(In press, 2013). In: S. C. Herring, D. Stein, & T. Virtanen (Eds.), *Handbook of pragmatics of computer-mediated communication* (pp. 3-31). Berlin: Mouton.

Introduction to the pragmatics of computer-mediated communication

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1. The state of the field

Computer-mediated language research represents a new and dynamically evolving field. Although a few pioneering studies were published in the 1980s,[1] linguistic study of computer-mediated communication (CMC) began attracting serious attention only about 20 years ago, with a classification question that is now regarded as overly simplistic: Is CMC more like speech or writing? (e.g., Ferrara, Brunner, and Whittemore 1991; Maynor 1994). Those early days were also characterized by a fascination with superficial structural features, such as acronyms, abbreviations, and emoticons, that purportedly characterized CMC (e.g., Murray 1990; Reid 1991). Since then, however, the field – if an area of study that is still so new can be described as such – has grown dramatically.

The early research mentioned above was followed in the 1990s by contextualized discourse studies of language use in online textual environments such as mailing lists, newsgroups, and chat rooms. Politeness (or the lack thereof) in the former was one of the first topics to attract attention, along with gender differences in politeness behaviors (e.g, Herring 1994, 1996; Kim and Raja 1991). Chat rooms raised issues about how interaction (turn-taking, topical coherence, etc.) was managed in computer-mediated environments (e.g., Garcia and Jacobs 1999; Herring 1999; Rintel and Pittam 1997). In the latter connection, it was observed that the textual record left by CMC allows communicators to engage in multiple simultaneous threads of conversation, as well as giving rise to a meta-awareness that fosters language play (Danet 2001; Danet, Ruedenberg-Wright, and Rosenbaum-Tamari 1997; Herring 1999).

Research addressing sociolinguistic concerns started to appear in the mid-1990s. Some of the earliest studies examined language choice and code switching (e.g., Androutsopoulos and Hinnenkamp 2001; Georgakopoulou 1997; Paolillo 1996); this was later followed by studies of variation in usage – especially of typography and orthography – according to participants' status, regional dialect, gender, and CMC mode (e.g., Androutsopoulos and Ziegler 2003; Herring and Zelenkauskaite 2009; Ling and Baron 2007; Paolillo 1999; Siebenhaar 2003; Tagliamonte and Denis 2008).[2] Meanwhile, interest in classifying CMC as a whole was, for the most part, abandoned in favor of classification of modes or genres of CMC, on one hand (Herring 2002),[3] and classification approaches that cross-cut modes based on scalar dimensions or facets, on the other – the latter often inspired by earlier work on speech and writing (e.g., Collot and Belmore 1996, with reference to Biber 1988).[4]

Until recently, the vast majority of language-oriented CMC research had as its subject matter English-language CMC – a reflection, in part, of the origins of the Internet in the United States. This, too, has been changing, especially as regards discourse analysis and sociolinguistic research (see, e.g., the papers in Danet and Herring 2007), in

accordance with the rapid diffusion of the Internet to other countries starting in the mid-1990s. Native-language traditions of research into computer-mediated language have now become established in Germany, France, and the Nordic countries, and are starting to emerge in Japan, China, Spain, Italy, and Greece.[5] Cross-linguistic research has identified both similarities and cultural specificities as regards language use online.

While most of the topics mentioned above can be subsumed under the broad heading of pragmatics, studies focusing explicitly on pragmatic issues are a more recent phenomenon. When the first author, Susan Herring, was putting together a keynote lecture for the 2007 International Pragmatics Conference on "The Pragmatics of Computer-Mediated Communication: Prospectus for an Emerging Research Agenda", she found few high quality published works to review – or rather, few that could be classified as pragmatic first and foremost,[6] as opposed to the many studies that could also be classified as discourse analysis, conversation analysis, sociolinguistics, and the like. In that lecture, she argued that it is nonetheless useful to distinguish a 'pragmatics of CMC' from other language-focused approaches to CMC, inasmuch as it can benefit from drawing on pragmatic theory, as well as methods of analysis developed within the tradition of linguistic pragmatics, to provide potentially unique perspectives. Specifically, she recommended that such an approach focus on three kinds of phenomena: 1) classical core pragmatic phenomena (e.g., implicature, presupposition, relevance, speech acts, politeness) in CMC, 2) CMC-specific phenomena (e.g., emoticons, nicknames, "netspeak"), and 3) CMC genres or modes (blogs, SMS, wikis, chat, etc.). That proposal informs the broad organization of the present volume. However, in the end it proved difficult to separate out discourse-pragmatic from 'core' phenomena, with the result that the volume includes a section on the discourse pragmatics of CMC as well.

In short, the 'pragmatics of CMC' is still in flux. Yet a handbook traditionally brings together comprehensive and canonized knowledge, blessed by the passage of time. Strictly speaking, given the speed of knowledge creation in the field of CMC pragmatics and its relative youth, this handbook should not be possible. There are gaps in its coverage, and the research presented in some chapters is new. For these reasons, the collection might perhaps better be viewed as presenting the 'state of the art' in an emergent field rather than as a distillation of time-honored knowledge. One notable gap is in the coverage of Web 2.0 phenomena such as wikis, microblogging, and social network sites, about which significant bodies of language-focused research have yet to accumulate. Section 4 of this chapter discusses emerging directions that research on language use in Web 2.0 is taking thus far.

In the face of so many apparently new developments, one might question whether the term "computer-mediated communication" is still appropriate to characterize the overall scope of the phenomenon. Communication technologies are increasingly moving beyond computers. Although mobile phones can be considered honorary computers where text messaging is concerned, voice calls challenge that characterization, as does television-mediated conversation via text messages (Zelenkauskaite and Herring 2008). Some recent language-focused publications use alternatives such as 'digital media' and 'new media' language. However, the term 'new media' is lacking in historical perspective, and 'digital media' is too broad, referring as it

does to video games as well as communication devices, although 'digital discourse' (e.g., Thurlow and Mroczek 2011) makes clear that language use is in focus. Conversely, the term 'keyboard-to-screen communication' proposed by Jucker and Dürscheid (in press) is too narrow, in that it excludes communication input via audio and video technologies. It well may be that in the coming years, the dust will settle and a descriptive term that is neither too narrow nor too broad will emerge as the obvious candidate. For now, CMC still seems a useful term, in that it is based on established tradition and remains the term preferred among communication scholars, so it will continue to be used in this volume.

