Computer Conferencing: Choices & Strategies
Jill Y. Smith, *University of Denver*

Abstract

Computer conferencing permits meeting through the computer while sharing a common file. The primary advantages of computer conferencing are that participants may (1) meet simultaneously or nonsimultaneously (2) contribute across geographic distance and time zones. Due to these features, computer conferencing offers a viable meeting option for distributed business teams. The presentation summarizes past research and practice denoting practical uses of computer conferencing as well as types of meeting activities ill suited to the medium. Additionally, the presentation outlines effective team strategies to maximize the benefits of computer conferencing.

COMPUTER CONFERENCING: CHOICES AND STRATEGIES

Jill Y. Smith
University of Denver
Department of Management Information Systems
Denver, CO 80208

ABSTRACT

This paper connects the growing popularity of distributed business teams with the feasibility of supporting team meetings with a nonsimultaneous (or asynchronous) computer conference. The conclusion is that a properly designed nonsimultaneous computer conference may render a competitive advantage to firms wrestling with the problems of managing the multi-site interdependence characteristic of distributed business teams. However, design issues are difficult and attempts to directly substitute a nonsimultaneous computer conference for a face-to-face conference are likely to fail. Text discussion addresses why this communication medium is different and the known advantages and limitations inherent in computer conferencing. A brief discussion summarizes present and state-of-the art computer conferencing technology to provide context for the major contribution of the paper. That contribution is CELRUA, or a set of strategic guidelines salient in the design and implementation of a nonsimultaneous computer conference.

COMPUTER CONFERENCING: AN INTRODUCTION

> *Our fundamental thesis is that a firm's ability to continuously improve the effectiveness of managing interdependence is the critical element in responding to new and pressing competitive forces. Unlike in previous eras, managerial strategies based on optimizing operations within functional departments, product lines, or geographical organizations simply will not be adequate in the future.*
> *(Rockart and Short, 1989)*

Computer conferencing (CC) offers a forum for an electronic meeting. CC technology supports group interaction on a defined task; communication is largely text based, however graphics and data may be exchanged as well. CC differs from EMail in that CC provides a common environment for topic discussion rather than the exchange of discreet comments.

Participants may elect to meet through a CC simultaneously. However, the distinguishing characteristic of a CC from other computer-mediated meeting channels (e.g. audio or videoconferencing) is the ability to hold a nonsimultaneous (or asynchronous) meeting. Not having to be present in real time means that participants can transcend geographical and temporal constraints. Additionally, participants may work on different agenda items according to their talents and are not constrained by group progression through an agenda (Turoff 1991). The theme of this paper is that the nonsimultaneous CC may render a competitive advantage to firms wrestling with the problems of managing multi-site interdependence.

COMPUTER CONFERENCING AND DISTRIBUTED BUSINESS TEAMS

CC is a technology worth exploring to support the communication needs of an increasing phenomenon, the geographically distributed business team (Kutsko and

Smith, 1991). Business is now acutely aware of the need for high performance business teams and many said teams operate from multiple physical locations. Sometimes the teams represent permanent functional workgroups such as purchasing agents located at different plants. However, other teams are formed as ad-hoc task forces. Johansen (1988) typifies the latter as fluid organizational forms whose members are assigned (and reassigned) based on their ability to contribute, not on their position in the organizational chart. Examples of organizational teams include project teams, brand teams, sales teams, account teams, new-product teams, and crisis-response teams.

Often these teams are cross-functional and perform in a decentralized, matrix environment. Herein lies the opportunity and challenge for CC technology. Present CC meeting advantages accrue primarily in (1) coordinating activities, (2) generating and organizing information, (3) asking and responding to inquiries, and (4) controlling work flow.

