# Communication and Problem Solving in Diverse Groups: A Comparison of Electronic Meeting Systems' Use in Dispersed and Face-to-Face Settings

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The hybrid nature of an electronic meeting system (EMS)—as a communication medium and as a manager of diversity—offers organizations an excellent vehicle for improving group performance, handling stress, and building cohesive teams. This report describes a project that examined the performance and behavior of various decision making groups using an EMS in face-to-face and dispersed settings. Results of this study suggest that the proper task-technology-team fit is a critical factor in determining outcomes. In other words, homogeneous groups needing to discuss issues and resolve ambiguities may require face-to-face meetings, while diverse groups may be able to accomplish the same tasks in dispersed settings using an EMS. However, where the goal is information exchange and uncertainty reduction, lean media such as dispersed EMS may be used just as effectively as any other media by all groups, regardless of their degree of diversity.

15. SUBJECT TERMS

| Electronic meeting system | Group support systems | Group performance and behavior |
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COMMUNICATION AND PROBLEM SOLVING IN DIVERSE GROUPS: A COMPARISON OF ELECTRONIC MEETING SYSTEMS' USE IN DISPERSED AND FACE-TO-FACE SETTINGS

## EXECUTIVE SUMMARY

Research Requirement:

Meetings of the future will involve people from different backgrounds operating in different places; our study dealt with such meetings of the future. The existence of diversity in a group, if not managed effectively, can be disruptive and a source of stress for its members. Additionally, far-flung group members may have difficulty communicating quickly and effectively. The hybrid nature of an electronic meeting system (EMS)--as a communication medium and as a manager of diversity--offers organizations an excellent vehicle for improving group performance, handling stress, and building cohesive teams.

Procedure:

This report describes a project that examined the performance and behavior of various decision making groups using an EMS in face-to-face and dispersed settings. A controlled laboratory experiment was designed to test whether an EMS could in fact be used to simultaneously manage diversity and communicate remotely. A 2x2 factorial research design was used, with the two factors manipulated being geographic dispersion and degree of diversity.

Findings:

Significant differences across the treatments were observed in the extent of influence exerted by the group on its members and by individuals on the group. However, along other dimensions such as behavior and performance, no significant differences were detected among the groups.

Utilization of Findings:

Results of this study suggest that the proper task-technology-team fit is a critical factor in determining outcomes. In other words, homogeneous groups needing to discuss issues and resolve ambiguities may require face-to-face meetings, while diverse groups may be able to accomplish the same tasks in dispersed settings using an EMS. However, where the goal is information exchange and uncertainty reduction, lean media such as dispersed EMS may be used just as effectively (as any other media) by *all* groups, regardless of their degree of diversity.

COMMUNICATION AND PROBLEM SOLVING IN DIVERSE GROUPS: A COMPARISON OF ELECTRONIC MEETING SYSTEMS' USE IN DISPERSED AND FACE-TO-FACE SETTINGS

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> *"America is not a blanket, woven from one thread, one color, one cloth. When I was a child in South Carolina and momma couldn't afford a blanket ... she took pieces of old cloth--wool, silk, crocker sack--only patches, barely good enough to shine your shoes with. But they din't stay that way long. With sturdy hands and strong cord, she sewed them together into a quilt, a thing of power, beauty and culture. Now we must build a quilt together."*
>
> The Reverend Jesse Jackson
> Democratic National Convention, 1988.

# INTRODUCTION

The Hudson Institute in its *Workforce 2000* (1990) predicts that throughout the 1990s, people of color, women, and immigrants will account for 85 percent of the net growth in our nation's labor force. It also predicts that during this decade, the American workforce will continue to mature, with those in the 35-54 age group increasing by more than 25 million--from 38 percent of the workforce in 1985 to 51 percent by the year 2000. At the same time, those in the 16-24 age group will decline by almost 2 million, or 8 percent. These changes in the character and composition of the civilian workforce are being reflected in the U.S. armed forces as well. There are more women and minorities in the military than ever before. In the future, their numbers are expected to increase even further (Aspin, 1992).

In recent times, other dramatic changes have also been sweeping over the U.S. armed forces. *First,* a proportionately smaller military has an increasingly larger role to play in all walks of life: from helping federal agencies deal with the after effects of Hurricanes Andrew and Iniki to dealing with drug wars; and from dealing with inner city turmoil to providing humanitarian assistance to impoverished Third World Nations. *Second,* the end of the Cold War and decline of the Soviet threat have redirected the efforts of the military towards new threats in the Middle East, Africa, Asia and Eastern Europe. In many of these instances the U.S. has had to build coalitions with Western powers and indigenous nations *before* taking on the hostile forces. In the future, such multinational coalitions will be the primary *modus operandi* for the U.S. military (Petersen, 1993). *Third,* the nature of military intelligence gathering has also changed. As a recent *Newsweek* (1993) article reports,

> *"Spies don't even use dead drops anymore. The secret mailboxes have been retired, along with invisible ink and poison-tipped canes. CIA officers now find it safer to pick up messages from foreign agents with special cellular phones or portable computers that transmit digitized photos, electronically encrypted to avoid interception. The spy game has changed radically since the end of the cold war."*

All these changes underscore the importance of instant communication capabilities for command and control purposes. Advances in information technology now make it possible for geographically dispersed teams to communicate with each other using electronic meeting systems. These electronic meeting systems can help the U.S. military deal effectively with the changes discussed above in the following ways:

(1) They can provide a flexible, electronic highway for exchanging information instantly and coordinating activities efficiently.
(2) They can help the U.S. armed forces build and maintain multinational coalitions across geographic boundaries in times of crisis.
(3) They can act as electronic conduits in disseminating intelligence securely and quickly.

In each of these three capacities they will help manage various types of diversity that exist among individuals: diversity based on job type, national or ethnic origin, education, race, economic background etc. Increasingly, diversity is--and will continue to be--a major concern for organizations because of internal and external changes occurring in our country and overseas. At the same time, these diverse constituents participating in decision making will be increasingly separated by time and place. *Our study examined the group processes, behavior and performance among diverse groups in dispersed settings.*

**The "Virtual Organization"**

As organizations, both civilian and military, seek new ways of managing an increasingly diverse workforce, an important phenomenon--outlined in a *Business Week* cover story, entitled the 'Virtual Corporation'--is sweeping across America: the emergence of a new organizational structure, "that uses technology to link people, assets and ideas in a temporary organization[1]" (*Business Week*, 1993). The article illustrates how the diverse and far-flung stakeholders of a corporation will have no temporal or geographic boundaries, develop close-knit project teams, and remain in constant communication with each other from start to finish of a project. The emergence of electronic meeting systems is accelerating this transformation of hierarchical organizational structures to team-oriented "virtual organizations". There is growing evidence that many organizations are turning to these systems as a way of simultaneously dealing with a diverse workforce and linking up project teams (*Meeting Management News*, 1992).

