Collaboration via E-mail and Internet Relay Chat: Understanding Time and Technology

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SUMMARY

The purpose of this preliminary study was to structure and begin to study how collaborators working across distance perceive and use e-mail and Internet Relay Chat (IRC) to facilitate their collaboration and decision-making processes. Students from the University of Western Sydney and the University of Minnesota worked in pairs to respond to four decision-making scenarios over a 4-week period. Using e-mail, students came to a decision more quickly than with the use of IRC, and when IRC was slow, students reverted to a series of rapid-fire e-mail messages to facilitate their work. Students appreciated the cross-cultural experience; however, they struggled to create a shared communicative context via the Internet.

We study the global marketplace; however, we seldom offer students experiences that would prepare them for their future collaborative work with professionals throughout the world. We work for multinational companies; however, we seldom participate in training that moves beyond self-assessment exercises (Goodman 1994), role-playing, and simulations (Pedersen 1988). We adopt new technologies; however, we seldom prepare for the resulting effects on collaborative processes. If technical communicators are to survive the inevitable eruptions and constant uncertainties of work in the next century, they need the ability to collaborate using a variety of technological environments; they need the ability to understand and communicate across the boundaries of time and technology.

The purpose of this preliminary study was to structure and begin to study how collaborators working across distance perceive and use e-mail and Internet Relay Chat (IRC) to facilitate their
collaboration and decision-making processes. Seventeen undergraduate students from the University of Western Sydney and 5 undergraduate and 12 graduate students from the University of Minnesota used IRC for real-time collaboration and electronic mail for delayed exchange of messages as they responded to 4 decision-making scenarios over a 4-week period.

In terms of time, the Australian and American students had to consider the 15-hour time difference between their locations; to schedule an IRC session meant determining who would get up early and who would stay up late. On a deeper level, time can be thought of as a straight line or as a circle: as the linear, sequential march of days and years, or the rotation of the seasons; as doing one thing at a time or allowing many things to happen simultaneously; as sacred schedules or open-ended ones (O'Hara-Devereaux and Johansen 1995).

Time can also produce very different task performance in both individuals and groups (McGrath and Kelly 1986). Instead of describing e-mail and IRC as separate "channels," we could typify the two modalities as necessitating differing characteristics in terms of their demand on one's time. Indeed, early research into computer-mediated communication (CMC) did exactly this; asynchronous and synchronous CMC results were often simply aggregated.

Thus, investigating collaborators' use of e-mail and IRC may help us begin to understand how same-time and delayed-time technologies affect collaboration and decision-making. And hopefully, through such an investigation, we give students the opportunity to collaborate with those who may hold different orientations toward time.

The technological environments themselves—virtual classrooms, virtual corporations, and virtual communities—indeed alter our notions of collaboration (Duin and Archee in press; Gurak 1996; Rheingold 1993). Instead of assuming that collaborators meet in the shared space of a conference room, we often assume that they meet electronically. Instead of assuming that employers primarily provide technical communicators with experience and practice in the kinds of collaboration that the corresponding culture most values, technologies allow people the opportunity to structure interactions and practices that may differ from those occurring within traditional workplaces or classroom settings.

The technologies used in this study differed both in terms of time (delayed or same-time) and in terms of how users interpreted and accommodated them to their needs. We know that with any use of technology, social structures and technological manifestations constantly evolve as participants appropriate features of the technologies into their broader cultures (Duin and Hansen 1996; Fulk 1993). In the case of collaborating across this great distance, an even broader set of social structures and technological manifestations arises as collaborators work to understand the technology, understand their collaborators, and construct a communicative context to support their activity.

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In the remainder of this article we present the method used in this study, a detailed analysis of an e-mail segment and an IRC segment, and results from a student questionnaire. We conclude with a discussion of the difficulties associated with this study as well as implications for technical communicators.

METHOD

In this preliminary study, pairs of students from the University of Western Sydney and the University of Minnesota read four case scenarios, used either electronic mail or Internet Relay Chat to discuss the scenarios, came to a decision based on each case, and reported on their decision to either one of us. Each scenario represented either a convergent or divergent topic and was discussed either via e-mail or IRC. (All four scenarios are available on request to either author.) Twelve of the University of Minnesota students were graduate students in a masters program in scientific and technical communication, and five were undergraduate technical communication students in a document design course. The University of Western Sydney students, representing a wide variety of majors ranging from humanities to computer science, were in an undergraduate-level course titled "Cyberspace and Community." We assigned the students into their collaborative pairs, and we allowed students to
correspond with their partners outside the confines of the study.

