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DIGITAL MEDIA

Digital media are those media whose means of production and distribution are digitized via computers; the term is commonly used in contrast to older forms of media such as print (for text) or analog devices (for sound and images). In language studies, digital media most commonly refer to the Internet, the World Wide Web, mobile telephony, and other networked and wireless technologies that support human communication—known as computer-mediated communication (CMC)—and the transmission of information. Digital media can also refer to digital storage devices for data, sound, video, and graphics. Here we are concerned primarily with the former sense, especially the impact of digital communication technologies on people's individual and collective use of and relation to language.

History

Communication via digital media can be traced to the invention of packet switching technology in the 1960s, which enabled messages to be exchanged among networked computers. The ARPANET, the predecessor of the Internet, was implemented as a United States defense department project in 1969; by the mid-1970s it had become popular for human communication via email and mailing lists. In 1979, the USENET was created as an alternative, grassroots network; USENET newsgroups, along with various BBS (bulletin board systems) and networks hosted on private servers during the 1980s, were eventually integrated into the Internet, the term used after 1983 for the collection of networks that had grown around the ARPANET. By the late 1980s, the Internet offered public real-time chat via Internet Relay Chat and MUDs (Multi-User Dimensions), along with email, mailing lists, and newsgroups. Around the same time, Internet service providers (ISPs) were starting to make the Internet accessible to people in their homes, rather than just from businesses and universities.

The introduction of the World Wide Web in 1991 and the first graphical browser in 1993 transformed the Internet by enabling networked multimedia. By the mid-1990s Internet telephony and videoconferencing were available, along with graphical virtual worlds. Despite the increasing availability of bandwidth to support multimedia, however, text retained its popularity. The late 1990s saw the emergence of several text-based applications: instant messaging, weblogs (blogs), and text messaging on mobile phones (especially in Europe and Asia).

A more recent trend has been toward mobile media and flexible access. Starting with external hard drives for external data storage and continuing with laptops, personal digital assistants (PDAs), iPods, and smartphones, digital media have moved away from desktop computing toward more distributed, lightweight, faster devices.

Language-Related Issues

The rapid rise in popularity of digitally-mediated communication over the past two decades has attracted considerable interest from language scholars. The central debates have focused on how to classify such communication relative to speech and writing; the

effects of technology on language and language use; the purported anonymity of text-based CMC and its social and linguistic consequences; and the long-term effects of digital media on individual languages and the global language ecology.

Computer-mediated communication is sometimes claimed to constitute a third *modality* of language alongside speech and writing. Text-based CMC, by far the most common manifestation of digital communication, blends the production and reception features of writing (typing on a keyboard or otherwise entering characters into an alphanumeric interface; reading messages on a screen) with the structural and interactional features of spoken conversation (e.g., informality; phatic content; relatively rapid exchange of messages), making it a hybrid modality with distinctive characteristics (Crystal 2001). Moreover, the personal accessibility and wide public reach of the Internet have led some to characterize it as fundamentally transformative of human communication, a revolution as profound as that triggered by the printing press.

At the same time, the novelty of digital language should not be overstated. It is often possible to trace the roots of so-called "emergent" or "digitally native" CMC genres (Crowston and Williams 2001) to older written and oral genres. An example is the blog, which, while arguably a historically-unprecedented hybrid of personal, interpersonal, and mass communication, manifests continuities with hand-written diaries, phone calls to friends and family, project logs, and letters to the editor. Ultimately, what may be most unique about digital media is their tendency to support a convergence of language features, genres of communication, and communication technologies that were previously considered distinct. The incorporation of text chat into multiplayer online games and the ability to send text messages from mobile phones to interactive television (iTV) programs illustrate the latter trend.

Theoretical debate has also centered around the *effects of digital technology* on human communication. A strong technological determinism position holds that production and reception constraints on CMC inevitably shape digitally-mediated language and language use. Such a position finds support in research findings that technical constraints on message exchange disrupt and reshape turn-taking patterns across a range of digital genres (Herring 1999). A weaker version of technological determinism holds that features of specific technologies predispose users to communicate in certain ways, but that users may override those predispositions. For example, the synchronicity of CMC systems tends to affect message length, complexity, and formality (with messages in asynchronous modes being generally longer, more syntactically complex, and more formal than in synchronous modes), although both formal and informal language can be found, for example, in email (asynchronous) and chat (synchronous), depending on the topic and purpose of the communication.

The social construction of technology theory goes further to assert that users shape technologies through their use as much or more than their use is shaped by those technologies (Bijker and Law 1992). This view receives support from computer-mediated cooperative work and online education, where the nature of the tasks structure communication in often predictable ways. Further, many face-to-face social and interactional dynamics, including gendered patterns of communication, are reproduced in digital discourse, albeit differently in academic discussion forums than in chat. In an effort to account for such variation, a fourth position holds that there is no single way in

which technology influences mediated language; rather, it depends on the particular constellation of technical and social variables that characterizes a given sample of mediated discourse (Herring 2007). A desideratum for future research is a coherent theory that can predict when specific types of media will have particular communicative effects.

