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E-mail in the Workplace:

The Potential for Increased Employee Participation

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Executive Summary

This study looks at the social effects of the widespread use of e-mail in the workplace today. Some commentators have claimed that e-mail can change the traditional workplace by weakening status barriers between users, thereby flattening the workplace hierarchy, improving employee performance and satisfaction, and promoting equal participation by all members of work groups. These consequences are linked to the democratic potential of e-mail, defined here as the right of all employees to communicate equally, free from constraints of status. The author of this study is more cautious, however, pointing out that the technology will not produce the desired results on its own: organizations must be aware of various mediating factors that can eliminate the potential benefits. Drawing on a close examination of three case studies of e-mail and employee participation, she emphasizes that organizations wishing to use e-mail to promote participation and empowerment in the workplace must pay close attention to the human context of e-mail networks.

- In the right situations e-mail can promote openness in the workplace and wider participation in decision making. Because power and leadership are more diffuse and because peripheral and minority employees are more involved, a wider assortment of opinions is heard and contributions to the decision-making process are generally better.

- Although decision making in e-mail groups is generally lengthier and more complex, the evidence suggests that the decisions that are made will generally be better.

- E-mail is better suited to some tasks than to others. Groups communicating face to face outperform e-mail groups in negotiation tasks, for example, but e-mail has advantages when the task is to generate new ideas or choose a preferred or correct solution to a problem.

- The potential benefits of e-mail will not be realized by all types of users. People with one sort of rhetorical, or communication, style will be less concerned about problems of confidentiality and will have different perceptions of the

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About the Author

Chantalle Kudsi-Zadeh graduated from the Queen's MIR program in 1999. Prior to that, she completed a Master of Arts in Communications at McGill. Her areas of interest include issues and theories of democracy, technology, and globalization.

'other' with whom they are communicating; they will therefore consider the medium more useful than other, more cautious types. Some types are more likely to have expressed anger through e-mail—thereby disrupting group processes—or to have experienced harm from using it.

- The gender of the user is closely related to whether or not potential benefits are realized in practice, since gender helps to determine how often and in what ways e-mail is used in a group forum. Even though they may theoretically be allowed access to a network that invites equal and open participation by men and women alike, women may be prevented by their conventional communication styles from participating fully in e-mail work groups. Contrary to the optimistic pronouncements of some commentators, gender-based discrimination can freely apply.

Introduction

The widespread use of e-mail in the workplace today raises important issues with regard to employee participation and the social organization of work. Like other information technologies, e-mail both enables and constrains; it facilitates some aspects of communication by some employees while limiting others. How this technology organizes social relations in the workplace by promoting and restricting different features of communication is the subject of this study.

E-mail both enables and constrains; it facilitates *some aspects of communication by some employees while limiting others.*

E-mail can affect traditional work group participation by altering the structure of work groups, processes of interaction, and aspects of task performance. It can also change the traditional workplace by weakening spatial, temporal and status barriers between users, thereby improving group communication and flattening the workplace hierarchy. These consequences are linked to its democratic, empowering potential.

While many commentators would agree that e-mail has the potential to promote democratic change, that is—to encourage equal participation by all employees—they disagree about the extent to which this potential is in fact realized in the workplace setting. Based on a detailed examination of three cases of the use of e-mail in the workplace, this study identifies characteristics of the users that will play a major role in determining the extent to which the potential of e-mail to promote worker participation and empowerment is in fact realized.

Benefits and Drawbacks of E-mail

In the right situations, e-mail can promote openness in the workplace and wider participation in information sharing and group decision making. It can weaken spatial, temporal, and status barriers to create work groups that are more diverse in composition and more fluid in structure. Although decision making in e-mail groups is often lengthier and more complex than in face-to-face groups, the evidence suggests that decision-making quality is not compromised. Because power and leadership are more diffuse and because peripheral and minority employees are more involved, a wider assortment of opinions is heard, and contributions to the decision making process are generally better (Garton and Wellman 1995, 434).

While e-mail has been associated with improved organizational communication, it is, nevertheless, a highly controversial addition to the organizational environment, for several reasons. E-mail can quickly spread misinformation, rumors, bad jokes, and complaints (Garton and Wellman 1995, 447). E-mail messages may constitute harassment—frequently, though not always, it will be sexual in nature, particularly in organizations that have not established an effective code of ethics for computer use.

