Introduction

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Computer-mediated communication (CMC) is communication that takes place between human beings via the instrumentality of computers. This book focuses on text-based CMC, in which participants interact by means of the written word, e.g., by typing a message on the keyboard of one computer which is read by others on their computer screens, either immediately (synchronous CMC) or at a later point in time (asynchronous CMC).[1] Twenty years ago, this activity was largely unknown outside of a few elite government and academic research institutions in the United States. Today, text-based CMC is engaged in regularly by millions of people around the world, an increasing proportion of whom now gain access to the global network—known as the Internet—through commercial providers rather than through institutional mainframes.[2]

The phenomenal growth of CMC has captured both popular and scholarly imaginations. Cultural theorists and technophiles have been quick to envision sweeping changes in the social order as a result of the democratic and anarchic possibilities inherent in widespread use of a networked medium which allows anyone with access to speak out more or less anonymously, and which is not as yet subject to any centralized authority or control. Utopian visions of class- and gender-free virtual societies have arisen alongside of dystopic visions involving information overload, e-mail addiction, uninhibited aggression, and the eventual breakdown of people's ability to engage one another face-to-face. The popular media contribute to the clamor by focusing on sensational aspects of life in "cyberspace" (as computer networks are collectively and metaphorically known) such as electronic pornography, pirated data, and virtual rape.

While some empirical studies of CMC have been carried out, futuristic speculation and popular stereotyping still far outstrip the availability of factual information. There is thus a pressing need for descriptive and empirical research on computer-mediated interaction, and it is for this reason that the present collection was produced. The 14 papers contained herein are scholarly works which report on empirical observation and analysis of CMC, most in the form of

case studies focusing on specific CMC genres. The collection is interdisciplinary in its outlook, with an overall emphasis on language, culture, and social interaction. However, no attempt is made at completeness in any of the areas represented; rather the goal is to bring together a variety of approaches to CMC so that their insights might inform one another and direct future research.

The data examined in this volume represent a broad range of CMC genres—synchronous and asynchronous, local and global, academic and recreational. In other respects the data are more limited: because of ethical issues associated with collecting and analyzing private e-mail correspondence, most of the examples are drawn from public or semi-public group interactions, and with the exception of one chapter which describes interaction on a French-speaking "chat" channel, all of the CMC analyzed here is in English.[3]

A further limitation is the time involved in getting a collection of this sort together and in print. The chapters for this volume were originally written in 1993 and 1994, yet CMC has continued to expand and evolve in the intervening years. For example, the numbers of female users and computer network users of both sexes who access the Internet from their homes have increased dramatically in the past year;[4] these changes in user demographics are not addressed in the volume. Nor does the volume contain many references to the World Wide Web, which first began attracting attention in 1994 and has grown in the intervening two years to rival interactive text-based CMC in popularity.

The passage of time has also worked to our advantage. Because of recent exponential increases in computer network use, many more readers are now familiar with CMC through direct personal experience than would have been the case in 1993. And the significance of CMC itself has been validated through its continued growth: no mere passing trend, CMC has emerged as an important new communication modality that is increasingly permeating everyday life in industrialized societies. Back in 1993, I entertained fears that the subject matter of this volume would appear marginal or arcane to all but a small body of enthusiasts. Such fears have been effectively mooted by recent developments. With a critical mass of readers now Internet literate, the general awareness has caught up with the concerns of this book. Rather than wondering whether CMC scholarship is legitimate, a more appropriate question now is how scholarship can best keep pace with the continued expansion and diversification of CMC.

Historical background on CMC research

When computer networks were first designed in the 1960's, their primary purpose was to facilitate the transfer of information protocols between computers. No one, least of all their inventors, imagined that such networks would come to be used predominantly for human-to-human social interaction (Rheingold 1993b; but cf. Licklider et al. 1968). Some of the earliest researchers to concern themselves with this phenomenon were Starr Roxanne Hiltz and Murray Turoff, sociologists involved in a U.S. government-sponsored project to

