

# Use of SMS in Office Environments

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## Abstract

*Investigations of Short Messaging System (SMS) or texting have been directed at private use and mostly the adolescent population. The present paper investigates SMS in a representative sample of office environments in a Scandinavian town. The results indicate that SMS messaging is not integrated into office work, that the messages are highly informal, mostly from the private sphere and from persons well known to the receiver. Different explanations of the infrequent use of SMS in the workplace, e.g. cost sharing between employer and employee, are proposed. One explanation ties the difference in popularity in the private and business spheres to technical aspects of the system and its user interface. This explanation is based upon the Gricean concept of conversational implicature and Clark's concept of common ground and is elaborated at length. This explanation suggests that SMS is an inherently informal communication system, ill suited to the business domain.*

## 1. Introduction

The use of the mobile Short Messaging System (SMS) text messaging system has increased dramatically the last years. For instance, the Norwegian population of about 4.5 million, sent 515 million SMS messages in 1999 and 3,137 million in 2003 [16], representing a six fold increase over four years. The impact of SMS messaging has been assessed in relation to many aspects of private life, for instance micro coordination [11], gift giving [18,19], and maintaining relationships [7,8]. Strangely there are no reports on the use of SMS in business life. When it comes to business use of lightweight communication tools, instant messaging (IM) is the system most often described in the literature (see [2] for a recent overview of the literature on office use of IM).

However, there are many reasons to believe that the use of SMS doesn't mirror the use of IM in the workplace. Most notably, the cost of use, ease of use and ownership of the terminal, is different. Thus, while a considerable amount is known about IM, very little is known about how and to what extent one of the most ubiquitous communication tools (SMS) is used in the workplace.

The present paper investigates the degree to which SMS is used between colleagues as well as the conversational characteristics of SMS use in the office. To our knowledge the frequency of SMS use between colleagues has not been reported earlier. When it comes to the conversational characteristics of lightweight text messaging in the workplace (of which SMS and IM are two different types), most research on IM report three findings; 1) messages and conversations are short and informal, 2) there is a high degree of media switching and 3) users appear to multi task [5,10,13]. There is a slight divergence in the literature when it comes to media switching. Isaacs et al. [10] report that this happens to a lesser degree than earlier reports [13]. The present paper investigates these issues relative to SMS.

The present paper differs from previous research in the method used. Most reports on SMS and IM use are based on in depth inspections of a small sample of users [7,8,10,13,18,19]. In the present study a representative sample of a predefined population was studied, thus making it possible to generalize the results to a defined population. Since absolute frequencies are often hard to evaluate alone, the study was done as a comparison between SMS and e-mail use. IM was not a possible comparison because IM was hardly used in this population at the time of the study.

## 2. Method

A survey of users of e-mail and SMS was conducted. In the following, the messaging systems, procedure, sample and the questionnaire are described.

## 2.1. The messaging systems

Both e-mail and SMS are text based asynchronous messaging systems. E-mails are read and written on computers with large screens, high quality keyboards, and text editing facilities and place no restrictions on the length of messages. SMS on the other hand is read on small mobile phone screens typically capable of presenting 15 to 20 characters per line. The messages are written with the numeric keypad on the phone, typically requiring more than one key press per character. The messages are restricted to 160 characters in length.

## 2.2. Population, sample and procedure

The respondents were recruited from a population of workers in knowledge-based organizations, i.e., private businesses and public organizations doing research and development, administration, education, journalism and consulting. The organizations were all from a small university town in Scandinavia with about sixty thousand inhabitants. A list of all organizations in the region within this category was compiled, and a random sample of ten organizations was drawn. Each of the ten organizations were contacted and asked if they were willing to participate in a study where ten of their employees with access to e-mail and SMS would be asked to answer a questionnaire. If a company wasn't willing, another one was randomly chosen. Based on information from the companies' administration, ten employees who had access to both e-mail and SMS were randomly chosen. The employees were handed the questionnaire and given a short introduction. Anonymity was ensured, as the questionnaires were not traceable to the respondents. The respondents could partake in a lottery for five 75\$ gift vouchers. Ninety-eight subjects answered the questionnaire. Six respondents were excluded from the analysis due to lack of SMS access at the time of the study, leaving the total respondents at ninety-two. Not all of the respondents responded to all questions, thus some of the reported results are based on less than 92 responses. All statistical analyses were conducted with the Statistica v. 6.0 program package [17].

