6 Computer-Mediated Discourse 2.0

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0 Introduction

Computer-mediated discourse (CMD) is the communication produced when human beings interact with one another by transmitting messages via networked or mobile computers, where "computers" are defined broadly to include any digital communication device.[1] The study of CMD is a specialization within the broader interdisciplinary study of computer-mediated communication (CMC), distinguished by its focus on *language and language use* and by its use of methods of *discourse analysis* to address that focus.

The nature of CMD varies depending on the technical properties of the CMC system used and the social and cultural context embedding particular instances of use. Originally, most CMC was *text based* – that is, messages were typed on a computer keyboard and read as text on a computer screen – and accessed through stand-alone clients. Text-based CMC modes include email, discussion forums, newsgroups, chat, MUDs (multiuser dimensions or multiuser dungeons) and MOOs (MUDs, object oriented), blogs, microblogs, and wikis. Increasingly, however, textual CMC has been supplemented by graphical, audio, and/or video channels of communication, and multiple modes of CMC are available on Web 2.0 platforms and smartphones. All of these environments provide rich contexts in which to observe verbal interaction and the relationship between discourse and social practice.

The first research on computer-mediated language was conducted in the 1980s (Murray 1985, 1988; Severinson Eklundh 1986), but language scholars did not begin to take serious notice of CMD until 1991, with the publication of Ferrara, Brunner, and Whittemore's "Interactive written discourse as an emergent genre." Since then, linguists have been researching CMD at an accelerating rate, broadening the scope of inquiry and generating an ever-growing list of published resources. Indeed, CMD

research has expanded so dramatically since the first version of this chapter was published that it is no longer possible to summarize its findings in a single chapter. The earlier version included structure below the level of the utterance – typography, orthography, and word-formation processes in CMC. In order to keep the scope manageable while bringing the coverage up to date, the present chapter focuses on discourse more narrowly defined – language use at the level of the utterance and above – as described in research published since 1999, when the original chapter was written. Like the earlier version, this chapter is concerned primarily with discourse in interactive (as opposed to monologue or broadcast) CMC.[2]

The remainder of the chapter is organized into six broad sections, each of them representing an active area of CMD research. Section 1 addresses the nature of CMD in relation to written and spoken language, and identifies technologically, culturally, and historically based CMC types. Section 2 discusses CMD structure at the utterance, message, exchange, and conversation levels. Section 3 considers meaning as it is expressed through discourse usage: of words, utterances, messages, and genres. Section 4 considers how participants in CMD negotiate turn-taking and maintain cross-turn coherence despite constraints on interaction management imposed by CMC systems. Section 5 discusses CMD in the service of social goals ranging from self-presentation to interpersonal interaction to engagement with mass-media discourses. Section 6 addresses recent developments in multimodal CMD, including decorated text, graphical icons, audio, video, and text embedded in graphics. The chapter concludes by identifying trends in CMD that are likely to grow in importance in the future.

1   Classification of Computer-Mediated Discourse

Starting in the late 1980s and continuing through the present time, language scholars have classified CMD according to various principles. Four approaches are discussed below, roughly in chronological order: CMD as a modality, CMD as individual modes/genres, CMD as sets of characteristics that cross-cut modes, and CMD in relation to its offline and online antecedents. Each of these approaches illuminates different aspects of CMD and facilitates identifying questions, choosing methods, and interpreting results in CMD research, as well as enabling comparison with other types of discourse.

1.1   Modality

In the early days of CMC systems, some scholars characterized CMD as a single language variety (e.g., Ferrara, Brunner, and Whittemore 1991; see also Crystal 2001 on "Netspeak"). Relatedly, a number of scholars attempted to classify CMD as either writing or (typed) speech (e.g., Hård af Segerstad 2002; Maynor 1994). However, CMD does not fit easily into either modality: while the means of production are similar in textual CMD and other forms of writing, CMD exhibits features of orality as well as characteristics unique to itself.

Nor is CMD a single language variety. Other scholars, noting that speech and writing are not dichotomous but rather are situated along a continuum (see Biber 1988), have distinguished between synchronous and asynchronous CMD, situating asynchronous modes such as email closer to the written end of the written–spoken continuum than synchronous modes such as chat, which tend to exhibit more "oral" features (e.g., Condon and Čech 2010; Herring 2001). That is, as CMC on the Internet became more diversified, there was a growing recognition that language was used differently in different kinds of CMC.

1.2   Modes, genres, and discourse types

A more differentiated approach to classification focuses on emic (culturally recognized) categories of CMC, such as modes, genres, and discourse types. Common *modes* such as private email, electronic mailing lists, Web forums, chat, instant messaging, and blogs are socially as well as technologically defined, each having their own unique affordances, histories, and cultures of use. The term "mode" was first used in this sense by Murray (1988).

CMD also manifests different *discourse types* and *genres*, which often recall those in offline communication. CMC is *conversational* in chat rooms, instant messaging, Web forums, and the like, as well as in online environments that are not primarily intended for conversation such as photo- and video-sharing sites (e.g., Bou-Franch, Lorenzo-Dus, and Blitvich 2012). *Narrative* is salient in multiuser role-playing games, and people often produce fragments of narrative, or "small stories" (Georgakopoulou 2013), in online environments – fragments that may be expanded through interaction with other participants. Even *expository* text such as encyclopedia entries on Wikipedia are collaboratively constructed and discussed on the "Talk" pages that accompany each entry.