explore the implications of computer networks for government communications. Hiltz and Turoff's 1978 book, *The Network Nation* (republished in 1993), stands as an early classic in the field of CMC research, although its vision is somewhat idealized. Another major milestone was the publication in the mid-1980's of experimental work by social psychologist Sara Kiesler and her colleagues comparing computer-mediated and face-to-face behavior; Kiesler et al. (1984) is a particularly clear and oft-cited articulation of this early work. Not surprisingly, communications scholars were also among those who took a relatively early interest in CMC (e.g., Cathcart and Gumpert 1983; Chesebro 1985; Rice, ed. 1984), and the mid-to-late 80's also saw a growing practical interest in research on CMC in organizational and business settings (Sproull and Kiesler 1986; Zuboff 1988). Yet another productive branch of CMC scholarship sprouted several years later as composition specialists began to explore the implications of networked classrooms for teaching writing (Batson 1988; Cooper and Selfe 1990; Faigley 1990; Peyton 1989). Surprisingly, although text-based CMC is constructed almost exclusively from linguistic signs, linguists have been slow to consider computer-mediated language a legitimate object of inquiry. Exceptions to this are early articles by Baron (1984) and Murray (1988, 1989), and a special issue of *Written Communication* in 1991 containing a frequently-cited paper by Ferrara, Whittemore, and Brunner characterizing "interactive written discourse" as an emergent discourse genre. Other approaches, such as the analysis of gender and cultural differences in CMC, the dynamics of virtual communities, and psychotherapeutic uses of computer-mediated interaction, have arisen only in the past few years, and numerous potentially fruitful areas of pragmatic and sociolinguistic analysis are currently being identified in ongoing research. As of this writing, scholarly inquiry into CMC is expanding simultaneously in multiple directions, and we can expect new foci of CMC research to continue to emerge in the future.

Key issues in CMC research

What is interesting about CMC? While it is beyond the scope of this introduction to touch even fleetingly on all the issues which have intrigued scholars and provoked heated debates on-line and off, certain properties of CMC draw repeated comment, and are addressed to varying degrees in the papers in this volume. I will mention three of these here.

The first issue concerns the *language* of CMC: it is typed, and hence like writing, but exchanges are often rapid and informal, and hence more like spoken conversation. Moreover, the computer-mediated register has unique features of its own, such as the use of "emoticons" (smiley faces composed of ascii characters) and other graphics, as well as special lexis ("lurking", "flaming", "spamming"[5]) and acronyms (FAQ, IMHO, RTFM[6]). Finally, CMC is not homogeneous, but like any communicative modality, manifests itself in different styles and genres, some determined by the available technologies (e.g., real-time

"chat" modes, as opposed to asynchronous e-mail), others by human factors such as communicative purpose and group membership. Separating out the contributions of the medium from those of human users is an important prerequisite to further CMC analysis. It is also important that CMC and its structural variants be accurately described, for what such description stands to contribute to our knowledge of the typological diversity of human communication. A number of the papers in this book (Collot and Belmore; Yates; Werry; Condon and Čech; Herring) are concerned to characterize CMC in linguistic terms.

A second characteristic of the medium that has provoked speculation is the fact that participants interact without the benefit of extra-linguistic cues as to the gender, identity, personality, or mood of their interlocutors (e.g., Hiltz and Turoff 1978/1993). This observation, or some form of it, has led some to hypothesize that text-based CMC is impersonal or distancing, making it useful for the transfer of information but unsuitable for personal relationships. (This hypothesis is belied by most of the papers in this volume, especially the chapter by Deuel on "virtual sex".) The alleged "impersonality" and "anonymity" of the medium have also been claimed to result in decreased inhibition, leading to self-disclosure on the one hand and increased expression of hostility on the other (Kiesler et al. 1984; Kim and Raja 1991). More idealistically, others perceive in the lack of physical cues a potential freedom from limiting gender, class, ethnic, and other status-based prejudices; they claim CMC is inherently democratic—one is judged solely on the merit of what one says, not on who one is. The issue of communication across group and status boundaries is addressed in this volume in the papers by Ma, Meagher and Castaños, and Ziv. However, the democratization view has been substantially undermined by the results of research in at least one area, that of gender. Gender asymmetries have been found to carry over wholesale from face-to-face interaction, and even to be exaggerated in CMC (Herring 1993a inter alia, and this volume; Hall, this volume; cf. Graddol and Swann 1989). These observations give rise to a fundamental question: to what extent does the computer medium alter human interaction, and to what extent do people simply map their existing patterns of behavior onto communication in the new medium?

The last issue of general interest relates to the phenomenon of community formation in cyberspace (Rheingold 1993b). On-line communities take shape, generate norms of interaction (for example, rules of network etiquette, or "netiquette") and conflict resolution procedures, literally before our eyes, in text that can be saved and mined later for insights into the genesis of human social organization. The potential of CMC to bring people together, for better or worse, also has practical consequences both for individuals and the social order. Virtual communities, like communities "in real life", must protect the interests of their members, and ethical dilemmas result when individual and group needs come into conflict, as well as when certain groups dominate in defining the terms of

the discourse. The question of "access" in the broader socio-political sense has barely begun to be addressed, yet ultimately it will determine the ends to which the potential of the global network is put. These broader issues are addressed to varying degrees in the papers by Kollock and Smith, Hall, Herring, Korenman and Wyatt, and Gurak in this volume.