However, these benefits are not automatic because CC is not a direct substitute for a face-to-face conference and the medium is apt to fail when considered a substitute (Johansen, 1984). For example, information filtering and organization techniques available in state-of-the-art CC systems create capabilities not present in face-to-face meetings. Alternatively, face-to-face communication is certainly richer in communication channels (voice intonation, eye contact, posture, dress, etc.) The problem is to understand the dynamics of the CC experience and to forge a match between distributed business teams communication needs and CC capabilities.

PRESENT MARKET AMBIVALENCE TOWARD CC

Past research and practical experience with CC creates polarized opinions and is no doubt related to the present rather ambivalent market acceptance of CC software (Straub and Wetherbe, 1989). Typical pro and con CC sentiments are listed below. Quotations illustrating each statement come from the book Electronic Meetings (Johansen et al. 1979, pp. 61-79).

Pro CC Sentiments:

1. CC is valuable for presenting technical information.

    For accuracy's sake, I think it might be best to stick to computer conferencing. In other meetings, a lot of technical errors go unnoticed.

2. CC allows vigilance at home while meeting with people elsewhere.

    I'm really glad I can visit local groups here during the day and still be an active participant in this conference.

3. CC provides a written transcript which provides continuity between meeting sessions as well as a written record.

In my opinion, the transcript is one good argument for continuing in this conference.

4. CC enables "back burner", careful, objective consideration of the issues.

    Computer conferencing works well for me. I can file my reports at any time of the day, have a permanent record, and can check to see if what I am sending is accurate. It enables us to deal objectively with a mass of data.

5. CC promotes egalitarian participation for shy personalities and for individuals who may be stymied in face-to-face conversation with authority figures.

    I'm glad to see Professor Pierson speaking up in this conference. He is really a strong thinker, but I know he is also very shy in meetings. A colleague of mine attended a large international conference in Montreal where he was also in attendance, but didn't say a word!

Con CC Sentiments:

1. CC is ill suited to resolving interpersonal problems.

    ...I think we should try to avoid solving interpersonal problems in this medium. Remember when we were having trouble with the LCF data base and we attempted to solve it over the terminal? We were tying to help, but each message came out like judgments in a criminal court.

    and

    > *In retrospect, I can see that the basic flaw in the conference was the overemphasis on the value of information in solving a culturally complex problem. With one or two possible exceptions, we failed to acknowledge the importance of the interpersonal aspects of the meeting--the building and maintenance of alliances.*

2. CC meeting formats may provide too much structure.

    It was structured so rigidly that we never had a chance to get basic concerns out in the open.

3. CC meetings often suffer from information overload.

    We finally reached a complete impasse when there was more data than any of us could absorb!

4. CC meetings require self-regulation to participate. Unevenness of participation can create feelings of mistrust and isolation.

    One of the most serious [manifestations of mistrust] was the unevenness of participation. Some people responded to new entries every day. Others responded only irregularly.

Such an atmosphere understandably tends to make organizations leery of CC. Many organizations have piloted CC and given up either through bad experiences or inertia (Johansen, 1988). What is not apparent in the above comments is that end

users must apply any communication technology, including CC, appropriately to a true business need. "Applied appropriately" means that designers concentrate equally on the communication needs and technical capabilities. According to Bikson and Eveland (1986 p. 9), "...we cannot appreciate what a tool is until we see what it does -- or better yet, use it ourselves to do something we value having done."

The following section presents a synopsis of present and future CC technology. Then discussion summarizes CC potential and limitations through the lens of communication theories and past research/practical experience. The remainder of the paper recommends technical and organizational design strategies to examine the "fit" between the communication needs of distributed business teams and CC capabilities.

COMPUTER CONFERENCING TECHNOLOGY

CC belongs to a family of computer-mediated communication systems including EMail, facsimile, computer-bulletin boards, videotex, voice messaging, and videoconferencing. The intention of CC design is to support the group and the application (Turoff 1991). However, to date the basic CC format available to organizations provides minimal support. Two formats are widely available. One consists of a common file to which conference participants write comments in sequential order (e.g. EIES). A second is a reply oriented system where respondents respond to new comments as they arrive (e.g. Confer). Generic facilities support (1) keyword searches, (2) links between various topics, (3) defined participant roles and privileges, and (4) the ability to track each participant's progress through the transcript. Generally, private message capability complements the group conference.