We asked all participants to forward their e-mail and IRC correspondence to us. Because we decided not to monitor students’ participation, we could not ensure that all correspondence would be forwarded to us. For those messages or IRC logs forwarded to us, we used the qualitative conversation analysis program QSR NUD.IST to analyze the correspondence. (NUD.IST stands for Non-numerical Unstructured Data Indexing Searching and Theorizing.) A research assistant at the University of Western Sydney prepared the data sets for analysis by the NUD.IST program, and a research assistant at the University of Minnesota coded each text unit according to the Bales’ (1967) and Scollon and Scollon (1995) scales. We used the sentence as the unit of analysis. The assistant coding the text units first memorized the scales/descriptors, then categorized each statement that met the descriptors for one of the categories, then met with one of the researchers to discuss text units that may have more than one description, then corrected for any misinterpretations of the categories.

At the end of the study we distributed a questionnaire online to all participants.

**RESULTS**

All of the participants immediately introduced themselves as part of the research project. Students referred to geography as a way of locating themselves relative to their partners, going so far as to refer to maps. One American student opened her discussion by describing where she was located geographically: “Bloomington, Minnesota—Home of the Mall of America.” Between the second and third cases, she asked how her pop-culture perceptions of Australia (from TV and novels) compared with the real item and then offered more visual descriptions of her Minnesota landscape. Still another American graduate student asked her Australian partner to “watch Willard Scott’s weather report on the Today show for a geography lesson,” making the assumption that Sydney, Australia, received the NBC morning show’s weather report.

From the units forwarded to us, we know that the totals ranged from 147 to 875; that in six cases, the Australian partner forwarded more text units than the American partner, and that in six cases, the American partner forwarded more text units than the Australian partner; that roughly one fourth of the forwarded text units were devoted to discussing the scenarios and that roughly three fourths of the forwarded text units were devoted to other discussions; and that in seven cases (four American female students; three Australian female students), the females discussed more (or forwarded more text units) than did their male partners, who discussed more (or forwarded more text units) in only four cases (two American male students; two Australian male students).

**Analysis of the Conversations**

We used the Bales (1967) Interaction Process Analysis (IPA) scales to analyze general interaction processes, and from intercultural communication theory, we adapted Scollon and Scollon’s (1995) Grammar of Context to study how participants might be interpreting the context surrounding their collaboration.

Using the Bales (1967) scales, we categorized each participant’s statement as being in one of the following areas:

- **Socioemotional area:** Shows solidarity (seems friendly)
  - Positive reactions
    - Shows tension release
    - Shows agreement
  - Task area: Answers
    - Gives suggestion
    - Gives opinion
    - Gives orientation
  - Task area: Questions
    - Requests orientation
    - Requests opinion
    - Requests suggestion
  - Socioemotional area:
    - Shows disagreement
    - Shows tension
    - Shows antagonism

To summarize our general findings using this scale, we found that participation was equal in both e-mail and IRC modes. The IPA showed marked increases of the first six categories of interaction, or the “positive” acts, and marked decreases in the second six categories, or the “negative” acts. If we attribute conflict to the second six Bales categories, then there was a definite lack of conflict in the exchanges in this study. Depending on your view of decision-making and the task in question, this lack of conflict may be regarded as either beneficial or antithetical to effective collaboration.

According to Scollon and Scollon (1995), “We interpret the meanings of speakers because we know the rules by which contexts are constructed. We could call this a kind of grammar of context, which we use
to interpret the meanings of speech acts within speech events which occur within speech situations” (pp. 21-22). Their emphasis is on the shared knowledge of context which is required for successful professional communication. They state that one major aspect of becoming educated as a professional communicator is “learning the very specialized contexts of business and other professional work environments. In a real sense a professional communicator earns that designation because he or she has invested the time and effort directly in the study of the contexts of professional communication” (p. 22).