## 2.3. The questionnaire

All questions concerned incoming messages. Apart from the two first questions, respondents were asked to assess their most recent incoming e-mail and SMS message, and answer the questions based on that message. The first question was general and asked respondents about the amount of e-mail or SMS received on a typical workday. The second question was also general and asked respondents about the proportion

of messages received from different sources on a typical workday. All questions had two forms, one for e-mails and one for SMS. Altogether two times thirteen questions were asked. The questions assessed the amount of messages received, whether the message was from a colleague, a private relation, or a stranger, conversational character of the messages (how long it took to comprehend them, how promptly they were answered, whether the message was read concurrently with other activities ie talking on the phone or being in a meeting, whether they had openings and closings and how the topic was introduced in the message), whether the message was part of a conversation, and in that case if other media had been used in the conversation. Further, the respondents were asked how formal the message was perceived and how well the recipient knew the sender.

## 3. Results

In this section, the following results are presented; Amount and origin of the incoming messages, the conversational character of the messages and frequency of media switching in the two messaging systems.

### 3.1. Amount and origin of received messages

The respondents were asked to indicate on a scale how many messages of each type they received per day. The scale had the following categories: Less than 1, 1 to 4, 5 to 9 and 10 and more. The results are presented in table 1. As can be seen, there is a large difference between the number of SMS messages and the number of e-mails the respondents receive. While about seventy-five percent of the respondents receive less than five SMS messages per day, only eight percent of them receive that few e-mail messages. Further, only about seven percent receive ten or more SMS messages, while the majority received that many e-mails.

	SMS	Email
<b>Less than 1</b>	32 (35%)	3 (3%)
<b>1 to 4</b>	36 (39%)	5 (5%)
<b>5 to 9</b>	14 (15%)	30 (33%)
<b>10 or more</b>	6 (7%)	53 (58%)
<b>Missing</b>	4 (4%)	1 (1%)

**Table 1. Number of respondents that report receiving stated amount of messages per day. Percent in parenthesis**

Using the distribution in table 1 to estimate the mean number of SMS messages received per day results in a mean of 3.0 (SD=2,97) and a 95% confidence interval of  $\pm 0.63$ . The distribution in table 1 indicates that this is

most likely an overestimate since there is evidence of a floor effect<sup>1</sup>. Thus it is safe to estimate that the mean number of messages received per day in the population is less than 3.63. Official Norwegian statistics indicate that each mobile phone user sends about 68 SMS messages each month [16]. Supposing that users on average send as many messages as they receive, this indicates that our population is somewhat more active than the general population. No effort is made to estimate the mean number of e-mails received both since this is not our main concern and there is obviously a huge ceiling effect in the material.

**Table 2. Message origin in percent. 95% confidence**

Type\Origin	Colleague	Private	Unknown
SMS	14.7 (±5.1)	83.2 (±5.7)	2.4 (±2.3)
E-mail	55.0 (±6.6)	19.6 (±4.1)	25.8 (±6.1)

**Table 1**  
interval in parenthesis.

In table 2 the percentage of messages coming from colleagues, friends and family, and unknown sources are shown. As is readily apparent, the bulk of SMS messages comes from friends and family. Altogether 83% of the SMS messages come from this source. This is in contrast to the e-mail messages; just less than 20% comes from friends and family, while 55% comes from colleagues. The high proportion of mail from unknown sources should be noted. This is probably spam mail.

A point estimate of the average number of SMS messages received from colleagues per day is 0.44. Using the upper confidence limits both for the proportion of messages from colleagues and the number of messages yield an average of 0.74 messages per day. Thus one could quite confidently say the mean number of messages received from colleagues per day in this population is less than 0.74 and probably closer to 0.45.

