THE CHANGING NATURE OF TEXT:
A LINGUISTIC PERSPECTIVE

David Crystal

How does digitally mediated communication alter our notion of text? There are some continuities with traditionally spoken and written text, but also important discontinuities. Differences with speech include new patterns of turn-taking, the use of emoticons, and new conversational rhythms. Differences with writing include issues of persistence, animateness, hypertext linkage, and framing. A pragmatic perspective brings to light new kinds of text, such as those which include features to defeat spam filters or to ensure a high search-engine ranking, or those which raise ergonomic or ethical issues. Digitally mediated communication also raises the question of how to handle texts whose boundaries are continually changing, as in forums and comment postings. Issues of responsibility arise relating to who is the author of a text, especially in contexts where there is moderation or interactivity (as in wikis).

Introduction

To the linguist, the world of digital communication presents an intriguing and challenging research domain. It hasn't even got an agreed name yet. A bewildering array of popular and scholarly labels have been used, such as cyberspeak, Netspeak, and electronic discourse. *Computer-mediated communication* seemed to be becoming a standard, fostered by such journals as the *Journal of computer-mediated communication,* but patently this is now too narrow, in view of the emergence of devices which present text but which are not computer-mediated in the usual sense, such as mobile phones, blackberries, satnavs, and voice-interactive washing-machines. *Electronically mediated communication* is now receiving some use, most recently in Baron (2008). *Digitally mediated communication* also suggests itself; and in view of the emphasis on 'digital text' in this book, I shall stay with that.

Linguistic challenges

There are several properties of digitally mediated communication which constitute a challenge to linguists wanting to explore this medium. The amount of data it contains, first of all. There has never been a corpus of language data as large as this one. It now contains more written language than all the libraries in the world combined, and the time it takes for its informational content to double in size is soon going to be measured in hours, as more parts of the world come online, and in seconds, as voice-over-internet becomes routine.

Secondly, there is the diversity of digitally mediated communication. The stylistic range of digitally mediated communication has to recognise not only internet texts, but also the vast outputs found in email, chatrooms, virtual worlds, blogging, instant messaging, and text messaging, as well as the increasing amount of linguistic communication in social networking forums (over 100 in 2008) such as Facebook, MySpace, Hi5, and Bebo. Each of these domains presents different communicative perspectives, properties, strategies, and expectations. It is impossible, at present, to find a linguistic generalization that applies comfortably to digitally mediated communication as a whole.

Part of the reason for this is another linguistically challenging property: the speed of change. It is difficult to keep pace with the communicative opportunities offered by new technologies, let alone to explore them in the required linguistic detail. By way of anecdotal illustration, the first edition of my *Language and the Internet* appeared in 2001: it made no reference to blogging and instant messaging, which had achieved no public presence at that time. A new edition of the book was therefore quickly needed, and that appeared in 2006. It included sections on the language of blogs and of instant messages, but it made no reference to the social networking sites, which were coming into prominence at the time. Linguistic studies of digitally mediated communication seem always to be out of date as soon as they appear.

Even within a single domain, it is difficult to keep pace. How can we generalize about the linguistic style of emails? When it first became prevalent, in the mid-90s, the average age of emailers was in the 20s. Today, it is in the late 30s: the average in the UK rose from 35.7 to 37.9 in the year October 2006–October 2007, according to Nielsen Online. Doubtless similar increases are to be found in other countries. This means that many emailers, for example, are now senior citizens. The

consequence is that the original colloquial and radical style of emails (with its deviant spelling, punctuation, and capitalization) has been supplemented by a more conservative and formal style, as older people introduce their norms derived from the standard language. I now receive many emails which follow the conventions of a traditional letter, beginning 'Dear David', concluding 'Yours sincerely', and so on. This would have been unusual among the geeks who first explored the medium a few decades ago.

Another linguistically challenging property of digitally mediated communication is perhaps the most surprising: the inaccessibility of much of it. There is of course no problem in finding and downloading data from the pages of the Web, within the various legal and commercial constraints imposed by website owners. But it is a different matter when dealing with such domains as emailing, chatrooms, and texting. People are notoriously reluctant to allow their private e-communications to be accessed by passing linguists. There are now some corpora of emails and chatroom interaction, but issues of reliability and representativeness have yet to be fully explored, and some domains, such as text-messaging, remain elusive. The research literature is characterized by a great deal of theoretical speculation but relatively few empirical studies.

And a final example of the linguistic challenge. Assuming we have somehow achieved access to the data, how do we handle the unprecedented specificity of the linguistic information it contains? Linguists are used to being vague when it comes to describing language change: a word is said to have entered the language 'in the early sixteenth century' or in 'the 1780s'. Indeed, with rare exceptions, it has been impossible to identify the precise moment at which a new word or sense arrives in a language. But the time-stamping of webpages, and the ability to track changes, opens up a whole new set of opportunities. If I introduce a new word such as *digitextualization* on my website tomorrow at 9.42, it will be possible for lexicographers to say that the first recorded use of this word was at 9.42 am on Friday 30 October 2008. This sort of chronological specificity has hitherto been of professional interest only to forensic linguists, concerned to identify patterns of criminal interaction, but it will in future be of much broader relevance. However, I am currently unclear about how linguists will approach the handling of this level of descriptive detail.