Advanced features lend more support. For example, an agenda may allow participants to pursue major points (not necessarily in sequential order). Additionally, structure may support a decision making process such as the Delphi method or nominal group technique. Feasible too are electronic questionnaires, graphics, and an array of voting techniques.

In the future, CC products may incorporate additional "groupware" features (Johansen, 1988). Prototype facilities exist for (1) hypertext to improve message linking, (2) text filtering to cope with information overload, (3) group authoring software, (4) decision aids and artificial intelligence protocols to structure problem solving and decision making, and (5) conversational structuring to better manage and administer projects. To a limited extent, some of these features are commercially available today.

CC POTENTIAL AND LIMITATIONS: SOME CAVEATS

Communication theories (Fulk et al. 1990, Daft et al. 1987, Short et al. 1976, Rice 1987) and practical experience lend insight on nonsimultaneous CC shortcomings and promise. Limited presently to a largely text-based format, CC conferees experience difficulties conveying interpersonal information and using the medium for consensus building and decision making activities (Smith and Vanecek,

1990). Without sufficient group norms to respond promptly, questions go unanswered and mistrust develops with perceived isolation. This has led to the conclusion that text-based mediums are optimal for information exchange, coordination, asking questions, keeping informed, and reducing uncertainty with swift communication (Rice, 1984; Kydd and Ferry, 1991). At times CC meetings are more successful when participants have pre-conference face-to-face get togethers to develop mutual trust.

However, research examining past CC transcripts indicates that interpersonal communication is present and the inclusion of social and emotional comments may be more related to experience with the medium and to group norms than to the medium itself (Rice, 1987; Chesbro, 1985; Steinfield, 1986). Additionally, the need for interdependent communication by people at different locations and time zones may moderate a natural preference for face-to-face or telephone communication channels (Rice, 1987). This is the "mother is the necessity of invention" syndrome.

CC design and effective use depends on two caveats. First, the technical design must provide mechanisms both to deal with information overload (e.g. text filtering), and to provide balance between conversation structure and freedom to pursue new avenues of thought (e.g. hypertext). Second, the distributed team members must buy into the idea of a nonsimultaneous meeting and perceive personal benefits greater than costs (Grudin, 1988). Benefits point to an augmented capability to work interdependently from a distance. Costs encompass the time and energy necessary to develop and learn new group processes for expressing interpersonal messages that will not be misinterpreted. Costs also include a group norm for self-regulated meeting "attendance." The concluding section outlines strategic considerations in planning a CC to support a distributed team.

CC STRATEGY, THE CELRUA GUIDE

Capitalizing on communication need, distributed business teams have an opportunity through CC to augment their communication capabilities. Teams can configure the technology, task, and group process norms and create a new communication skill -- a nonsimultaneous meeting.

Strategic decisions discussed below begin with the strategy developed in the book Teleconferencing and Beyond (Johansen, 1984). The basic strategy has been expanded and targeted specifically to issues salient in the implementation of a nonsimultaneous computer conference. "CELRUA" is an acronym for the strategy derived from the imperative verbs beginning each guideline.

Complete and accurate needs assessment. Establish the critical success factors to meet key unmet business needs. Example needs of distributed teams suggesting a nonsimultaneous CC are:

1.   A sales force that needs current product information.

2.   An ad hoc task force or project team which needs to communicate across geographic and temporal barriers.

3.   Vigilance on the home front or security issues prohibit travel.

4.   A competitive requirement exists for swift task completion.

5.   Planning and coordination of the work flow is crucial.

6.   Technical information changes and team members must know about the changes.

7.   A focus on quality management mandates participatory management across distance.

Establish a clear, immediate benefit. Change will always be difficult, but a clear, immediate benefit for a pressing problem may provide the necessary impetus to change traditional communication patterns. Identify a communication bottleneck limiting the performance of a distributed team and pilot a nonsimultaneous CC. A successful initial experience may expand insights on the use of the medium.