Because e-mail can be used as a forum for open and unsupervised information sharing, it also threatens management's interest in maintaining control over the organization (Sproull and Kiesler 1991). For example, e-mail has in some cases been used successfully for unionization (Clement 1996). Many workplaces therefore monitor how e-mail is being used and between whom, often without the knowledge of employees themselves. But this surveillance and censorship in turn raises pressing concerns about employee privacy and limits on their freedom of expression (Perrolle 1996; Sipior and Ward 1995; Weisband and Reinig 1995). It also obviously works against equal and open communication in the workplace, which promises to be one of the important benefits of e-mail when it is properly handled.

Media Richness

In attempting to identify the effects of e-mail in an organizational setting, researchers have developed the concept of 'media richness,' which denotes the capacity of different media to provide immediate feedback and multiple verbal and nonverbal cues (Daft and Lengel 1984, 1986). The general consensus is that face-to-face communication is the richest medium, since it helps participants understand one another through direct feedback involving physical cues, language variety, and personal focus (Daft, Lengel and Trevino 1987). Face-to-face communication provides opportunities for exchanges of meaning in ways that computer-mediated communication, which provides only channels of communication, does not.

Media are ranked in decreasing order of richness by Daft and Lengel (1986) as follows: face-to-face communication, communication by telephone, by personal and formal written documents (letter, memos), by impersonal unaddressed documents (bulletins, standard reports), and by numeric documents. E-mail has been located somewhere between personal and formal written documents by some commentators (Schmitz and Fulk 1991) and closer to the telephone by others (Lea 1991). E-mail can be seen as exhibiting a combination of written and oral styles of communication (Gotcher and Kanervo 1997; Herring 1996).

Markus (1996) found that because it has fewer channels of communication, e-mail is favoured over face-to-face communication for executing difficult tasks: conveying information to someone likely to dispute it, conveying information to someone not well liked, describing a matter that makes the recipient angry, or making a request to someone who intimidates the sender. Rice et al. (1990) found that people choose e-mail to communicate complex tasks that will involve further exchange and explanation, often in conjunction with other media. On the other hand, Lea (1991) found that members of a large firm considered e-mail to be similar to face-to-face communication and the telephone; they considered it to be appropriate for inconsequential and important communication alike (Garton and Wellman 1995, 438). Different social meanings are also communicated by the media. In one study, for example, managers used face-to-face communication to signal a desire for teamwork and to build trust. Conversely, they communicated on paper to signal authority and legitimacy (Trevino, Daft, and Lengel 1990, 86).

Some studies suggest that e-mail increases overall communication between members of an organization.

Some studies suggest that e-mail increases overall communication between members of an organization; it is not a substitute for but a complement to face-to-face communication, the telephone, and other media. Other studies suggest, however, that groups using e-mail spend less time using other media. One explanation is that it is the ***way*** in which e-mail is used in workplace environments, rather than the frequency of e-mail use, that affects the use of other communication media (for references, see Garton and Wellman 1995).

E-mail and Work Group Communication

In computer conferencing all of a group's e-mail messages are available to all members. Experimental laboratory studies of this type of communication have involved relatively small groups, consisting of two to five people, and have compared how face-to-face and computer conferencing groups solve designated problems within a specified time limit (Garton and Wellman 1995, 439). The research has also tended to focus on work-group decision making. Other aspects of e-mail communication in work groups, such as implications for social and emotional relationships between members, have received less attention.

Work groups that meet face-to-face interact regularly; each group has a relatively stable identity, and group members are interdependent. The membership is therefore typically oriented toward common goals, and group members are motivated to cooperate, and they are open to each other 's influences. Members of work groups that associate through e-mail, on the other hand, are rarely in the same place at the same time. It may therefore be more difficult for these groups to maintain focus and identity in the ways that face-to-face groups can (Garton and Wellman 1995, 440). They may also be less unified and stable but, on the other hand, more dynamic and flexible.

The research comparing problem-solving work groups that meet face-to-face and those based on e-mail identifies the consequences of e-mail's comparatively narrow channels for communication. Hollingshead, McGrath, and O'Connor point out that, as already mentioned, 'the many channels through which face-to-face groups communicate—auditory, visual, nonverbal, and paraverbal—are greatly reduced or eliminated' in e-mail communication. Cues such as eye contact, gestures, or hesitation before responding are absent in e-mail group communication (Garton and Wellman 1995). Contextual cues are also absent: participants do not choose or identify the significance of meeting sites, nor obviously, is there a meaningful seating arrangement. Social roles are undercut, since the technology offers few social cues apart from what may be contained in the context of individual messages themselves. By inscribing just the e-mail addresses and names of the senders and recipients, e-mail has the potential to circumvent conventional social categories of power and status in workplace communication.