2. Perspectives on pragmatics

A volume title such as "The Pragmatics of Computer-Mediated Communication" begs the question of what our notion of pragmatics is. Given the tricky issue of the limits of the discipline and the interdisciplinary nature of CMC itself, some remarks are in order about the rationale for the selection of contributions to the volume.

Generally speaking, the perspectives on pragmatics represented by the authors of this handbook are broad, yet not so broad that they include all of linguistics (cf. Verschueren 1999). At the same time, they are wider than the more narrow view represented by a classical textbook like Levinson (1983), which focuses on a limited set of phenomena that includes deixis, implicature, presupposition, and speech acts. For example, in the view adopted here, there is no clear boundary between pragmatics and sociolinguistics. Such a boundary, dictated by academic labels, would in any case be more heuristic than real. The decision to take a middle road between a wide and a narrow view of pragmatics seemed to us the best trade-off between a reasonable coherence and relative representativeness. A further reason for avoiding too narrow a view is that language use on the Internet can only be characterized by a broader perspective that takes into account the complex interweaving between language use and its technologically-mediated forms.

Another way to situate the approach represented here is suggested by Ariel's (2010) overview of how the field of pragmatics might be internally structured. Ariel makes a useful distinction between two approaches to pragmatics. "Border-seekers" focus on the distinction between semantics and pragmatics, restricting the list of topics that belong to each. For border-seekers, pragmatics is predominantly the domain of a particular set of topics that are defined as pragmatic, rather than syntactic or semantic. This orientation facilitates the description of grammar along relatively simple lines, as the "messy" stuff is moved out to a domain of its own. The theoretical approach adopted, however, imposes severe restrictions as to what can be included in pragmatics, resulting in core topics that can be accounted for using particular linguistic tools, such as Gricean pragmatics, neo-Gricean pragmatics, and Relevance Theory. Border-seekers are an Anglo-American tradition.

In contrast, "problem-solvers" start out from linguistic puzzles that cannot be solved in terms of grammar, or "the grammar" in a Chomskyan sense. For problem-solvers the focus is on the identification of a problem for empirical study, and pragmatics is a matter of adopting a particular perspective on the object of study. The

number or nature of topics to be explored in pragmatic terms is not limited. Problem-solvers are particularly popular in the European Continental tradition.

The classical areas in the sense of Levinson (1983), the more narrow-scope approach to pragmatics, illustrate the "code" approach to pragmatics. They tend to concern aspects of language that have structure-external context "encoded" in them, or are closely related or "signalled" in relatively systematic or even grammaticalized ways by language. The point of departure for these approaches is basically the individual expression, whereas in "problem-solving" pragmatics the point of departure tends to be a certain mode or genre or phenomenon of externally defined language use, such as code-switching, in which language is embedded and receives its conversational, social, and interactional meanings.

While narrow-scope, code-based approaches are covered in this handbook, a majority of the contributions, following contemporaneous interest in the field of pragmatics, adopt "problem-solving" approaches. Among these are discourse- and conversation-analytical approaches, approaches that consider various facets of the notion of "context" in language use. Some contributions address narrative and genre analysis, and more purely descriptive approaches to CMC-specific language phenomena are also represented. Excluded, in contrast, are approaches that have some connection to pragmatics but primarily belong to another domain, such as applied linguistics, corpus/computational linguistics, logic/formal semantics, cognitive linguistics/psycho-linguistics, and variationist sociolinguistics. Including them, or trying to do justice to all subfields represented by such a wide approach, would have meant producing several volumes.

Arguably the "problem-solving" class of approaches to the pragmatics of CMC includes the socio-technical constellations of the uses of language in CMC – the "communication-pragmatic" constraints as captured in concepts such as "mode" and "affordances". The effects of the medium on, for example, the management of grounding, on uptake, and on the notion of context are important in identifying differences between the traditional media and CMC, and it is an empirical question to what extent – and in what ways – medium effects shape online language use. Thus we assume that medium effects are a priori an eligible subject of study within the "pragmatics of CMC".

3. Recurrent theoretical issues

3.1. Technological determinism

The chapters in this handbook attempt to various degrees, implicitly or explicitly, to explain language in CMC: why the linguistic properties of CMC are the way they are, as well as how and why are they different from those of spoken and (traditional) written language. These questions are closely linked to the much-debated question of technical determinism. What is the role of the technological medium in shaping the behavior of users of that medium? The discussion (briefly summarized in Herring 2001: 614; extensively discussed in Döring 2003) in the context of CMC goes back to an article by Daft and Lengel (1984), who characterize spoken language as a "rich" medium and communication via computer as "lean", with information only available through one channel, typed text. Although Daft and Lengel do not refer explicitly to CMC, this

characterization soon attached itself to CMC and became the basis for claims that CMC was impoverished and ill-suited for certain purposes of communication (e.g., Kiesler, Siegel, and McGuire 1984).

Two topical lines of discussion can be distinguished here. The first is the deterministic perspective: User behavior is a result of the physical conditions of production and reception of the medium. In this view, language and language usage are shaped by the constraints and affordances of the medium. This claim, while intuitively true to some extent, has been made with various degrees of strength and exclusivity. A corollary of this view is that the stronger the claim of pure technical determinism, the stronger the implication of universality and convergence of different languages used on the Internet.

The issue of media richness or media leanness is important theoretically for characterizing the medium fully, as well as for applied purposes. As Clark and Brennan (1991) point out, for a given communication purpose, the choice of medium is important: One channel may be too rich, another may be too lean. Döring (2003: 134) cites the example of face-to-face talk, which may necessitate deflection of attention and the need for relational small talk, as compared to a more impersonal and efficient short email message. Parts of Hössjer's (this volume) findings in a study of professional communication that includes media switches can be explained by reference to this type of strategic medium choice.

The second line of discussion, not unconnected to the first, is the notion that CMC is deficient compared to spoken and written language. This view dominated early research and application in CMC (e.g., Daft and Lengal 1984; Kiesler et al. 1984); it emphasizes the absence of a number of signal types, such as non-verbal, auditory, olfactory, gustatory, and tactile. "The problem," Brennan (1998: 1) writes, "is that electronic contexts are often impoverished ones". CMC scholars who subscribe to this view often focus on "compensational" features such as emoticons, graphical devices, repetitions, and deletions, as discussed in the contribution by Bieswanger (this volume), and performative action words such as *waves* (as discussed by Virtanen in this volume). These can be interpreted as replacing paralinguistic and nonverbal cues that are absent from the written repertoire.