The four usage groups in table 1 reported similar proportions of messages from colleagues, and a one-way ANOVA showed no significant difference between the groups ( $p > 0.25$ ,  $df = 3, 79$ ). Thus there is no evidence that some usage groups are heavier work users of SMS than others.

### 3.2. The conversational character of SMS and e-mail

In this section the messages are described in terms of openings and closings, perceived formality and degree to which they were read concurrently with other tasks, also known as multitasking.

<sup>1</sup> The “less than 1” category is the lowest category. The large proportion of users in this category suggests that categories lower than this would have been used had they been available. Thus the term “floor effect”. A ceiling effect is the opposite.

**Table 3. Openings and closings in SMS and e-mail**

Table 3 shows the number of respondents reporting messages with openings and closings and the

	Openings		Closings	
	#(n)	% (CI)	#(n)	% (CI)
SMS	28(90)	30% (±10)	38(89)	41%(±10)
Email	48(90)	52%(±10)	50(90)	54%(±10)

corresponding estimate of the population proportion with confidence interval<sup>2</sup>. As can be seen openings and closings are less common in SMS messages than in e-mail.

The proportion of respondents who reported reading the SMS messages concurrently with other activities (for instance having a phone conversation or being in a meeting) was 39% ( $N = 90$ ,  $95\%CI = 39\% \pm 10\%$ ). For e-mail the corresponding proportion was 18% ( $N = 90$ ,  $95\%CI = 18\% \pm 10\%$ ). Multitasking is quite common when reading SMS messages, and a lot more so than when reading e-mail.

When asked how the topic of the message was introduced 63% ( $N = 32$ ,  $95\%CI = 63\% \pm 17\%$ ) of the respondents indicated that the topic wasn't introduced at all, it was neither described nor named. The corresponding proportion for e-mail was 26% ( $N = 45$ ,  $95\%CI = 26\% \pm 15\%$ ).

Respondents report that they find the SMS messages quite informal. On a seven point Likert scale, with the anchors “very informal” and “very formal” at one and seven respectively, the mean rating of SMS messages was 2.1 ( $SD = 1.27$ ,  $95\%CI = 2.1 \pm 0.27$ ). The e-mails had a mean rating of 3.9 ( $SD = 1.42$ ,  $95\%CI = 3.9 \pm 0.30$ ). SMS is obviously regarded as a much less formal means of communication than e-mail.

When asked how well they know the sender of the SMS message, the mean was 6.5 ( $SD = 1.0$ ,  $N = 89$ ,  $95\%CI = 6.5 \pm 0.22$ ) on a seven point Likert scale with the anchors “not at all” and “very well” at 1 and 7 respectively. For e-mail messages the mean was 4.4 ( $SD = 1.9$ ,  $N = 91$ ,  $95\%CI = 4.4 \pm 0.4$ ).

### 3.3. Media switching

Table 4 shows the number and proportion of messages that were part of an ongoing conversation or a thread, and the number and proportion of conversations that involved media switching. Proportions are reported with confidence intervals estimated in the same manner as in

<sup>2</sup> The confidence estimate was reached by using the formula:  $proportion \pm 1.96 * p / \sqrt{N}$ , where  $N$  is the sample size and  $p$  is the true proportion in the population. The estimate was made conservative by assuming  $p = 0.5$  [9]. All confidence intervals of proportions were estimated this way.

table 3. It is notable that SMS messages are, to a lesser degree than e-mails, part of a conversation or thread. A high proportion of singles has also been noted in [8]. While media switching is quite common in both messaging systems when the message is part of a conversation, it occurs to a larger degree with SMS than with e-mail.

	Ongoing conversation		Media switching	
	#(n)	%(CI)	#(n)	%(CI)
<b>SMS</b>	20 (89)	22%(±10)	15 (20)	75%(±22)
<b>E-mail</b>	38 (90)	42%(±10)	23 (38)	59%(±16)

**Table 4. Media switching and threads.**

## 4. Discussion

The following summary and discussion is primarily directed at understanding why SMS is not utilized more in this business environment. Some explanations are suggested. In particular we propose that features of the SMS system and the systems user interface predisposes the sender of SMS messages to *conversationally implicate* [6] a personal relation to the receiver of the message. It is suggested that this is the reason why SMS messaging is highly popular in the private sphere but hardly used in this business community studied here.