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Scollon and Scollon’s aim is to provide a common vocabulary for talking about the many aspects of context which are relevant in professional communication, and the seven main components of their Grammar of Context are the following (in each case, we describe how we defined the category for purposes of this study):

Scene: This includes elements such as
- setting—in our case, delayed-time vs. same-time conversation
- time—references to the time at which a message was composed and to future times for IRC or rapid-fire e-mail sessions
- place—references to immediate location (for example, “my office,” “my desk”) and to landmarks around which the participants organized their life (for example, the “Mall of America”)
- purpose—references to the purpose of the study and their work
- topic—anything related to discussing the scenarios
- genre—discussion specifically of the characteristics of e-mail vs. IRC (noting anticipation of IRC, or complaints about the ineffectiveness of IRC)

For this study, we used it to indicate when a collaborator misread or misinterpreted the tone or mood of the conversation.

Participants: This includes statements regarding who the collaborators are and the roles they take; i.e., statements of personal likes/dislikes, career, family life, student at university, or statements talking about being a part of this project (for example, as “participants in The Great Intercultural Experiment”).

Message form: This includes speaking (not applicable in this case), writing, silence, and other media.

Sequence: This includes statements about setting a structure for the conversation.

Co-occurrence patterns: This includes patterns of conversation that are or are not expected.

Manifestation: This includes statements that show either a tacit or explicit awareness of the other collaborator’s culture (for example, one American student’s references to the Sydney Opera House).

Whereas the Bales scale helped us address the question, “What are they doing?,” Scollon and Scollon’s Grammar of Context helped us address the question, “How are they doing it?” (p. 23). Scollon and Scollon’s grammar is designed to illustrate the characteristics of a context; in this project, students were constructing a context of communication where previously none had existed. By using Scollon and Scollon’s grammar, we therefore also addressed the question, “What contexts are they constructing?”

The following e-mail and IRC segments from Jacob and Rita illustrate how we used these two scales to categorize the correspondence between collaborators in this study. We chose to include results from this pair of students because they were both undergraduate students, they represented the “middle ground” in terms of totals of text units sent to us, and their first two conversations were nearly complete in terms of the correspondence that was saved and forwarded to us.

E-Mail Segment

Jacob and Rita came to agreement and completed three of the four scenarios. After introductory messages, Jacob began discussing scenario one in which the collaborators were to choose which of four courses should be required for all undergraduates. Italics indicate where Rita copied parts of Jacob’s e-mail message into her response.
**E-mail exchange—Rita and Jacob—Scenario #1**

Howdy, I’m back.
Well by now I assume you have to have had a bit of a read through of our first collaboration task.
Well here is my suggestion as to which subject I believe should be compulsory for the new year.
Wait for it ... drum role please, subject b.

Although it was a close call between that and subject c, the only reason why I didn’t run with c is because it sounds frighteningly similar to a subject I did last year, and just between you and me (oh yeah and Ray and presumably Ann) it wasn’t the best one I’ve done to date (in my opinion that is).
Anyway my particular viewpoint behind this choice covers a number of possibilities, firstly, the supposed belief that everyone will (at some stage anyway) be using the internet in some capacity.
It would be, therefore, fairly relative to be able to gather experience in a university/college situation.
Therefore offering such a course would help many to develop the skills necessary to survive in an ever-changing world.
The only downfall I can see in this type of situation, is that those who, for whatever reason, don’t go to uni/college will once again miss out.
However I guess it isn’t our job to moralise over that one . . .

Well I guess I’ve talked your ear off so I will sign off for now, and shall eagerly await your concurrence or rebuttal of my suggestion.
Talk to you soon. Jacob. 8”)

**Rita responds three days later:**

Jacob, I’m back.
Well by now I assume you have to have had a bit of a read through of our first collaboration task.
Yes. Actually, I read it a few days ago.
I apologize for this delayed response.
But here it goes:
Wait for it ... drum role please, subject b.

Well, guess what?
I chose b too.
Now that we’ve made our decision, it’s time to formulate the reasoning process . . .
We concur, and we’ve got some reasons.
How do you think we should go about writing the “this is our decision . . .” memo?
Do you want to write this one and I’ll write the next?
vice versa?
other suggestions?