CMC as data

At this point, a few words are in order about using CMC as data. Research on computer-mediated communication is still in its infancy, and the authors in this volume have had to devise their own methodologies or adapt methods from other domains to address their research questions about on-line language and social interaction. Some authors have devised sampling techniques for constructing representative corpora, some have made use of questionnaires as data-gathering instruments, some have relied on ethnographic observation of naturally occurring interactions, and some have combined these and other methods. CMC has advantages in respect of each of these methods: large corpora are easily amassed, in that interactions come already entered as text on a computer; surveys can be distributed and returned electronically; and observers can observe without their presence being known, thus avoiding the "Observer's Paradox" that has traditionally plagued research in the social sciences.

In other respects, however, the use of CMC data poses ethical dilemmas. For example, is it ethical to collect data while "lurking" (reading without contributing) on an electronic forum? To the extent that a forum is open to the public, one can argue that this practice is essentially no different from collecting data by eavesdropping on a conversation in a public place such as a restaurant or an airport (Herring, forthcoming). A question still remains, however: how much information about the data sources should be revealed in scholarly publications? Many researchers feel it is best to avoid using participants' real names, especially if the messages are personally revealing or if the analysis is unflattering. King (forthcoming) takes this position to an extreme by advocating that researchers should avoid mention of any specifics concerning the messages or their sources altogether, including the name of the discussion group, so as not to violate the "perceived privacy" of the participants. At the opposite extreme, some consider all CMC to be published written material, and hold that quoting it without crediting the source is in violation of copyright (e.g., Cavazos 1994; Gurak, In press). As this brief discussion illustrates, there are as yet no generally agreed-upon guidelines governing CMC research practices.[7]

The editorial policy followed in citing CMC data in this volume makes a distinction between restricted- and open-access electronic fora, the former of which are considered private, while the latter are public. With data from private or semi-private sources, pseudonyms have been used to refer to participants and groups unless permission to use real names was explicitly granted by the participants involved. Messages posted publicly to Usenet and to open-acess

Listservs are exempt from this requirement, although some authors have elected to mask all participants' identities by the use of pseudonyms regardless, as a matter of courtesy. Finally, if a message is cited to credit (or argue against) its content, rather than as an example of a phenomenon under investigation, its source has been cited as though it were a published reference (e.g., in the chapter by Gurak). In short, an attempt has been made to follow common sense in respecting as much as possible the privacy of those whose messages are cited as examples, while giving credit for ideas where credit is due.

Organization of the volume

This volume is organized into four sections. The first section, *Linguistic Perspectives*, constitutes perhaps the largest collection of linguistic analyses of CMC to appear together in print to date (although I expect and hope that this record, if indeed it is a record, will soon be surpassed). The five papers in this section represent three approaches: corpus linguistics (lexico-grammatical analysis), conversation analysis, and text linguistics; all but one make use of quantitative methods. A common concern expressed in these papers is how CMC compares with other language modalities, especially with spoken and written language.

The second section, *Social and Ethical Perspectives*, contains three papers, each of which is concerned in some way with conflicts of interest between groups, or between individuals and society, in cyberspace. Included in this section are discussions of freedom of speech, including sexually-explicit and hate speech, and the collective interests of a wider community of users. These are the most theoretical papers in the volume, although all maintain a strong descriptive orientation and are based on extended ethnographic observation of computer-mediated communities.

The third section, *Cross-Cultural Perspectives*, is made up of three case studies of computer-mediated interaction between members of different cultures: East Asian and North American college students, Mexican and American high school students, and socially-disadvantaged first-year college students in the United States in interaction with academic institutional culture. A shared concern in these papers is whether CMC in fact facilitates intercultural learning and appreciation, as has been claimed.

The fourth and last section, *CMC and Group Interaction*, applies varied disciplinary approaches to the question of how electronic communication contributes to the construction of group identity by communities of users. The papers in this section address a powerful characteristic of computer networks, which is their ability to bring people together who might not otherwise come together, or who would normally interact in different ways (for example, in more hierarchical or convention-bound roles).