### 4.1. Summary of results

The results show that in this population the total number of SMS messages received per day is less than 3.6 and less than 15% of them come from colleagues. On average, a mobile phone user in this population probably receives less than 0.5 messages per day from colleagues, a clear indication that SMS is not used as a work tool. This is puzzling and in contrast to the popularity of mobile phones and the use of IM in the business community, where recent studies show that IM messaging is quite popular [4,13] and is primarily used for work related topics and not socializing with friends and family [15].

The results also show that SMS messages are seen as informal and that they come almost exclusively from people the receiver knows very well. When SMS messages are part of an ongoing conversation, media switching occurs frequently. This is partly in contrast to what is reported in [10] and more in line with [13]. Further, multitasking is quite common when reading SMS messages, and a lot more so than when reading e-mail.

More often than not, SMS messages are one-shot

messages that are not part of a conversation, e.g. “I’m leaving work now”, “I’ll be 15 min late” etc. Messages of this type presuppose a high degree of common knowledge between the sender and the receiver, thus the high proportion of them further strengthen the impression of the private character of SMS messaging.

### 4.2. Study limitations

A small sample size has an effect on the precision of the population estimates; the smaller the sample is, the wider the confidence interval will be. Thus the effect of the small sample is taken into account in the population estimates. Consequently, there is no reason to distrust the estimates as such. As long as the estimates are precise enough to allow for a conclusion, the sample size does not constitute a problem. Another, and related question, is how general these findings are. The results can be generalized to the population with measurable confidence. However, “knowledge workers in a small Scandinavian university town” is a limited population indeed. The methodology and statistics involved in the study does not allow for generalization of the results beyond this population.

In spite of this, we would argue that the results are of interest for two reasons: a) When almost all interest and research into the use of SMS has been concentrated on adolescents and private use, this is in all probability because that is where the users are. Thus, it would seem likely that the results are more examples of the general state of affairs, than exceptions to the rule. b) While small Scandinavian towns are not at the center of commerce, their population is in fact at the forefront of SMS use. It is well documented that Scandinavians are among the first adopters and heaviest users of SMS [12]. Thus the usage patterns in a small Scandinavian town today might give us a glimpse of what the future might bring in societies that have not taken up SMS use to the same extent. Therefore we proceed to discuss the results as if they had a wide generality, allowing that the basis for doing this is argument, not statistics.

### 4.3. Why SMS is not used in office environments

Why is the use of SMS markedly lower in business settings than in private environments? In the following some answers to this question will be suggested and discussed.

*Dissemination.* It may be argued that SMS is a technology that disseminates as other technologies, that it is just at another point in the uptake in business compared to private life. The problem with this explanation is that it merely states what should be explained. In Scandinavia the uptake of mobile phones did not start in the private sphere and disseminate into the commercial; quite the contrary, the uptake of mobile telephony came first in business settings and then migrated to the private sector [12]. Thus a priori it should be assumed that the uptake

was higher in the business environments than in the private. Further, studies of use and adoption of mobile services indicate that traditional ICT adoption models, e.g. the technology acceptance model (TAM) [4] and the theory of planned behavior (TPB) [1] seem insufficient to explain adoption of mobile services [14].

*Age and gender.* It may be argued that SMS is an adolescent (primary girl) phenomenon, and that there are not many teenage girls in business. This explanation does not hold for two reasons: First SMS is not a teenage boy or girl phenomenon [12]. Second, as our results show, the employees do use SMS, they just do not use it much between themselves.

*Usefulness.* It may be argued that SMS is not useful in a business setting. The popularity of mobile phones and IM in business settings, however, makes it very improbable that a communication medium that incorporates elements of both should be useless. It could be argued that the lack of integration of SMS system with business software like e-mail, makes it less likely to be used. This is obviously only partly true since most GSM phones come with software and docking stations that makes it easy to synchronize address lists with those in common email applications.