Some genres that at first blush appear unique to CMC can also be classified in familiar terms, particularly when these are viewed not so much as fixed sets of features than as responses to common communicative exigencies, as suggested by Giltrow (2013). For example, the blog (sub)genres of filter blog and personal journal recall the offline genres of journalistic commentary and diary, respectively (Herring *et al.* 2004). And the online genre of the Nigerian scam letter, as described by Blommaert and Omoniyi (2006) and Gill (2013), is a type of "appeals letter" of the *hortatory* discourse type (in the terms of Longacre 1992), adapted to the scammers' desire to appear legitimate and trustworthy and to appeal to the recipients' greed so that they send their private banking details in response to promises of large sums of money.

Mode- and genre-based analyses provide a convenient shorthand for categorizing CMD types. At the same time, CMD is shaped by a variety of technical and situational factors, making it variable within as well as across modes. For example, Herring (2007) observed that personal-journal blogs on the open-access blog-hosting platform LiveJournal differ in many respects from a privately developed, limited-access educational blog for children, even though both fall within the blog mode and the personal-journal blog genre, and these differences have consequences for language use.

1.3   Faceted classification

A third approach involves classifying CMD data according to a pre-defined set of factors. Several early studies invoked Hymes's (1974) SPEAKING taxonomy to characterize samples of CMD (e.g., Murray 1988). In a taxonomy more tailored to CMD, Baym (1995) identified five factors that condition behavior and language use in Internet discussion groups: the external contexts – physical, cultural, and subcultural – in which CMC use is situated; the temporal structure of the group; the computer system infrastructure; the purpose of communication; and the characteristics of the group and its members.

A more fine-grained classification scheme was developed by Herring (2007). In this scheme, multiple categories or "facets" cut across the boundaries of sociotechnical modes and combine to allow for the identification of a nuanced set of CMD types. The scheme comprises two sets of facets: medium and situation.

The medium facets posited to influence CMD include available channels of communication, synchronicity, one-way versus two-way message transmission, message persistence, message format, and size of message buffer. While the case for the deterministic influence of the computer medium on language use is often overstated, properties of computer-messaging systems sometimes do shape CMD, especially interaction management, as discussed in Section 4. The situation facets posited by Herring (2007) include group size, participant characteristics, purpose of communication, topic or theme, norms of social appropriateness, and code or language variety used. Situational shaping is especially pronounced in self-presentation and social dynamics in online discourse.

The facets in this scheme are open sets that can be expanded as CMD evolves. For example, recent social media call for the addition of social networking affordances to the set of medium facets, such as friending and linking, including "like" links. Moreover, the traditional distinction between synchronous and asynchronous CMD is breaking down in CMC systems that enable real-time chat but also preserve a record of the interaction that can be accessed later, as in Facebook's current private-messaging feature, which combines chat and asynchronous messages.

1.4   Classification of "Discourse 2.0"

The term *Web 2.0* refers to Web-based platforms that incorporate user-generated content and social interaction, often alongside or in response to structures and/or (multimedia) content provided by the sites themselves; such platforms have been ascendant since the turn of the millennium. A common characteristic of Web 2.0 environments is the co-occurrence or convergence of different modes of communication on a single platform.

The discourse in these new environments – or "Discourse 2.0" – introduces new types of *content*, such as status updates, text annotations on video, tags on social bookmarking sites, and edits on wikis. New *contexts* must also be considered – for example, social network sites based on geographic location – as well as new (mass-media) audiences. Discourse 2.0 manifests new *usage patterns*, as well, such as media co-activity (near-simultaneous multiple activities on a single platform [e.g., Herring *et al*. 2009]) and

multi-authorship, and joint discourse production (e.g., Androutsopoulos 2011). These reflect, in part, new *affordances* made available by new communication technologies: text chat in multi-player online games (MOGs); collaboratively editable environments such as wikis; and "friending" and social tagging/recommending on social network sites. Furthermore, Discourse 2.0 includes *user adaptations* to circumvent the constraints of Web 2.0 environments, such as interactive uses of @, #, and retweeting on Twitter (e.g., boyd, Golder, and Lotan 2010; Honeycutt and Herring 2009; Page 2012).

Discourse phenomena in Web 2.0 environments can be classified in relation to their antecedents (or lack of antecedents) as *familiar*, *reconfigured*, or *emergent* (Herring 2013a). Phenomena *familiar* from older CMD modes such as email and chat appear to carry over into Web 2.0 environments with minimal differences; examples include non-standard typography and orthography, code-switching, gender differences, and email hoaxes. CMD phenomena that adapt to and are *reconfigured* by Web 2.0 environments include personal status updates and quoting/retweeting, which have traceable online antecedents. Finally, new or *emergent* phenomena that did not exist prior to the era of Web 2.0 include the dynamic collaborative discourse that takes place on wikis, along with conversational video exchanges and multimodal conversation more generally.

The following sections summarize key findings of CMD research, with an emphasis on the 15 years since the earlier version of this chapter was written. The sections are ordered according to the levels of CMD analysis as described in Herring (2004, 2013a): structure, meaning, interaction, social practice, and multimodality. This is a heuristic for organizational purposes; several phenomena could be described at more than one level.

2 Discourse Structure

Some of the most iconic properties of computer-mediated language are structural features at the sentence level and below: creative and non-standard typography, spelling, word-formation processes, and syntax. A recent overview of such features can be found in Herring (2012). The focus in this section is on structure at the utterance level and above: messages, exchanges, and threads or conversations.