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The Absence of Nonverbal Cues

The relative absence of nonverbal cues in e-mail has both positive and negative consequences. It has been linked to a propensity for extreme language, difficulties in coordination and feedback, problems in reaching group consensus, and group polarization (Godde and Johnson 1991; Kiesler, Siegal, and McGuire 1984; Liesler and Sproull 1992). On the other hand, because e-mail provides few nonverbal cues larger groups can be more easily coordinated through e-mail than through face-to-face communication. E-mail is also better able to accommodate diverse ideas from large numbers of people. Messages can be written and sent simultaneously; proposals can be made without following a formal sequence or chain of command (Garton and Wellman 1995, 440).

Because it reduces status cues, lower-status people who are normally reluctant to talk to their superiors will feel less intimidated when communicating with e-mail (Sproull and Kiesler 1996). In face-to-face groups higher-status employees generally speak more often than lower-status employees, men speak more than women, and managers speak more than subordinates (Garton and Wellman 1995, 440). E-mail reduces these differences and encourages more equal discussion, which leads to decisions based on knowledge rather than status (Kiesler and Sproull 1992).

Reaching Consensus

Although members of e-mail groups participate more equally than members of face-to-face groups, they do not necessarily find it easier to achieve a consensus. Rather, because e-mail hinders the rise of group leaders, group coordination for reaching consensus may be more difficult (Hilts, Johnson, and Turoff 1986).

As a relatively new type of discourse, e-mail lacks established conventions of use (etiquette); perhaps for this reason, users are more inclined to use uninhibited language. The

Reaching consensus is therefore a lengthier and more complex process in e-mail groups than it is in face-to-face groups.

nonconforming behavior and disagreement that can easily result from e-mail use reduces the ability of e-mail groups to reach consensus (Garton and Wellman 1995, 441). In fact, e-mail groups have been found to shift to extreme positions more frequently than face-to-face groups (Kiesler et al. 1985; Kiesler and Sproull 1992; Sproull and Kiesler 1991).

As mentioned, reaching consensus is therefore a lengthier and more complex process in e-mail groups than it is in face-to-face groups (Adrianson and Hjelmquist 1991; Hiltz, Johnson, and Turoff 1986; Kiesler et al. 1985; Sproull and Kiesler 1991). Kiesler and Sproull (1992) found that it took four times as long for a three-person group to reach consensus through real-time computer conferencing than through face-to-face meetings. Typing and reading e-mail messages, even when done in real-time, took longer than speaking and listening at face-to-face meetings. Messages were sometimes difficult to interpret because of feedback lags and weak interactional cues. It was also difficult to interpret how confident participants were in their views. Finally, members found it difficult to interpret when the group was ready to come to a decision (Garton and Wellman 1995, 443).

The Quality of Decisions

The difficulties associated with reaching consensus do not apparently compromise the quality of the decisions, however. E-mail communication can, as mentioned, generate a greater variety of opinions and ideas and more original thought (Hiltz, Johnson, and Turoff 1986; Valacich et al. 1993). And, while the greater number of opinions makes it less likely that the group will reach agreement, the decisions that are made are likely to be better.

Distribution Lists

Many organizations use distribution lists to circulate e-mail messages to many or all employees, who thereby receive information that they would not otherwise receive. The distribution lists can help integrate the organization, fostering a sense of electronic community (Finholt and Sproull (1990), since they link people and work groups across space and time and across group boundaries.

Distribution lists may be formal, pertaining directly to business matters, or they may involve extracurricular or voluntary matters. Informal e-mail can help to relieve workplace stress (Steinfield 1985), integrate new and peripheral employees into a group (Eveland and Bikson 1988; Steinfield 1985), and encourage organizational involvement, cohesiveness, and commitment (Huff, Sproull, and Kiesler 1989; Sproull and Kiesler 1991, 1996).

The ability of e-mail to cut across geographical boundaries as well as organizational structures makes it a valuable tool for supporting large, complex, fluid groups (Finholt and Sproull 1990; Kaye 1992) and for increasing contact between head office and peripheral employees (Garton and Wellman 1995, 446; Sproull and Kiesler 1996, 462). It has the potential to offer low-status people more access to information and organizational power (Sproull and Kiesler 1991, 1996).