Following the four sections, bibliographic references cited in this introduction and in the individual chapters have been combined into a collective

list at the end of the book. This was done so as to eliminate redundant references to commonly-cited works, and to produce a convenient resource for those interested in reading about or researching CMC further. The resulting 29-page list includes approximately 240 references to work on CMC, most of it published since 1992.[8]

Overview of the chapters

The book begins with a chapter by Collot and Belmore on "Electronic Language", in which they analyze lexical and grammatical features of a large corpus of computer-mediated messages sent to an electronic bulletin board system in Canada. Collot and Belmore apply Biber's (1991, 1992) factor analysis to their corpus, comparing the electronic corpus with computerized corpora of spoken and written English. They identify two types of Electronic Language—on-line and off-line—and situate them along six dimensions: informativity, narrativity, explicitness, persuasion, abstraction, and elaboration. The result is a more exact characterization of electronic language than would be possible by simply contrasting it with "spoken" and "written" modalities.

Yates' chapter describes the construction of another large CMC corpus; this one is based on messages exchanged on a computer conferencing system at the Open University in the United Kingdom. Yates compares his corpus with computerized corpora of spoken and written English, following a Hallidayan model that considers textual, interpersonal, and ideational functions of language. His results show that CMC is more like written language with respect to vocabulary use (textual), more like spoken language with respect to the use of personal pronouns (interpersonal), and makes greater use of modal auxiliaries (ideational) than either speech or writing.

Werry takes as his data a synchronous mode of CMC known as Internet Relay Chat (IRC). The chat sessions he analyzes are in English (on an Australian channel) and French. In addition to providing a useful taxonomy of features that characterize this little-studied genre, Werry argues for the essential "orality" of IRC by pointing out ways in which participants attempt to recreate aspects of spoken language through graphic and orthographic means.

The chapter by Condon and Čech directly compares face-to-face and synchronous computer-mediated interaction in an experimental study. Pairs of subjects, some face-to-face and others connected via microcomputers, were asked to complete four decision-making tasks involving planning social events. The authors found that all subjects followed a general decision-making schema, but that subjects under the two experimental conditions differed in their frequency of use of interactional functions such as metalanguage, repetition, and discourse markers. Overall, the CMC interactions were found to be more efficient, while the face-to-face interactions produced more detailed plans.

Herring analyzes the schematic organization of electronic messages posted to two academic mailing lists, one mostly male and the other mostly female, in

order to evaluate the popular stereotype that men and women use e-mail for different purposes (information exchange vs. social interaction). The results do not support the stereotype: rather, both genders post electronic messages to exchange views and information in interactive ways. However, women's and men's messages are structured differently, with female users exhibiting alignment, and male users opposition, towards their addressees.

Kollock and Smith take the Usenet and its many newsgroups as the domain in which to situate the problem of "free-riding", or making use of group resources (such as publicly-posted information, free software, and "bandwidth"—the "space" taken up by posting messages) without contributing to their maintenance. They point out that free-riding is rational behavior from the perspective of the individual, but is ultimately detrimental to the common good. By comparing the Usenet with face-to-face communities as described by Ostrom (1990), the authors identify a unique set of issues involved in maintaining the "virtual commons" as a collective resource.

Deuel's chapter is perhaps the first scholarly treatment of the phenomenon of Virtual Sex (VSex) as practiced in recreational MUDs and MOOs (synchronous chat environments in which participants textually construct their identities, physical appearance, and the physical setting). Deuel describes the textual features of VSex interaction, arguing contra Rheingold (1991, 1993a) that VSex is personally beneficial in that it provides valuable opportunities for learning about sex. In concluding, she considers the negative social and political implications of censoring VSex activities.[9]

Hall's chapter identifies and contrasts two varieties of "cyberfeminism": "liberal cyberfeminism", which embraces CMC as a gender-fluid (but sexualized) utopia, and "radical cyberfeminism", in which women-only mailing lists are formed to resist and protect against male-initiated harassment on the Internet. Hall examines the discourse of both movements, the first through the magazine *Future Sex*, cyberpunk literature, and postmodern theory, and the second through the analysis of actual communication on a woman-only mailing list. The analysis of the latter reveals discursive features Hall terms "aggressively collaborative", in opposition to the aggressive "cybermasculinity" exhibited elsewhere on the Internet.

Ma's chapter begins the section on cross-cultural CMC with an investigation of the effects of synchronous relay chat exchanges on cross-cultural communication between East Asian (Chinese, Japanese, and Korean) and North American university students. Ma examines five proposals about cross-cultural CMC, including the hypotheses that both East Asians and North Americans will perceive CMC to be more egalitarian, and will be more direct and self-disclose more in CMC than face to face. Self-reports by students participating in the study largely confirmed the proposals, although U.S students perceived East Asians to be less direct and self-disclosing than East Asians perceived themselves to be.