New medium or old?

Notwithstanding the challenges, linguists have been able to make some progress in understanding the properties of digitally mediated communication. 'How do the new tools change our concepts and categories?' is one of the issues that are considered in the contributions to this book. 'Texts as objects of transmission' is another. I agree that the matter is best addressed initially through text comparison: comparing digitally mediated communication with the familiar notions of text as found in such domains of linguistic study as textlinguistics, discourse analysis, and stylistics. Three language modalities are traditionally recognized: speech, writing, and—not dealt with here—sign, in the sense of sign language used among deaf people. To what extent are these modalities replicated in digitally mediated communication? And is digitally mediated communication an imitation of the medium of the book? We must generalize these questions: 'Is digitally mediated communication an imitation of the medium of writing, whether in book or other form?' And we must furthermore also extend them: 'Is digitally mediated communication an imitation of the speech modality?' And of both we can ask the question originally referred to in the colloquium theme: 'Do we speed up classical techniques, or do we develop a new domain of techniques for access to [...] texts?' In short, are we doing things we could not do before? My answer, as we will see, is both 'yes and no'.

How are we to compare mediums of communication? The anthropological and zoological approaches to semiotics have shown us the fruitfulness of a design-feature framework, in which salient properties of communication are identified and used as a basis of comparison. In general linguistics, this procedure was first introduced by Charles Hockett in his comparison of language with animal communication.[1] In text linguistics, it takes two forms: an analysis of the formal properties of the mediums, and an analysis of their pragmatic properties; that is, looking at the intentions and effects relating to their use.

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[1] C. Hockett, A course in modern linguistics.

Formal properties

The formal properties of speech and writing are displayed in Table 1 and compared with digitally mediated communication domains in

Table 1: Differences between speech and writing (after Crystal, 1995)

Speech	Writing
1. Time-bound Speech is time-bound, dynamic, transient. It is part of an interaction in which both participants are usually present, and the speaker has a particular addressee (or several addressees) in mind.	*1. Space-bound* Writing is space-bound, static, permanent. It is the result of a situation in which the writer is usually distant from the reader, and often does not know who the reader is going to be.
2. Spontaneous There is no time-lag between production and reception, unless one is deliberately introduced by the recipient. The spontaneity and speed of most speech exchanges make it difficult to engage in complex advance planning. The pressure to think while talking promotes looser construction, repetition, rephrasing, and comment clauses (for example *you know, you see*). Intonation and pause divide long utterances into manageable chunks, but sentence boundaries are often unclear.	*2. Contrived* There is always a time-lag between production and reception. Writers must anticipate its effects, as well as the problems posed by having their language read and interpreted by many recipients in diverse settings. Writing allows repeated reading and close analysis, and promotes the development of careful organization and compact expression, with often intricate sentence structure. Units of discourse (sentences, paragraphs) are usually easy to identify through punctuation and layout.
3. Face-to-face Because participants are typically face-to-face, they can rely on such extralinguistic cues as facial expression and gesture to aid meaning (feedback). The lexicon is often vague, using words which refer directly to the situation (deictic expressions, such as *that one, in here, right now*).	*3. Visually decontextualized* Lack of visual contact means that participants cannot rely on context to make their meaning clear; nor is there any immediate feedback. Most writing therefore avoids the use of deictic expressions, which are likely to be ambiguous.

Table 1 (*cont.*)

Speech	Writing
4. Loosely structured Many words and constructions are characteristic of (especially informal) speech, such as contracted forms (*isn't*). Lengthy coordinate sentences are normal, and are often of considerable complexity. There is nonsense vocabulary (for example *thingamajig*), obscenity, and slang, some of which may appear as graphic euphemism (*f****).	*4. Elaborately structured* Some words and constructions are characteristic of writing, such as multiple instances of subordination in the same sentence, elaborately balanced syntactic patterns, and the long (often multi-page) sentences found in some legal documents. Certain items of vocabulary are never spoken, such as the longer names of chemical compounds.
5. Socially interactive Speech is very suited to social or 'phatic' functions, such as passing the time of day, or any situation where casual and unplanned discourse is desirable. It is also good at expressing social relationships and personal attitudes, due to the vast range of nuances which can be expressed by the prosody and accompanying nonverbal features.	*5. Factually communicative* Writing is very suited to the recording of facts and the communication of ideas, and to tasks of memory and learning. Written records are easier to keep and scan, tables demonstrate relationships between things, notes and lists provide mnemonics, and text can be read at speeds which suit a person's ability to learn.
6. Immediately revisable There is an opportunity to rethink an utterance while the other person is listening (starting again, adding a qualification). However, errors, once spoken, cannot be withdrawn; the speaker must live with the consequences. Interruptions and overlapping speech are normal and highly audible.	*6. Repeatedly revisable* Errors and other perceived inadequacies in our writing can be eliminated in later drafts without the reader ever knowing they were there. Interruptions, if they have occurred while writing, are also invisible in the final product.
7. Prosodically rich Unique features of speech include most of the prosody. The many nuances of intonation, as well as contrasts of loudness, tempo, rhythm, pause, and other tones of voice cannot be written down with much efficiency.	*7. Graphically rich* Unique features of writing include pages, lines, capitalization, spatial organization, and several aspects of punctuation. Only a very few graphic conventions relate to prosody, such as question marks and italics. Several written genres (for example timetables, graphs) cannot be read aloud efficiently, but have to be assimilated visually.