Mediating Factors

While much of the research shows that e-mail can enrich and extend social relations in work groups, the case studies examined in the next chapter show that employees' experience with the medium, their rhetorical style, and their gender help to determine the extent

to which e-mail does actually facilitate or impede equal participation among members of work groups in real-life situations.

Influences on the Success of E-mail

One important study of the ability of e-mail to improve task performance—and therefore productivity—in work groups tested the prediction that the type of task the group was working on would moderate the effects of the communication medium on the structure of the group and its performance over time. It also tested the prediction that experience with the technology, along with certain kinds of changes imposed on the group, would moderate these effects (Hollingshead, McGrath, and O'Connor 1993).

Task as Moderator

To study the influence of the kind of task that a work group is undertaking, Hollingshead, McGrath, and O'Connor identified four categories of work group activities: generating ideas or plans, choosing the correct answer to a problem, choosing a preferred answer, and negotiating conflicts of interest. The first three categories involve cooperative tasks, while the fourth involves both competition and cooperation.

As a group moves through the four task types, increasing degrees of interdependence among group members are required, making consensus increasingly difficult as they move from the first type of task to the fourth. For example, the task of generating ideas or plans does not involve interdependence between group members, because the objective is to generate a variety of possibly diverse ideas. On the other hand, negotiation, which involves reconciliation between individual competitive goals and the group's cooperative goal, requires a high degree of interdependence. Not only must group members reconcile different information, attitudes, opinions, and the like, to reach consensus—as is also the case in decision-making tasks without demonstrably correct answers—they must also reconcile their conflicts of interest.

Hollingshead, McGrath, and O'Connor propose that at each successive level of interdependence, the group's need for richness of information increases: they have an increased need for the full range of emotional, attitudinal, normative, and other meanings that information may carry, beyond the explicit meanings of words. Tasks such as brainstorming to generate ideas or plans may therefore not require as rich a communication medium as decision-making and negotiating require. Richness of information becomes increasingly important as the group's task makes reaching consensus more difficult.

The upshot is that there is a good task-medium fit between tasks such as generating ideas and e-mail communication. In this case, the richness of face-to-face communication provides an excess of cues that might in fact inhibit group performance. In other words, rich media supply distractions that are not essential to this kind of task. Thus, research comparing the performance of computer-mediated and face-to-face groups engaged in brainstorming reveals that the former outperform the latter (Gallupe, Biastianutti, and Cooper 1991). Conversely, the research shows that e-mail communication is less conducive to negotiation than face-to-face communication.

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These generalizations may be qualified to some extent by recognizing that work groups may adapt to the technology they are using and overcome some of its limitations to some extent. For example, users of e-mail might add richness to information exchanges by using capital letters or asterisks to emphasize a point. Similarly, they might reduce the richness of face-to-face communication by instituting specific instructions for brain-

storming tasks, for example. It is therefore possible that initial differences between the performance of computer-mediated and face-to-face work groups will decrease over time, as members adjust to their medium of communication.

In general, however, Hollingshead, McGrath and O'Connor propose that the following four hypotheses capture the differences between the two forms of communication (1993, 316):

1a Computer groups will outperform face-to-face groups when the task is to generate ideas, plans and so on. The former will experience less difficulty than the latter and report more satisfaction with the performance of the group, the interaction process, and the communication medium.

1b Face-to-face groups will outperform computer groups in negotiation tasks. The former will experience less difficulty with the process and will react more favorably to the performance of the group, to the interaction process, and to the communication medium.

1c On decision-making tasks involving choosing a preferred answer or choosing a correct answer to a problem, face-to-face groups will do as well or better than e-mail groups, at least initially. Face-to-face groups will express more positive reactions to their group performance, interaction process, and communication medium.

1d The differences between the task performance of groups using different media will decrease over time, for any type of task. Groups will adjust to the richness of the communication medium available to them.

Change as Moderator

Any major change imposed on a task group can at least temporarily alter previous patterns of group functioning. Hollingshead, McGrath, and O'Connor therefore postulate that a change in the group's membership, its technology, or the tasks it is performing could affect group performance, the process of interaction, and member reactions. For example, following a change, a group may need to devote more attention and time to solving technical issues than to resolving conflict.

A change from face-to-face communication to computer-mediated communication may be more likely to have a negative effect on group participation, interaction, and performance than a change from computer-mediated communication to face-to-face communication.