-Rita

<table>
<thead>
<tr>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bales: seems friendly</td>
</tr>
<tr>
<td>Bales: requests orientation</td>
</tr>
<tr>
<td>Bales: gives orientation</td>
</tr>
<tr>
<td>S&amp;S: topic</td>
</tr>
<tr>
<td>Bales: gives opinion</td>
</tr>
<tr>
<td>S&amp;S: topic</td>
</tr>
<tr>
<td>Bales: gives opinion</td>
</tr>
<tr>
<td>S&amp;S: topic; roles they take</td>
</tr>
<tr>
<td>Bales: gives opinion</td>
</tr>
<tr>
<td>S&amp;S: topic</td>
</tr>
<tr>
<td>Bales: gives opinion</td>
</tr>
<tr>
<td>S&amp;S: topic</td>
</tr>
<tr>
<td>Bales: gives opinion</td>
</tr>
<tr>
<td>S&amp;S: topic</td>
</tr>
<tr>
<td>Bales: seems friendly; requests orientation</td>
</tr>
<tr>
<td>Bales: seems friendly</td>
</tr>
</tbody>
</table>

As can be seen, Jacob opens the conversation for scenario one by asserting which of the four course options he prefers. He does not follow the model of many other groups, or that of discussing the relative weaknesses of other options. Rather, it’s straight away into the argument for option b. Rita responds in kind, noting that “now that we’ve made our decision, it’s time to formulate the reasoning process.” Jacob and Rita decide that they will each write one of the reports to the researchers detailing their conclusion; that is, they do not intend to collaborate in terms of generating the report together.

Table 1 shows how we categorized this full e-mail exchange according to the Bales’ IPA scale. We see
Table 1. Analysis of the text units in the e-mail segment

<table>
<thead>
<tr>
<th>Bales’ (1967) Scale Item</th>
<th>Jacob’s Text Units</th>
<th>Rita’s Text Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioemotional area: Positive reactions</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Shows solidarity (seems friendly)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Shows tension release</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Shows agreement</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Task area: Answers</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Gives suggestion</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gives opinion</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Requests orientation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Requests opinion</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Requests suggestion</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Socioemotional area: Negative reactions</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Disagrees</td>
<td>16</td>
<td>26</td>
</tr>
</tbody>
</table>

that because Jacob began the conversation, he generated slightly more units in which he gives his opinion. Since Rita responds, she generated many more units in which she provides orientation; these units mainly consist of her copying parts of Jacob’s previous message and then responding to them. She also requests suggestions about how they should handle writing the report.

Examining their complete e-mail segment in terms of Scollon and Scollon’s Grammar of Context, we see that they spent the vast majority of the time discussing the topic (27 text units), Rita spent some time setting the agenda (five units), and Jacob referred once to the roles they took. Essentially, the context they constructed focused on coming to a quick decision regarding the topic and then continuing to stay focused primarily on the task and topic.

In terms of time and technology, Jacob expressed a common myth, “the supposed belief that everyone will (at some stage anyway) be using the internet in some capacity,” and he expressed hope that through the understanding of computer technology, students will gain “insight to the cultures and beliefs/ideals of other people such as we are doing through this collaboration.” By choosing to ignore the ethics of their decision (“I guess it is not our job to moralise over that one”), Jacob pushed forward to come to a solution. Rita also expressed her need to hurry, assuming that since she read his message “a few days ago,” her not responding immediately to e-mail required her to “apologize for this delayed response.” Based on the same facts, they came to the same conclusion, and Rita urgently requested suggestions on how they might write and submit their report.

In contrast to this conversation on a convergent topic via e-mail, the following segment shows how their conversation differed when the topic was a divergent one conducted via IRC.

IRC Segment

In the following IRC exchange, Jacob and Rita discuss the second case on gender equality on the Internet. Jacob speaks of an “Internet all about freedom of speech, choice, etc.,” and Rita makes note of the difference between their responsibility to act as users of the Internet and as citizens of society. Yet Rita’s final conclusion is that “this discrepancy in the sexes...will address and therefore correct itself.” Paragraphs in the transcript beginning with <R> indicate Rita’s text; paragraphs beginning with no descriptor indicate Jacob’s text; paragraphs beginning with # indicate either a computer statement or a gesture sent by Rita or Jacob.

In this IRC exchange, Jacob and Rita seem to have reached a consensus much more slowly, in part perhaps because IRC in this case provided for a fuller discussion of the issues. It also allowed Rita to thrice demand, “Again I ask, is it appropriate for a university to give non-university students access to the internet??” IRC is also the only point in the discourse at which Rita felt free to vocalize tension with Jacob’s tendency to play devil’s advocate.