## WHAT IS AN EMS?

Electronic meeting systems (EMS) use information technology to support groups by integrating the task focus of group support systems and the communication focus of computer-mediated communication systems (Dennis, George, Jessup, Nunamaker and Vogel, 1988). Such systems could *potentially* offer organizations tremendous

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[1]Such organizations are considered temporary because they are formed expressly for the execution of a specific project and are typically disbanded upon completion of the project.

opportunities to make quick and effective decisions, improve their ability to communicate these decisions globally, solicit and secure feedback instantaneously from diverse constituents, and coordinate geographically dispersed teams efficiently. In the future, these systems can help reduce the growing costs associated with transportation and shrink geographic distances. With the addition of multi-media capabilities, these systems could also serve to improve dispersed organizational communication without necessarily reducing the socio-emotional interaction needed in many meetings.

The discussion below elaborates how four key EMS structures are likely to play a key role in helping groups manage diversity. These structures include: anonymity of input, simultaneity of communication, electronic recording and display and structuring of interaction processes.

## Anonymity

One of the most important EMS structures that can contribute to the effective management of diversity in groups is the anonymity offered by the system. Previous research indicates that this structure allows group members to focus on an issue or idea, independent of who generated it (Fellers, 1989; Dennis et al., 1988). This may be particularly important in sensitive settings. The anonymity offered by the system will enable diverse participants to express their views and opinions without fear of retribution or reprisal.

Collusion and coalition formation are well entrenched negative behaviors for handling diversity (Jamieson and O'Mara, 1991). Homogeneous sub-groups are formed as a protective mechanism to isolate "non conformers" and suppress diversity of beliefs and opinions. As groups meet more frequently, coalitions are strengthened, diverse opinions are held at bay, and conflict increases. Collusion and coalition formation tend to wrench groups apart, making it difficult to develop productive, cohesive teams. The anonymity offered by the EMS may retard coalition formation because it will be difficult for members to seek out sources of behavior perceived as either conformist or deviant. The impact of this will obviously be more significant on larger groups interacting in task or project oriented environments. Moreover, the separation of ideas from authors will limit the role of personalities in team interactions.

The anonymous structure, besides minimizing negative behaviors, will also promote positive responses, like inclusion, in handling diversity. In non-EMS settings (especially in face-to-face settings), group members frequently use verbal and non-verbal cues-- looks, frowns, smiles, or head shakes--to signify their acceptance or disapproval of a certain idea. Such ongoing non-verbal evaluation will be present in EMS groups too; snickers when "bad" ideas appear on the public screen, or smiles when members read something amusing. However, an important distinction between "manual" and EMS groups is that, in EMS groups, it is not possible to easily identify the target of the covert evaluation. Hence, negative forces reducing creativity will be kept to a minimum in EMS groups through its embedded structure of anonymity.

Most EMS implementations--including the one used in this study--in addition to providing an anonymous data entry module, also offer an anonymous voting procedure. This structure especially permits participants with diverse viewpoints to evaluate alternatives without intimidation by other group members and reduces the subtle pressures--ubiquitous in manual settings--to "toe the party line". Thus, the global structure of anonymity, if utilized properly, can help groups effectively manage diversity by reducing inappropriate negative behaviors like collusion while simultaneously promoting positive behavior like inclusion.

## Simultaneity

Previous research indicates that simultaneity can help groups improve an important aspect of their performance--creativity (Fellers, 1989). Limiting the creativity of all groups in general, production blocking is particularly serious among diverse groups. Production blocking refers to the inability or unwillingness of team members to literally "speak their mind" due to the difficulty of simultaneous communication in a verbal setting. Group meeting protocols dictate that members should hold their thoughts (and tongues) when someone has the floor. Such waiting can ultimately result in curbing creativity.

In some diverse groups, dominant members or sub-groups may never yield the floor to less dominant members. This, coupled with the inevitable problem of production blocking may have a disastrous effect on the creativity of diverse groups. An EMS can help groups break this pattern by providing all members a level playing field and enabling them to generate ideas simultaneously. Hence, an EMS can assist diverse groups with improving their creativity, examining a wider range of alternatives and processing issues in parallel.

## Electronic Recording and Display

The object of effective diversity management is to provide group members freedom of expression while forging a common bond linking the group. As discussed earlier, the anonymous and simultaneous ability to communicate can provide members of EMS groups freedom of expression. The electronic recording and display features of an EMS will help forge the common bond linking all members, even those with divergent views. In EMS groups, all issues under examination and all ideas generated appear on a public screen (which can be simulated on user terminals in dispersed groups) dominating the focus of the entire group. The public screen is *the* place where the "group's" ideas are displayed, manipulated and discussed. Previous research has shown that participants tend to be more objective when viewing or discussing ideas in this environment because the public screen allows them to disassociate themselves from their ideas (Chidambaram, Bostrom and Wynne, 1991). This role of the public screen in providing procedural support and creating a group identity can be important in managing diverse groups.

## Process Structuring

Diversity can generate conflict; if not handled effectively, conflict can cause stress, reduce productivity and destroy group cohesiveness (Putnam, 1986). Three pre-requisites of effective conflict management have been identified: The *first,* deals with the group's ability to handle procedural details such as prioritizing ideas, determining what issues to discuss first and following an agenda etc. The *second,* deals with members' ability to separate issues from personalities. And the *third,* deals with the ability and willingness of members to find common ground.

An EMS through its enhanced procedural support, offers groups the ability to fulfill all three pre-requisites. The difficulty of enforcing an agenda in traditional face-to-face groups leads to their being dominated by the restricted agenda of a few vocal members and sub-groups. In diverse groups (without computer support) issues are frequently "lost in the shuffle" as dominant coalitions push their agendas through causing resentment and promoting collusion (Loden and Rosener, 1991). As discussed earlier, the ability to separate personalities from issues is made possible in EMS groups by the anonymity of input and the electronic recording and display of ideas. Finally, the need of diverse members to work together can be facilitated by quick access to anonymous straw polling, easy sharing of information and immediate access to all ideas.