A change from face-to-face communication to computer-mediated communication may be more likely to have a negative effect on group participation, interaction, and performance than a change from computer-mediated communication to face-to-face communication, because information richness will narrow and because members will be less familiar with computer-mediated communication. When initially exposed to a communication technology a task group will likely use the technology in unpredictable and unstable ways, and members will have unstable perceptions of group norms and communication activity. Over time, however, as self-organizing processes unfold, these patterns may stabilize. Hollingshead, McGrath, and O'Connor have therefore proposed the following hypotheses about the effects of change (1993, 320–21):

2a At first, computer groups will exhibit worse performance across all task types as they learn new technology and adjust to information that is less rich.

2b Over time, the difference in performance between face-to-face and computer-mediated groups will greatly decrease. The group's use of the technology, its development and perceptions of group norms, and its communication activity will stabilize. Face-to-face and computer groups will show no significant difference in performance after the groups have worked together in their new medium for some time.

2c Imposed change in communication media and group membership will cause perturba-

tions in group performance. Groups moving from face-to-face communication to computer-mediated communication will see greater negative consequences than groups moving in the other direction. A change in membership will have a greater negative effect on the task performance of computer groups than it will on face-to-face groups.

2d Initially, the processes of all groups will be relatively unstable as they negotiate how they will use the new technology, develop group norms regarding task focus, and so on. With time, however, group processes will become more stable. When a change is introduced during this relatively stable period, there will again be perturbations in the process of group interaction as members adjust to the change.

2e At first, computer groups will be less satisfied with their task performance, process of interaction, and communication medium than will face-to-face groups. A period of stabilization will eliminate these differences. When change is introduced during this relatively stable period, there will be a reduction in member satisfaction for groups working on computers.

Testing the Hypotheses

The two sets of hypotheses just outlined (hypotheses 1a-1d and 2a-2e) were tested in an advanced undergraduate course on the social psychology of organizations in the spring of 1992. Students in the course were assigned to three-and four-person work groups. Half the groups met face to face, and the other half met via computer. There were twenty-two groups altogether (McGrath 1993, 288). Members of the work groups were asked to suppose they were employees of a large consulting firm. Each week, the groups would carry out assignments for various 'client' organizations and generate both group and individual responses to the assigned (client) task Responses were scored on appropriate criteria of quantity and quality (289).

Test Results

The results concerning the type of task on which a group was working were as follows. Hypothesis 1b was supported: face-to-face groups outperformed computer groups on negotiation tasks. Hypotheses 1a and 1c were not supported: there was no significant difference between face-to-face and computer-mediated groups whose tasks were to generate ideas or plans or to decide on a preferred or correct answer to a problem. Hypothesis 1d was partially supported: there was some evidence to suggest that differences in task performance decrease over time as groups adjust to the information richness of the communication medium (Hollingshead, McGrath, and O'Connor 1993, 324–26).

For the second set of hypotheses, dealing with the effects of certain changes on the group process, task performance, and member reactions, all the hypotheses (2a-2e) were supported (Hollingshead, McGrath, and O'Connor 1993, 326–28). Thus the predictions concerning the effects of change fit the pattern of fluctuations in performance and of member perceptions and satisfaction better than the predictions concerning the effects of the kind of task that the group is undertaking.

Rhetorical Styles

The medium alone is not the message.

Gotcher and Kanervo (1997) have identified the effects of the rhetorical style of the communicator on the use of e-mail within an organizational setting. They began with the assumption that 'the medium alone is not the message'. Rather individuals bring a host of experiences, backgrounds, and personality traits to any communication situation, and

these experiences and traits help to determine how they will interact with any medium of communication (1997, 146). More specifically, individuals bring one of three rhetorical styles to a communication situation: these have been called the rhetorical sensitive (RS) style, the noble self (NS) style, and the rhetorical reflector (RR) style (Eadie and Powell 1991, in Gotcher and Kanervo 1997).

People with different rhetorical styles will understand and employ the attributes of computer –mediated communication differently.

RS communicators reveal different personae in different social contexts; they refuse to play the same role without regard to the communication situation. RS communicators realize that not all ideas or feelings can or should be communicated, and they distinguish between ideas and feelings and the ways in which each should be communicated (Gotcher and Kanervo 1997, 146). In contrast, NS communicators view communication situations as 'opportunities to express their ideas, beliefs, and values without regard for the needs or expectations of others', and they communicate with consistency across communication situations and recipients. Finally, RR communicators are willing to change their own positions in consideration of or out of courtesy to the other's position: in general, they always appear to agree with the individuals they are communicating with (Gotcher and Kanervo 1997, 146).