*Economy.* Two somewhat different explanations fit this category. A) It may be argued that SMS is not unpopular in the business sector, it is SMS that is popular in private life because it is cheaper to send a message than to make a call. In business life the expense of making a call does not make a difference, thus users have no need for SMS. This explanation is based on the assumption that the communicative features of SMS can easily be exchanged with that of a call. That is obviously not the case. Further it seems to neglect the fact that in private life an SMS message quite often leads to a call [8]. B) Another primary economic explanation would point to the reimbursement plans that are in effect. For instance, since most people carry only one mobile phone, some kind of cost sharing between the employer and the employee must be put in place. This cost sharing might weigh negatively against SMS messaging. This is a possibility that cannot be ruled out.

*The fit between context and tool.* It can be argued that the way employees communicate can only be understood in relation to the constraints and opportunities that arise in the type of businesses they are in; the way work is conducted and the work culture that exists among them. Thus any effort to explain features of the communication without relating it to the context in which it is situated is at best pointless and at worst misleading. In this respect knowledge workers in a small Scandinavian town differ markedly from what most knowledge workers are exposed to. Consequently it cannot be concluded that SMS is, or will, be unpopular in the business community based on the empirical evidence from this study. This explanation is a special case of the generalization

problem discussed earlier and cannot be ruled out. However, the explanation suggests that SMS would be a popular business communication tool in other environments, and so far, that does not seem to be the case.

*Medium characteristics.* A prime characteristic of SMS messages is their informal, private and personal character. An obvious interpretation is that messages are informal *because* they are sent between people that know each other very well. However it might be the other way around, that SMS messages mostly are sent to persons the sender knows well *because* they turn out informal and personal. It might be that the SMS system in some way predisposes towards informal messages. In that case, the SMS medium is inherently more suited to private messages than to business use.

Some of the explanations outlined above can be ruled out, but three cannot: The one suggesting that the results are caused by the reimbursement plan, the one suggesting that the results are specific to the alignment between the work practice and communication tool and the one suggesting that the phenomenon is caused by the communication medium itself. In case one or both of the two first are correct, it is reasonable to believe that SMS messaging will find its proper place in the work environment as businesses learn of their virtues and telecom operators recognize the business market. However, if the SMS medium turns out to be inherently “private and personal”, new reimbursement plans or cost structures might not have the desired effect on SMS use in office environments. In this case, the medium needs to be “depersonalized” in order to become an effective business communication channel.

In order to “depersonalize” SMS it is necessary to have a clear idea of why it is personal in the first place. It cannot be the mobility of the terminal since mobile phones are used extensively in the business sector and are not viewed as especially personal and informal. The suggestion here is that the cumbersome interface and the limit on number of characters make the communication medium more suited to personal exchanges than to formal ones. However, why should this be the case? After all, the cost of a telex message was measured based on the word count and it was certainly cumbersome, but it was a significant tool for business communication over many years. Also, it is not particularly difficult to make short messages that are formal. Consider the following message that is less than 160 characters, including spaces:

“Dear Sir. Please excuse me if I’m interrupting. I’m writing to remind you that your travel expenses must be filed before June 15. Yours J. Doe”

Thus, to state that the short message length and the cumbersome interface of the SMS system make it personal and informal, will not explain much until it is

shown how these attributes of the system influence the degree to which the messages are private and personal.

#### 4.4. A language-theoretical approach to the personal character of SMS

The approach proposed here is based partly on the Gricean concept of *conversational implicature* [6] and partly on Clark's idea that interlocutors establish *common ground* [3]. These concepts are introduced briefly in the following.

**4.4.1. Conversational Implicature and common ground.** Conversational implicature can be explained by an example from Grice [6]:

"Suppose that A and B are talking about a mutual friend, C, who is now working in a bank. A asks B how C is getting on in his job, and B replies, *Oh quite well, I think; he likes his colleagues, and he has not been to prison yet.* At this point, A might well inquire what B was implying, what he was suggesting, or even what he meant by saying that C had not yet been to prison. The answer might be any one of such things that C is the sort of person likely to yield to the temptation provided by his occupation, that C's colleagues are really very unpleasant and treacherous people, and so forth. It might, of course, be quite unnecessary for A to make such an inquiry from B, the answer to it being, in the context, clear in advance. I think it is clear that whatever B implied, suggested, meant, etc., in this example, is distinct from what B said, which was simply that C had not been to prison yet." (op. cit., p 43).