People often produce grammatically correct sentences in textual CMD, especially in asynchronous modes such as email (which allow more time for editing) when the writers are well educated, the purpose of the communication is professional, and the tone is serious. Yet deviations from standard sentence structure also occur often – elided elements, missing or incorrect capitalization and punctuation, sentence fragments, and so on. Thus it makes sense to consider "utterances," rather than "sentences," as the basic units that constitute and combine to form messages in CMD, where utterance is defined as a sequence of one or more words that is preceded and followed by silence (space) or a change in communicator. Note that punctuation is not part of this definition, as it is not uncommon for utterances in CMD to lack final punctuation.

Utterances can constitute micro-messages in and of themselves. This occurs most often in synchronous chat, and in text messaging and status updates on social media

services such as Twitter that impose technical limits on message length. (At the time of this writing, the limits are 160 characters for text messages and 140 characters for tweets.) Each of the following utterances is a message – in this case, a Facebook status update (from Lee 2011).

(1)   Amy[3] is in a good mood.
      Snow is "I've seen you in the shadow".
      Kenneth quitting facebook.
      Katy: ?

As these examples illustrate, single-utterance messages are often considerably shorter than the maximum allowed. Moreover, users sometimes break utterances into multiple messages (posting units), even when there is no need to do so to avoid message length constraints, as in the following IM example (Baron 2010):

(2)   Joan: that must be nice
      Joan: to be in love
      Joan: in the spring

Baron suggests that such breaks reflect intonation units in speech. Posting messages in short bursts in synchronous CMD can also be a strategy to approximate a faster, more "speech-like" pace and/or to hold the floor by not leaving time for another participant's message to intervene while one composes a complex utterance.

   Asynchronous messages, in contrast, tend to be made up of more than one utterance, and thus they have more possibilities for internal structure. Herring (1996) identified a basic three-move schema in messages posted to academic mailing lists: (1) *link to an earlier message*, (2) *express views*, and (3) *appeal to other participants*. Condon and Čech (2010) found that email messages displayed a similar three-move structure in a task where subjects had to recommend musicians for awards in various categories, as in the following example.

(3)   Hello! [1] Sorry it took so long for me to respond to your letter..I haven't been at school lately. Vacation was great..but it never seems to last long enough! [2] I think for best female vocalist we should chooose Alanis..seems like she has gotten really hot lately. I think your idea of going from easy listening to heavy is great. I don't have my paper with me right now that has all of our choices on it so there isn't much more I can think of.. [3] so I will close here and check in probably on wednesday.. talk to you later

Structure was also evident in Condon and Čech's study in the decision schema that the participants followed in order to complete the music awards task, consisting of repeated cycles of the moves *orientation – suggestion – agreement*. The asynchronous messages sometimes combined more than one move from the decision schema – in the above example, an orientation and a suggestion followed by an agreement

with a previous suggestion by the addressee – whereas the synchronous exchanges tended to express the moves of the sequence in separate messages by alternating participants.

As this example suggests, the more structured the communicative task, the more predictable is the sequence of moves. And the more predictable the move sequence, the more it is possible to leave moves unexpressed in CMD, increasing the efficiency of task-focused exchanges. Condon and Čech (2010) found that, when communicating via either synchronous or asynchronous CMC, subjects in their study tended to abbreviate the moves of the decision schema more than when communicating face to face, omitting certain moves (such as agreement) that were assumed to be understood. Similarly, Ford (2002) found synchronous chat reference interactions to be more routinized than face-to-face interactions with reference librarians: the former were shorter (13 vs. 63 turns, on average), expressed a narrower range of information needs, and followed more predictable move sequences, especially during openings.

Structure can also be discerned in casual chat exchanges, despite a tendency in synchronous CMD for adjacency pairs – moves that should logically be adjacent – to be interrupted by unrelated messages. Some evidence suggests that participants in dyadic social chat tend to follow a global schematic structure. Goutsos (2005) proposed that two-party IRC (Internet Relay Chat) exchanges between Greek–English bilinguals are oriented toward an ideal schema consisting of three phases (*opening – body – closing*) and characteristic speech acts, such as self-identification, introduction, development, pre-closing, and greeting (closing). Similarly, Herring (2006) proposed a jointly constructed, seven-move schema for dyadic instant messaging conversations between previously acquainted chatters in English:

1   Greeting – greeting
2   Formulaic inquiry – reply
3   Question/topic initiation 1 – response 1
4   Question/topic initiation 2 … n – response 2 … n
5   Closing initiation – (response)
6   Arrange to talk later – (response)
7   Leave-taking – leave-taking

Informal observation suggests that adherence to this schema is more evident in text chat than in face-to-face conversation, perhaps to compensate for the relative lack of feedback and cues in textual CMC and to make it easier to follow. The nature of turns and turn-taking in CMD is discussed further in Section 4.

3   Meaning

In CMD, meaning is constituted and negotiated almost entirely through verbal discourse. This is especially true in textual CMD, in which context cues are reduced relative to face-to-face communication. This section discusses how discourse and

pragmatic meanings are conveyed through words, utterances, emoticons, (violations of) genre conventions, performativity, and intertextuality in textual CMD.

The choice, frequency, and distribution of *words* can indicate what a segment of discourse is about (topicality), as well as communicators' attitudes and affective states. For example, Cohn, Mehl, and Pennebaker (2004) compared LiveJournal bloggers' affective and psychological states before and after the events of 9/11 using the LIWC (Linguistic Inquiry and Word Count) data-analysis tool. They found a sharp decrease in emotional-positivity words starting on 9/11, accompanied by sharp increases in words reflecting cognitive processes, social processes, and psychological distancing, with psychological distancing words taking the longest to return to pre-9/11 levels. Automated tools such as LIWC enable large samples of text to be mined for meaning at minimum cost.