Thus, an EMS offers the *potential* for valuing diversity in the workforce. This study examined the effect of these EMS structures on diverse and homogeneous groups in face-to-face and dispersed settings.

## RESEARCH FRAMEWORK

Traditionally, face-to-face meetings have been the *modus operandi* for problem solving and decision making in many organizations. Membership in these meetings can aptly be described by the *cliché* "old boys network"; there has been very little diversity in the composition of these groups. The prevalence of these face-to-face meetings and their attendant problems--including low productivity, existence of groupthink, domination by a few members, and pressure to conform--prompted the marketplace to apply the power of computer technology to support these meetings. Figure 1 depicts the evolution of electronic meeting support (EMS) for group meetings; the arrows indicate the direction of change. (Note that the evolution of EMS has mirrored the changes in the nature of organizational meetings.) The two factors juxtaposed in the framework are the *geographical proximity* of group members and their *degree of diversity*. Early EMS were really aimed at providing structured support for a few exclusive homogeneous groups (Cell 1). The high cost of these early systems prevented their wide diffusion.
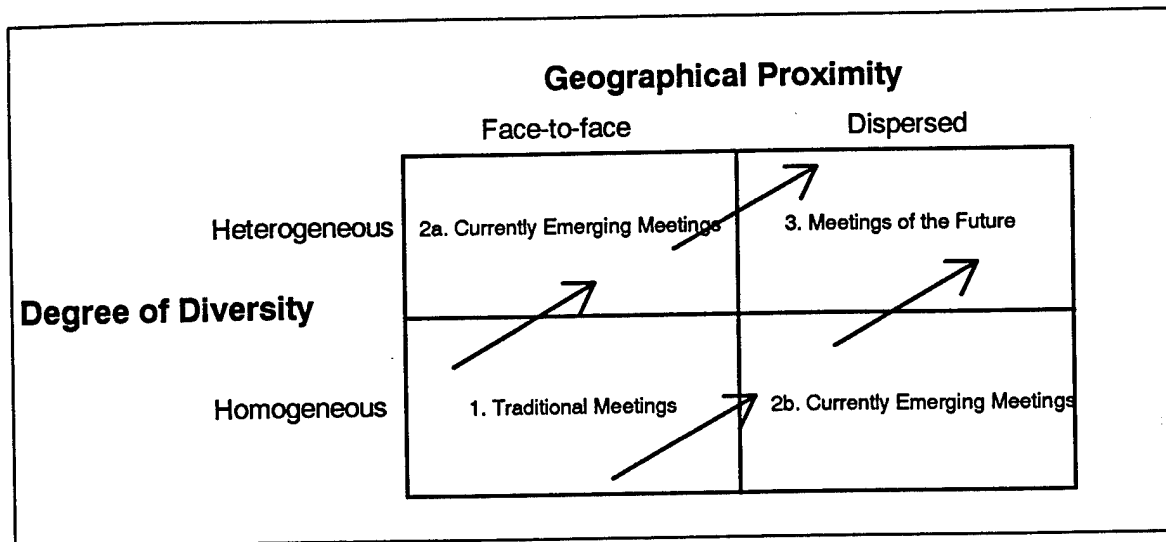
**Geographical Proximity**

|  | Face-to-face | Dispersed |
|---|---|---|
| **Heterogeneous** | 2a. Currently Emerging Meetings | 3. Meetings of the Future |
| **Homogeneous** | 1. Traditional Meetings | 2b. Currently Emerging Meetings |

**Degree of Diversity**

**Figure 1: Research Framework**

As the technology matured and the nature of organizational meetings changed, EMS vendors started supporting other types of meetings. Currently the technology supports dispersed groups generally within an organization (Cell 2b). EMS are installed on local area networks and are accessed by a limited number of organizational members. Generally, participants in these meetings tend to be technophiles with similar backgrounds from the same organization; the degree of diversity is relatively low. Advances in EMS technology--such as the development of iconic interfaces and their integration with the Internet--and the increasing diversity of the workplace are now making it possible for a wider range of participants to take advantage of EMS (Cell 2a). Technical limitations and the inertia of organizational teams have currently restricted these meetings primarily to face-to-face environments.

However, with the increasing globalization of business, the flattening of corporate hierarchies and the need for instantaneous communication, civilian managers are being pressed to explore innovative ways of linking their diverse and dispersed constituents. Similarly, the military leadership is also faced with the challenges of managing an increasingly diverse workforce, coordinating activities among multi-national forces, and maintaining efficient command and control operations (Aspin, 1992). In order to coordinate activities globally, the dispersed EMS offers tremendous possibilities: a relatively inexpensive system that can operate within the existing telecommunication infrastructure (in most organizations including the military). Such a system is essential, as *meetings of the future will involve people from different backgrounds operating in different places* (Cell 3).

In the currently evolving organizational context of empowering a diversified workforce, the need to provide flexible work environments without sacrificing productivity is paramount. Distributed EMS systems can enable organizations to provide such an environment. They can also help organizations make partners of external constituents by electronically linking such partners with their own organizational decision making

processes. Besides reducing the costs associated with transportation, such systems will form the basic infra-structure for communicating in the future.

In addition to offering an additional channel of communication, increasingly sophisticated EMS also offer participants the more conventional advantages of electronic meeting support such as anonymity and simultaneity. Experimental groups using these systems have shown that they can maintain their focus on the task-at-hand and handle inter-personal conflicts common to many heterogeneous groups (Chidambaram and Jones, 1993). Thus, organizational leaders can effectively use these systems to link diverse decision makers who are dispersed geographically. Our study examined such meetings of the future.

## UNDERSTANDING AND MANAGING DIVERSITY

Traditionally, the term diversity when applied to the work environment has been interpreted to mean gender and race (Thomas 1991). Diversity really refers, however, to perceptual and actual differences among individuals, and is evident in a variety of ways including: gender, ethnicity, age, physical abilities, cognitive styles, religion, national origin, socio-economic background, affectional orientation, education, learning styles, marital status, religious beliefs, and work experience (Jamieson and O'Mara, 1991; Loden and Rosener, 1991).

