had fled to Guyana decided to obey their deranged leader by killing themselves.

For good or bad, the dynamics of face-to-face meetings usually are predictable and similar across groups. The dynamics of electronic group meetings, however, differ from those of face-to-face meetings and are less predictable. Managers and software developers interested in putting groups on-line to streamline their operations (a first-level effect) should understand that patterns of participation and the quality of decisions may vary enormously from those of face-to-face groups (a second-level effect). This chapter is about how people behave in electronic meetings. First we compare behavior in electronic meetings with the behavior of the same people in face-to-face meetings. The standard of comparison is face-to-face meetings not because they are always preferable to other forums but because they are ubiquitous. Next we offer suggestions for designing and managing electronic groups.

The evidence in this chapter comes primarily from controlled experiments and not, as in the other chapters, from observation of natural electronic groups in organizations. One might ask why it takes experiments to uncover how electronic communication changes group dynamics. Because people like working in groups, they often do not measure and report their group behavior objectively. Cohesiveness and consensus are pleasant, so group members conclude that their group has done well, whether or not this impression has validity. Experiments can separate perceptions from actual group behavior. An experimental study of brainstorming in a computer-based group decision support system at the University of Arizona illustrates the sometimes incorrect connection between how well group members like a group and how they evaluate its performance. Researchers put a confederate in each group to compare the effect of a critical member with a supportive member. Electronic discussion groups with a planted group member who criticized others produced more new ideas and achieved more than groups whose planted member was highly supportive. Yet group members' perceptions of their success did not match the performance facts. Groups with the critical group member did not like their group and incorrectly thought the group did poorly, whereas groups with the supportive member liked their group and incorrectly thought they did very well (Connolly, Jessup, and Valacich 1990).

Experiments are a way of systematically testing assumptions in a way that cannot be done through natural experience alone. They make it

possible to watch the same people (or randomly assigned people) in both electronic and face-to-face groups and thus rule out the possibility that observed differences in behavior stem from personality or job differences that cause people to prefer one type of meeting to another. The disadvantage of experiments is that they never duplicate all the conditions of actual groups. Most troublesome is that experiments usually construct groups from people who do not typically and routinely work together.

Although experimental groups sometimes do not behave as actual groups do, experiments often reveal hidden processes that managers and group members should attend to. For instance, experiments on brainstorming in groups indicates that face-to-face interaction can dampen creativity and productivity. Group members spend too much time listening to each other instead of thinking. They try too hard to please one another. (See, for instance, Diehl and Stroebe 1987.) Actual groups can be given training in brainstorming techniques, but training may not overcome the social pressures on people to listen and to censor their own ideas. New decision-support conference rooms that allow group members to communicate electronically through a local area network make another technique feasible: People meet in the decision room, but prior to discussion, they simultaneously and anonymously contribute ideas to an electronic brainstorming idea pool. This pool of ideas is made the basis of face-to-face discussion. This technique can leverage both the productivity of individual work and the motivating properties of group interaction.

4.1 How Electronic Groups Work

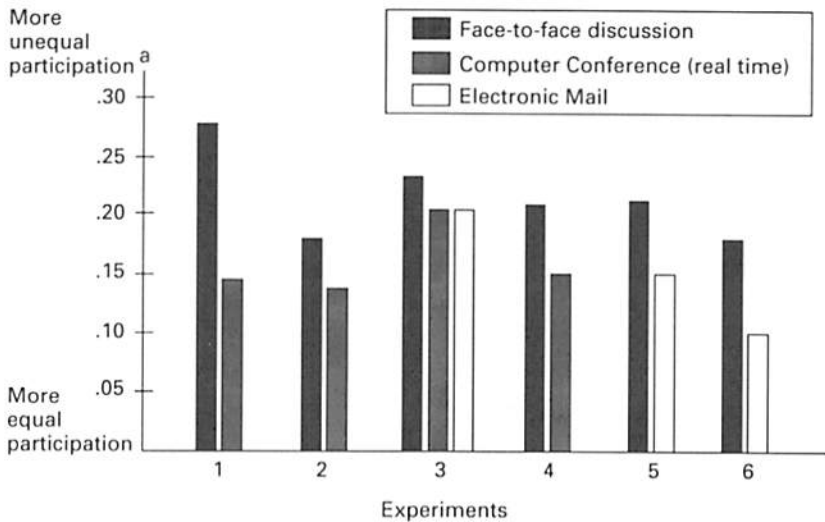
(1) Who Participates?

In a face-to-face meeting, only one person can talk a time. In electronic discussions, taking turns is unnecessary because electronic communication is asynchronous. Thus for any given duration of time, more people can "talk" in an electronic meeting than in a comparable face-to-face one.

In a face-to-face meeting, talking time is usually not distributed equally across all participants; often it is very unequal. One person or a minority clique often dominates the discussion, talking most of the time while participation by others falls off rapidly. Sometimes half the members talk only 10 or 20 percent of the time. In electronic discussions, participation is more equal. For instance, in one experiment, three-person groups that held discussions electronically showed twice as much equality of partici-

pation as when they talked face to face. Members tended to talk their appropriate one-third of the time in the electronic discussion. Figure 4.1 illustrates differences in participation patterns across many experiments.

In face-to-face groups, the amount a person talks has a high correlation with his or her prestige and social status. Status imbalance has been documented in classrooms, hospitals, personnel interviews, performance appraisals, and decision-making meetings.² Status within a group derives in part from status in the outside world, as well as from work in the group. In other words, people carry their status from group to group, though some of their standing in any particular group depends on their particular group role and expertise. Thus, for instance, in face-to-face groups, managers talk more than subordinates; men talk more than women. These behaviors hold



a. In the scale, 1.0 represents perfect inequality, when one person does all the talking. Zero represents perfect equality, when everyone talks the same amount.

Figure 4.1

Equalization of participation in computer-mediated discussions: Results of six experiments (source: Results of experiments 1–3 are from Siegel, Dubrovsky, Kiesler, and McGuire [1986]; of experiment 4 are from McGuire, Kiesler, and Siegel [1987]; of experiment 5 are from Dubrovsky, Kiesler, and Sethna [in press]; and of experiment 6 are from Weisband [in press])