In the Cohn, Mehl, and Pennebaker study, meaning was given off unconsciously, through cumulative word choices over time. People interacting via CMD also produce meaning intentionally, via utterances that aim to convey a particular illocutionary force (see Searle 1975). A number of CMD studies have analyzed the use of individual *speech acts*: apologies in mailing lists (Harrison and Allton 2013), advice in a community blog for mothers and mothers-to-be (Kouper 2010), and rejections of date requests in an online dating service (Tong and Walther 2011), for example. Nastri, Peña, and Hancock (2006) analyzed the acts found in IM "away" messages using Searle's (1975) taxonomy of assertives, directives, commissives, and expressives; the "away" messages in their corpus mainly used assertive acts (e.g., "at the library") followed by expressives (e.g., "I love Fridays") and commissives (e.g., "be back at 5").

With the goal of creating an act taxonomy that could be used to analyze all types of CMD, Herring, Das, and Penumarthy (2005) proposed a coding scheme consisting of 16 "CMC acts." Each act – roughly the semantic equivalent of a structural utterance – is further classified according to whether it expresses the utterer directly or the speech/thought of someone else, and whether the act is bona fide or non-bona fide (e.g., humorous, ironic, sarcastic, deceptive). The act taxonomy was applied to messages in five teen chat sites by Kapidzic and Herring (2011), who found that the frequency of most acts varied according to the topic of discussion. Overall, however, boys produced more manipulative (invite, direct) and girls produced more reactive (react, reject) acts, in keeping with the complementary roles they tended to assume in flirtatious interaction, a frequent activity on the sites. Thus in CMD, as in speech, illocutionary acts mirror the message producers' communicative goals.

Emoticons – the most common of which are variations on the smile, the wink, and the frown – express meaning iconically (happiness, sadness, etc.). Dresner and Herring (2010) argue that emoticons can also be used to modify the illocutionary force of computer-mediated utterances. Following a complaint with a smiling or winking emoticon can shift its pragmatic meaning to an ironic observation, for example. More generally, the use of any emoticon imparts a metamessage of playfulness or non-seriousness, and it may function as a signal that the act it is associated with is non-bona fide.

Intentionally *deceptive messages* constitute another category of non-bona-fide communication. Hancock (2007) found that people lie less in CMC than in synchronous, record-less media such as telephone and face-to-face communication. Moreover, when typing deceptive messages, CMC users tend to employ more words and avoid first-person

references, presumably to deflect attention from themselves, although it is unclear how conscious this strategy is.

The harder a cue is to access through conscious reflection and control, the more reliable an indicator of authenticity it is (Donath 1999). *Identity* or *category deception*, where people present themselves as a different gender, age, or race (for example), offers good illustrations of this. Identity deception typically involves making explicit identity claims, including adopting category-specific user IDs, and invoking stereotypical features of communication of the category claimed – that is, via cues that are easy to manipulate. Herring and Martinson (2004) found that participants in an online gender-deception game manipulated stereotypical content cues while retaining features of their offline gendered discourse styles, which were presumably less available for conscious manipulation. Moreover, other participants tended to focus on the stereotyped cues more than on discourse styles when assessing gender authenticity, often leading to mistaken judgments.

Online frauds, scams, and hoaxes represent other *deceptive genres* of CMD. "Nigerian letters" are for the most part easy to spot as deceptive, in that they violate numerous pragmatic norms, including of the letter genre itself (Blommaert and Omoniyi 2006; Gill 2013). Hoax chain letters ("Forward this message to everyone you know …") employ a variety of persuasive and interactional tactics and are more successful in their uptake (Heyd 2013). Heyd draws a parallel between email hoaxes and trolling – disingenuously posting provocative message content with the goal of embroiling others in fruitless argument. Both are intended for the amusement of the originator and others "in the know" at the expense of those gullible enough to fall for the ruse. These examples show that deceptive meanings reside not only in words and utterances but also at the generic level. As Heyd puts it, certain genres have "an in-built insincerity" (2013: 389).

The power of language to create meaning in CMD is nowhere more evident than in *performative utterances* and sequences that "do by saying." These range from fixed expressions such as *LOL* ("laughing out loud") to more creative variants such as *wipes away a tear* to extended playful sequences such as the thread in example 5 below, from a Web forum about cosmetics (adapted from Virtanen 2013).

(4)   On a break with SO [significant other] I deserve a mini-haul ... right?? ;-) User1
    –   […]
    –   The very best medicine there is! Who needs men when theres makeup? :P User2
        ○   Ok. I, User3, hereby do declare that any and all problems, breakups, breaks, r/o arguments, or any other "situations" with any SO be it man or woman, totally warrant, deserve, and indeed require splurges, hauls and indulgences of any kind. User3
            ■   I second the motion! User4
                ○   thirded. Motion passes. User5
            ■   here, here! :D User6
            ■   SO HELP ME GOD. User7

User3's formal performative ("I hereby declare") and legalistic lexicon (e.g., "any and all," "warrant") cue a play frame that subsequent posters elaborate upon with

further performatives; together the users perform the roles of participants in a court-house or town hall meeting. These non-bona-fide utterances incorporate two subject positions – that of a participant on the cosmetics forum and that of an imagined legal authority.

Intertextuality is manifested through implicit cultural references, as in the performativity example above. CMD users also incorporate outside context to create meaning by paraphrasing, quoting, retweeting, or linking to other texts elsewhere on the Web. Hodsdon Champeon (2010) found that participants in a racially antagonistic online discussion also conveyed meaning through their choice of intertextual reference strategy. They tended to use indirect reference strategies for ideas they felt were valid or true and direct quotations (which are easier to discredit) for those they considered invalid or false. However, the type of intertextual reference used had no correlation with the participants' ideologies about race, which were expressed mainly through the stances they adopted toward racially sensitive issues.