Learn from experience. Cumulative past experience from MIS, OA, and teleconferencing implementation failures is transferable to the CC context. Technological innovations need a senior management advocate and that advocate should be both visible and present at least through the initial pilot. Sometimes referred to as the "information technology champion," this individual "has the vision, keeps pushing when the going gets tough, generates creative energy, and makes it happen" (Cook, 1988).

Past lessons demonstrate that CC will not work if brought in as a toy or if users do not perceive a clear benefit. Additionally, CC use will be minimal if the learning curve is complex and no time is allotted to learn or share experiences. Finally, team members must have a sense of ownership. Preferably, adoption will be a team choice or, at least, team members should have strong inputs to both the technical and group process design choices.

Recognize company/team culture and individual differences.
Existing groups have both task and maintenance components. Maintenance components reflect group norms for working together. Face-to-face groups typically have norms about (1) where people sit in a conference room, (2) communication turn-taking, (3) clout of individual team members based on seniority, respect, or power, (4) amenities available in the conference room, and (5) acceptance of supporting technology. Often maintenance factors operate without conscious discussion or even group awareness. However, given the limited communication channels available in a CC, maintenance factors need design attention, not just happenstance. For example, a CC may provide a conference "space" solely for social interaction.

Do not Underestimate the technical complexity of CC design. Preferably, CC technology supports generic group processes rather than any specific task. In this respect, CC technology is analogous to a DBMS product which provides a common

user interface from which designers build specific database applications. However, CC design is more complex than database design because text is unstructured data. Creating a single user interface so that users can selectively contribute and weave their way through meeting content while simultaneously structuring group communication is a significant design challenge.

Educators creating on-line CC courses speak of the significant up-front tasks necessary to support a CC environment. None of the face-to-face props exist (e.g. tables, chairs, blackboards, coffee machines). The designer/instructor must create environmental spaces for social and cognitive interaction (Harasim, 1991).

Today's CC systems support idea generation far better than idea management. That is, brainstorming and reacting to other's ideas are not difficult; however synthesizing and making sense of those ideas is cumbersome. Advanced work (now commercially available) by Murray Turoff on EIES2 at the New Jersey Institute of Technology incorporates object-oriented design principles to better manage conference text (Turoff, 1991).

<u>Address the problem of responsibility</u>. As discussed above, designing a CC from a generic "tool set" is complex and time consuming. However, monitoring and "coaching" participants through both the social and cognitive task requirements mandates indispensable and constant attention by the conference "owner." At this time it is not clear who the "owner" should be -- the team leader or a separate CC facilitator. Given the multiple, simultaneous demands on team leaders and the necessity for quick response to CC participant questions, a separate CC facilitator is beneficial. Facilitator requirements include knowledge of the technology, task, and group maintenance norms necessary for a nonsimultaneous CC.

CONCLUSION

This paper describes the potential of a nonsimultaneous CC to meet the communication requirements of distributed business teams. Pro and con sentiments concerning CC illustrate the minimal acceptance of this communication medium to date. Basic present day limitations with nonsimultaneous, primarily text-based meetings center in three difficulties: (1) providing sufficient interpersonal communication and timely response, (2) managing information overload, and (3) striking a balance between structure and freedom to develop new avenues of thought. Newer technology (Turoff, 1991) may alleviate the latter two problems. Conscious CC design effort to provide appropriate group behavioral norms may address the first issue.

Recognizing the problems and limitations of CC technology, the central theme of this paper is that the communication requirements of distributed teams may stimulate interest in a nonsimultaneous CC. Exploiting that interest, the paper outlines design strategies, termed CELRUA, targeted toward social and technical considerations impacting CC implementation.

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