Tables 2a and 2b. Disregarding the differences between situations in Tables 2a and 2b, and looking solely at the cells in terms of 'yes', 'variable', and 'no', it is plain that digitally mediated communication has far more properties linking it to writing than to speech. Of the 42 cells in the speech summary in Table 2a, only 15 are 'yes', 4 are 'variable', and 23 are 'no'. The situation for the writing summary in Table 2b, as we would expect, is almost exactly the inverse: 11 are 'yes', 8 are 'variable', and 23 are 'no'. On the whole, this comparison shows that digitally mediated communication is better seen as written language which has been pulled some way in the direction of speech than as spoken language which has been written down. However, expressing the question in terms of the traditional dichotomy is itself misleading. Digitally mediated communication is identical to neither speech nor writing, but selectively and adaptively displays properties of both. It is more than an aggregate of spoken and written features. It does things that neither of these other mediums do. There is nothing in digitally mediated communication like the phenomenon of simultaneous feedback ('mhm'-type vocalizations, nods, facial expressions from the listener while the speaker is talking) in face-to-face conversation;

Table 2a: Spoken language criteria applied to selected digitally mediated communication areas (Crystal, 2006)

		Web	Blogging	Email	Chatgroups	Virtual worlds	Instant messaging
1	time-bound	no	no	yes, but in different ways	yes, but in different ways	yes, but in different ways	yes
2	spontaneous	no	yes, but with restrictions	variable	yes, but with restrictions	yes, but with restrictions	yes
3	face-to-face	no	no	no	no	no	no, unless camera used
4	loosely structured	variable	yes	variable	yes	yes	yes
5	socially interactive	no, with increasing options	no, with increasing options	variable	yes, but with restrictions	yes, but with restrictions	yes
6	immediately revisable	no	no	no	no	no	no
7	prosodically rich	no	no	no	no	no	no

Table 2b: Written language criteria applied to selected digitally mediated communication areas (Crystal, 2006)

		Web	Blogging	Email	Chatgroups	Virtual worlds	Instant messaging
1	space-bound	yes, with extra options	yes	yes, but routinely deleted	yes, but with restrictions	yes, but with restrictions	yes, but moves off-screen rapidly
2	contrived	yes	variable	variable	no, but with some adaptation	no, but with some adaptation	no
3	visually decontextualized	yes, but with much adaptation	yes	yes	yes	yes, but with some adaptation	yes, unless camera used
4	elaborately structured	yes	variable	variable	no	no	no
5	factually communicative	yes	yes	yes	variable	yes, but with some adaptation	variable
6	repeatedly revisable	yes	variable	variable	no	no	no
7	graphically rich	yes, but in different ways	no, with increasing options	no	no	yes, but in different ways	no

and the hypertext link, which is the obligatory, fundamental functional unit of the Web, has no equivalent in traditional writing aside from such optional features as the footnote and cross-reference.

What makes digitally mediated communication so interesting is the way it relies on characteristics belonging to both sides of the speech/ writing divide. At one extreme is the Web, which in many of its functions (for example databasing, reference publishing, archiving, advertising) is no different from traditional situations which use writing; indeed, most varieties of written language (legal, religious, and so on) can now be found on the Web with little stylistic change other than an adaptation to the electronic medium. In contrast, the situations of e-mail, chatgroups, virtual worlds, and instant messaging, though expressed through the medium of writing, display several of the core properties of speech. They are time-governed, expecting or demanding an immediate response; they are transient, in the sense that messages may be immediately deleted (as in emails) or be lost to attention as

they scroll off the screen (as in chatgroups); and their utterances display much of the urgency and energetic force which is characteristic of face-to-face conversation. The situations are not all equally 'spoken' in character. We 'write' emails, not 'speak' them. But chatgroups are for 'chat', and people certainly 'speak' to each other there—as do people involved in virtual worlds and instant messaging. The interesting question is whether the technology makes us do this in different ways, and offers opportunities to do this in new ways.

Digitally mediated communication and speech

There are several differences between digitally mediated communication and speech that produce new properties in texts. Here are two of them.