Diversity highlights several issues which must be carefully addressed in organizational environments; some of these issues include: the impossible-to-achieve homogeneous ideal, the oft-misguided strategy of assimilation, stereotyping and cultural myopia, inappropriate language, garbled communication, collusion and culture clash (Loden and Rosener, 1991). Thus, the dimensions of diversity refer to all the differences which can be a source of conflict or stress in the field or the workplace. In order to build cohesive teams and improve productivity, these issues of diversity need to be understood and managed by civilian and military organizations.

### Dealing With Diversity

Despite some exceptions, many managers often define "acceptable" employee behavior very narrowly; i.e., there is one (and only one) blueprint for how individuals can succeed, how they should communicate, and what image they must project (Galen, Palmer, Cuneo and Maremont, 1993). However, such a policy does not recognize differences among individuals; rather, it seeks to reinforce the restrictive--and often impossible-to-achieve homogeneous ideal (Loden and Rosener, 1991). Other responses to diversity such as stereotyping also ignore individual differences. Stereotypes represent median behaviors of groups and may not accurately describe a specific *individual's* behavior (Adler 1991). Empirical evidence suggests that executives who rely on stereotyping are generally rated ineffective managers by their peers (Ratiu, 1983). Stereotyping reduces group cohesiveness and can be disruptive to the organization.

Often, an unfortunate consequence of diversity is the extent to which communication gets distorted among heterogeneous groups (Jamieson and O'Mara, 1991). To communicate effectively, we must have the knowledge required to anticipate how our message will be translated and interpreted by others. Moreover, in diverse groups, various verbal signals (like use of nicknames or slang) and non-verbal signals (like hugging or back-patting) can be misinterpreted, leading to reinforcement of stereotypes and perceptions of insensitivity. Lack of awareness of nuances and innuendoes contained in cross-cultural interactions, can lead to garbled communication.

An extreme response to diversity--and potentially more damaging than poor communication--is lack of *any* communication. This can result as a consequence of collusion--the informal, and often pervasive, links among individuals that either knowingly or unknowingly exclude members who are "different". Loden and Rosener (1991, p. 47) state, "In mixed work groups ... it is not uncommon for people to informally group themselves by age, occupational level, gender, and race during coffee breaks and over lunch, thereby avoiding informal contact with others." As these informal networks become deep-rooted, they tend to isolate non-conformers (Adler, 1991). The consequences of such isolation for traditionally disenfranchised individuals can be especially serious. Occasionally, collusion may lead to culture clashes and open acts of hostility among group members.

**Defining Common Ground**

The previous discussion provides a clear message: *The existence of diversity in a group-- if not managed effectively--can be a source of tremendous stress for its members.* Managing diversity means defining common ground among various, often conflicting, perspectives. Defining common ground refers to the process of sharing differing points of view, establishing common goals, developing mutual respect and above all, valuing diversity (Loden and Rosener, 1991). This process is based on (a) limiting the assimilation of individuals into a single, unified prototype (b) recognizing the fact that individuals with various ideological, ethnic and cultural stripes can co-exist in an organizational environment, and (c) leveraging the differences among individuals into a source of strength (Thomas, 1991; Jamieson and O'Mara, 1991).

A number of advantages can accrue to an organization which is willing to define common ground among its diverse constituents, including full utilization of its human capital and shared organizational vision (Roosevelt, 1991; Loden and Rosener, 1991). Galen's (1993) report also indicates that many organizations providing supportive environments for their diverse workforce are enjoying higher productivity, lower turnover and increased employee morale. As non-traditional employees flood the workforce, the need for common ground will be critical for continued organizational success.

**Defining Common Ground With an EMS**

Electronic meeting systems (EMS) have been used in a wide variety of contexts: from product design to performance evaluation, and from brainstorming to negotiation (Dennis et al., 1988). However, despite the success of different EMSs in dealing with various problems related to team work, the efficacy of this technology in dealing with diversity has not been tested. Empirical evidence suggests that groups can expend a lot of energy and effort in managing diversity and occasionally even ignore the demands of the task at hand (Jamieson and O'Mara, 1991). Structural features of an EMS (discussed earlier) such as anonymous data input, simultaneous idea generation, electronic recording and display of issues, and process structuring can help groups deal effectively with diversity. At the same time, an EMS has the ability to link dispersed groups electronically. Thus, an EMS can be used effectively for dealing with the diverse composition of the group **and** communicating with team members irrespective of their location. The hybrid nature of the EMS--as a communication medium and as a manager of diversity--can provide an excellent vehicle for handling the stresses related to diversity and linking far-flung team members. This study examined empirically whether an EMS helps in defining common ground among diverse, dispersed groups.

## RELEVANCE OF RESEARCH

As discussed earlier, the increasing diversity of the work force and advances in communication technology indicate that *meetings of the future will involve people from different backgrounds operating in different places.* New paradigms are needed for understanding the behavior of a diverse work force operating in a dispersed setting. This study--while seeking to contribute to the development of such a paradigm--is based on the expectation that diversity has intrinsic value, which, if managed effectively, can yield effective results. In other words, if diversity is not managed, it can be a source of stress resulting in negative outcomes like distorted communication, interpersonal conflict and poor performance.

Research has shown that basic modes of communication and decision making differ among people from different cultural, ethnic and educational backgrounds (Roosevelt, 1991). The differences are apparent in such areas as the locus of decision making, initiation and coordination mechanisms, temporal orientation, mode of reaching decision, decision criterion, and communication style. These differences can cause stress and hinder effective communication and coordination among the group members. Results from this study will help provide answers to some of these basic questions of group behavior.

This study evaluated whether an EMS can help handle the stress caused by diversity and simultaneously compensate for the reduced "human touch" that occurs in dispersed settings. With the wide variety of electronic meeting systems and communication media available today, perhaps the biggest challenge is to select the appropriate media/system combination. The results of this study will help planners evaluate the impacts of an EMS

on heterogeneous groups in dispersed settings and thereby assist them in choosing what, if any, system ought to be used for enabling communication and collaboration.

In examining group dynamics, this study contributes to the science of organizational behavior in two ways:
- by seeking to understand media choice in groups; and,
- by helping to define the dimensions of diversity.

Specifically, our study will help in better understanding communication in groups composed of members with diverse backgrounds. As indicated earlier, the growing diversity in the work force could be a fertile ground for increased miscommunication, heightened conflict, culture clashes and reduced productivity. The results of this project will help expand our knowledge about effectively managing diversity in organizations.

