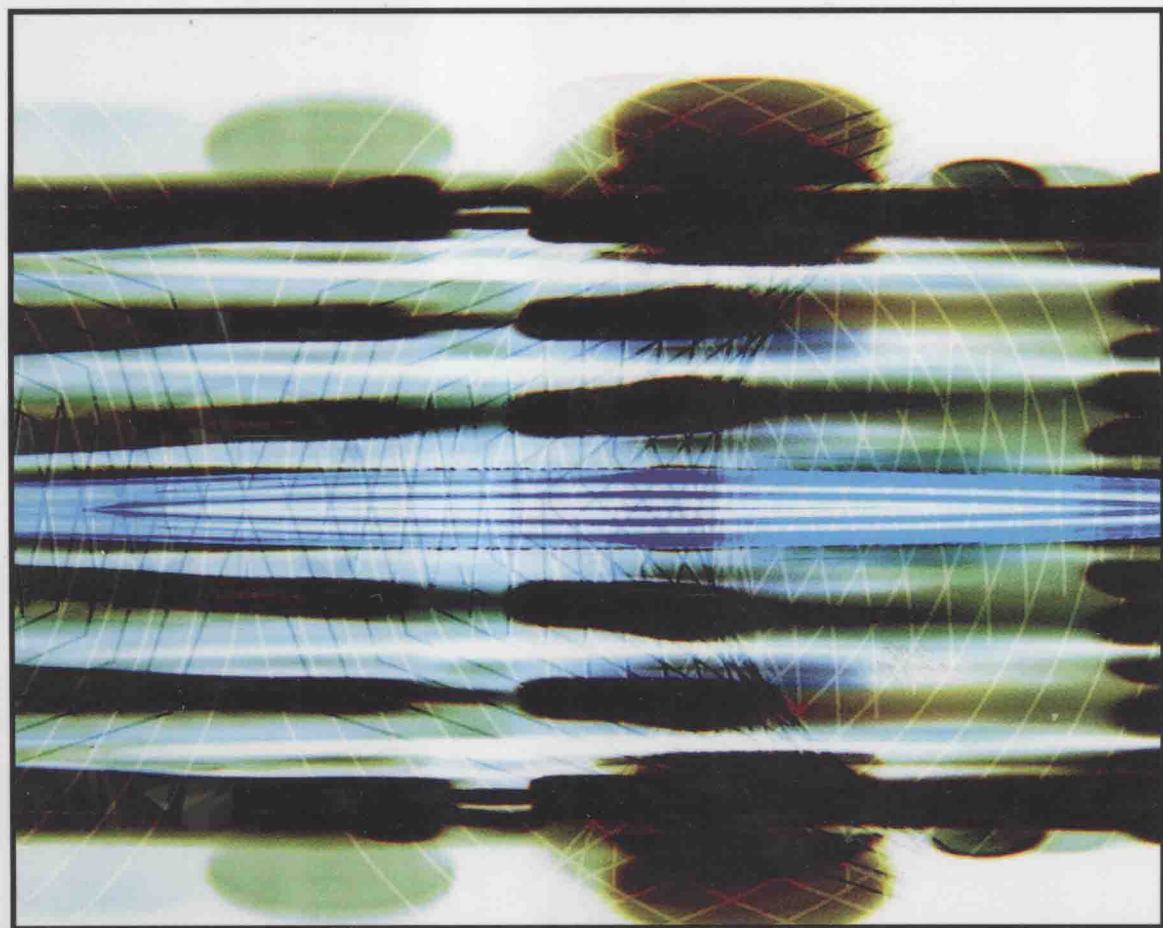


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Computer-Mediated Communication for Linguistics and Literacy

Technology and Natural Language Education



Computer-Mediated Communication for Linguistics and Literacy: Technology and Natural Language Education

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Foreword

In the name of progress, we have perhaps adopted computer technology at such a pace that few of us can slow down enough to ponder whether it is technology that is driving us, or whether it is that we have clear purpose in guiding where technology is heading. There is no better example than the interaction between human languages and technology. Dr. Adams Bodomo has been in an ideal position to observe, collect data, experiment, and analyze the phenomenon in one of the most dynamic places on earth, from a social and linguistic perspective: Hong Kong SAR, China. This book is the culmination of his research work on the relationship between human language and information technology there. To help appreciate its significance, let me explain my viewpoint on the role of technology in the Information Age.