Turn-taking

In a traditional speech setting, it is impossible to hold a conversation with more than one or two people at a time. Entering a room in which several conversations are taking place at the same time, we cannot pay attention to all of them or interact with all of them. But in multi-party settings in digitally mediated communication, this is perfectly feasible and normal. In a chatroom, we observe messages from other participants scrolling down the screen: there may be several conversations going on, on different topics, and we can attend to them all, and respond to them, depending only on our interest, motivation, and typing speed. If we were to attempt to interact in this way in a cocktail party, for example, we would be locked up!

Does this make us use language differently? Indeed it does, for it introduces a wholly new set of options for the *conversational turn*. Turn-taking is so fundamental to conversation that most people are not conscious of its significance as a means of enabling interactions to be successful. But it is a conversational fact of life that people follow the routine of taking turns, when they talk, and avoid talking at once or interrupting each other randomly or excessively. Moreover, they expect certain 'adjacency-pairs' to take place: questions to be followed by answers, and not the other way round; similarly, a piece of information to be followed by an acknowledgement, or a complaint to be followed by an excuse or apology. These elementary strategies, learned at a very early age, provide a normal conversation with its skeleton.

In digitally mediated communication, the turn-taking, as seen on a screen, is very different, because it is dictated by the software, and not by the participants. In a chatgroup, for instance, even if one did start to send a reaction to someone else's utterance before it was finished, the reaction would take its turn in a non-overlapping series of utterances on the screen, dependent only on the point at which the send signal was received at the host server. Messages are posted to a receiver's screen linearly, in the order in which they are received by the system. In a multi-user environment, messages are coming in from various sources all the time, and with different lags. Because of the way packets of information are sent electronically through different global routes, between sender and receiver, it is even possible for turn-taking reversals to take place, and all kinds of unpredictable overlaps to appear. Lucy asks a question; Sue receives it and sends an answer, but on Ben's screen the answer is received before the question. Or, Lucy sends a question, Sue replies, and Lucy sends another question; but on Ben's screen the second question arrives before Sue's reply to the first. The number of overlapping interactions that a screen may display at any one time increases depending on the number of participants and the random nature of the lags. What is surprising is that practised participants seem to tolerate (indeed revel in) the chaos which ensues. The issue is now receiving a great deal of empirical study.

Emoticons

Apart from in audio/video interactions (such as iChat), digitally mediated communication lacks the facial expressions, gestures, and conventions of body posture and distance (the *kinesics* and *proxemics*) which are so critical in expressing personal opinions and attitudes and in moderating social relationships. The limitation was noted early in the development of the medium, and led to the introduction of *smileys* or *emoticons*, such as the basic pairing of :) and : (for positive and negative reactions respectively. Today there are some 60 or so emoticons offered by some message exchange systems, though totals vary. It is plain that they are a potentially helpful way of capturing some of the basic features of facial expression, but their semantic role is limited. They can forestall a gross misperception of a speaker's intent, but an individual smiley still allows a huge number of readings (happiness, joke, sympathy, good mood, delight, amusement, etc.) which can only be disambiguated by referring to the verbal context. Without

care, moreover, they can lead to their own misunderstanding: adding a smile to an utterance which is plainly angry can increase rather than decrease the force of the 'flame'. It is a common experience that a smile can go down the wrong way: 'And you can wipe that smile off your face, as well!'

What is interesting to the linguist, of course, is why these novelties have turned up now. Written language has always been ambiguous, in its omission of facial expression, and in its inability to express all the intonational and other prosodic features of speech. Why did no one ever introduce smileys there? The answer must be something to do with the immediacy of digitally mediated communication interaction, its closeness to speech. In traditional writing, there is time to develop phrasing which makes personal attitudes clear; that is why the formal conventions of letter-writing developed. And when they are missing, something needs to replace them. A rapidly constructed digitally mediated communication message, lacking the usual courtesies, can easily appear abrupt or rude. A smiley defuses the situation. We might therefore expect to see the frequency of smileys reduce, as people get more used to digitally mediated communication exchanges and construct their messages more carefully and explicitly. My impression is that they are at present most frequent in instant messaging, which is the most quickfire of all digitally mediated communication interactions.

Other points of difference

Absent also are other linguistic features typical of conversational speech, and these make it even more difficult for language to be used on the Internet in a truly conversational way. These limitations arise out of the current dependence of the medium on typing speed and ability. The fact of the matter is that even the fastest typist comes nowhere near the spontaneity and speed of speech, which in conversation routinely runs at five or six syllables a second. Even apparently spontaneous digitally mediated communication messages can involve elements of preplanning, pausing to think while writing, and mental checking before sending, which are simply not options in most everyday conversation. Some features of spoken language are often present in Internet writing, such as short constructions, phrasal repetition, and a looser sentence construction. But studies of e-mail and chatgroup interactions have shown that they generally lack the very features of

spoken language which indicate most spontaneity—notably, the use of reaction signals (*m, mhm, uh-huh, yeah*...) and comment clauses (*you know, you see, mind you*...). Indeed, some writers have identified the lack of these features as one of the reasons why so many Internet interactions are misperceived as abrupt, cold, distant, or antagonistic. Addressing someone on the Internet is a bit like having a telephone conversation in which a listener is giving you no reactions at all: it is an uncomfortable and unnatural situation, and in the absence of such feedback one's own language becomes more awkward than it might otherwise be.