Meagher and Castaños investigate perceptions of American culture by Mexican high school students before and after participation in a computer-mediated exchange program. Their investigation produced a startling result: perceptions of American culture were *less* rather than more favorable after the exchange. Through triangulation of their results from a variety of diagnostic measures (questionnaires, interviews, analysis of student messages and course work related to the exchange), the authors conclude that the Mexican students have nevertheless undergone significant learning about the target language and culture; their decreased regard for the target culture is attributed to culture shock.

Colomb and Simutis expand the cross-cultural paradigm by examining the effects of interaction in a networked writing class on socially-disadvantaged first-year college students. The students not only belong to diverse cultural groups (African-American, Hispanic, Asian, Anglo-American), but also are encountering an alien academic culture through the discourse they are expected to learn. The authors report on a test case in which CMC was used successfully in conjunction with a special pedagogical design to support novice learning.

The chapter by Korenman and Wyatt begins the last section of the book, which is concerned with group interaction. Their chapter investigates the ways in which interactions by participants on a large women's studies mailing list (one of the two lists analyzed in the chapter by Herring) resemble face-to-face interaction in a small group. The authors analyze questionnaire data and patterns of participation, and propose that feelings of "groupness" can be traced to the exchange of personal messages outside the list, the existence of a core of regular participants who provide continuity, and the establishment of oral discourse practices on the list.

Ziv's chapter examines how the use of e-mail in a workplace setting can reflect organizational change. He reports on a case study involving a technologically less-sophisticated group that has been incorporated under the administrative domain of an academic computing services group. In his study, which focuses on a disagreement over wording for an article in a campus newsletter, Ziv finds that the use of electronic communication by the first group is symbolic of its change in identity. In addition, he finds that CMC does not flatten organizational hierarchies as has been claimed, but rather interacts with existing hierarchies.

Gurak's chapter concludes the volume with a rhetorical analysis of a community protest in cyberspace. She reports on how the electronic medium enabled people who were concerned about privacy violations associated with a commercial product, LotusMarketplace, to come together quickly and in large numbers to force the manufacturer to cancel release of the product. Her examination of the dynamics of the protest reveals limitations of the medium as a "public meeting place", as well as its considerable potential as a forum for community action and political deliberation.

The papers in this volume provide initial answers to intriguing questions, as well as identifying directions for further study. In the meantime, computer-mediated interaction continues to expand and evolve in new directions, and future students of CMC will find no lack of original topics to pursue. My personal vision for the future of this area of scholarship is that it will continue to bring academic disciplines together to learn from one another, at the same time as sub-specializations develop and disciplinary expertise is brought to bear on CMC-related questions. Both breadth and depth are needed if we are to come to understand fully this technologically-based phenomenon with vitally human implications.

NOTES

1. Other forms of CMC not considered in this volume involve graphic, auditory, and/or tactile modalities in addition to or in place of written text.

2. As of December 1995, 46% of the 9.5 million Internet users in the United States accessed the Internet via on-line services, of which America Online is the most popular provider (The American Internet User Survey, 1996).

3. This is in part a reflection of the predominance of English on the Internet (Paolillo 1995). There is a need for published scholarship on computer-mediated interaction in other languages, and on CMC that involves language mixing.

4. The American Internet User Survey (1996).

5. "Flaming", for those readers who may be unfamiliar with the term, refers to the practice of sending hostile or insulting electronic messages, usually in response to a message posted by someone else (Herring 1994, 1996; Kim & Raja 1991; Lea et al. 1992). "Lurking" is observing the interaction on a discussion group without posting messages oneself (Broadhurst 1993). "Spamming" refers to the practice of sending multiple copies of the same message to different electronic destinations; at the present time, this activity is often associated with unsolicited commercial advertising (Elmer-Dewitt 1994).

6. These acronyms stand for "frequently-asked question", "in my humble opinion", and "read the f***ing manual", respectively.

7. For further discussion of the ethics of conducting on-line research, see Thomas (forthcoming).

8. An extensive listing of references to work published up to and including 1992 can be found in the Infolingua bibliography on Computer-Mediated Communication compiled by Sabourin and Lamarche (1994).

9. Since these claims are likely to be controversial, this seems an appropriate point at which to state that the views expressed in the chapters of this volume do not necessarily reflect those of the volume editor, the series editors, or the publishers.