They also discussed their phone conversation and their accents. Jacob exchanged phone numbers with Rita because he felt that e-mail might delay their progress: “I’m going to give you my phone number, just in case you want to ring so we can work out some kind of timetable.” Strangely, then, Jacob believed that traditional, synchronous (telephone) communication was necessary to arrange for an appropriate time to engage in synchronous e-mail conversation.

Table 2 presents the detailed results of the Bales’ IPC analysis of the complete IRC segment.

In row one, 24 IRC text units showed solidarity; these 24 units represented 21% of the total number of IRC text units; these 24 units also represented 6.8% of the total text units for the entire set of exchanges (which has a total of 354 text units); and
IRC exchange—Rita and Jacob—Scenario #2

### Value of LOG set to ON

<R>: It might do some harm... but what are under 18 people doing on a university account?
<R>: Obviously, something odd is going on

There have been some reports in the news here of primary school kids getting access to that sort of info from school
<R>: But this situation is in regard to a university

Yeah, but it is not stopping others from getting the info, so they have banned everyone
<R>: They should enforce who has access then

At the moment there is a company (I think) in Melbourne that has banned the sex channels
<R>: If the individual is registered as a university student then they would receive an account with unlimited access...
<R>: Have we reached a decision yet? why do you want to get some rest/or go partying?
you have to excuse me, I make my living out of playing devils advocate and therefore can argue a point until I'm blue in the face even if I'm wrong

#R laughs
<R>: no... I just don't want to argue if we don't have to

<R>: arguing makes me tense

<R>: this is the way you make your living?
<R>: what are you, a lawyer?
I think we can agree that we both think there should be some limiting to underage users so yes in a way I guess we have reached a decision, and no
I'm not a lawyer, I'm who they are a journalist
<R>: again, I ask... is it appropriate for a university to give non-university students access to the internet?
ethically no, but at my uni the computer access is run by students so I guess anything is possible
is ethically too strong a word?...

It was nice to talk to you on the phone, put a voice to all the key strokes (that sort of thing)
<R>: actually, it took me by surprise... I was half asleep trying to figure out why I was speaking to someone with an accent

#R laughs
What do you mean, you are the one with the accent
<R>: sure....

#R smiles
well I guess that wraps it up, I will let you go and rest/party or whatever it is you do at 1 am over there
<R>: that's the one thing that took me a little while to get used to... the actual existence of others

#I laughs
Did you think that only the U.S. existed
<R>: well, that's not really what I meant... it's just hard to picture another individual putting text on my computer screen...

<R>: well... I guess we'll just have to eagerly wait for our next task:)

no worries bye
<R>: g'night!
g'afternoon
#R waves

### Signoff: R (Leaving)
Table 2. Analysis of the text units in the IRC segment

<table>
<thead>
<tr>
<th>Bales’ Scale Item</th>
<th>IRC text units</th>
<th>% of overall IRC text units</th>
<th>IRC totals as % of entire document</th>
<th>% of this category for e-mail and IRC combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioemotional area: Positive reactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shows solidarity (seems friendly)</td>
<td>24</td>
<td>21.0</td>
<td>6.8</td>
<td>13.7</td>
</tr>
<tr>
<td>Shows tension release</td>
<td>2</td>
<td>1.8</td>
<td>0.6</td>
<td>1.1</td>
</tr>
<tr>
<td>Shows agreement</td>
<td>10</td>
<td>8.8</td>
<td>2.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Task area: Answers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives suggestion</td>
<td>1</td>
<td>0.8</td>
<td>0.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Gives opinion</td>
<td>18</td>
<td>16.0</td>
<td>5.0</td>
<td>12.8</td>
</tr>
<tr>
<td>Gives orientation</td>
<td>27</td>
<td>23.6</td>
<td>7.6</td>
<td>19.0</td>
</tr>
<tr>
<td>Task area: Questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requests orientation</td>
<td>8</td>
<td>7.7</td>
<td>2.0</td>
<td>4.2</td>
</tr>
<tr>
<td>Requests opinion</td>
<td>10</td>
<td>8.8</td>
<td>2.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Requests suggestion</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>Socioemotional area: Negative reactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagrees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shows tension</td>
<td>3</td>
<td>2.6</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Shows antagonism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Server message</td>
<td>4</td>
<td>3.5</td>
<td>1.1</td>
<td>1.1</td>
</tr>
</tbody>
</table>

the final column indicates the percentage of units which ‘show solidarity’ regardless of whether the unit was part of an e-mail or an IRC conversation. The final column is only significant if compared to the previous column; that is, 13.7% of the text units forwarded to us from this pair “show solidarity.” Half of those text units appeared in IRC. We cannot determine whether this is a factor of IRC or of these two people.