The Lana Project (1971-1976) by Duane Rumbaugh, Sue Savage-Rumbaugh, and William Fields had the clear purpose of investigating the ability of chimpanzees to acquire language. The application of information technology resulted in the development of a computer-based language training system, as summarized on www.greatapetrust.org:

Lana is a female chimpanzee born in 1970 at the Yerkes National Primate Research Center. Her name derives from the LANguage Analogue (LANA) project, which sought to develop a computer-based language training system in an effort to investigate the ability of chimpanzees to acquire language. Lana joined the research as a subject when she was two and a half years old. The research was the first to interface a keyboard with a chimpanzee. At that time, it was believed that only humans could use symbols. Lana demonstrated that she could discriminate between lexigrams and associate them with ideas. As she progressed, she would sequence words and use them grammatically, later starting to create novel utterances in response to unplanned events that affected her life. For example, Lana would request that the research technician refill her computer vending device when it

was empty of treats, or request an item she had seen outside her room that the computer had no facility to provide to her. Lana exhibited language learning, and her experimental accomplishments were extraordinary. Equally important to her legacy is the lexigram keyboard, developed by Duane Rumbaugh, which has served as the primary communicative interface for ape language research at Decatur, Georgia for the last several decades. This keyboard is composed of three panels with approximately 384 noniconic arbitrary symbols. When the apes depress a key, the word represented there is spoken by a digital voice and the lexigram is displayed on a video screen.

This is a classic example of successful application of technology to serve a clearly stated purpose in computer-mediated communication (CMC). It starts with what one wishes to accomplish, to be followed by how technology can help. By contrast, the development of many of the information communication technology (ICT) in common use today are driven by space-age trends of miniaturization and speed, rather than any linguistic or literacy concerns. Designers strive mainly to package more processing power into ever-shrinking devices. It is then little surprise that the need to type on tiny keyboards and read on even smaller screens, often while one is in motion, leads to the distortion of standard languages. The merit and legitimacy of such emerging forms of language is subject of debate. However, whether viewed as evolution or deformation, one can hardly argue that they are by design and on purpose.

Meaningful purpose is the domain of education. With clear standards for what one wishes to accomplish, the question can then be asked on how CMC can help. Views on literacy can be orthodox (adherence to standard languages) or liberal (open to new language standards), but should not be allowed to drift, even in the guise of multiculturalism and diversity. In the perhaps unique and peculiar case of Hong Kong, the politically-correct and complacent claim of bi-literacy and tri-lingualism [两文三语] may have degenerated into a euphemism for deficiency in all. In the past, citizens motivated by conforming to colonial rule maintained language standards that afforded them the relative competitive advantage of knowing better English than their mainland compatriots, and better Chinese than Westerners. With sinking standards in English and the native Cantonese not being official Chinese, Hong Kong runs the risk of being marginalized in this age of globalization. Is code-mixing (the prevalent blending of Cantonese and English) the culprit? Is this predicament exacerbated by ICT-driven colloquialism? The fact that we have the technology to communicate with Lana the chimpanzee, does not mean that we all have to use CMC that way, do we? Can educators rise to the occasion to set clear purpose to improve language standards, with the help of CMC technology? For anyone intrigued by or having a stake in these critical issues, this book by Dr. Adams Bodomo provides

indispensable insight with background data and analysis for constructive discourse and deliberation.

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James K. Ho is Professor of Information & Decision Sciences at the University of Illinois at Chicago. A native of Hong Kong, he graduated from Columbia University in 1970 and obtained his PhD from Stanford University in 1974. He has published widely in academic and professional journals and authored four books, including *Prosperity in the Information Age—Creating Value with Technology, from Mailrooms to Boardrooms (1994)* and *Cyber Tigers: How Companies in Asia can Prosper from E-Commerce (2000)*. His recent research interests focus on data mining and visualization with applications in topological analysis of online auction markets, technology diffusion, investment climates, and customer relations management. In *Computer Mediated Communication*, he did pioneering work in multilingual Web interfaces to promote e-commerce among small and medium size enterprises, which culminated in the APEC Multilingual International Trade Project. He is on the editorial board of the *Journal of Computer Mediated Communication*.

Preface

INTRODUCTION: CMC

Computer-mediated Communication (CMC) is an amazingly multi- and inter-disciplinary subject area that spans fields as diverse as computer science, information technology, communication studies, linguistics, literacy, education, business, ethics, and law. Given this vast subject-matter it would be practically impossible for any single volume to cover all aspects of CMC to any appreciable depth. There is thus the need to focus on one or the other of these component disciplines.