## HYPOTHESES

In general, face-to-face groups, given their ability to communicate verbally, non-verbally and electronically were expected to be more cohesive and exert more influence than dispersed groups. Also, diverse groups--with their inherently different viewpoints--were expected to outperform their homogeneous counterparts. However, these very same viewpoints were expected to cause stress which would negatively affect their abilities to affiliate. Also, homogeneous groups--compared to diverse ones--have been shown to exert greater influence on its members to conform (Seashore, 1954). We expected similar results in this study. Figure 2 summarizes the differences among the four treatment conditions formed by the interaction of dispersion and diversity.

Three sets of hypotheses--related to group behavior, influence and performance--were tested in this study. Although only main effects were explicitly hypothesized (as seen below), interaction effects were also tested where appropriate.

### Group Behavior

H1a: Face-to-face groups will exhibit greater cohesiveness than dispersed groups.
H1b: Homogeneous groups will exhibit greater cohesiveness than diverse groups.
H2a: Face-to-face groups will manage conflict better than dispersed groups.
H2b: Homogeneous groups will manage conflict better than diverse groups.

### Group Influence

H3a: Members of face-to-face groups will exert greater influence on their group compared to those in dispersed groups.
H3b: Members of homogeneous groups will exert greater influence on their group compared to those in diverse groups.
H4a: Face-to-face groups will exert greater influence on their members than dispersed groups.
H4b: Homogeneous groups will exert greater influence on their members than diverse groups.

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## Group Performance

H5a: Face-to-face groups will perform better than dispersed groups.
H5b: Diverse groups will perform better than homogeneous groups.
H6a: Face-to-face groups will be more creative than dispersed groups.
H6b: Diverse groups will be more creative than homogeneous groups.

| Independent Variables | | | | |
|---|---|---|---|---|
| *Dispersion* | Yes | No | Yes | No |
| *Diversity* | Yes | Yes | No | No |
| **Effect on Dependent Variables** | | | | |
| *Group Behavior* | | | | |
| *Degree of Cohesiveness* | Low | Medium | Medium | High |
| *Ability to Manage Conflict* | Low | Medium | Medium | High |
| *Influence* | | | | |
| *Of Individuals on Group* | Low | Medium | Medium | High |
| *Of Group on Individuals* | Low | Medium | Medium | High |
| *Group Performance* | | | | |
| *Quality of the Decision* | Medium | High | Low | Medium |
| *Creativity of the Group* | Medium | High | Low | Medium |

**Figure 2: Expected Outcomes (Interaction Effects of Dispersion and Diversity)**

# RESEARCH METHODS

## Research Design

A controlled laboratory experiment was used to test the hypotheses presented above. A 2x2 factorial design was used, with the two factors manipulated being *geographic dispersion* and *degree of diversity*. Subjects were recruited from four undergraduate business classes at the University of Hawaii. Twenty five four-member groups were studied: 13 groups were dispersed and the other 12 were face-to-face. Of the dispersed groups, 7 were heterogeneous and 6 were homogeneous. Similarly, of the face-to-face groups, 7 were heterogeneous and 5 were homogeneous.

All groups performed with electronic meeting support--half had "face-to-face EMS" support and the other half had dispersed EMS support. Computer-supported groups, in both settings, used Ventana's *GroupSystems*, a leading EMS software package. [See Kranz and Sessa (1994) for more details.] The EMS was installed on a Novell 3.0 local area network that used thick/thin ethernet as the primary transport vehicle. In the face-to-face setting, subjects could communicate with each other verbally, visually and electronically while in the dispersed setting, subjects could only communicate with each other electronically.

Besides manipulating the two independent variables--geographic dispersion and diversity--all other potential sources of variation were either controlled or randomized. For instance, task types and task complexity were controlled, while facilitator assignment to groups and group assignment to treatments were randomized.

## Experimental Procedures

After reading and signing a consent form, subjects completed several pre-session surveys aimed at measuring diversity. For purposes of this study, four different aspects of diversity were measured; these included: cognitive, ethnic, cultural and learning diversity. Cognitive diversity was used as the primary mechanism for forming teams; the other measures were used as secondary indices. Diverse groups were formed with a combination of high and low scoring individuals (on the cognitive diversity scale), while homogeneous groups were formed with average scoring individuals. Additionally, the other diversity indices were used to ensure that diverse groups varied on ethnic, cultural and learning aspects as well.

*Cognitive diversity* was measured with the Keirsey-Bates version of the Myers-Briggs Type Indicator, MBTI (Keirsey and Bates, 1984). The MBTI has been validated across a broad spectrum of groups and is widely used to describe and differentiate people according to the way they prefer to "use their minds" (Murray, 1990). *Ethnic diversity* was measured based on the ethnic background of the participant's parents. *Cultural diversity* was measured using a validated instrument based on the work of several researchers (Schwartz and Bilsky, 1990; Rokeach, 1973). (See Appendix for a copy of the instrument.) *Learning diversity*, was assessed using the Kolb Learning Style

Inventory (Kolb and Fry, 1975), which classifies individuals into one of four categories based on their learning style: accomodator, converger, assimilator and diverger. These styles are based on a composite score that measures whether a person is an active or reflective learner and whether a person learns from concrete experiences or abstract concepts.

## Task

The task used in this study was the NASA lunar survival task developed by Hall (1989) and used in a variety of applied and experimental settings. The task requires participants to rank 15 items needed for survival on the moon. This task has a definite "right answer" solution worked out by the experts at the National Aeronautics and Space Administration in Houston, Texas. As Hall (1989) states, "The objective of this exercise is to explore the performance characteristics of the decision-making group--both its pitfalls and potentials--and the significance of member contributions for the quality of group production."

Subjects were asked to complete this exercise at three different times:

- individually, before the start of the group exercise with no input from any one else;
- as a group, with electronically-mediated interaction among group members; and,
- individually, after the group exercise.

## Dependent Variables

Three classes of dependent variables were examined in this study: group behavior, influence and performance. Each of these is discussed below.