Gotcher and Kanervo suggest that people with different rhetorical styles will understand and employ the attributes of computer-mediated communication differently.

Confidentiality

E-mail is especially useful to organizations, of course, because messages can be easily stored and forwarded to other parties. The drawback, however, is that the originator of the message may lose control of the communication. Because storing and forwarding functions give messages extended longevity, they may be sent to intended and unintended recipients alike, raising concerns about confidentiality.

Gotcher and Kenervo 1997 suggest that concern over the confidentiality of e-mail messages may be influenced by the communicator's rhetorical style. Since RR communicators design messages to reflect the interests of the specific recipient, they would revise their message if they knew it was going to be received by a different party. For this reason, it is expected that RR communicators would be particularly concerned about the forwarding function. Similarly, RS communicators, who construct messages to suit specific readers, would be cautious about the potential for their messages to be forwarded to unintended recipients. In contrast, NS communicators, who express themselves regardless of the needs, concerns, or interests of others, would be expected to be less concerned about the potential readership of their messages (Gotcher and Kanervo 1997, 147). These considerations suggest the following hypothesis:

1 RR and RS communicators will be more concerned about the lack of confidentiality of e-mail than NS communicators.

Differing Needs for Media Richness

A second hypothesis involves the idea that people with different rhetorical styles desire or need different degrees of media richness (Gotcher and Kanervo 1997, 148).

Both RS and RR communicators monitor their social interactions to determine the needs, expectations, and desires of others. They therefore require the numerous cues furnished by rich media. RS and RR communicators continually weigh their decisions about communication, and with rich information they are better able to make an appropriate choice in light of their desire to please others. Media richness would probably be less

important to NS communicators, since they are inclined to express their opinions regardless of the recipient's persuasions or preferences (Gotcher and Kanervo 1997, 148). Consequently, it is assumed that:

2 NS communicators will find e-mail more useful than will RS and RR communicators.

Anger and Injury

Because they are by nature self-absorbed and less likely to take others' feelings into account when designing communication messages, NS communicators tend to be argumentative. The characteristics of NS communicators are expected to become more pronounced in their use of e-mail, which appears to heighten unsociable or hostile behaviour. On the other hand, RR communicators would be expected to act cautiously, given the lack of cues available with e-mail. RS communicators would similarly be expected to communicate cautiously in a lean medium and to phrase opinions in nonthreatening ways to avoid confrontation and argumentation (Gotcher and Kanervo 1997, 148–49). Thus, the third hypothesis about rhetorical style is:

3 NS communicators will be more likely to say they have expressed anger through e-mail than will RS or RR communicators.

Because NS communicators are least concerned about the lack of confidentiality of e-mail messages and are also most likely to express anger through e-mail, it is expected that they will be the most likely to be hurt by e-mail's lack of helpful feeddback and by its forwarding function. They will be hurt by the repercussions of sending e-mail messages with strong opinions to recipients who may hold different opinions from their own. Sending e-mail messages to superiors can, in particular, have serious negative consequences for the NS communicator (Gotcher and Kanervo 1997, 149). Thus,

4 NS communicators are more likely to say they have been hurt by e-mail communications than RS or RR communicators.

Testing the Hypotheses

The four hypotheses about rhetorical style were tested at a university in the United States using questionnaires administered to members of faculty and staff who had between three months and eight years of experience with e-mail. As it turned out, the results of the study did not support the first hypotheses: NS communicators were actually ***more*** concerned about the lack of confidentiality afforded by e-mail than were RS and RR communicators. Two explanations were offered. First, RS and RR communicators may have a false sense of security and believe that e-mail is confidential. More plausibly, it is suggested that RS and RR communicators approach all types of communication with more caution than do NS communicators; they are less likely to communicate information that could get them into trouble if stored or forwarded, and are therefore less concerned with the matter of e-mail confidentiality (Gotcher and Kanervo 1997, 153–54).

The second hypothesis was also not supported. RS and RR communicators reported e-mail to be more useful than did NS communicators. Gotcher and Kanervo suggest that RS and RR communicators may be approaching e-mail differently; they may be using information gained through richer media (face-to-face communication, the telephone) with specific communication partners to develop a ***schema*** for cultivating useful e-mail exchanges (1997, 154).

Hypothesis 3 was supported. As predicted, significantly more NS communicators reported that they had expressed anger in e-mail messages than did either of the other two types. Because RS and RR communicators have greater regard for 'the other' in communication, they are less likely to express anger in e-mail.