THE BOOK'S FOCUS

Within this wider, interdisciplinary arena, this book, titled, *Computer-mediated Communication for Linguistics and Literacy: Technology and Natural Language Education*, occupies an important position. It has a clear focus on the linguistic, literacy and educational aspects of CMC. The book investigates the way humans communicate through the medium of information technology gadgets. Based on extensive research on how we use natural languages like English and Chinese in media such as emails, MSN, and mobile phones, the book outlines new forms and ways of speaking, reading, and writing in an age in which there is a pervasive presence of communication technologies in offices and homes. This interaction between human language and technology has created new forms and uses of language and literacy the study of which has given birth to this exciting new field of Computer-mediated Communication (CMC) that we are about to delve into.

Alternative names for this focus on the linguistic and literacy aspects of the field of CMC include Human Language Technology (HLT), Language and Computation, or even Internet Linguistics. CMC, HLT and their allied fields have as a

subject-matter the theoretical study of this interaction between natural languages and communications technology but also a study of the practical implications and applications of how computers and other communications technologies can be used to analyze and process natural languages for the design of communication systems and devices like automatic translation devices, mobile phones, voice recognition devices and all kinds of computer systems involving a human language component. This book takes a closer look at many of these issues and guides the reader through the way language is used in various media of technology and the implications this has for learning to speak, read, and write languages.

FURTHER ON THE ROLE OF CMC

The era in which we live has often been referred to as the Information Age or even the Knowledge Society. In this age and society we constantly witness a massive explosion of new types and styles of communications gadgets such as computers of all types (including desktops and laptops), PDAs, mobile phones, Blackberries, and so forth; and media like the Internet, emails, ICQ, chat, text messaging and others. We can expect that new ones will be invented.

In this book, I will discuss how these different types and styles of information and communication technologies impact the way we communicate. In particular, I will examine the nature and uses of language in what may be described as a revolutionary environment for information and communication. As these communication technologies bring us closer together, we are forming a global village, and indeed, this era has also been referred to as an era of globalization. We will find that in this global village our everyday communications may involve not just one language, but several languages. In fact, it is hardly ever sufficient to operate in only one language anymore. Bilingualism/multilingualism is now an essential part of this information communication revolution. I will examine how these combinations of technologies and languages affect the nature and structure of each language and whether this leads to changes in language structure and language use.

Not only are these technologies creating an environment of multiplicity of languages, they also have an impact on the way we read, write, and process information. I will examine the different ways in which we are called upon to speak, read, and write in these different technological environments. We will notice that we are called upon to juggle different ways of reading and writing in these different environments. Literacy is no longer a mono-modal practice but very much multi-modal; various kinds of literacies are needed to function well in the information society.

This ecology of languages, literacies, and technologies will be shown to be very dynamic, and in this ever-changing ecology many issues about human nature

will be discussed. In particular, an examination of these interrelationships helps us understand some important aspects of our culture and society. Throughout the book I will examine some consequences for learning and knowledge acquisition in this complex ecology, and attempt to show how we can harness these languages, literacies, and technologies to improve education for our future generations.

DISTINCTIVE ASPECTS OF THE BOOK

Case Studies

One of the most distinctive aspects of this book is that most chapters incorporate a case study to anchor the issue being discussed within the sphere of actual empirical data. This is possible because it is a book that is the outcome of funded competitive research projects as diverse as *Linguistic Features of Mobile Phone Communication*, *The Use of Computers in Teaching Languages and Linguistics*, and *Communication in the Age of Information Technology: New Forms of Language and their Educational Implications*. It is thus based on current research results and discussions that would lead the reader to valuable insights to the sort of issues that experts in the field are currently grappling with.

Addressing Everyday Issues

While the book is grounded on top-notch research, it still addresses everyday issues. The main theme and purpose of this book is to analyze and explain everyday linguistic and cultural dynamics triggered by new communication technologies. This is an important theme and a cultural issue that has the potential to impact most, if not all, citizens of the 21st century society. Books such as this are thus needed by not just only academics and other experts but also the man on the street to help explicate these linguistic, cultural, and communication dynamics surrounding our everyday lives.

More Than One Medium

A third aspect of the book is that it touches on many media. There are a number of valuable books on this important theme of CMC but my book is distinguished from them in the sense that it treats contemporary themes surrounding language and literacy dynamics in more than one medium. Many books on CMC either concentrate on email, or some single internet system or the other but my book treats all these linguistic, literacy, and communication innovations on email, MSN, mobile phone

texting, and even video-based CMC media like YouTube and online games. All these media are treated with data based on actual university-level academic research by myself, my students, and other members of an informal research group that I head: The Linguistic Theory and Technology Group (LTTG).