An alternative explanation for these common features of CMC – so-called "Netspeak" features, as described by Crystal (2001) – is that they are playful and represent the inherently ludic character of language use on the Internet (e.g., Danet 2001; Danet et al. 1997). The written, persistent nature of CMC makes language more available for metalinguistic reflection than in the case of speech, and this, together with a tendency towards loose cross-turn relatedness in multiparticipant CMC, encourages language play (Herring 1999, this volume). According to this view, CMC is not so much impoverished relative to speech and writing as different in nature from them.

Medium effects are addressed in most chapters in this collection in one way or another. For example, Simpson, citing Cherny (1999), notes the easier construction of multiple floors in synchronous CMC. Harrison and Allton (this volume) note that email is also more economical in that the interaction is accelerated by combining several conversational moves into a single message (see also Condon and Čech 2010). At the

same time, the rapid exchange of messages in multiparty chat interfaces that display messages in the order received can result in disrupted turn adjacency, loosened norms of relevance, and decreased conversational coherence, as discussed in the chapter by Herring.

Finally, several of the chapters shed yet another light on the impoverishment question. A recent development in research on Internet language, manifested in several contributions in this volume, involves identifying emergent pragmatic functions of phenomena that were hitherto predominantly considered sociolinguistic, such as address terms (de Oliveira this volume) and code-switching (Androutsopoulos this volume), as well as the analysis of emoticons as "illocutionary force indicating devices" analogous to punctuation (Dresner and Herring 2010). These are examples of how existing forms can become endowed with new pragmatic meanings, a process of sign genesis that countervails ideas of "impoverishment" of Internet language. This approach holds that new expressive needs and forms arise from and adapt to specific conditions of the new medium. Such new functions result from the specific "faceting" structure (Herring 2007) – the affordances and the communicative situation – of the medium, together with an enhanced metapragmatic awareness arising from the textual nature of most CMC (Herring 1999; Thurlow and Poff this volume). However, unlike in technological determinism, these effects are variable rather than categorical, manifesting differently in different languages and cultures.

3.2. Internet genres

Another pervasive, pragmatic-based theme in the CMC literature is Internet genres. The Internet enables new kinds of participation, new kinds of fragmentation, and new ways of co-constructing meaning that transcend traditional notions of conversation, narrative, exposition, and so forth. The issue of classifying Internet language into types has been a focus of linguistic CMC research since the 1990s, initially in relation to speech and writing (e.g., Baron 1998; Maynard 1994; Yates 1996) and later in terms of technological modes such as email, chat, and MUDs and MOOs (e.g., Cherny 1999; Herring 2002). A section of this volume is devoted to the mode-based approach. Given the proliferation and convergence of CMC technologies, however, such an approach cannot capture the full range of constellations that form around digital communication. A first explicit approach to a typology based on the medial features and external communicative setting is Herring's (2007) faceted approach to classifying computer-mediated discourse (CMD). As she is careful to caution, however, "the scheme is not in itself a contribution to a theory of genre, but is rather a preliminary aggregation of factors that will have to find a place in a theory of CMD genres" (n.p).

The chapter by Giltrow in this volume represents the current state of the art of discussion of the notion of genre in CMC from a point of view that is informed by both the new rhetoric and modern pragmatics. Giltrow (this volume) and Giltrow and Stein (2009) see the focus of genre studies – which traditionally has been the search for discourse invariants, how to identify the "type" – as moving away from statistical averages or privileging of form occurrences and becoming more complex, with linguistic forms seen more as manifestations and instructions to construct meanings in ad hoc

processes. This drift in the theoretical orientation of the definition of genre recapitulates the drift in the study of language on the Internet from a surface, form-based approach to a more broadly pragmatic approach to an emphasis on users as social identity carriers in dynamic, ad hoc, cognitive states. A "constructionist" approach to social meanings is also discussed by Androutsopoulos (this volume).

A common theme of recent work on the subject is that genre definition is more fluid on the Internet than in spoken and written media. If genres are primarily defined by external function, Internet genres seem to be more multi-functional and open to changes and adaptations of societal and interpersonal functions, and it is harder to define invariants on the functional level. This applies to even seemingly technically constrained CMC modes such as text messaging. Thurlow and Poff (this volume) observe that the differences between texting, instant messaging, and emailing, modes that are quite distinct in terms of Herring's faceted parameters, tend to blur when compared with respect to the range of functions they fulfill. To take another example, whatever the definition is of the blog (Puschmann this volume), there are so many sub-types that it is harder to define the prototype than with most written and oral-based genres, as Herring, Scheidt, Bonus, and Wright (2005) conclude in their analysis of "weblogs as a bridging genre". This receptivity to innovation and the in-principle openness of the set of genres are consequences of the rapidly-changing technical conditions of digital communication. Generally, as Giltrow points out, this openness and fluidity of the ecology of genres on the Internet has made for genres being named at a low level of generality, allowing genre theory "to assume an open set" in principle. Thus, rather than speaking of blogs as a single genre, one tends to refer today to "diary blogs", "organizational blogs", "travelblogs", and the like.

A related finding of several studies in the volume is that traditional, static categories of analysis have to be abandoned in favor of more fluid and flexible concepts that allow for local and ad hoc negotiation. The narrative is a case in point. Georgakopoulou discusses a class of narrative discourses, "small stories", that challenge the traditional criteria of storyhood, such as "time told" and "telling time", long posited as defining features of narratives. There are online genres – if the designation is appropriate – such as Internet sports narratives in which the difference between these two times is either absent or minimized, such that its existence is questionable (Jucker 2010). Traditional notions of story-telling also break down when tellers transition between different technical modes and share authorship through processes of interactional writing.

In addition to having to modify genre concepts developed on the basis of ideas about spoken and written language, it appears that even basic pragmatic notions undergo modification and ad hoc innovation in CMC. Two examples of this are the notions of performativity (Virtanen this volume) and relevance (Herring this volume). These new types of meanings and functions, and their characteristic of being negotiated in a more ad hoc manner, are arguably a consequence of the higher degree of mediatedness of the communication situation, which diminishes the directly mutually observable and ascertainable information about the communicants, leaving more space open and available to be negotiated ad hoc.

3.3. Pragmatic norms, variability, and language change

The fact that there is an emphasis on "local" negotiations of norms raises the very question of the rise and the status of norms in Internet communications. Even at the level of individual linguistic structures, creativity and ludic deviations from traditional norms of standard writing in CMC led early on to negative comments about the (further) decay of language (Thurlow 2006). Norms at the interactional level, as well, are different from those for traditional genres – less rigid, more open to development and local definition, at least in the early phases of their formation. This may change as CMC genres become more entrenched, but rapid technological development of modes and affordances, a hallmark of the Internet as against other language media, could militate against solidification of norms.