4   Interaction Management

In Hodsdon Champeon's (2010) study, newsgroup participants sometimes alternated between positive and negative stances to create the impression of a back-and-forth debate within a single message. *Quoting* part of another user's message and then responding to it in the same message is another way to create the illusion of a conversational exchange (Severinson Eklundh 2010). Similarly, a retweeted message on Twitter may simultaneously report what someone else tweeted and provide context for the retweeter's response to it. Such strategies are useful in multiparticipant asynchronous CMD, where the logical adjacency of turns is disrupted by other unrelated messages and/or when considerable time has elapsed between the original message and the response.

The interactional aspect of CMD is more explicitly evident in message exchanges involving multiple participants. As in spoken discourse, these exchanges raise issues of interaction management that include coherence, relevance, turn-taking, topic development, non-response, floor, and repair. A "turn" is understood here as the smallest interactionally relevant complete linguistic unit in a given context. In CMD, most *turn units* are also message units (Condon and Čech 2001), with the exception of single turns that are broken up across multiple messages, as in example (2) – for example, to hold the floor and/or to simulate a spoken pace of conversation.

Perhaps more than any other aspect of CMD, interaction management is shaped by the medium characteristics of CMC systems. In particular, one-way message transmission, in which the recipient does not see the message until it is transmitted in its entirety, affects the *coherence* of exchanges. Disrupted adjacency occurs when logically related turns are separated by unrelated turns posted by the same or other participants (Garcia and Jacobs 1999; Herring 1999). The interactional difficulties caused by disrupted adjacency should not be exaggerated, however. Several studies have found that even when many adjacent messages appear unrelated, chat participants are able to read the different threads and reconstruct the adjacency of each message (Örnberg Berglund 2009; Schönfeldt and Golato 2003; Simpson 2005). In environments such as

multiparticipant chat rooms, where disrupted adjacency is common, communicators may even come to accept tenuous or "loose" relatedness of adjacent turns as normal (Herring 2013b).

More profound disruptions of traditional turn-taking norms occur in two-way message transmission systems, which display messages keystroke by keystroke as they are typed. For example, in the synchronous VAX "phone" application studied by Anderson, Beard, and Walther (2010), three participants in a problem-solving task tended to alternate between typing at the same time and then pausing at the same time to read what the others had written. This strategy, which violates the "no gap, no overlap" principle posited by Sacks, Schegloff, and Jefferson (1974) for turn-taking in speech, makes more efficient use of participants' time than alternating turns. Anecdotal evidence suggests that participants in one-way CMC sometimes employ a simultaneous type-and-pause strategy as well.

Medium characteristics also affect *turn allocation* in multiparticipant CMD. Absent the traditional face-to-face signals through which a speaker selects a next speaker – for example, body orientation, gaze, intonation, pausing – a current "speaker" in textual CMD will often employ explicit addressivity – naming a next speaker – or next speakers will self-select. However, there is some evidence that participants who self-select are less likely to receive a subsequent response (Panyametheekul and Herring 2007). Turn allocation is less relevant in two-way CMC, since participation tends not to be based on turn alternation.

Multiple responders who are unaware of what others are typing can generate redundant responses or fragment the topic of discussion by moving it in different directions. This contributes to the tendency for discussions in one-way CMD to digress away from their starting points. Digression is especially common in unstructured, unguided discussions in public forums and in playful exchanges, as well as toward the end of a discussion, when topic fatigue sets in. In contrast, "on-topic" discussions tend to progress in a gradual stepwise fashion (Herring 2003), as Sacks (1987) described for casual face-to-face conversation. In recent years, however, this common pattern has been reconfigured in Web 2.0 environments that provide a visual prompt (e.g., a video or static image) or a textual prompt (e.g., a status update or a news story). In those environments, commenters tend to respond to the prompt rather than responding to other commenters, resulting in a different pattern of *topic development* (Androutsopoulos 2013c; Bou-Franch, Lorenzo-Dus, and Blitvich 2012).

Pauses are normally not evident in logs of one-way CMD, unless the writer adds explicit pause indicators, such as ellipses (…).[4] Nonetheless, the amount of time between when a message is sent and when it is responded to is interactionally significant. Kalman *et al.* (2006) found that responses to computer-mediated messages follow a power-law distribution, with at least 70 percent occurring within the "quick-to-average zone" while long silences are a "negligible minority." What constitutes "quick" and a "long silence" varies in absolute terms across CMC contexts.

Delayed responses and *non-response* may signal relational problems, technical problems, or that the responder is overwhelmed with messages. In a study of non-response to email in a Norwegian workplace, Skovholt and Svennevig (2013) observed that employees looked for institutional or technical reasons before they assumed that there was an interpersonal problem. Messages directed at particular individuals and that normatively call for a response (e.g., questions) are more likely to receive responses than

undirected messages and other kinds of speech acts. Moreover, Joyce and Kraut (2006) found that participants in online forums whose first message received a response were more likely to post again. In both the workplace email and the online forums, however, non-responses were common. Similarly, Herring (2010) found that only 53 percent of men and 39 percent of women in three academic discussion lists received a response to their first message, although the response rate increased to 100 percent for participants of both genders who persisted in posting three messages.