READERSHIP

Each chapter in this book takes up comprehensive treatments of the frequent themes on the interaction between languages, literacies, and technologies; it is based on facts and figures gained from actual research projects on how the youth use language in the new media, it is international in scope, and it does a rigorous survey of the literature in the area. Therefore this book will be useful for undergraduates, postgraduates, and scholars in computer-mediated communication fields as diverse as Linguistics, Literacy, Education, Computer Science, Information Science, and Human Language Technology. It would also be of interest to the general public.

ORGANIZATION OF THE BOOK

The book comprises 12 chapters. Chapters 1 to 4 may be regarded as constituting Section 1 of the book, covering the foundational aspects. Chapters 5 to 8 may be considered as Section 2, the technological and linguistic empirical base of our study, where I focus on the various CMC technological environments like email, msn, and mobile phone one at a time. Chapters 9 to 11 may be seen as focusing on the educational and pedagogical aspects of the link between ICT and language. Chapter 12, the final chapter ties together many of the issues discussed, and points to emerging themes and emerging CMC tools and media that will surely shape the future of CMC.

In Chapter 1, *Definitions and Basic Conceptual Notions*, I introduce fundamental conceptual terms, such as communication, language, literacy, computer science, IT, and of course computer-mediated communication. I do this by providing short definitions and explanations of these key topics that constitute the subject matter of the book.

In Chapter 2, titled, *Is Technology Changing the Way We Communicate?* I present the main theme or thesis of the book in the form of a discussion. I present different positions, indicating how different scholars approach these issues. On the one hand are works of scholars like Adams (1986), Baron (1984) and Crystal (2001), and on the other side are those like Kress (1998) and Luke (2000).

In Chapter 3, titled *Digital Literacy: Reading in the Age of ICT*, I focus on the changing patterns of reading in the environment of new technologies. I first show how technology is affecting the way we read, both in terms of the choice of media and in terms of the strategies we employ to read. More importantly I focus on the surveys of reader preferences, as it is evident that given a wide choice of media that technology provides us, we have developed preferences. Preference surveys have become an important way of measuring changes in reading communication due to changes in technology.

In Chapter 4, *TeLCU: A Model for Technology Conditioned Language and Literacy Change*, I shall build on this discussion by proposing a model in which we can capture and conceptualize these perceived new forms of language and new ways of speaking. Indeed, I go further as to present a particular study of the way some bilingual speakers of Chinese and English create new forms of language through mobile phone texting (though the concept of mobile phone texting is taken up more comprehensively in chapter seven). I shall present and discuss concrete examples throughout the chapter.

In Chapter 5, *Insights from an MSN Corpus*, I look closely at one type of Computer-mediated Communication, Microsoft Network (MSN) instant messaging. MSN instant communication is quite popular among the youth in most parts of the world. In Hong Kong, it has fast replaced I-see-you (ICQ) and QQ (in mainland China) as one of the primary instant communication tools among the youth.

In Chapter 6, *Insights from Mobile Phone Voice Communication*, I will be looking particularly at the linguistic features of this kind of communication. More specifically, Hong Kong being a trilingual and biliterate society, we will see how participants juggle these languages within the medium of the mobile phone instant messaging and what linguistic features are thus produced. As is usual with most chapters our observations are based on a case study. A distinctive feature of this chapter from some others is that I present and describe a comprehensive corpus as an example of an actual CMC exchange. This will give us insights into actual communication sessions of young people who use mobile phone in Hong Kong and worldwide.

Chapter 7, *The Grammar of Mobile Phone Written Language*, is dedicated to the grammatical analyses of language produced in the environment of mobile phone texting or communication through Short Message Service (SMS). SMS has quickly emerged as a frequent daily linguistic, literacy, or general communicative practice in which two or more people exchange messages by coding and decoding texts received and sent from their cell phones. In this chapter, I focus on the relationship between communications technology and language change with evidence from the peculiar nature of the grammar of mobile phone texting.

Chapter 8 is titled, *New Forms of Reading and Writing: Cell Phone Novels*. In this chapter I discuss a radical consequence of the new forms of reading and writing

on the literacy and literary world that would have been discussed in earlier chapters: the cell phone or mobile phone novel. Instant messaging, such as text messaging, is taking the idea of a novel to new heights. While the traditional novel as we know it, is a product of, presumably, many years of laborious writing and imagination by a single individual, the author, and delivered to the reading public as a carefully edited and published product by editors and publishers, the “novel” as produced through computer-mediated instant messaging is a radically different sub-genre or even a different genre altogether. It is interactive and instantaneous. In this chapter I present the outlines of the cell phone novel, including how it started, and what its main features are.