This IRC exchange represented a third of the total text units forwarded to us by Rita and Jacob. This third includes fully half of the “shows solidarity,” “shows agreement,” “requests orientation,” and “requests opinion” text units. For this pair, perhaps IRC encouraged these types of statements. Also, whereas Jacob and Rita came to agreement based on whole discourses (e-mail exchanges) at a time during scenario one, their agreement comes more slowly via IRC during scenario two, and their solidarity increases.

Regarding Scollon and Scollon’s (1995) Grammar of Context, as can be seen in the elements of the exchange quoted here, Jacob and Rita clearly spent the vast majority of the time again talking about the “topic.” They also spent more time indicating “who they are”; they “correct for the time difference”; and they compare e-mail versus IRC (genre category). The synchronicity of IRC allowed them to construct a somewhat more open context in which they could disclose who they were and the roles they were taking.

Questionnaire Results

We asked all participants to complete an online questionnaire. Students indicated several reasons for liking the project, with the overwhelming response being that they enjoyed working with partners from another culture.

Approaching the scenarios from a different perspective was most often indicated as a cultural difference between partners. In terms of surprises and frustrations, both American and Australian students felt that they encountered no major surprises and that the most frustrating part of the project was clearly the use of IRC. In terms of their overall thoughts about using e-mail and IRC to collaborate, both American and Australian students were equally divided. About half wrote that e-mail seemed more effective for getting information, whereas IRC seemed more effective for making decisions, and the other half indicated the opposite, preferring e-mail for compiling thoughts and making decisions and preferring IRC for getting to know their partners. One American male participant wrote:

I enjoyed working with e-mail and IRC. The experiment demonstrated the powers of CMC [computer mediated communication] for this type of work. I tend to think better when I put words on a page; however, I know quite a few people who do not. Before engaging in such a collaborative relationship with someone “for real” I’d like to have some idea how comfortable he or she is.
with written versus conversational dialogue as a brainstorming/negotiation/collaboration tool.

Regarding decision-making processes, the American participants were twice as likely to pose a recommendation to their partner, discuss it, and then come to an agreement, whereas the Australian participants described a variety of processes. One Australian woman wrote that

When using email, I thought about the topic longer and spent more time reaching a decision and writing about my decision. When using IRC, I only read the topics just before entering IRC so I didn’t spend as much time thinking about it, and I also waited to see what my partner was going to say about the topic rather than deciding beforehand exactly what I was going to say. When discussing topic four, I reached a decision (very quickly) before I entered IRC, but when discussing topic two I only thought of some comments to make and didn’t reach a decision beforehand.

Discussion and Implications

This was a preliminary project intended to connect learners for the purpose of increasing our knowledge of collaboration via e-mail and IRC. Since this was a preliminary project, we had difficulties. First, the e-mail messages and IRC logs (the data set) were irregular and incomplete because participants forwarded messages and IRC sets to us. We made this choice because we wanted participants to retain authority over the content and direction of their messages. Second, the unit of analysis was the sentence, so parentheticals and compound sentences with completely different speech acts were sometimes grafted together. As can be seen in the e-mail and IRC segments presented earlier, if a sentence represented more than one category, it was coded with the additional categories.

Third, a great deal of frustration was experienced with the use of IRC. Although participants initially were excited to use IRC, this excitement quickly faded when we were faced with University restrictions, a lack of participant knowledge of how to use IRC, and an extremely slow Internet. In fact, many pairs decided to send a series of rapid-fire e-mail messages back and forth since this at times was actually faster than IRC. Interestingly, this improvisation constituted synchronous communication through an asynchronous medium and showed how the pairs constructed the technological context to meet their communicative needs.