Responses play a crucial role in ratifying *conversational floors* in textual CMD. In the absence of nonverbal feedback, the only way to know that others have attended to one's message is if other messages subsequently ratify it by referencing its content. Thus floor in CMD necessarily involves multiple participants. Following this principle, Simpson (2005) identified three floor types in synchronous chat among ESL learners: a "speaker-and-supporter" floor, a "collaborative" floor, and a "multiple conversational" floor. In addition, Cherny (1999) identified a "nonpropositional" floor type (self-centered floors of speakers preoccupied with their own thoughts) in a social MUD. In asynchronous academic mailing lists, Herring (2010), building on Edelsky's (1981) observations about floor and participant gender, found that mostly male environments favored an F1 (one speaker at a time; like the speaker-and-supporter type) floor, whereas mostly female environments sometimes had F2 (collaborative) floors and sometimes F1 floors, which could be dominated by either men or women. Herring proposed that the mapping of gender onto floor is mediated by conventional power associations that grant males a greater entitlement to "speak" and to hold the floor. However, in online contexts where women are empowered (by their status, by their role, or by being numerically predominant), they may employ F1 strategies, and they may receive more responses to their messages than men do.

5   Social Practice

Research on CMD as social practice started with exploratory work on computer-mediated interaction and community in the 1990s (e.g., Baym 1995; Cherny 1999) and was consolidated in the 2000s as a "second wave" in linguistic Internet studies (Androutsopoulos 2006), which coincided with the broader turn to language practices in socially oriented linguistics. The social aspects of CMD are shaped by the progressive digitization of society and the embedding of digital communication technologies in everyday life, along with the medium and situation factors described in Section 1.3. The very distinction between offline and online communication is now increasingly fuzzy, as people are "always on" (Baron 2008). One impact of these changes on CMD research has been a turn from discourse in virtual communities as separate social entities to digital language practices that mediate between offline and online practices by individuals and communities. For example, Jones (2009) draws on the concept of entextualization to study how a community of young people creates photo and video representations of social activities, which are disseminated and interactively negotiated via social media. Androutsopoulos (2014) draws on the same concept to study practices of sharing in social networking and their impact on the deployment and change of linguistic repertoires. Practices of this kind have largely replaced, in popular imagination and academic interest, earlier interest in virtual communities of users who come together,

often with no shared geographical space, and establish power hierarchies and norms of social conduct exclusively by linguistic means.

5.1   Variation and linguistic diversity

The abundant evidence of sociolinguistic variation in CMD argues against early claims that Internet language constitutes a homogenous register. Structural features of CMD have been found to vary across modes (e.g., Cherny 1999), across languages (e.g., Bieswanger 2007), and according to the characteristics of the participants and the situation. Paolillo (2001) found that language use on the IRC channel #india varied systematically according to the participants' status: insiders used more profanity and switched more often from English into Hindi, while "newbies" (inexperienced users) used more "Netspeak" abbreviations. Research from Flanders (Vandekerckhove and Nobels 2010), southern Germany (Androutsopoulos and Ziegler 2004), and German-speaking Switzerland (Siebenhaar 2006) suggests that IRC channels from certain regions show regular occurrence of typical features from the respective regional dialects, with socially meaningful deployment in style-shifting between standard and dialect. Variation according to participant gender is also well attested, including at the lowest level of linguistic structure. For example, Waseleski (2006) found that women use more exclamation marks than men in library and information science discussion groups, and Squires (2012) found that women use more apostrophes than men in instant messaging.[5]

Code-switching and multilingual practices have also attracted considerable interest, covering postcolonial and diaspora communities, professional groups, and youth-culture settings.[6] Regarding the role of English as a global linguistic resource in CMD, some findings suggest that English is largely limited to formulaic and emblematic usage (Androutsopoulos 2013a, 2013b), whereas others, such as Sharma's (2012) study of English used among Nepali first-language speakers on Facebook, show regular alternation between English and a local national language. A study of Facebook interactions among female Thai speakers who live in Anglophone countries found that the group's online talk displayed "a great complexity of code-switching into English," even though no English would be expected in their face-to-face conversational exchanges (Seargeant, Tagg, and Ngampramuan 2012: 514). Androutsopoulos (2013b) coined the term "networked multilingualism" to describe how multilingual practices by Greek-German youth are framed by three affordances of social network sites: that is, focus on written linguistic signs as a main resource for meaning-making, orientation of contributions to a semi-public networked audience, and recontextualization of online resources.

5.2   Interaction and identity

Written language constitutes the primary resource for creating social reality in text-based CMC. Early ethnographic work on public virtual communities examined a range of genres that constitute virtual life, as participants negotiate, intimidate, joke, tease, and flirt (and in some cases have sex and get married) on the Internet, often without having ever met their interlocutors face to face. The accomplishment of virtual interaction is facilitated by both technological affordances (e.g., a special command to describe

actions or states in synchronous modes such as MUDs and IRC; Cherny 1999) and linguistic innovations by which participants attempt to compensate for social cues normally conveyed by other channels in face-to-face interaction, such as the textual representation of emotions and physical actions with emoticons and expressions such as <grin> and *yawn* in English. These affordances are often deployed creatively and playfully (Danet 2001).

The performance of playfully framed social identities is also pervasive in CMD. A case in point is the display and negotiation of gender and sexual identities. Del-Teso-Craviotto (2008) examined linguistic strategies for the negotiation of sexual desire in Spanish and English dating chats and argued that maintaining a play frame balances the tension between the expression of private erotic pleasures and the public character of the chat environment. Rellstab (2007) examined playful performances of gender in a Swiss IRC channel, emphasizing how chatters' practices destabilize normative conceptions of masculinity and femininity. Recent work has also seen a resurgence of interest in (im)politeness in CMD (Locher 2010). For example, Planchenault (2010) studied a French-speaking online community of transvestites and reported a widespread use of gender-marked politeness there to construct feminine identity, consistent with earlier research that found a strong association between online politeness and female identity.[7] Planchenault's study illustrates that the performance of social identities can simultaneously index online group or subcultural membership.