Grice introduced the term "implicature" for what B suggests or implies. Further, Grice suggests that conversations are cooperative in nature and that interlocutors follow certain general rules, the most important of which is the cooperative principle (CP): "Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged" (op cit p 45). Grice suggests that this general principle has four subcategories, or conversational maxims; Quantity, Quality, Relation and Manner. Now, the CP is not always followed, especially:

(the speaker)... may FLOUT the maxim; that is he may BLATANTLY fail to fulfil it. On the assumption that the speaker is able to fulfil the maxim and to do so without violating another maxim (because of a clash), is not opting out, and is not, in view of the blatancy of his performance, trying to mislead, the hearer is faced with a minor problem: How can his saying what he did be reconciled with the supposition that he is observing the overall CP? This situation is one that characteristically gives rise to a conversational implicature, and when a conversational implicature is generated this way, I shall say that the maxim is being EXPLOITED." (op. cit, p 49).

Grice goes on to say that someone who says p has

"conversationally implicated" q, provided 1) the speaker observes the conversational maxims, 2) the speaker is aware that q follows of p if the speaker follows the maxim, 3) speaker thinks that the listener will understand (and that the listener will think that the speaker thinks) that 2. Going back to the example above, A might reason as follows:

"(1) B has apparently violated the maxim 'Be relevant' ...yet I have no reason to suppose that he is opting out of from the operation of CP, (2) given the circumstances, I regard his irrelevance as only apparent if, and only if, I suppose him to think that C is potentially dishonest; (3) B knows that I am capable of working out step (2). So B implicates that C is dishonest." (op. cit p 50).

Following Clark and Marshall [3], common ground is the knowledge that speakers share. To establish a common ground is a necessary prerequisite of being able to engage in a cooperative verbal interchange. Clark and Marshall argue that interlocutors use three heuristics to determine that they share common ground:

- 1) Class inclusion. If a person is a member of a specific class, it can be assumed that he or she knows specific things. For instance if a person is known to be Norwegian, it can be assumed that he or she knows that the capital of Norway is Oslo.
- 2) Joint experience. If the interlocutors have shared an experience, it can be assumed that this experience is part of their common ground.
- 3) What happened earlier in the conversation At moment t in the conversation what was said earlier in the conversation can be assumed to constitute common ground.

**4.4.2. Communication media and conversational implicature.** Now, going back to conversational implicature, we are in a position to argue why SMS might be better suited to private than to business communication. The argument goes as follows:

- 1) When speaking, interlocutors utilize common ground, their shared knowledge.
- 2) "Over"- or "under"-utilizing common ground has a conversational implicature (depending on the context and the information over- or under-used).
- 3) If a speaker under-utilizes common ground, i.e. is more explicit and thorough than is required, he or she is in breach of the brevity maxim. Depending on the source of the common ground this could be taken to implicate that: a) I don't regard you a member of this class. b) I don't recognize that we have had a shared experience. c) I don't regard you capable of remembering what I just

said. This would more often than not implicate that the speaker does not consider the person spoken to as close, that the person spoken to is not capable of understanding, or is not in the “know”. The listener is treated as a stranger. The listener will probably regard this as negative unless there are good reasons for this, for example that the exchange is a formal one.

4) If a speaker over-utilizes common ground, i.e. is less explicit and thorough than would normally be required, he or she is in danger of breaching the maxim “be intelligible”. Depending on the source of the common ground this could be taken to implicate that the speaker a) I, for one, regard you as a member of this class. b) I know and remember that we have shared this experience c) You have no problems remembering what I have said earlier in the conversation. This would more often than not implicate that the speaker does consider the person spoken to be close, that the person spoken to is capable of understanding or is in the “know”. Here the listener is treated as a friend, which might be seen as positive or negative depending upon their relationship and the circumstances. If the listener is, or would like to be the speaker’s friend, it is probably regarded as positive. If the listener does not know the speaker, or has no interest in knowing the speaker, then the listener might consider the reference to common ground rude and improper. It should be noted that there are no absolute limits the speaker has to cross in order to over- or under- utilizing common ground. It is a matter of degree that partly relies on the speaker’s assessment of the listener’s ability to remember.