Digitally mediated communication and writing

If digitally mediated communication does not display the properties we would expect of speech, does it instead display the properties we expect of writing? Here too, there are important points of difference.

Persistence

Let us consider first the space-bound character of traditional writing—the fact that a piece of text is static and permanent on the page. If something is written down, repeated reference to it will be an encounter with an unchanged text. We would be astonished if, upon returning to a particular page, it had altered its graphic character in some way. Putting it like this, we can see immediately that digitally mediated communication is not by any means like conventional writing. A 'page' on the Web often varies from encounter to encounter (and all have the option of varying, even if page-owners choose not to take it) for several possible reasons: its factual content might have been updated, its advertising sponsor might have changed, or its graphic designer might have added new features. Nor is the writing that you see necessarily static, given the technical options available which allow text to move around the screen, disappear/reappear, change colour, and so on. From a user point of view, there are opportunities to 'interfere' with the text in all kinds of ways that are not possible in traditional writing. A page, once downloaded to the user's screen, may have its text cut, added to, revised, annotated, even totally restructured, in ways that nonetheless retain the character of the original. The possibilities are causing not a little anxiety among those concerned about issues of ownership, copyright, and forgery.

The other Internet situations also display differences from traditional writing, with respect to their space-bound presence. Emails are in principle static and permanent, but routine textual deletion is expected procedure (it is a prominent option in the management system), and it is possible to alter messages electronically with an ease and undetectability which is not possible when people try to alter a traditionally written text. Messages in asynchronic chatgroups and blogs tend to be long-term in character; but those in synchronic groups, virtual worlds, and instant messaging are not. In the literature on digitally mediated communication, reference is often made to the *persistence* of a conversational message—the fact that it stays on the screen for a period of time (before the arrival of other messages replaces it or makes it scroll out of sight). This certainly introduces certain properties to the conversation which are not available in speech. It means, for example, that someone who enters a conversation a couple of turns after an utterance has been made can still see the utterance, reflect upon it, and react to it; the persistence is relatively short-lived, however, compared with that routinely encountered in traditional writing. It also means, for those systems that provide an archiving log of all messages, in the order in which they were received by the server, that it is possible in principle to browse a past conversation, or search for a particular topic, in ways that spontaneous (unrecorded) conversation does not permit; however, in practice none of the systems currently available enable this to be done with ease, time-lags and the other factors described above making it extremely difficult to follow a topical thread in a recorded log. There are well-established means of finding one's way through a traditional written text: they are called indexes, and they are carefully compiled by indexers, who select and organize relevant information. Indexes of this kind are not likely in interactive digitally mediated communication, because there is so much of it and the subject-matter does not usually warrant it. There has been little research into the question of whether automatic indexing could be adapted so as to provide useful end-products.

Other points of difference

The other characteristics of traditional written language also display an uncertain relationship to digitally mediated communication. Is digitally mediated communication contrived, elaborate in its construction, and repeatedly revisable (items 2, 4, and 6 in Table 1)? For the Web,

the answer has to be yes, allowing the same range of structural complexity as would be seen elsewhere. For chatgroups, virtual worlds, and instant messaging, where the pressure is strong to communicate rapidly, the answer has to be no, though the fact that smileys and other graphic conventions have been devised illustrates a certain degree of contrivance. Blogs vary greatly in their constructional complexity: some blogs are highly crafted; others are wildly erratic, when compared with the norms of the standard written language. (It should be borne in mind that blogging is the first continuous-text public written genre which has not been subjected to the moderating influence of editors, copy-editors, and proof-readers since the Middle Ages.) Emails vary enormously: some people are happy to send messages with no revision at all, not caring if typing errors, spelling mistakes, and other anomalies are included in their messages; others take as many pains to revise their messages as they would in non-digitally mediated communication settings.

Is digitally mediated communication visually decontextualized (item 3 in Table 2b)? Immediate visual feedback is always absent, as discussed above, so in this respect digitally mediated communication is just like traditional writing. But Web pages often provide visual aids to support text, in the form of photographs, maps, diagrams, animations, and the like; and many virtual-world settings have a visual component built in. The arrival of webcams is also altering the communicative dynamic of digitally mediated communication interactions, especially in instant messaging.

Is digitally mediated communication factually communicative (item 5 in Table 2b)? For the Web, blogs, and emails, the answer is a strong yes. The other two situations are less clear. Within the reality parameters established by a virtual world, factual information is certainly routinely transmitted, but there is a strong social element always present which greatly affects the kind of language used. Chatgroups vary enormously: the more academic and professional they are, the more likely they are to be factual in aim (though often not in achievement, if reports of the amount of flaming are to be believed); the more social and ludic chatgroups, on the other hand, routinely contain sequences which have negligible factual content. Instant message exchanges are also highly variable, sometimes containing a great deal of information, sometimes being wholly devoted to social chit-chat.