Humorous language play can also define social groupings. For example, an entire online subculture has arisen around sharing LOLcat images and communicating in LOLspeak, the fractured variety of written English that is imagined to be how cats would type (if they could type).[8] Linguistically defined social groupings can also be local and transitory, as in the case of participants on the DailyKos political blog who created an ad hoc ingroup around play with the passive-voice construction (Lazaraton 2014).

The locus of research on individual self-presentation in CMD has shifted since the 1990s from personal homepages to blogs to social network sites. Blogs commonly present an individual blogger's thoughts and feelings and adopt a first-person perspective (Herring *et al.* 2004), although Puschmann (2013), contrasting what he terms the "author-centric" and the "topic-centric" styles, shows that the purposes of blogging influence audience design, style, and content. To a greater extent than blogs, social network sites enable the construction of semi-public audiences of friends and intimates. Bolander and Locher (2010) classified status updates by members of a personal network on Facebook and found that participants offered both direct and indirect cues to personal identity. Lee (2011) content-analyzed Facebook status updates by several participants, with a focus on a young woman who posted about her pregnancy and giving birth. The scarcity of language-focused social network research to date is related in part to the practical and ethical issues connected to the elicitation of non-public CMD data.

5.3   *Discourse and engagement*

Contemporary CMD shows a high degree of interpenetration with mass-media representations and discourses, and orients to practices of media engagement as people use online text and talk to comment on and follow media spectacles. Twitter, in particular,

is rapidly becoming a favorite venue of media engagement. Page (2012) discusses the ad hoc formation of audience communities during the reception of a media event; these communities engage in the recontextualization of tweets by celebrities. Zappavigna (2011) coined the term "ambient affiliation" to describe how microbloggers engage with other virtually co-present members of an ad hoc community of interest that bonds around evolving topics of interest. *YouTube* has also been known to serve as a site for media engagement, for example when commenters recontextualize advertising slogans (Jones and Schieffelin 2009) or engage with representations of a capital city and its vernacular speech forms (Androutsopoulos 2013c).

CMD is also an increasingly important site of civic participation in political discourses, as attested, for example, by the widespread use of Twitter during recent events in the Middle East. Zappavigna (2011) shows how tweets produced during a political rally communicate stances toward the political actors. Georgakopoulou (2013) describes how Greek citizens mobilized various CMD platforms to retell and recontextualize controversial media events in the context of the recent Greek financial crisis. Moreover, computer-mediated language itself is often politicized. Online discourses on language debate the risks and opportunities of the Internet for various languages and speech communities. For example, Barton and Lee (2013) observe that members of the user-generated photography website Flickr produce discourse on Internet-specific language and self-deprecating metalanguage in which they deplore not being able to address their international audience in English, or apologize for their English if they do. These examples illustrate how the Internet offers space to engage in language-in-society issues with reference to other events, media, or domains of language.

Finally, representations of computer-mediated language are a frequent subject of language ideological debates that share striking interlinguistic similarities (e.g., Brommer 2007 for German; Thurlow 2006 for English). Squires (2010) describes popular perceptions of Internet language as evidenced in forum discussions sparked by newspaper reports and finds them to be shaped by conceptions of both standard language ideology and technological determinism. Popular and academic views on CMD thus coincide in part, although the assumption of technological determinism is stronger in popular discourses.

6 Multimodal Computer-Mediated Discourse

The view that the properties of the medium shape certain discourse outcomes has recently received additional support from studies of multimodal CMD. For the purposes of this chapter, CMD is considered to be multimodal when its production and reception involve channels of communication other than, or in addition to, plain text. Although most multimodal CMD phenomena can be described in terms of their structure, meaning, interactional characteristics, and/or social functions, multimodality raises additional considerations. For that reason, multimodal CMD is discussed separately here.

Typed CMC has always lent itself to manipulation for graphical effects, starting with emoticons composed of basic keyboard characters. Emoticons have evolved over time from text to cartoonish icons to emoji (animated icons) to animated gifs (short video

clips that loop endlessly); emoji are popular on cellphones, and gifs are a popular way to show reactions on media-sharing sites. These graphics often depict human faces and express emotion in a humorous or ironic way. Plain text may also be replaced by or decorated with special characters, including non-alphanumeric symbols and letters from other writing systems, to express individual and social identities, as described for instance by Vaisman (2013) for pre-teen girls blogging in Hebrew.

Text inserted in images constitutes another format of multimodal communication. Text-in-images can function as turns in conversational interaction on image blogs (as described by McDonald 2007), on image boards such as 4chan, and in exchanges of animated gifs on Tumblr. Some text-in-image composites become *memes* that are repeated across Internet sites as jokes or political commentary, their communicative force deriving from the popular culture or Internet subculture context(s) that they reference. LOL-cat memes, which feature pictures of cats with superimposed text that is misspelled and ungrammatical, are a popular example.

Collaborative video annotation (CVA) is a dynamic variant of text-in-image communication. On video-sharing sites such as YouTube, certain videos allow viewers to insert text annotations; the annotations appear at the points of insertion when the video is played back. In principle, users can interact with other commenters through such annotations, although Howard (2012) found more user-to-video interaction than user-to-user interaction in a study of CVA in an instructional technology course. Similarly, a study of text comments inserted in spectrograms of songs on the music-sharing site SoundCloud.com found that most comments interacted with the song or its creator rather than with other commenters (Ishizaki and Herring 2013). These patterns are reminiscent of the prompt-focused topic development pattern described in Section 4.