Another nexus of debate concerns the purported *anonymity* of digitally-mediated communication. Because social cues conveyed through prosody, facial expression, and physical appearance of message senders are "filtered out" in text-based CMC, many early scholars believed that digitally-mediated communication was depersonalized and that users' identities were masked or irrelevant. This was thought to give rise to "flaming" or hostile language (and antisocial behavior, in general); play with identity and liberatory (or inauthentic, depending on one's perspective) online self-presentations; and compensatory linguistic strategies, such as creative spellings and "emoticons" (faces made out of ascii characters), in order to enhance one's social presence and signal one's intentions. These linguistic strategies have been referred to as "textspeak" by Crystal (2001/2006; for examples, see figure 1).

Alternative perspectives have also been advanced on the above phenomena, however. True "anonymity" is infrequent, since most people who communicate digitally use consistent identifiers, and in the case of private communication (e.g., via email, instant messaging, or SMS), the communicators usually already know one another. "Flaming" may be better explained by the lack of accountability characteristic of public Internet forums than by anonymity per se, given that many hostile messages are sent by people with known identities. Play with identity, while fashionable in some chat environments, occurs less often in practice than was implied by early theorists, in part due to the difficulty of maintaining a false identity over time. Recent years have also seen an increasing tendency for people to post photographs of themselves, for example, on social networking sites—although false and digitally-modified photos can of course be posted. Finally, textspeak is also shaped by the impetus to type quickly, especially in real-time message exchanges, resulting in "creative," often abbreviated spellings. Nonetheless, it remains the case that digital media afford new and increased opportunities for selectively crafting one's self-presentation, both linguistically and visually, and for deceptive communication to take place.

The *scope* and *spread* of digitally-mediated communication, both globally and over time, give rise to other language-related issues. Digital media enable unprecedented large-scale conversations (e.g., in public discussion forums) and provide vast, potentially interactive audiences (e.g., for websites and blogs) in which many participants are unknown to one another and participation is open to a wide spectrum of society. Conversations involving hundreds (or thousands) of people raise new challenges for maintaining interactional coherence, and unknown audiences constitute new kinds of addressees when the broadcast content is personal, as is the case for many blogs. As ordinary language users come to grips with these challenges, new media-specific norms are emerging, much as people a century ago evolved new interactional and pragmatic norms for speaking over the telephone.

The Internet enables new kinds of social formations to arise—known as virtual communities—which often develop characteristic communicative practices. These, in

turn, may spread. New lexical items, as well as "textspeak" features, have diffused rapidly across the Internet and have become integrated to varying degrees into everyday speech and writing, especially of young people, giving rise to the claim that digital media are accelerating processes of language change. This includes introducing new morphological formatives such as *e-* and *cyber-* into the English language; however, there is less evidence that digital media are associated with syntactic changes, which typically take place more slowly. The fears of some educators and journalists that digital communication is accelerating language decline and interfering with children's learning of standard written language appear to have no basis in empirical fact (Thurlow 2006).

Digital media also have *global implications* for cross-cultural communication, multilingualism and language choice, and the status of individual languages. Although still a small percentage of the world's languages, the number of languages used on the Internet is growing. Figure 1 gives examples of "textspeak" in four languages.

HK English: **Hee hee . . . dunno** why I always like to send **u** mails *ar*! Part is **becoz** I **wanna** keep contact with **u** *la*!
French: Ca sera donc **tjs 1** plaisir **2**te revoir! **:-)** [So it will always be a pleasure to meet you again :-)]
Arabic: w **3**laikom essalaaam asoomah ^_^ [Hi there, Asoomah ^_^]
Japanese: 復活おめて ゛と~♪良かったね(*^▽^*) [Congratulations on your comeback (as if singing) That was good (*^▽^*)]

Figure 1. Examples of "textspeak" (bolded) in Hong Kong English, French, Romanized Arabic, and Japanese (from Danet and Herring 2007)

However, there is debate as to whether linguistic diversity equal to that in the offline world will eventually be achieved, or whether digital media are promoting and accelerating the dominance of English and other large languages. Evidence from multilingual contact situations, such as cross-national Internet discussion forums, suggests that English or the regional language (e.g., Spanish, German, Russian) tends to be used as a lingua franca in order to insure the widest comprehension; this trend bodes ill for the use of minority languages in such forums. At the same time, many Internet forums have national rather than international audiences, and localization efforts are producing hardware and software in local languages. Some speculate that these trends are leading toward a global DIGLOSSIA, with English as the High (international) variety and local languages as the Low or Colloquial variety. The Internet has also been used with some success as a tool to support revitalization efforts for endangered languages (Danet and Herring 2007).

Current State of Research

From the outset, scholarship on digital media was broadly interdisciplinary. In the first two decades of CMC research, scholars trained in communication, rhetoric, social psychology, management, linguistics, human-computer interaction, anthropology, and education came together in interdisciplinary fora to try to meet the challenge of characterizing online communication, and in recent years, new interdisciplinary "fields"

have arisen in which digital media play a central role, such as new media studies and social informatics. At the same time, there is a trend toward increasing disciplinary specialization, as new media become accepted into mainstream disciplinary approaches. In language studies, new media currently provide application domains (e.g., for language learning) and sources of data for empirical analysis and, increasingly, for theorizing about language from cognitive, social, and evolutionary perspectives.

--Susan C. Herring

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