In nearly all cases, participants struggled to create a shared communicative context on the Internet. Where no context had previously existed, participants forged connections with those they had never known before. Participants knew that this was a short-term project (most classroom-based projects are obviously short-term), and Walther (1994), based on his study of asynchronous and synchronous CMC and face-to-face groups, states that “CMC appears to be more interpersonally positive when used by members who at least think that their association will have some longevity” (p. 495). Walther further notes that the use of CMC for one-shot groups runs some risk of greater impersonality. Were participants to assume that their collaboration would be continued beyond the scope of the project, or were participants to engage in a series of projects in which they could develop closer
connections with their partners, perhaps then we might better study and understand how participants alter their constructions and uses of these technologies over time. Clearly, cross-cultural teams in multinational companies are often put together with the assumption that the collaboration will continue over a series of projects. Such collaboration might be examined in a way similar to that employed in this study.

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Regarding issues of time and technology, did partners share facts but come to different conclusions based on different orientations toward time? Approaching the cases from a different perspective was most often indicated as a cultural difference between partners, but we have no way of knowing whether this difference was due to time or other factors. We know that participants used e-mail and IRC differently; to those who use these technologies on a regular basis, this comes as little surprise. We know that the myth that IRC somehow could be used to meet easily and come to quick decisions was quickly dispelled by the sheer slowness of the Internet and administrative policies prohibiting its use. These factors—Internet overload and organizational policies—are very real factors influencing how technical communicators will use or not use the Internet for collaboration across distance.

Our hope is that these preliminary findings will help technical communicators begin to consider how they are using e-mail and IRC to support their global work as well as how these technologies allow them to “cross over” from one culture to another. In an age in which we need to localize our products and the accompanying documentation (see Hoft 1995), the need for those technical communicators equipped with the expertise to meet with and address the special concerns of audiences from other cultures will only increase.

As technical communication researchers and practitioners, we need to continue to ask the question: What technological contexts should we construct to support decision-making and collaboration across distance? If we rely on asynchronous communication alone (for example, e-mail), we may “orient” our responses according to those messages previously sent, and in some cases, fail to consider alternatives. If we rely on synchronous communication alone (for example, IRC), we may consider more alternatives, but we may come to the communicative event less prepared to present and defend alternatives. Ultimately, we need a variety of technologies to support collaboration, and we need to examine each technology in terms of the types of collaboration it supports and the ways it influences how decisions are made. In addition, we need to consider how time influences both the design of the technology and the way that we use it. We need to recognize myths surrounding our understanding of time and technology.

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Increased collaboration using emerging technologies will result in the creation of an entirely “different universe with an entirely new ecology that defies all the old assumptions” (O’Hara-Devereaux and Johansen 1995, p. 30). Technological advances heaped on each other allow us to do many things simultaneously; however, do we understand how they change our collaboration? Each technology likely supports one perspective over another, one orientation toward time over another, one process over another. Clearly this is an area to be studied from within each organizational, cultural, and technological context. Collaborators need to assess their communicative contexts, to pose questions regarding culture and time, to log conversations and study them in terms of what happened and how it happened.

We know that technical communicators working in today’s global contexts rarely have time for usability testing, let alone time for studying their collaboration processes. In the best of worlds, technical communicators who are collaborating across distance would allow researchers to study the
collaboration, offer ideas for technologies that might be used, and suggest ways to encourage "a literal crossing over by members of one culture to where they may help with the special concerns of members of another culture" (Bunker and Adair 1959, p. 26).

Our tendency to embrace technologies for use in long distance collaboration indeed requires critical examination; it requires teams of practitioners and researchers working together. Gurak (1996) states that "our cultural tendency to embrace new technologies based only on speed and efficiency should be balanced with a critical examination of CMC" (p. 96). Despite the problems and the complexity, we feel this area of inquiry—collaboration via the Internet—holds promise. On a global level, theorists, researchers, and practitioners welcome knowledge about how collaborators construct, understand, and order knowledge via contrasting technologies. On a local level, studies such as this offer students the opportunity to collaborate cross-culturally. At a time when technical communicators are exploring alternative modes of information delivery, exploration and a critical examination of the effects of advanced technologies on global collaboration and decision-making are paramount.

REFERENCES
QSR NUDIST. 1993, 1994. Non-numerical Unstructured Data Indexing Searching and Theorizing. Copyright Qualitative Solutions and Research Pty. Ltd., La Trobe University, Bundoora Campus, Victoria, Australia. (ACN 006 357 213)