A corollary of the discussions around technical determinism is the expectation that technological forces will result in a convergence of practices in interactional norms, as predicted several decades ago for email by Baron (1984). This point is taken up in several chapters, including by Thurlow and Poff in their chapter on text messaging, a mode with a much higher degree of technical constraints on the formal shape of messages than email. Even there, a comparison of research into several cultural contexts shows surprising divergence in usage, or at least much less convergence than one might have expected. There is even a tendency to establish regiolects ("regiolectal spellings") in text messaging within a cultural area, such as the United States, an observation that is supported by recent work by Eisenstein, O'Connor, Smith, and Xing (2010).

The issue of convergence versus divergence taps into another general theme that figures prominently among a number of contributions: innovation and development. Notions of linguistic change, at least in more traditional versions, have tended to focus on the development of individual linguistic expressions, a topic of speculation especially in earlier CMC research (see Herring 2001 for a brief survey). Linguistic innovation at the micro level is discussed in the chapters in this collection by Bieswanger (for textual CMC as a whole) and by Dürscheid and Frehner (for email). Several chapters also consider the emergence of larger units of discourse such as genres, as discussed above. There is evidence that CMC genre characteristics are not directly generated by external communicative conditions so much as by communicants re-articulating preexisting forms in new media. Giltrow (this volume) cites evidence that points to the manifold ancestries of blogs, and Georgakopoulou notes that some of the features she identifies as characteristic of Internet stories have been previously described for conversational narratives. At the same time, pre-existing qualities are differently combined, emphasized, and articulated, resulting in an end product that is qualitatively different, with the potential to express new meanings and functions (Herring in press).

A related theme is the extent to which communicants carry over strategies and practices from oral communication to the new medium, such as described by Markman (this volume) for topical coherence. Just as oral residue was a feature of early written language, so oral conversation management strategies appear to persist in coherence management techniques in electronic team meetings via synchronous computer chat.

Finally, chat is another example of variation and change in affordances: A range of modes all go by the name of chat. Moreover, Paolillo and Zelenkauskaite (this volume) note that multiparticipant text chat is increasingly migrating into other modes, such as online games. In such cases of media convergence, an interesting point raised by the authors is: Where does game chat get its pragmatic features from – traditional chat, such as Internet Relay Chat, or its new host context? This suggests a line of future research that can be carried out as an in vitro study of change in process: an opportunity afforded to a previously unprecedented extent by communication on the Internet.

4. Web 2.0

From controversial beginnings, the term Web 2.0 has become associated with a fairly well-defined set of popular Web-based platforms characterized by social interaction and user-generated content. The World Wide Web was pitched as a concept by physicist Tim Berners-Lee to his employers at CERN in 1990, implemented by 1991, and attracted widespread attention after the first graphical browser, Mosaic, was launched in 1993.[7] The early websites of the mid-1990s tended to be single-authored, fairly static documents, and included personal homepages, lists of frequently-asked questions (FAQs), and e-commerce sites. The late 1990s saw a shift towards more dynamic, interactive websites, however, including, notably, blogs (Herring et al. 2005) and online newssites (Kutz and Herring 2005), the content of which could be – and often was – updated frequently and which allowed users to leave comments on the site. These sites foreshadowed what later came to be called Web 2.0.

The term itself was first used in 2004 when Tim O'Reilly, a web entrepreneur in California, decided to call a conference he was organizing for "leaders of the Internet Economy [to] gather to debate and determine business strategy" the "Web 2.0 Conference" (Battelle and O'Reilly 2010; O'Reilly 2005). At the time, the meaning of the term was vague, more aspirational and inspirational than descriptive. As a business strategy, "Web 2.0" was supposed to involve viral marketing rather than advertising and a focus on services over products. One of O'Reilly's mantras is "Applications get better the more people use them" (Linden 2006). Today the term refers, according to Wikipedia (2011b) and other online sources, to *changing trends in, and new uses of,* web technology and web design, especially involving participatory information sharing; user-generated content; an ethic of collaboration; and use of the web as a social platform. The term may also refer to the *types of sites* that manifest such uses, e.g., blogs, wikis, social network sites, and media-sharing sites.

From the outset, the notion of "Web 2.0" was controversial. Critics claimed that it was just a marketing buzzword, or perhaps a meme – an idea that was passed electronically from one Internet user to another – , rather than a true revolution in web content and use as its proponents claimed. They questioned whether the web was qualitatively different in recent years than it had been before, and whether the applications grouped under the label Web 2.0 – including such diverse phenomena as online auction sites, photo-sharing sites, collaboratively-authored encyclopedias, social bookmarking sites, news aggregators, and microblogs – formed a coherent set. Tim Berners-Lee's answers to these questions was "no" – for the inventor of the web, the

term suffered from excessive hype and lack of definition (Anderson 2006).

In response to such criticisms, O'Reilly (2005) provided a chart to illustrate the differences between Web 2.0 and what he retroactively labeled "Web 1.0". This is shown in modified and simplified form in Figure 1. The phenomena in the second column are intended to be the Web 2.0 analogs of the phenomena in the first column.

Web 1.0	**Web 2.0**
Personal websites	Blogging
Publishing	Participation
Britannica online	Wikipedia
Content management systems	Wikis
Stickiness	Syndication
Directories (taxonomies)	Tagging (folksonomies)

Figure 1. Web 1.0 vs. Web 2.0 phenomena (adapted from O'Reilly 2005)

Language use in Web 2.0 environments raises many issues for pragmatic analysis. There are new types of *content* to be analyzed: status updates, text annotations on video, tags on social bookmarking sites, edits on wikis, etc. New *contexts* must also be considered – for example, social network sites based on geographic location – as well as new (mass media) audiences, including in other languages and cultures. (Facebook, for example, now exists in "localized" versions in well over 100 languages [Lenihan, 2011].) Web 2.0 manifests new *usage patterns*, as well, such as media co-activity, or near-simultaneous multiple activities on a single platform (e.g., Herring, Kutz, Paolillo, and Zelenkauskaite 2009) and multi-authorship, or joint discourse production (e.g., Androutsopoulos 2011; Nishimura 2011). The above reflect, in part, new *affordances* made available by new communication technologies: text chat in multiplayer online games (MOGs); collaboratively editable environments such as wikis; friending and the "walled gardens" of Facebook; social tagging/recommending; and so forth. Last but not least, Web 2.0 discourse includes *user adaptations* to circumvent the constraints of Web 2.0 environments: e.g., interactive uses of @ and #, as well as retweeting, on Twitter (e.g., boyd, Golder, and Lotan 2010; Honeycutt and Herring 2009) and performed interactivity on what are, in essence, monologic blogs (e.g., Peterson, 2011; Puschmann this volume). Each of these issues deserves attention, and some are starting to be addressed, but on a case-by-case, rather than a systemic, basis.