Hypothesis 4 was also supported: NS communicators were significantly more likely than the other two types to say that they had been hurt by e-mail communication in some way. The apparent dominance, unfriendliness, and hostile tone of e-mail messages from NS communicators provoke responses that NS communicators report as hurtful (Gotcher and Kanervo 1997, 155).

The Effects of Gender

Herring (1996) examined the effect of gender on e-mail use and how gender moderates the democratic potential of the technology. Democracy is defined here as involving equal access to the means of communication and the right to communicate equally, free from constraints of status.

In society at large e-mail has the potential to satisfy these criteria as increasing numbers of people are able to gain access to the medium at little or no cost through universities and other institutions, including libraries and workplaces. In addition, with its limited channels for information exchange e-mail provides few reminders of status and other differences. In the workplace, employees therefore report less fear of criticism when communicating electronically with their superiors than they do when communicating face to face (Sproull and Kiesler 1996).

A discussion of workplace hierarchy and of e-mail's potential to cut across the organization involves gender, because gender is embedded in hierarchical relations. Surveys show that women are less likely than men to occupy positions of power in organizations; when they do, it is usually in positions of power over other women. Men, in contrast, are more likely to occupy managerial and supervisory positions over both women and men (Boyd, Mulvihill, and Myles 1991, 428). Since e-mail tends to break down the workplace hierarchy, it also therefore tends to break down barriers related to gender.

Herring finds democratic potential in the lack of a set of agreed-upon conventions for the use of e-mail. This characteristic may also promote greater openness in communication and again contribute to the breakdown of traditional hierarchical patterns (1996, 478). But while the democratic potential of e-mail seems to be real, that potential has not apparently been realized in the workplace. Specifically, Herring questions whether there is in fact any evidence of increased gender equality resulting from e-mail communication (1996, 478). Contrary to the mainstream view, Herring believes that gender still has an important effect on the rate and manner of participation.

Discussion Groups: Gender-Based Differences in Participation

Results reveal a striking gender-based disparity in participation in distribution lists.

In her research, which was carried out over a one-year period, Herring examined male and female participation in two academic e-mail distribution lists, or 'discussion groups': LINGUIST, devoted to the discussion of issues of language, and Megabyte University (MBU), informally organized around the discussion of computers and writing. The results reveal a striking gender-based disparity in participation in distribution lists: men participated more than women in each group. Even though women constituted only 36 percent of LINGUST and 42 percent of MBU subscribers, they participated at a rate significantly lower than that corresponding to their numerical representation. Moreover, the messages

contributed by women were much shorter than those contributed by men, averaging one screen or less compared to one and a half or two screens for men. Herring suggests that the women may have been reacting to how their messages would be met by others (Herring 1996, 480).

The data also shows that messages posted by women consistently received fewer average responses than those posted by men. For example, in a discussion of sexism on MBU, 89 percent of male postings received an explicit response compared to 70 percent of female postings. The disparity was even greater on LINGUST, where men's messages received a greater likelihood of response from men and women alike, a pattern that Herring believes resulted from an implicit recognition of the more powerful status of men in groups (1996, 480).

Consistent with the unequal rate of response, topics initiated by women were found to be less often 'taken up' as topics to be discussed by the group as a whole: women were experiencing difficulty and frustration in getting the group to talk about topics that were of interest to them. In a workplace situation, it is possible to extend this logic not only to matters that are of interest to women but also to matters that concern women individually and collectively. For example, the problem of sexual harassment in the workplace, while not unknown to men, is far more familiar to women. If messages regarding this topic or other important matters affecting women are less likely to be taken up by the group as a whole when women author them, women and women's issues risk being ignored.

The results of the study also showed that when women persisted in communicating on a given topic despite a relative lack of response, they were met with harsh resistance from some men. In three electronic discussions (two of which involved the topic of sexism), women's rate of posting increased gradually to equal 50 percent of the contributions for a period of one or two days. In each of the three cases 'a handful of men wrote in to decry the discussion, and several threatened to cancel their subscription to the list.' While acknowledging that the men who protested may have been responding to the content of the messages posted by the women, Herring raises a second plausible explanation: that the men were responding to the frequency of women's communications. This second interpretation is supported by the fact that at no other time during the period of observation did women participate equally with men and that at no other time did any subscriber (male or female) threaten to stop subscribing (Herring 1996, 481).