Beginning with Chapter 9, *New Languages, New Literacies, and the School Curriculum*, I focus on the educational applications of linguistic practices within CMC media for the next three chapters. In previous chapters I would have undertaken a quite detailed analysis of the features of language and literacy practices within the medium of communication technologies, including email, MSN, mobile phone speech, and mobile phone texting. This has given us the opportunity to examine carefully new or peculiar linguistic structures, and new ways of communicating and expressing oneself within these new technological environments. Of course, it is not everybody who is comfortable with these new ways of using whatever language it is by experimenting with these new structures and strategies of encoding such as shortening words and explicitly disregarding standard grammatical encoding. In particular, parents and teachers have been quite critical about these new languages and new literacies produced within the context of new communication technologies by their children and students. To address these concerns, I draw on a case study based on a funded project whose aim was to do a focused and careful analysis of email, ICQ and mobile phone practices among young people in Hong Kong with a view to examining if there are any consequences of these language and literacy practices on the way they learn and use language in the classroom.

In Chapter 10, *Educational Technologies (WebCT): Creating Constructivist and Interactive Learning Communities*, I continue this theme of education by discussing how to take advantage of youth interests in these new technologies that have been discussed at length in previous chapters. I show how we can turn them into learning and pedagogical technologies, leading to a model for language learning using these media – the Conversational Learning Community. Two main concepts, constructivism (Bodomo 2005b, 2007) and interactivity (Bodomo 2006, 2008), will be highlighted as important concepts in the area of using learning technologies to create good pedagogical environments for teaching issues of linguistics and literacy, and for that matter any other subject. The empirical basis for this chapter is a series of studies undertaken in the context of a teaching development project at the Uni-

versity of Hong Kong led by me, the author. I will be particularly concerned with how we can achieve interactivity in the learning environment I term Conversational Learning Community (CLC). CLC is based on a constructivist theory I term Conversational Learning Theory (CLT).

In Chapter 11, the penultimate chapter of the book titled, *Evaluating Learning Technologies*, I continue with our discussion of how we can take advantage of these youth interests and practices with ICTs for enhancing learning and teaching by actually evolving ways to evaluate these communication and learning environments. As with most chapters in the book, I focus on a case study as a way to give an in-depth study to the subject matter. In this case, interactivity is the subject matter. Interactivity, discussed at length in the previous chapters, leading to the creation of a new learning theory, the Conversational Learning Theory, and a new learning model, the Conversational Learning Community is even further emphasized here in terms of how to evaluate it.

In Chapter 12, *Computer-Mediated Communication: Emerging Media and Themes*, I point to emerging media and new themes that will shape the future of CMC. About every month a new technology is introduced by one company or the other that has the potential to impact the discipline in profound ways. So much so that it is hard for a research academic to pretend that at any one moment in time one can capture a representative snap-shot of the discipline that can stand the test of time. New technologies - new media, new issues - new themes are constantly emerging. In previous chapters, I would have focused mostly on what may be termed text-based Computer-Mediated Communication, which may be defined as interaction and transfer of information through the medium of the computer and related digital devices mainly in the written word. One emerging trend to be pointed to in this chapter, however, is that a new theme has emerged from text-based CMC to video-based CMC. Video-based Computer-Mediated Communication may be defined as interaction and transfer of information through the medium of the computer and related digital devices mainly in the form of dynamic image streams. Most contemporary social networking tools like Facebook and YouTube are implemented with video-based CMC. Of course, Video CMC still contains the written word, but the written word is mainly meant to just express talk around the main issue, the Video event. Young users of the internet have radically moved away from communication through the plain written word to communication in the medium of video clips and voice-image interactions through video-based media such as Facebook, YouTube, video games, and skype. It is this emerging paradigm shift from text-based to video-based CMC that this last chapter addresses.

SUMMARY

Taken together then, the chapters in this book address many aspects of the vast field of Computer-mediated Communication. I do this with a particular focus on linguistic or natural language and literacy aspects of the technology that is the basis of CMC. Each of the 12 chapters reveals some new facts and insights, or outlines the various positions surrounding some discussion or the other and then takes a position based on the results that I have obtained from my research. It is hoped that students and scholars of computer-mediated communication will find in these pages facts, figures, insights, theoretical positions, and practical solutions that can only make our field even more exciting.

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