Herring (in press) recently proposed a three-part classification of Web 2.0 discourse phenomena: phenomena *familiar* from older computer-mediated modes such as email, chat, and discussion forums that appear to carry over into Web 2.0 environments with minimal differences; discourse phenomena that adapt to and are *reconfigured* by Web 2.0 environments; and new or *emergent* phenomena that did not exist – or if they did exist, did not rise to the level of public awareness – prior to the era of Web 2.0. She argues that this three-way classification can provide insight into why particular language phenomena persist, adapt, or arise anew in technologically-mediated environments over time. In so doing, she invokes technological factors such as

multimodality and media convergence, social factors at both the situational and cultural levels, and inherent differences among linguistic phenomena that make them variably sensitive to technological and social effects.

Web 2.0 phenomena in the first category are well represented in this volume. Examples of familiar Web 2.0 discourse phenomena include non-standard typography and orthography (Bieswanger), code switching (Androutsopoulos), addressivity (de Oliveira), flaming (Danet), and email hoaxes/scams (Gill; Heyd), as well as the continued predominance of text as a channel of communication among web users, whether it be in blogs, microblogs, wikis, comments on news sites, or web discussion forums. The latter, in particular, remain very popular, and illustrate many of the same kinds of phenomena as did asynchronous online forums in the 1990s. Examples of reconfigured Web 2.0 discourse phenomena include personal status updates (Lee 2011; cf. Cherny 1999), quoting/retweeting (boyd et al. 2010; cf. Severinson Eklundh and Macdonald 1994), 'small stories' (Georgakopoulou this volume; cf. Lindholm 2010), and blogging (Myers 2010; Puschmann this volume; cf. Herring et al. 2005), which might on the surface appear new but have traceable online antecedents, as well as reconfigurations of such familiar phenomena as topical coherence, threading, turn-taking, and repair (cf. the chapters in this volume by Simpson, Markman, Herring, and Garcia and Jacobs).

Less studied (as yet) are what Herring (in press) calls emergent Web 2.0 discourse phenomena – although since much of what has been claimed to be unprecedented on the web has been found, upon deeper examination, to have online and/or offline antecedents, caution must be exercised in asserting that any phenomenon is entirely new. Phenomena that can tentatively be identified as emergent and unprecedented, at least as common practices, include the dynamic collaborative discourse that takes place on wikis (e.g., Emigh and Herring 2005; Myers 2010), as well as conversational video exchanges (Pihlaja 2011), conversational exchanges via 'image texts' (MacDonald 2007), and multimodal conversation more generally.

Aside from the works cited above, however, little language-focused analysis of these new phenomena has yet been published. A general challenge for emergent media environments is that they need to be analyzed descriptively first before more sophisticated, theoretically-informed analyses can be carried out; this often results in a lag between the emergence of new environments and scholarly understanding of them.

5. Overview of the Handbook

The coverage of this volume reflects the inherently interdisciplinarity of the pragmatics of CMC. Contributors approach the topic from the perspectives of classic pragmatics, discourse-pragmatics, interactional linguistics, sociolinguistics, communication, rhetoric, and other (sub)disciplines in the academic study of language. Methods vary hand-in-hand with approaches, as is expedient in a new field of study.

In what follows, the individual chapters of this handbook are encapsulated in terms of the five themes around which they cluster: (1) pragmatic characteristics of technologically-based CMC modes; (2) classic pragmatic phenomena in CMC environments; (3) pragmatic innovations emerging from the affordances and practices

of CMC; (4) interactional phenomena in CMC; and (5) broader metapragmatic issues, including code choice, narrativity, and genre dynamics.

PART 1: Pragmatics of CMC modes

In the first section of the handbook the focus is on a selection of established CMC modes, ranging from asynchronous to synchronous, from text-based to voice-based CMC and multimodality, and involving both traditional computers and mobile phones. The presentation of CMC modes in the eight chapters in this section roughly conforms to their chronology.

The section begins with the oldest mode of CMC, email. **Christa Dürscheid** and **Carmen Frehner** note that email threads may manifest high concentrations of familiar features such as lexical and grammatical reduction, non-standard punctuation, and emulated prosody. Moreover, the heterogeneity of the discourses mediated through email reveal new communication practices. The chapter presents two models of analysis, one focusing on the conceptual distinction between the language of immediacy and the language of distance, the other on the contexts of email discourse. While the once so popular CMC mode has been largely replaced by other modes in private communication, email persists in text-based discussion forums and workplace communication.

Another early mode of CMC is the discussion list. Adopting a broad, functional view of pragmatics as a perspective, **Helmut Gruber** discusses listserv communication as a special kind of email communication, contrasting it with other forms of many-to-many asynchronous computer-mediated discourse. The research reviewed concerns technological affordances, register and language choice, discourse coherence, genres, and interactive norms and practices, as well as community formation. Analyses of mailing list communication benefit from models that succeed in capturing and differentiating technical and socio-situational factors and showing causal relationships between them and the discourse-pragmatics of listserv communication.

Cornelius Puschmann's concern is with blogging. Blogs differ from other modes of CMC in terms of the control that the blogger exerts on possible interaction. While a blogging option is made available by various public and semi-public hosts for professional purposes, blogs are mainly used for personal purposes, in particular for self-expression in view of a conceptually restricted, familiar audience. The purposes of blogging, as indicated by the discourse, appear to influence audience design, style, and content; studies also indicate relations between these aspects and age and gender. The chapter reviews research on deixis, givenness, addressivity, and politeness in blog language, and presents two prototypical blogging styles: topic-centric and author-centric.

John Paolillo and **Asta Zelenkauskaite** review research on real-time chat. They discuss the social nature of technologically different chat modes, such as MUDs/MOOs, AOL, IRC, and web-based chat, and identify four major domains of applications, i.e., recreational, educational, institutional, and business. The chapter describes great variation across the affordances of various chat modes, applications of chat, as well as across users and their communicative and social motivations, all of which are likely to be reflected in the linguistic landscapes of chat. The pragmatic phenomena in focus include

interaction management, international and intercultural contexts, orthography, and participant gender.