Herring also discovered gendered differences in the styles of the messages, to the extent that it was often possible to determine the gender of the communicator solely on the basis of the rhetorical and linguistic strategies employed. The language of the female participants more often included questions, attenuated assertions, apologies, explicit justifications, a personal orientation, and a show of support for others (these are all conventional features of women's language). The language of the male participants more often included strong assertions, self-promotion, presuppositions, rhetorical questions, an authoritative orientation, humor or sarcasm, and a propensity toward challenging others (these are conventional features of men's language). Although 46 percent of women's messages combined female and male rhetorical features, only 14 percent of men's messages did so. According to Herring, this finding supports the view that women must employ some features of men's conventional language in order to be taken seriously and some features of conventional women's language in order not to be considered aggressive (1996, 483-4).

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In each distribution list, discussions tended to be dominated by a small male minority that, according to the author, abused features of men's language to focus attention on themselves, often at others' expense. Women in particular expressed an aversion to such behavior and were more likely than men to take offense (Herring 1996, 485).

Results reported here provide valuable lessons for organizations wishing to use e-mail to promote participation and empowerment in the workplace.

Conclusion

The research results reported here provide valuable lessons for organizations wishing to use e-mail to promote participation and empowerment in the workplace.

Learning by Doing

The results of Hollingshead, McGrath, and O'Connor reveal that the users' familiarity with the technology improves work group processes and outcomes, including members' satisfaction with e-mail. Time is needed to allow users to adjust to the fact that there are fewer channels for expressing meaning in e-mail.

Task Type

E-mail was shown to be better suited to some tasks than to others: face-to-face groups outperformed e-mail groups in negotiation tasks, for example, but there was no difference between the two types when it came to generating ideas or choosing the preferred or correct solution to a problem.

Rhetorical Styles

Gotcher and Kanervo (1997) revealed that the approach of the communicator plays an important role in how the technology is perceived, used, and experienced. People with different rhetorical styles have different perceptions of e-mail security and different perceptions of the 'other' in e-mail communication. Some types of communicators (rhetorical sensitives and rhetorical reflectors) are less concerned about the confidentiality of e-mail and consider it more useful than others do. They are less likely than others to have expressed anger through e-mail or to have experienced harm from using it and are therefore able to draw greater benefits from it. In other words, the potential benefits of e-mail will not be realized by all types of users.

Gender

The evidence also showed that the gender of the user helps to determine whether or not the potential benefits of e-mail are realized in practice. Herring (1996) found that the gender of the communicator is closely related to how often and in what ways e-mail is used in a group forum. Even though they may theoretically be allowed access to a network that invites equal and open expression of information and ideas from men and women alike, women may be prevented by overt and covert censorship (including conventional linguistic styles) from availing themselves of the democratic potential of e-mail. In her study Herring found that a small group of men dominated the discourse both in terms of the amount of communication and in terms of rhetorical style, which included self-promotional and adversarial strategies (Herring 1996). As a result conditions for full participation by all were not met. In other words, contrary to the opinions of some commentators, gender-based discrimination can freely apply in e-mail-based work groups. Furthermore, the style and content of e-mail messages can reveal the communicator's expertise or organizational position in a workplace setting (Walther 1992). Because women occupy a greater percentage of low-level positions than men, female users of e-mail are clearly at a disadvantage to male users in terms of both gender and power.

The Social Setting

Technology will not deliver the desired results on its own.

By highlighting the role and significance of characteristics of the communicator in e-mail communication, the studies reported here underline the importance of understanding social factors when setting up e-mail systems in the workplace: the technology will not deliver the desired results on its own. Understanding the human relationship to e-mail requires some understanding of the social contexts, linguistic conventions, and interpretive processes of individual communicators that make the technology meaningful.

The Organizational Context

The extent to which the organizations will be able to ensure that e-mail facilitates communication, improves performance and satisfaction, and promotes equal participation by all members of work groups will depend on their ability to deal with the mediating factors discussed here. In addition to experience with the technology, rhetorical orientation, and gender, they will have to consider other user attributes such as race and age. The size of the group, the nature of the task to which e-mail is being applied, and the features particular to the software are all important factors.

Of particular importance is the organizational context in which these work groups emerge. Some organizations may be more supportive toward the work group than others; they may be interested not only in the flexibility and efficiency that e-mail can bring to its organization but in the empowering and democratic possibilities that its use may bring to employees at all levels. Organizations wishing to cultivate improved dialogue along and across the workplace hierarchy will need to consider ways of making e-mail a more valuable tool for everyone. Achieving this goal will require attention to the research, effort, and imagination.

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