*Group behavior* was measured using two different (yet related) constructs: degree of cohesiveness and ability to manage conflict. Cohesiveness--the extent to which members are attracted to the group and to each other--and the ability to manage conflict have been linked to a number of positive outcomes, including a heightened awareness of problems, a proclivity to change, enhanced motivation, increased morale, better decisions and greater creativity (Budman, Soldz, Demby, Davis and Merry, 1993; Keller, 1986). Additionally, cohesive groups tend to work harder to achieve group goals and display higher job satisfaction than non-cohesive groups (Seashore, 1954). However, excessively cohesive groups tend to avoid conflict, can exert strong pressure on members to conform and may be prone to groupthink (Evans and Dion, 1991; Janis, 1982; Seashore, 1954).

In this study, the degree of cohesiveness was measured using an updated version of Seashore's (1954) Index of Group Cohesiveness--a measure, which has been used widely in several studies (e.g., Burke and Chidambaram, 1995; Keller, 1986) for over four decades. This measure had a reliability (Cronbach's $\alpha$) of 0.75. The ability to manage conflict was measured using a validated construct comprised of responses to five questions. (See appendix for a copy of the instrument). This construct had a reliability of 0.50.

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*Group influence* comprised of two orthogonal constructs--the degree of influence exercised by the individuals on the group and the degree of influence exercised by the group on individuals. These measures are important indicators of the "power of the group" and can serve as surrogates for changes in group consensus (Hall, 1989). Both measures were based on a comparison of group ranks with the pre- and post- ranks of individual group members.

*Group performance* was measured using decision quality and group creativity. Decision quality was evaluated by comparing the ranks of groups with those of NASA. A creativity index developed by Hall (1989) was used to measure group creativity. This index basically compared the most accurate member's ranks with the group's ranks. (Lower absolute scores indicated better performance on both criteria.)

## RESULTS AND DISCUSSION

Analysis of Variance (ANOVA) was used to test the six hypotheses presented above. Results of these analyses are presented in Tables 1-6. The means of the dependent variables by treatment are presented in Figure 3. As these exhibits suggest, both hypotheses about group influence (H3 and H4) were supported. In other words, there were significant differences in influence among groups in the various treatment conditions. However, the hypothesized differences in behavior (H1 and H2) and performance (H5 and H6) among the groups were not detected.

These results, while partly supporting media richness theory, also raise doubts about its applicability in every setting. For instance, the need for a rich medium like face-to-face communication was needed in one situation, i.e., homogeneous groups seeking to exert influence, but was not needed in another setting--diverse groups seeking to do the same. Moreover, all groups (regardless of communication medium or degree of diversity) were able to perform equally well. This suggests that where the group goal is to engage in a structured exercise (such as exchanging information or ranking alternatives) lean media such as dispersed EMS can function just as effectively as rich media such as face-to-face meetings.

Results about each group of variables examined in this study--group behavior, influence and performance--are discussed below.

| Variable | Communication Medium | Group Type | | Grand Means |
|---|---|---|---|---|
| | | **GROUP BEHAVIOR** | | |
| **Cohesiveness** | | *Diverse* | *Homogeneous* | |
| | *Dispersed* | 2.40 | 2.37 | 2.38 |
| | *Face-to-Face* | 2.64 | 2.38 | 2.53 |
| | **Grand Mean** | 2.52 | 2.37 | 2.46 |
| **Conflict Management** | | *Diverse* | *Homogeneous* | |
| | *Dispersed* | 3.00 | 3.10 | 3.05 |
| | *Face-to-Face* | 3.03 | 2.88 | 2.97 |
| | **Grand Mean** | 3.01 | 3.00 | 3.01 |
| | | **INFLUENCE** | | |
| **Of Individual** | | *Diverse* | *Homogeneous[2]* | |
| | *Dispersed[3]* | 26.93 | 20.88 | 24.14 |
| | *Face-to-Face[4]* | 26.41 | 35.38 | 30.15 |
| | **Grand Mean** | 26.67 | 27.47 | 27.02 |
| **Of Group** | | *Diverse* | *Homogeneous* | |
| | *Dispersed* | 10.49 | 11.80 | 11.09 |
| | *Face-to-Face* | 16.66 | 25.24 | 20.23 |
| | **Grand Mean** | 13.57 | 17.91 | 15.48 |
| | | **GROUP PERFORMANCE** | | |
| **Performance** | | *Diverse* | *Homogeneous* | |
| | *Dispersed* | 33.43 | 34.29 | 34.77 |
| | *Face-to-Face* | 36.33 | 41.60 | 37.33 |
| | **Grand Mean** | 33.86 | 38.73 | 36.00 |
| **Creativity** | | *Diverse* | *Homogeneous* | |
| | *Dispersed* | 34.57 | 27.33 | 31.23 |
| | *Face-to-Face* | 33.71 | 34.80 | 34.17 |
| | **Grand Mean** | 34.14 | 30.73 | 32.64 |

**Figure 3: Means of Dependent Variables**

[2] t-test for differences in means: t-value of 3.77 with 9 df, p = .004
[3] t-test for differences in means: t-value of 2.40 with 11 df, p = .035
[4] t-test for differences in means: t-value of 2.19 with 10 df, p = .053

## Group Behavior

As Tables 1 and 2 indicate, the hypotheses regarding group behavior (H1 and H2) were not supported. In other words, there were no differences among groups in their cohesiveness or ability to manage conflict. We discuss here the reasons for these results.

### Table 1: ANOVA of Cohesiveness (Hypothesis H1)

| Source of Variation | Sum of Squares | DF | F | Sig. of F |
|---|---|---|---|---|
| Communication Medium (H1a) | .126 | 1 | .619 | .440 |
| Group Type (H1b) | .124 | 1 | .610 | .443 |
| Comm. Medium x Group Type | .081 | 1 | .396 | .536 |
| Residual | 4.278 | 21 | | |
| Total | 4.622 | 24 | | |

### Table 2: ANOVA of Conflict Management (Hypothesis H2)

| Source of Variation | Sum of Squares | DF | F | Sig. of F |
|---|---|---|---|---|
| Communication Medium (H2a) | .040 | 1 | .118 | .734 |
| Group Type (H2b) | .002 | 1 | .006 | .940 |
| Comm. Medium x Group Type | .095 | 1 | .279 | .603 |
| Residual | 7.122 | 21 | | |
| Total | 7.258 | 24 | | |

One dimension on which the groups differed was in the type of communication media used: some groups could communicate only electronically while others could communicate verbally, visually and electronically. Previous research has shown that media differ widely in terms of social presence, i.e., the ability of a medium to allow group members to feel the actual presence of a communicator (Short, Williams and Christie, 1976). Media that are high in social presence, also permit the transmission of rich information, i.e., they offer multiple channels of communication for exchanging verbal, non-verbal and visual cues, and permit the transmission of information rich in socio-emotional content (Daft, Lengel and Trevino, 1987; Daft and Lengel, 1986). The introduction of computer-support has generally tended to lower social presence among group members (Siegel, Dubrovsky, Kiesler and McGuire, 1986). Results from communication studies indicate that e-mail and computer-conferencing have lower social presence and are less "warm" than face-to-face communication (e.g., Fulk, Steinfield, Schmitz and Power, 1987).