Naomi Baron surveys the history and evolution of Instant Messaging (IM). She points out that "the questions of language, context, and interpretation that IM initially generated are no less relevant today to students of CMC" (#). Such questions include user profile creation, as well as investigations of contexts and ways of use. Particular attention is paid to IM away messages, which reveal pragmatic information; the structuring of IM conversations; and gendered patterns of use. The chapter also reports user attitudes to IM as compared to Facebook and texting, and concludes by singling out a number of central pragmatic phenomena in need of investigation.

Crispin Thurlow and **Michele Poff** approach text messaging (texting, SMS) from the perspectives of cross-cultural, interactional, pragmalinguistic, and metalinguistic contexts. Texting "presents itself in the broadest terms as a social technology *par excellence*" (#), predominantly mediating "phatic communion" (Malinowski 1923). It provides users with recognized anonymity, mobility, discretion, intimacy, and play. The pragmatics of texting lies in the uses to which people put it, in various contexts mediated by the technology and a repertoire of genres involving brief messages. A research agenda is outlined for situated analyses of the discourse of text messages.

Rich Ling and **Naomi Baron** focus on mobile phone communication, both voice-based and text-based. People use mobile voice telephony to coordinate activities, increase feelings of personal safety, and contribute to social integration through "connected presence". The chapter discusses the influence of cost on the macro-pragmatics of mobile phone communication, its contributions to the emancipation of adolescents, and interlocutors' attitudes toward voice-based and text-based communication. Texting allows multi-tasking and near-synchronous interaction through rapid-paced chained messages. Findings from Norwegian and U.S.-based data indicate great variation in message content and the language of texting.

Chris Jenks and **Alan Firth** are concerned with synchronous voice-based CMC, analyzing interactional aspects of Internet telephony accomplished through the use of Voice-over-Internet protocol (VoIP). Adopting Conversation Analysis (CA) as their theoretical framework, Jenks and Firth investigate identification-recognition strategies, turn-taking mechanisms, and repair in VoIP data, drawing parallels to research findings concerning landline telephony and mobile phone communication where appropriate. An important finding is the difference in communicative strategies between audio chat rooms and text-based chat rooms. Users adapt their communicative behaviors to the affordances of the medium.

PART 2: Classic pragmatic phenomena in CMC

The focus of Part 2 of the handbook is on several classic pragmatic phenomena as they manifest in CMC environments. In Ariel's (2010) terms, these include the border-seekers' relevance and speech acts (performatives, apologies) and the problem-solvers' addressivity, advice-giving, and deception. While the classic pragmatic phenomena originate in essentially monological theories and models, they are examined in dialogical terms, to do justice to the dynamic, interactional character of CMC. In each chapter the

chosen phenomenon is approached from the point of view of CMC data of a particular kind.

Susan Herring investigates relevance in CMC of three kinds: multi-party chat using IRC and MUDs, and dyadic human-computer (bot) interaction. Relevance (or cross-turn coherence) is often problematic in such environments, and remedial strategies include use of explicit addressivity. The outcome of users' adaptation to the problems posed by fast-paced multi-party chat is what Herring calls "loosened relevance," which, she suggest, is becoming a norm in recreational, playful uses of chat. This communicational development challenges pragmatic models (Grice 1975; Sperber and Wilson 1986), in that user-independent technological constraints lead to highly cooperative and socially gratifying conversations that raise the question of whether users are aiming at relevance at all.

Tuija Virtanen approaches performativity in CMC from the perspectives of (i) "emoting", the novel construction of third-person action, and (ii) "mock-performatives", mediated institutional first-person performative utterances, as they are put to playful use on informal discussion boards. The form of a pre-programmed command "emote" in game environments has been adopted in a number of text-based CMC modes to refer to users' online personae in typographically marked third-person predications. Mock-performatives, incorporating the performative marker *hereby,* readily trigger joint play sequences. It is argued that the two kinds of virtual performatives call for a rethinking of performative theory.

The chapter on address terms, by **Sandi Michele de Oliveira**, reviews literature from contextually oriented branches of linguistics but finds that very little has been written on address in CMC environments. In pragmatics the focus has been on politeness, where address is only part of the package. Three objects of study in CMC are identified: address forms in greetings, conversational norms emerging from the (cross-cultural) study of address forms across CMC modes and communicative situations, and address in educational online settings. The chapter warns against static views of address forms as conveyors of identity and (im)politeness *per se*, critiquing popular ideas regarding the homogeneous informality of CMC.

Sandra Harrison and **Diane Allton** discuss distinctive patterns of apology in email discussion lists with academic or professional themes. Four kinds of apologies appear: (i) email-specific *apologies*, routinely used for cross-postings before committing the trivial offence in the same message; (ii) retrospective apologies for minor offences such as giving incorrect information or sending blank messages, which include some sign of genuineness in their formulations; (iii) retrospective apologies for serious offences such as word choice or sending private messages to the list; and (iv) the pragmatically interesting category of subverted apologies. The more serious the offence, the more varied the form of the apology.

Miriam Locher's concern is with advice-seeking and advice-giving on the Internet, with a focus on response patterns in professional health websites. The chapter explores a particular online advice column, *Lucy Answers,* in some detail. Response letters are investigated in the light of their content structure, syntactic characteristics, and pragmatic aspects related to politeness and self-presentation. The author then

examines the role of computer mediation in health advice, using Herring's (2007) classification scheme of medium and situational factors. It is assumed that people employ language differently in different advisory settings online, both in expert-non-expert interaction and in contexts of peer advice.

Jeffrey Hancock and **Amy Gonzales** explore digital deception, "the intentional control of information in a technologically-mediated message to create a false belief in the receiver of the message" (#). The mode of communication is likely to have an effect on people's decisions to lie or not, both in interactions with persons familiar to them and in anonymous online spaces. The chapter also deals with sets of linguistic features that are expected to reveal deception, in keeping with a shift in the study of deception from non-verbal cues to verbal elements. It is crucial to consider degrees of recordability, synchronicity, and co-presence of interlocutors in the naturalistic settings offered by CMC for the study of the pragmatic aspects of deceptive discourse.

PART 3: Pragmatics of CMC phenomena

Part 3 is devoted to the pragmatics of linguistic phenomena that have emerged as new in CMC. Such phenomena are relatively scarce, which may seem surprising in view of the discussions in the media of the novelties of CMC. Yet, it is primarily the combinations of linguistic features, their clustering in some CMC modes rather than others, and the innovative uses of language for pragmatic purposes that characterize CMC. Part 3 focuses on a small number of unevenly distributed pragmatic phenomena that may be labelled CMC-specific.