5) Some mediating systems tend to push users towards an over-utilization of common ground, while others tend to push towards an under-utilization of common ground. A priori it is reasonable to assume that systems that both convey persistent information, and that place a burden on conveying messages, tend to push the user towards an over-utilization of common ground. The burden, be it limited number of characters, necessity to respond fast, or a lousy interface, would motivate the user to send a short message. Since the message is persistent the receiver has ample opportunity to work out what is referred to, and thus the sender of the message may reasonably over-utilize their common ground. The SMS system would be a prime example of such a system. Following the same logic, it is reasonable to assume that an under-utilization of common ground would follow if the system made it easy to elaborate and hold the floor, thus placing few or no burdens on making lengthy messages, while at the same time, the message is not persistent and even noisy, making it reasonable to elaborate and be redundant in order to ensure that no misunderstanding occur. Examples here might be a (noisy) phone connection or a videoconference with bad sound.

6) In private conversations it might be unproblematic or even positive to over-utilize common ground. In a

business setting, on the other hand, it would most likely be seen as presumptuous. Thus the SMS system is well suited to private communication, but not very well suited to business use.

There is a rather large difference between a conversational implicature as Grice described it, and the over- or under-utilization of common ground that is described above. A conversational implicature is a language device that is consciously employed by the speaker. It is highly unlikely, however, that users of mediating technology are conscious of the implicature of their over- or under- utilization of common ground. Thus what is described here is not that SMS users tend to use conversational implicature in certain ways, but that the receiver will interpret the messages they receive in certain ways and that this interpretation is done similarly to how interlocutors interpret conversational implicature.

#### 4.5. Depersonalizing SMS

If the above hypothesis has merit, it follows that depersonalizing SMS could be done in two different ways.

A first approach would be to remove the reason that makes the user tend to over-utilize common ground. This would entail changing the SMS system to accept longer messages and changing the terminals to make text input easier, for instance with a speech-to-text interface. This might well be the way the SMS system will evolve in the future. However, if the argument presented here is correct, a side effect of such a development could be that the SMS system would become less suited to private use.

Another way of “depersonalizing” SMS would be to provide the sender and receiver with an interpretation of the message as being “non-personal”, for instance by flagging the specific message as a business message. This could be done by making specific “business templates” available. This route is certainly a lot easier in terms of the changes involved for system and terminal, and would keep the aspects of the SMS system that, according to the present hypothesis, contributes to its popularity as an informal communication tool.

### 5. Summary and conclusion

SMS is a popular communication tool in the private sphere. However, our results suggest that it is used only to a small degree in the workplace. The explanation that the SMS system is not neutral in relation to the conversational implicature the messages convey has been presented in detail. Based upon this hypothesis two ways of “depersonalizing” the SMS system have been suggested.

Can we conclude that the SMS system is unsuited to

workplace use unless it is depersonalized? No, certainly not. Numerous explanations for the apparent lack of popularity of SMS in the workplace have been suggested and two of these explanations, reimbursement of use and the fit between work processes and the SMS system, seem quite probable. If a combination of these explanations turns out to be right, it is expected that SMS will find its way into the workplace. In that event SMS will have followed the same path as IM, by first becoming a popular communication tool in the private sphere before it is absorbed into the office [13]. Thus there are obvious alternatives to our hypothesis that the cumbersome SMS interface tends to change the conversational implicature of the messages in ways that are unsuited to business use.

The conversational implicature hypothesis has a broader scope than to account for the lack of SMS use in the workplace. It could be applied to many different kinds of mediated (or non-mediated) communication. Further, it suggests that the fit between communication tools and the communication task is not only a practical matter where “more” and “easier” is always better. On the contrary, it suggests that the private nature of SMS messages is due, in part, to the systems’ constraints and it’s cumbersome user interface.

## 6. References

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