Finally, is digitally mediated communication graphically rich? Once again, for the Web the answer is yes, its richness having increased along with technological progress, putting into the hands of the ordinary user a range of typographic and colour variation that far exceeds the pen, the typewriter, and the early word processor, and allowing further options not available to conventional publishing, such as animated text, hypertext links, and multimedia support (sound, video, film). On the other hand, as typographers and graphic designers have repeatedly pointed out, just because a new visual language is available to everyone does not mean that everyone can use it well. Despite the provision of a wide range of guides to Internet design and desk-top publishing, examples of illegibility, visual confusion, over-ornamentation, and other inadequacies abound. They are compounded by the limitations of the medium, which cause no problem if respected, but which are often ignored, as when we encounter screenfuls of unbroken text, paragraphs which scroll downwards interminably, or text which scrolls awkwardly off the right-hand side of the screen. The difficulties are especially noticeable in blogging, where many pages fail to use the medium to best effect. The problems of *graphic translatability* are only beginning to be appreciated—that it is not possible to take a paper-based text and put it on a screen without rethinking the graphic presentation and even, sometimes, the content of the message. Add to all this the limitations of the technology. The time it takes to download pages which contain 'fancy graphics' and multimedia elements is a routine cause of frustration, and in interactive situations can exacerbate communicative lag.

Pragmatic properties

Pragmatics (within linguistics) studies the choices available to users when they speak or write, and the factors which govern their selection, such as the intention they have in mind or the effect they wish to convey. Some quite sophisticated classifications of texts have been made, which often provide a methodological framework for corpus construction. An example is the classification which informs the Survey of English Usage at University College London (Table 3). Each of the recognized categories has its own formal character.

From a pragmatic perspective, we would expect a new medium to motivate the appearance of different kinds of texts, reflecting the aims

Table 3: Pragmatic classification of mixed-medium texts (Crystal 1997, 292)

Speech
  To be heard
    Now (the norm)
    Later, for example telephone answering messages
  To be written down
    As if spoken, for example police statement, magazine interview
    As if written, for example letters, dictation

Writing
  To be read (the norm)
  To be read aloud
    As if spoken, for example radio/TV drama
    As if written, for example radio/TV newsreading
  To be partly read aloud, for example broadcasting continuity summaries

Mixed medium
  To self, for example memoranda, shopping list
  To single other, for example co-authorship sessions
  To many others, for example spoken commentary on a handout or
    blackboard

and intentions of the users. And so it proves to be. The content displayed on a screen permits a variety of textual spaces whose pragmatic purpose varies, some of which are summarized in Table 4. In the present state of research, a list of this kind can only be representative, not comprehensive. And the stylistic analysis of the texts relating to each of these categories is in its infancy. Plainly, there is a scale of online adaptability. At one extreme, we find texts where no adaptation to digitally mediated communication has been made—a pdf of an article on screen, for example, with no search or other facilities—in which case, any linguistic analysis would be identical with that of the corresponding offline text. At the other extreme, we find texts which have no counterpart in the offline world. Here are four examples.

Texts whose aim is to defeat spam filters

We only have to look in our email junk folder to discover a world of novel texts whose linguistic properties sometimes defy analysis.

    supr vi-agra online now znwygghsxp
    VI @ GRA 75% off regular xxp wybzz lusfg
    fully stocked online pharmac^y
    Great deals, prescription d[rugs

Table 4: Pragmatic classification of digitally mediated communication texts

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digitally mediated communication text
  As an end in itself
    To be read (the norm)
      In the displayed language
      In another language (if available), for example translate, click icon
    To be read
      Statically (the norm)
      Dynamically, for example news feeds, incoming results, market reports
    To be added to, for example chatroom, forum, post a comment
    To be acted upon
      To obtain information, for example contact us, help
      To review or evaluate, for example consumer reviews
      To persuade, for example ads, wish lists, more like this
      To purchase, for example payment methods, buying procedures

  As a means to an end
    On the same page
      To be searched, for example advanced search, archive, track order
    On a different page
      Hyperlinks, for example quick links, permalinks
    Using another medium, for example podcast, video link

It is possible to see a linguistic rationale in the graphological variations in the word *Viagra*, for example, introduced to ensure that it avoids the word-matching function in a filter. We may find the letters spaced (*V i a g r a*), transposed (*Viarga*), duplicated (*Viaggra*), or separated by arbitrary symbols (*Vi*agra*). There are only so many options, and these can to a large extent be predicted (an issue familiar to cryptologists). There have been huge advances here since the early days when the stupid software, having been told to ban anything containing the string S-E-X, disallowed messages about Sussex, Essex, and many another innocent term. There is also an anti-linguistic rationale, as one might put it, in which random strings are generated (*wybzz*). These too can be handled, if one's spam filter is sophisticated, by telling it to remove any message which does not respect the graphotactic norms of a language (i.e. the rules governing syllable structure, vowel sequence, and consonant clusters).