In this study, all groups had computer support. However, we expected face-to-face groups to use the additional channels of communication--including verbal and non-verbal ones--to affiliate. The focused nature of the task and the lack of strong disagreements among members (given the nature of the sample) made these additional channels

somewhat redundant. More conflict-laden or ambiguous tasks or the presence of control groups (with no computer support) may have helped us identify the existence of differences in behavior among groups using different media.

Another dimension along which groups differed was in their extent of heterogeneity—some groups were diverse while others were homogeneous. Conventional wisdom and some empirical evidence (e.g., Thomas, 1991; Jamieson and O'Mara, 1991) suggest that diversity is a double-edged sword—it can be beneficial by providing multiple perspectives on problems, but it can also cause stress, if not managed well. In this study, we expected homogeneous groups to be more cohesive and manage conflict better than diverse groups. However, our results did not support this expectation. The groups in this study were comprised of student subjects who were fairly cordial towards each other and, in general, did not have any major disagreements. Since these conditions were true across the board—for diverse *and* homogeneous groups—we were unable to find significant differences in behavior. In "real world" settings and with organizational teams the differences that exist in the behavior of diverse and homogeneous teams may be more apparent.

**Group Influence**

As Tables 3 and 4 indicate, the hypotheses regarding group influence (H3 and H4) were both supported. Thus, groups differed in the degree of influence they exerted on members and the extent to which members exerted influence on them. Since the extent of influence exerted by members on the group was significantly different across both communication medium (dispersed vs. face-to-face groups) and group type (diverse vs. homogeneous groups), post hoc follow-up t-tests were conducted (See Figure 3). The first part of the discussion below focuses on these results. The latter part of the discussion focuses on the influence of the group on individual members.

**Table 3: ANOVA of Individual's Influence (Hypothesis H3)**

| Source of Variation | Sum of Squares | DF | F | Sig. of F |
|---|---|---|---|---|
| Communication Medium (H3a) | 228.677 | 1 | 6.733 | .017 |
| Group Type (H3b) | 7.127 | 1 | .210 | .652 |
| Comm. Medium x Group Type | 345.394 | 1 | 10.170 | .004 |
| Residual | 713.199 | 21 | | |
| Total | 1291.226 | 24 | | |

**Table 4: ANOVA of Group's Influence (Hypothesis H4)**

| Source of Variation | Sum of Squares | DF | F | Sig. of F |
|---|---|---|---|---|
| Communication Medium (H4a) | 544.956 | 1 | 12.806 | .002 |
| Group Type (H4b) | 139.455 | 1 | 3.277 | .085 |
| Comm. Medium x Group Type | 80.984 | 1 | 1.903 | .182 |
| Residual | 893.618 | 21 | | |
| Total | 1635.460 | 24 | | |

Results examining members' influence on the group (see Table 3 and Figure 3) suggest that diverse and homogeneous groups exhibited opposite effects when using different media. In other words, as expected, members of homogeneous groups exerted greater influence (on their teams) than those in diverse groups when meeting face-to-face. However, surprisingly, those in diverse groups exerted greater influence (on their teams) compared to their counterparts in homogeneous groups when meeting in a distributed setting.

Previous research suggests that members of homogeneous groups are comfortable with each other, conform to group goals and are likely to "toe the party line" (e.g., Jamieson and O'Mara, 1991). These effects can be amplified in face-to-face settings where verbal and visual channels are available to ensure the delivery of a variety of influence cues. Some evidence of such exchanges were found in this study. However, in dispersed settings the lack of multiple channels to transmit rich information may reduce the impact influential members may have on the group. As the results suggest, this effect was particularly apparent among members of homogeneous groups.

Among diverse groups, on the other hand, the opposite effect was evident. Members of such groups are likely to be inhibited, unwilling to express their true feelings and reluctant to exercise influence openly (e.g., Loden and Rosener, 1991). In face-to-face settings, these inhibitions--despite the availability of an electronic communication channel--are likely to be strongest. However, in dispersed settings with no ability to express or evaluate visual or verbal cues, these inhibitions are likely to dissipate. Hence, with little possibility of censure, members of diverse groups--as in this study--can exert their influence on teammates. Thus, results of this study support the argument that diverse groups exploited fully the anonymity of the EMS--their sole medium for communication--in dispersed settings.

The last aspect of this discussion focuses on hypotheses H4a and H4b. As Table 4 indicates, the main effects of group type and communication medium on the group's influence (on individual members) were significant. As expected, homogeneous groups (irrespective of setting) exerted significantly greater influence on their members than diverse groups. This result supports the conventional wisdom that lack of diversity in a group fosters the "homogeneous ideal" and exerts pressure on its members to conform. Even the presence of an EMS was not enough to mitigate these demands. In another unsurprising result, face-to-face groups (regardless of type) exerted greater influence on their members than dispersed groups. This result supports the various theories of information richness and social presence articulated by communication theorists (e.g., Daft and Lengel, 1986; Short et al., 1976). In essence, the face-to-face medium permits the easy exchange of rich contextual cues essential for exerting influence. Dispersed media--such as e-mail, audio-conferencing or computer-conferencing--while offering other avenues of exchanging such information, are not as well equipped for tasks involving ambiguity resolution including negotiating settlements, influencing members or resolving disputes (Daft et al., 1987).

## Group Performance

As Tables 5 and 6 indicate, the hypotheses regarding group behavior (H5 and H6) were not supported. In other words, there were no differences among groups in the quality of their decisions or in their creativity. Analysts (e.g., Loden and Rosener, 1991) have argued that diverse groups, with their multiple perspectives, tend to perform better and be more creative than homogeneous groups. However, we did not find evidence of that in this study. Task type might have contributed to the lack of significance across groups. The task (NASA Moon Survival) was a structured task with a definite correct solution. In the absence of precise information about conditions on the moon, merely having different perspectives about the solution was unlikely to result in the right solution. With other tasks that are more equivocal, diverse groups--with their differing viewpoints--may perform better.