Theresa Heyd discusses the advantages of using classic pragmatics tools such as speech act theory and the cooperative principle to analyze deception in CMC. Studies of online discourse can indeed greatly benefit the development of pragmatic theory, as demonstrated in concrete terms by Heyd's investigation of "email hoaxes". After a discussion of their genre history, definitional criteria, and repertoire of types, email hoaxes are approached from the perspectives of their characteristic pragmatic mechanisms: They manifest dual patterns of (non)cooperation, felicity, and uptake. It is predicted that the model of analysis will also serve well in the study of future CMC genres with a deceptive orientation.

On a related topic, **Martin Gill** analyzes a corpus of Nigerian (scam) email letters for their "authenticity". Gill identifies a set of basic conditions that authentication effects need to meet: consistency, quantity, spontaneity, plausibility or appropriateness, and engagement. All of these are crucially missing from the messages in focus. Instead, their authentication cues give off disauthenticating information, while the authenticating work undertaken is sender and medium oriented, occurring in a communicational vacuum. Further, the authentication strategies employed have scope over local stretches of discourse, rather than the message as a whole. The five conditions identified in the chapter are offered as guidelines for future research on authentication in CMC.

Loukia Lindholm adapts Grice's (1975) cooperative principle for the analysis of online nicknames ("nicks"), arguing that these consist of minipropositions that contribute to the discourse by serving central communicative goals in CMC such as self-presentation, negotiation of group identity, and triggering interaction. At times

nicknames simply have the referential function of naming, but most instances in the two discussion forums investigated serve pragmatic functions in ways that offline nicknames do not, such as co-construction of online personae and establishing credentials for (verbal) actions. Participants readily discuss their and others' nickname practices, suggesting conformity to or noticeable deviation from the four maxims of online nicknames identified for these communities.

Markus Bieswanger discusses the micro-linguistic features that are often identified as characteristic of CMC, such as emoticons, non-standard spelling and creative use of writing systems, abbreviations, and non-standard punctuation. These features are an essential part of many online discourses. Yet, the great variation in their frequencies of occurrences makes generalizations of a relatively homogeneous Internet language (cf. "Netspeak", Crystal 2001) difficult to sustain. Moreover, some instances of each category are very common and others scarce, and variability in their (non-)use may be manifest in particular languages and scripts, CMC modes, communicative situations, and individual users.

PART 4: Discourse-pragmatics of CMC interaction

The chapters included in the fourth section revolve around central issues in interaction, testing and adapting concepts from the offline study of conversational discourse for the study of online discourse in various situational and institutional contexts. The final chapter in this section is concerned with the notion of "flaming", one of the first discourse-pragmatic phenomena to be ascribed to CMC (Kim and Raja 1990).

Rodney Jones analyzes pragmatic uses of rhythm and timing in text-based chat, by investigating gay chat room interaction. Rhythm and timing are exploited to produce shared "attention structures", and a lack of "interactional synchrony" tends to terminate the exchange. Users make their turns short, break up messages across several turns, and type in filler terms such as *ic*. Longer breaks may, however, successfully indicate conversation management when topics and activity stages are shifted. The chapter also discusses "polychronicity", i.e., multiple, simultaneous interactions not proceeding at the same pace, the effects of interactional roles and social power on the interaction, and the phenomenon of CMC users entering a state of "flow" and losing their sense of time.

James Simpson focuses on conversational floors in text-based multi-party synchronous CMC, investigating the factors that account for the emergence of distinctive patterns in human interaction mediated by computers. The notion of conversational floor is first related to inter-turn cohesion and coherence and then defined in relation to the topic, communicative action, and participants' sense of what is going on in the interaction. Different participant structures yield basic floor types: speaker-and-supporter floor, collaborative floor, and multiple conversational floor. The last of these is common in CMC environments, due to the occurrence of simultaneous conversations and multitasking. These floor types are illustrated through a case study of a virtual group dedicated to exploring ways of language learning online.

Informed by the CA tradition, **Kris Markman** approaches small-group chat from the perspective of conversational coherence and turn organization. The chapter presents a case study of virtual student team meetings that discloses an orientation towards

discourse topics as a means of designing and structuring turns online. Interactional coherence is examined in the light of conversational threads as well as speakership roles and turn allocation, while also paying attention to the size of the group, the technical features of the chat environment, and the purpose of the talk. The chapter argues for the difference between turns and chat messages, and presents a useful transcription method designed for the analysis of chat interaction.

Angela Garcia and **Jennifer Jacobs** examine another central concept in CA, repair. Their study of educational chat in an intranet context of composition classes in the U.S. makes use of an innovative transcription system based on videotapes of participants' computer screens to allow the analyst to keep track of what is visible to each student at a given point in the interaction and what keystroke actions they make in their postings. The case study focuses on avoidance and self/other repair of troubles in "quasi-synchronous" chat, as well as the technological solutions adopted by users for these purposes, such as short or split messages, delays in posting, addressivity, and format tying.

Karianne Skovolt and **Jan Svennevig** investigate norms related to responses and non-responses in workplace email in Norwegian contexts. Informed by CA and classic speech act theory, the study relies on participant display of communicative actions. While a response is found to be conditionally relevant after questions and requests, non-response to requests for comments and corrections to a proposal signals acceptance of the proposal. However, users may volunteer responses that have an interpersonal function. The emerging norms of responding or not in workplace email are compared to earlier studies of other kinds of CMC dialogue and to the literature on offline conversations.

Focusing on email use in Swedish workplace communication, **Amelie Hössjer** addresses the relationship between small talk and politeness in two editorial contexts: a physically-based and a digitally-based community of practice. In the former, email is one of several communication options, and its use is characterized by simple, routine matters. Small talk primarily appears in face-to-face contacts, reserved for complex or delicate issues. While not a "lean medium" in itself, email is used as such. In contrast, the digitally-based community of practice makes use of email as its primary form of communication. For these users it is a "rich medium", allowing them to construct and maintain social relationships through the discourse strategies of "framing" and "chaining" contexts in work-related interaction.

Brenda Danet's concern, in contrast, is with linguistic impoliteness and rudeness. The CMC phenomenon of "flaming" is provided with a historical context and related to (im)politeness theories, as well as issues of multilingualism, gender, and culture. The chapter shows that flaming can sometimes be used to express solidarity, perhaps jointly with hostility. A contextualized case study is presented of "flame events" in listserv communication among English-speaking Israelis in the U.S., relating some of the findings to the traditional Jewish culture of argument and disputing. Such flame events, Danet suggests, can be fostered by technological, organizational, gender-related, personality-oriented, sociocultural, and linguistic factors.