Other interactive Web platforms give users the option to comment in more than one mode. There is growing evidence to suggest that mode choice on such platforms affects the nature of discourse. In her study of the multi-player online game *World of Warcraft*, Newon (2011) found that voice chat was dominated by a few individuals whereas text chat favored more democratic participation. Pihlaja's (2011) study of video responses to video prompts on YouTube showed them to be longer, more developed, and more interactive than text responses to the same prompts. Sindoni (2014) noted that interlocutors are more self-conscious in video chat than in written exchanges, and that observing themselves in the feedback image "produces psychological effects influencing the verbal and nonverbal features of the online exchange" (333). Relatedly, in discussions on Voicethread.com, a website that supports asynchronous commenting in text, audio, and video, Herring and Demarest (unpublished) found that audio and video comments were more ego-focused than text comments. Moreover, audio and video comments were more positive in tone. Similarly, Bourlai and Herring (2014) found that emotions expressed in animated gifs on Tumblr were more positive than emotions expressed in text comments. They attribute the greater negativity of text, in part, to the lack of paralinguistic cues in text compared to other modes, which can create a distancing effect.

The multiple activities that take place on interactive multimodal platforms make competing demands on users' attention, especially when the activities transpire quickly in real time. In first-person shooter games where players' avatars are continuously being shot at, for example, players wanting to chat must attend to more than one channel simultaneously: text and game play. Media co-activity of this sort can adversely

impact the grammatical complexity, clarity of reference, and coherence of the chat (Herring *et al*. 2009). As with textual CMD, however, experienced users tend to adapt to the properties of the system and carry on effective (if sometimes truncated) exchanges.

Perhaps surprisingly, studies of multimodal CMD show that text remains popular, even as communication in other modes increases. As part of the ongoing trend toward media convergence in Web 2.0, text options are provided on most platforms, even when their primary purpose is something other than chatting, such as game play, television-viewing, or media-sharing. In support of this trend, audio-only chat, which was popular between roughly 1995 and 2005 and exhibited many of the interactive features of traditional telephony (Jenks and Firth 2013), is now rare, having been replaced by multimodal clients that offer video chat, screen-sharing, and instant messaging options in addition to voice. At the same time, text-only CMD is on the decline.

7   Conclusions

As the above discussion shows, we have come far from the view that properties of CMD follow inevitably from properties of computer technology and result in a single variety of Internet language. Social, contextual, and cultural factors – carried over from offline communication as well as generated within computer-mediated environments – contribute to the variability and complexity of CMD. Meanwhile, multimodal CMD reminds us that technological shaping should not be dismissed. The question is not "Does the technology shape the nature of discourse?" but rather "What aspects of discourse does it shape, how strongly, in what ways, and under what circumstances?"

The wide variety of activities that take place in CMD and the range of human experiences they evoke invite multiple approaches to analysis, including approaches drawn from different academic disciplines as well as different subfields of discourse analysis. This richness and diversity of CMD, combined with its relatively persistent nature, is its strength. CMD study can reveal interconnections between micro- and macro-levels of interaction that might otherwise not emerge by observing traditional spoken or written communication, and potentially lead language scholars to forge more comprehensive theories of discourse and social action as a result. In addition, given that CMC is rapidly becoming an indispensable part of all social institutions, CMD analysis can play a valuable role in exploring and explaining new forms of political, religious, and organizational communication as they evolve.

Meanwhile, CMC technology continues to innovate at a rapid pace, and new and up-to-the-minute research is needed to document its appropriation and consequences for discourse. For example, we can anticipate structural and cultural changes in online communication as smartphones and other portable devices enable ubiquitous mobile access to the Web. We can also look forward to new understandings (and new analytical challenges) as CMD enhanced by graphical elements comes into more popular use, and as developments in telepresence robotics enable human communication mediated by robots – an extension of avatar-mediated communication into physical space. For as long as CMC involves language in any form, there will be a need for CMD analysis.

NOTES

1 Other terms that have been used to describe this phenomenon include *computer-mediated conversation, digital conversation, digital discourse, digital language, electronic discourse, electronic language, Internet language,* and *new media language*; most recently, Jucker and Dürscheid (2012) coined the term *keyboard-to-screen communication.* We prefer the term *computer-mediated discourse* because it makes transparent the connection to computer-mediated communication, and because it is neither overly broad nor overly restrictive in its scope.

2 For a survey of CMD research up to 1999, see Herring (2001). For an overview of the computer-mediated discourse analysis methodological toolkit, see Herring (2004).

3 At the time Lee's data were collected, the user's ID was appended automatically to the front of Facebook status updates. Facebook has since changed its interface several times.

4 Screen captures and video recordings of CMC users can reveal pauses in production along with other nonverbal ergonomic, expressive, and interactional kinesic behaviors, and can be a useful supplement to analysis of textual logs (Beißwenger 2008; Marcoccia, Atifi, and Gauducheau 2008).

5 For a recent overview of research on gender differences in CMD, see Herring and Stoerger (2014).

6 For a recent overview of code-switching in CMD, see Androutsopoulos (2013a).

7 See Kapidzic and Herring (2011) for a review of research on gender and politeness online.

8 According to Lefler (2011), LOLspeak is characterized by phoneme/grapheme correspondences such as the diphthong /ay/ spelled "ai" in the words "hi" and "bye," and recurring syntactic constructions such as {subject} can has {object}.

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