### Table 5: ANOVA of Performance (Hypothesis H5)

| Source of Variation | Sum of Squares | DF | F | Sig. of F |
|---|---|---|---|---|
| Communication Medium (H5a) | 48.415 | 1 | .322 | .577 |
| Group Type (H5b) | 153.494 | 1 | 1.020 | .324 |
| Comm. Medium x Group Type | 29.805 | 1 | .198 | .661 |
| Residual | 3159.676 | 21 | | |
| Total | 3384.000 | 24 | | |

### Table 6: ANOVA of Creativity (Hypothesis H6)

| Source of Variation | Sum of Squares | DF | F | Sig. of F |
|---|---|---|---|---|
| Communication Medium (H6a) | 48.415 | 1 | .331 | .571 |
| Group Type (H6b) | 66.494 | 1 | .455 | .507 |
| Comm. Medium x Group Type | 106.205 | 1 | .727 | .403 |
| Residual | 3067.276 | 21 | | |
| Total | 3293.760 | 24 | | |

The lack of significant differences in performance between face-to-face and dispersed groups suggests that traditional theories of media richness may only apply to relational aspects of groups and not to their performance aspects. Hence, lean media (such as e-mail or EMS) may be sufficient for groups to accomplish their task, if the task (as in this case), is a structured exercise in uncertainty reduction. This result, in conjunction with the previous result (H3a and H4a), suggests that the proper task-technology-team fit is a critical factor in determining outcomes. In other words, homogeneous groups needing to discuss issues and resolve ambiguities may require face-to-face meetings while diverse groups may accomplish the same tasks in dispersed settings using an EMS. However, where the goal is information exchange and uncertainty reduction, lean media such as dispersed EMS may be used just as effectively (as any other media) by *all* groups. These results offer some support for the idea that an EMS can be used to effectively manage and leverage diverse and distributed groups.

# CONCLUSION

The results of this study offer some evidence that distributed EMS are a viable alternative for certain types of group activities. They also confirm some of the findings from other studies (e.g., Chidambaram and Jones 1993; Daft et al. 1987) regarding dispersed groups. In particular, the results suggest that geographically dispersed decision making is certainly possible--and even preferable--for certain teams and certain tasks. In particular, diverse groups working on amorphous, ambiguous tasks that involve negotiation and discussion will be able to accomplish it using a relatively lean medium such as a dispersed EMS. Homogeneous groups working on a similar task may require a much richer face-to-face medium. All groups, regardless of composition, will be able to accomplish structured, information exchange or evaluation tasks using lean media. Thus, these results suggest that while face-to-face meetings have a place in today's world, other alternatives--including the less costly distributed EMS option--may also be feasible (depending upon the team and task).

These results also suggest that members of diverse groups, irrespective of their location, can be linked effectively via an EMS. Thus, an EMS can play a dual role in organizations by helping them manage diversity and linking far-flung constituents. Additionally, this study underscores the fact that diversity, if managed effectively, can be an asset to organizations. In this study, members of diverse groups were able to use a relatively lean medium such as a distributed EMS to work with, affiliate and influence their teammates. Such systems may hold some promise for organizations like the military. Faced with shrinking budgets and growing diversity, the armed forces may be able to meet these challenges by using new electronic tools like remote EMS for communication and collaboration.

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# APPENDIX: POST-SESSION SURVEY

**1. The group carefully considered whether each alternative idea would make for a better quality decision.**

| Agree | | | Undecided | | | Disagree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**2. The group carefully checked the validity of members' opinions and assumptions.**

| Agree | | | Undecided | | | Disagree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**3. Premises for the group's strategy were not based on strong evidence.**

| Agree | | | Undecided | | | Disagree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**4. The most dominant member(s) influence on the group was:**

| Very Positive | | | Undecided | | | Very Negative |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**5. Do you feel that you are really a part of this work group?**

- ❑ Really a part of my work group.
- ❑ Included in most ways.
- ❑ Included in some ways, but not in others.
- ❑ Don't feel I really belong too much.
- ❑ Don't feel I belong at all.

**6. If you had a chance to do the same kind of work in another student work group, how would you feel about moving to a different group?**

- ❑ Would want very much to stay where I am.
- ❑ Would rather stay where I am than move.
- ❑ Would make no difference to me.
- ❑ Would rather move, than stay where I am.
- ❑ Would want very much to move.

**7. How does this group compare with other student groups on each of the following points?**

| | Very much better 1 | Better than most 2 | About the same 3 | Worse than most 4 | Very much worse 5 |
|---|---|---|---|---|---|
| A. The way people get along together | ❑ | ❑ | ❑ | ❑ | ❑ |
| B. The way people work together | ❑ | ❑ | ❑ | ❑ | ❑ |
| C. The way people help each other | ❑ | ❑ | ❑ | ❑ | ❑ |

**8. Ideas expressed in the discussion were <u>uncritically</u> examined.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**9. The functions of leadership in the discussion were poorly served.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**10. The participants tended to initiate discussion on irrelevant issues.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**11. The participants' contributions were well amplified.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**12. The participants <u>did not</u> deal with issues very systematically.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**13. Participation in the discussion was unevenly distributed.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**14. The behavior of the group was goal directed.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**15. Group members openly acknowledged and confronted conflict.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**16. There was constant bickering among the group.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**17. The group handled conflict effectively.**

| *Agree* | | | *Undecided* | | | *Disagree* |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**18. One part of the group seemed to be working against the other parts.**

|  Agree | | | Undecided | | | Disagree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**19. Did you find yourself wanting to say things that you didn't say?**

| Very Frequently | | | Undecided | | | Very Infrequently |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**20. How satisfied were you with the final decision of the group?**

| Very Satisfied | | | Undecided | | | Very Dissatisfied |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**21. Conflict was limited to task-related issues and not to group members' personalities.**

| Agree | | | Undecided | | | Disagree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**22. The facilitator(s) did not interfere in the content of our group discussions.**

| Agree | | | Undecided | | | Disagree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**23. Our discussions were:**

- ❑ Dominated by one individual.
- ❑ Dominated by a coalition of two members.
- ❑ Democratic, with each of us having an equal say.
- ❑ Dominated by the facilitator.