Texts whose aim is to guarantee higher rankings in web searches

How is one to ensure that one's webpage appears in the first few hits in a web search? There are several techniques, some nonlinguistic, some

linguistic. An example of a nonlinguistic technique is the frequency of hypertext links: the more pages link to my site, the more likely my page will move up the rankings. An example of a linguistic technique is the listing of key words or phrases which identify the semantic content of a page in the page's metadata: these will be picked up by the search engine and given priority in a search. Neither of these techniques actually alters the linguistic character of the text on a page. Rather different is a third technique, where the text is manipulated to include keywords, especially in the heading and first paragraph, to ensure that a salient term is prioritized. The semantic difference can be seen in the following pair of texts (invented, but based on exactly what happens). Text A is an original paragraph; text B is the paragraph rewritten with ranking in mind, to ensure that the product name gets noticed:

(A) The Crystal Knitting-Machine is the latest and most exciting product from Crystal Industries. It has an aluminium frame, comes in five exciting colours, and a wide range of accessories.
The Crystal Knitting-Machine is the latest and most exciting product from Crystal Industries.
(B) • The Crystal Knitting-Machine has an aluminium frame.
 • The Crystal Knitting-Machine comes in five exciting colours.
 • The Crystal Knitting-Machine has a wide range of accessories.

Some search engines have now got wise to this technique, and are trying to block it, but it is difficult, in view of the various paraphrases which can be introduced (for example *Knitting-Machine from Crystal, Crystal Machines for Knitting*).

Texts whose aim is to save time, energy, or money

Text-messaging is a good example of a text genre whose linguistic characteristics have evolved partly as a response to technological limitations. The limitation to 160 characters (for Roman alphabets) has motivated an increased use of nonstandard words (of the *C U l8r* type), using logograms, initialisms, shortenings, and other abbreviatory conventions. The important word is 'partly'. Most of these abbreviations were being used in digitally mediated communication long before mobile phones became a routine part of our lives. And the motivation to use them goes well beyond the ergonomic, as their playful character

provides entertainment value as an end in itself as well as increasing rapport between participants.[2]

Another example of a new type of text arising out of considerations of convenience is the email which uses *framing*. We receive a message which contains, say, three different points in a single paragraph. We can, if we want, reply to each of these points by taking the paragraph, splitting it up into three parts, and then responding to each part separately, so that the message we send back then looks a bit like a play dialogue. Then, our sender can do the same thing to our responses, and when we get the message back, we see his replies to our replies. We can then send the lot on to someone else for further comments, and when it comes back, there are now three voices framed on the screen. And so it can go on—replies within replies within replies—and all unified within the same screen typography. People find this method of response extremely convenient—to an extent, for there comes a point where the nested messages make the text too complex to be easily followed. I have never seen an e-exchange which goes beyond six levels of nesting.

Related to framing is intercalated response. Someone sends me a set of questions, or makes a set of critical points about something I have written. I respond to these by intercalating my responses between the points made by the sender. For clarity, I might put my responses in a different colour, or include them in angle brackets or some such convention. A further response from the sender might lead to the use of an additional colour; and if other people are copied in to the exchange, some graphical means of this kind, to distinguish the various participants, is essential.

Texts whose aim is to maintain a standard

Although the Internet is supposedly a medium where freedom of speech is axiomatic, controls and constraints are commonplace to avoid abuses. These range from the excising of obscene and aggressive language to the editing of pages or posts to ensure that they stay focused on a particular topic. Moderators (facilitators, managers, wizards; the terminology is various) have to deal with organizational,

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[2] D. Crystal, *Txtng.*

social, and content-related issues.[3] From a textual point of view, what we end up with is a sanitized text, in which certain parts of language (chiefly vocabulary) are excluded, thus making it a species of restricted language. It is not clear how far such controls will evolve, as the notion of textual responsibility relating to the libel laws is still in the process of being tested.[4]

A good example of content moderation is in the online advertising industry, where there is a great deal of current concern to ensure that ads on a particular web page are both relevant and sensitive to the content of that page. Irrelevance or insensitivity leads to lost commercial opportunities and can generate extremely bad PR. Irrelevance can be illustrated by the CNN report of a street stabbing in Chicago, where the ads down the side of the screen said such things as 'Buy your knives here'—the software being unaware that the weapons sense of 'knife' in the news report did not match the cutlery sense of 'knife' in the ad inventory. Insensitivity can be illustrated by a page which was describing heritage visits to Auschwitz; the same silly software, having found 'gas' mentioned several times on the page, linked this with a power company's ads for 'cheap gas', much to the embarrassment of all concerned. Putting this in the terminology of pragmatics, the perlocutionary effect was not what was intended. The solution known as 'semantic targetting', as used in Ad Pepper Media's iSense and Sitescreen products, carries out a complete lexical analysis of web pages and ad inventories so that subject-matter is matched and ad misplacements avoided.[5] In extreme cases, such as a firm which does not want its ad to appear on a particular page (for example a child clothing manufacturer on an adult porn site), ads can be blocked from appearing. As a result, from a content point of view, the text that appears on a page appears more semantically coherent and pragmatically acceptable than would otherwise be the case.