PART 5: Broader perspectives

The last section of the volume takes the dialogical approach to CMC further to investigate code-switching, narrative, and genre dynamics. These phenomena, while somewhat loosely related, can all be considered metapragmatic, in that they involve constructs beyond the level of contexts of use, i.e., language systems and CMC types.

Jannis Androutsopoulos opens the section with an overview of research on code-switching and code-mixing in CMC. Code-switching in digital discourse functions as a code-centred contextualization cue that constitutes unscripted, dynamically unfolding communication in its own right. The chapter discusses a number of ways in which code-switching and code-mixing are used as multilingual resources in CMC, focusing on the specific conditions of communication offered by digital media for (non)conversational discourse. Digital writing is dialogical, often vernacular and simultaneously used with other semiotic resources, and code-switching is affected by the affordances concerning planning and the mode-specific resources of writing.

The chapter by **Alexandra Georgakopoulou** provides a programmatic discussion of narrative in CMC. It is argued that the focus of narrative analysis in CMC should be on social practices, rather than textual and genre-related issues. In particular, it would seem expedient to adopt an approach that includes "small stories", marginal in terms of the traditional Labovian narrative, given that the new media are teeming with distributed multi-authored stories and story fragments emerging in interactive and multimodal environments. Several of the basic characteristics of narrative need rethinking as analysis of online narratives, fictional or personal, reveal new practices and ways of telling.

Finally, **Janet Giltrow** explores the elusive notion of "genre" in pragmatics, applied linguistics, corpus linguistics, and her own field, rhetoric, in relation to CMC. Two possible common denominators are identified among myriad definitions: Genre is a typifying concept, and genre is located at the interface between language and sociality. The chapter singles out two constitutive phenomena in rhetorical genre theory: "exigence" and "motive". Genre studies of CMC informed by various theoretical frameworks ideally contribute to the understanding of both "the extent and quality of newness of CMC" and "users' experience of exigence, including the social motive for taking up new technologies and their mutual recognition of these motives" (#).

The contents of the volume can be summarized concisely as follows. Part 1 shows important variation across CMC modes, Part 2 forcefully demonstrates how analyses of classic pragmatic phenomena in CMC data suggest developments to pragmatic theory, and Part 3 identifies a small number of unevenly distributed pragmatic phenomena that may be labelled CMC-specific, even though they, too, can be shown to have roots in offline communication. Part 4 raises the issue of the applicability to CMC data of models devised for the analysis of spontaneous face-to-face communication, and Part 5 addresses the broader metapragmatic issues of code alternation and genre in CMC.

6. Directions for future research

The diversity of topics addressed in this handbook notwithstanding, gaps remain in the pragmatic phenomena covered for various reasons. For instance, there are no chapters on deixis, presupposition, inferencing and implicature, grounding, or ideology, mostly because not enough language-focused research yet exists on these phenomena in CMC to provide the substance for separate chapters. Linguists have tended to focus on more "exotic" phenomena in CMC (such as "Netspeak" and emoticons) first, areas where computer-mediated language appears self-evidently different from traditional written and spoken language. This could explain, for example, why there has been so little research on presupposition, inferencing, and implicature – no one has yet observed these to work differently in CMC, that we are aware of (although it is an empirical question whether they work differently or not). As research on the pragmatics of CMC expands and becomes more nuanced, we expect and hope that these gaps will be filled in the future. This explanation does not account for the gaps in coverage on deixis and grounding, however, in that CMC-specific issues associated with these are readily observable, especially in videoconferencing systems and 3-D graphical worlds where reference to shared objects must be negotiated.[8] Most computer-mediated language research to date has not dealt with such modes, however, but rather has focused on conversational, textual modes of CMC. Finally, the volume contains no overall chapters devoted simply to speech acts or politeness; these are accidental gaps, in that the authors we invited unfortunately were not able to contribute. These topics have attracted research attention, however, as indicated by their inclusion in a number of chapters in the handbook as described in the previous section.

The pragmatics of CMC being a new field of study, it is a truism that more research on almost all topics is needed. Further research is needed especially on pragmatic phenomena in languages other than English, as well as in multimodal CMC (voice, video, graphics), including in game environments (Esslin 2011), domains where research has as yet only scratched the surface of understanding. Newer domains, such as social network sites and microblogs, have emerged and evolved as this volume was in preparation. Clearly, "canonized knowledge" is not yet available on the linguistic pragmatics of these, although we can envision that a separate volume on the pragmatics of Web 2.0 will become feasible in the not-so-distant future. Nor is the evolution of CMC technologies likely to slow any time soon, underscoring one of the main challenges for researchers studying language usage in digital media environments: Such usage – and the environments themselves – are dynamically moving targets.

Despite the likelihood that the coverage in this volume will soon become outdated, we nonetheless offer it as a multifaceted portfolio covering the first 25 years of computer-mediated language research, in the hope that it will weather the sands of time and remain as a sturdy foundation upon which future research can build.

Notes

1. Noteworthy among these are Baron (1984), Murray (1985), and Severinson Eklundh (1986).

2. For a useful (albeit now somewhat dated) overview of sociolinguistic research on CMC, see Androutsopoulos (2006).
3. See, e.g., Reid (1991) and Werry (1996) for IRC; Reid (1994) and Cherny (1999) for MUDs; Baron (1998) and Gains (1999) for email; Döring (2002) for German SMS; Thurlow and Brown (2003) for English SMS; Stein (2006) for business websites; and Herring et al. (2005) for blogs.
4. See also Weininger and Shield (2003) and Stein (2005) with reference to Koch and Österreicher (1994); Herring (2007) with reference to Hymes (1974).
5. In keeping with the rise in English as the lingua franca of scholarship, CMC scholarship from other countries published in English is also on the rise, especially on the Web (Callahan and Herring 2012).
6. A notable, and early, exception is Yus (2001). An English version of this work became available in 2010.
7. On the creation of the Web, see Wikipedia (2011a).
8. In the literature on computer-supported cooperative work, however, deixis has been addressed in just such environments, e.g., by Hindmarsh and Heath (2000) and Suthers, Girardeau, and Hundhausen (2003), and grounding has been addressed, e.g., by Clark and Brennan (1991) and Brennan (1998).

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