Authorship issues

Framed, intercalated, and moderated texts illustrate a multi-authorship phenomenon which reaches its extreme in wiki-type texts, where

[3] M. Collins and Z.L. Berge, *The Moderators Home Page*.
[4] Concurring Opinions.
[5] Ad Pepper Media, 'iSense'.

people may alter an existing text as their inclination takes them. Social and legal issues aside, what does this phenomenon do to the texts themselves?

First of all, it makes texts stylistically heterogeneous, as a glance at most Wikipedia pages will show. Sometimes there are huge differences, with standard and nonstandard language coexisting on the same page, often because some of the contributors are plainly communicating in a second language in which they are nonfluent. Traditional notions of stylistic coherence, with respect to level of formality, technicality, and individuality, no longer apply, though a certain amount of accommodation is apparent, with contributors sensing the properties of each other's style. Secondly, it makes texts pragmatically heterogeneous, as the intentions behind the various contributions vary greatly. Wiki articles on sensitive topics illustrate this most clearly, with judicious observations competing with contributions that range from mild through moderate to severe in the subjectivity of their opinions.

Thirdly, and fundamentally, it disturbs our sense of the physical identity of a text. How are we to define the boundaries of a text which is ongoing? People can now routinely add to a text posted online, either short-term (as in the immediate response to a news story), or medium- or long-term, as in comments posted to a blog, bulletin board, or other forum. Ferdinand de Saussure's classical distinction between synchronic and diachronic does not adapt well to digitally mediated communication, where everything is diachronic, time-stampable to a micro-level. Texts are classically treated as synchronic entities, by which we mean we disregard the changes that were made during the process of composition and treat the finished product as if time did not exist. But with many digitally mediated communication texts there is no finished product. I can today post a message to a forum discussion on page X from 2004. From a linguistic point of view, we cannot say that we now have a new synchronic iteration of X, because the language has changed in the interim. I might comment that the discussion reads like something 'out of Facebook'—which is a comment that could be made only after 2005, when that network began. I do not know how to handle this.

The problem exists even when the person introducing the various changes is the same. The author of the original text may change it—altering a Web page, or revising a blog posting. How are we to view the relationship between the various versions? The question is particularly relevant now that print-on-demand texts are becoming common. It is

possible for me to publish a book very quickly and cheaply, printing only a handful of copies. Having produced my first print-run, I then decide to print another, but make a few changes to the file before I send it to the POD company. In theory (and probably increasingly common in practice), I can print just one copy, make some changes, then print another copy, make some more changes, and so on. The situation is beginning to resemble medieval scribal practice, where no two manuscripts were identical, or the typesetting variations between copies of Shakespeare's First Folio. The traditional terminology of 'first edition', 'second edition', 'first edition with corrections', ISBN numbering, and so on, seems totally inadequate to account for the variability we now encounter. But I do not know what to put in its place. The same problem is also present in archiving. The British Library, for example, has recently launched its Web Archiving Consortium.[6] My website is included. But how do we define the relationship between the various time-stamped iterations of this site, as they accumulate in the archive?

Anonymity issues

Digitally mediated communication is not the first medium to allow interaction between individuals who wish to remain anonymous, of course, as we know from the history of telephone and amateur radio; but it is certainly unprecedented in the scale and range of situations in which people can hide their identity, especially in chatgroups, blogging, and social networking. These situations routinely contain individuals who are talking to each other under nicknames (*nicks*), which may be an assumed first-name, a fantasy description (*topdude, sexstar*), or a mythical character or role (*rockman, elfslayer*). Operating behind a false persona seems to make people less inhibited: they may feel emboldened to talk more and in different ways from their real-world linguistic repertoire. They must also expect to receive messages from others who are likewise less inhibited, and be prepared for negative outcomes. There are obviously inherent risks in talking to someone we do not know, and instances of harassment, insulting or aggressive language, and subterfuge are legion. Terminology has evolved to

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[6] The British Library, *Web-archiving Consortium*.

identify them, such as flaming, spoofing, trolling, and lurking.[7] New conventions have evolved, such as the use of CAPITALS to express 'shouting'. While all of these phenomena have a history in traditional mediums, digitally mediated communication makes them present in the public domain to an extent that was not encountered before. But we do not yet have detailed linguistic accounts of the consequences of anonymity.

Envoi

This paper is ending in the time-honoured scholarly way, of raising more questions than providing answers. But at this stage in the evolution of digitally mediated communication we have very little choice in the matter. Few of the communicative conventions of digitally mediated communication have received serious empirical linguistic study. The classical conception of a text is a selection of language by a known author directed at a known audience, expressing an intention which is specifiable, using a style which is coherent, and presented through a medium which is determinate in form. All of these attributes are at times uncertain, in digitally mediated communication. That is why we need this book.

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[7] D. Crystal, *Language and the Internet*.