Text Messages: A potentially rich medium in distributed organizations

Ira Galushkin
Bond University

This article argues that SMS (or text messaging), a type of computer-mediated communication (CMC), can be regarded as a rich medium in distributed organizations. Theories such as media richness and social presence regard any CMC as a lean medium. However, as a result of technological advancements, these classic communication theories have become outdated. This article uses four other theories to argue against these traditional theories and suggest that organisational communicators need to consider text messaging as a rich medium in many circumstances. Social presence theory, social influence theory, social identity de-individuation theory, and the social information processing model consider additional factors such as context, time, management support, individual user attributes, and the task at hand, in assessing media richness. This article discusses further review of management support, the equivocality of the task, and the ability of SMS to aid egalitarian participation within an organization, concluding that SMS does not replace face-to-face communication, but can be used with other traditional and non-traditional mediums within a distributed working context.

Glossary

SMS = Short Message Service (text message)

CMC = Computer Mediated Communication

FtF = Face to Face Communication

MRT = Media Richness Theory

SPT = Social Presence Theory

SIT = Social Influence Theory

SIDE = Social Identity De-individuation Theory

SIP = Social Information Processing Model

MOOs = Multi-User Dimensions, Object Oriented

Management support in adopting text messaging as an information rich medium is highly influential in improving communication perceptions and increasing work productivity in distributed work settings.

With 15 billion text messages flying through our hands each month, to and from our personal computers, personal digital assistants, and mobile telephones (Telecommunication systems and the internet, 2001), and SMS revenues representing in Europe alone $US 10 million a year, or 8% of annual European mobile telephone revenue (Rao, 2000), a figure that is "growing exponentially" (Rao, 2000), an investigation of this medium's effect on communication in distributed work environments is timely. The spatial and temporal constraints of workplace communication have been weakened or removed, and new communication structures and forms have developed. More organizations are adding flexibility, dynamics, and virtual components to their organizational design in order to enhance efficiency and productivity. These include; mobile work, home-based telecommuting (tele-workers), and satellite offices, collectively termed distributed organizations (Gay, Lentini, & Sturgill, 1996). Benefits include reduced costs such as travelling and childcare, and decreased relocation expenses when a company outgrows premises (Higa, Liu Sheng, Shin, & Figueredo, 2000; Gray, Lentini, & Sturgill, 1996). These rapid developments in information technology have radically altered the nature of human communication between individuals in organizations (Glassberg, Kettinger, & Logan,

1999; Galimberti & Giuseppe, 1998). It is important to understand the human effects of communication technologies such as SMS, which increasingly supplement or supplant more traditional methods of communication (Chalupa & Harris, 1998). As Ruhleder and Jordan point out:

> Developers of these technologies anticipate that they will profoundly alter the ways in which geographically distributed team members can work together as a single, purposeful unit. Their implementation, however, brings with it a new layer of complexity as people struggle to effectively integrate the right technologies into established work practices, and to modify those practices to take advantage of new technical opportunities. (Ruhleder & Jordan, 2001, n.p.)

In grappling with these complexities, existing communication theories might be expected to provide some guidelines that overcome the need for expensive trial and error. Due to the rapid pace of technological advancement in recent years, however, it is inevitable that some communication theories will not apply to certain new mediums and contexts. Much 'classic' communication theory comes from analysis of FtF interactions. FtF communication is still the most commonly used medium within organizations. It allows participants to use varying modes including words, vocal cues (i.e. voice inflection, sighs), nonverbal communication (i.e. gestures, touch), and written communication (i.e. paper, blackboards) (Dennis & Kinney, 1998). These modes combine to transmit factual information about the task, plus social information about team members' personal characteristics. But while people are still likely to work together in traditional FtF settings, teamwork today is increasingly characterized by distributed work, as organizations face the demands of increased competition and improved productivity (Ruhleder & Jordan, 2001). Team communication is now predominantly informal, augmenting FtF communication with new media such as video conferencing, instant messaging, email, and SMS (Telecommunication systems and the internet, 2001). Media richness theory and social presence theory, which regard FtF communication as the richest medium, have become outdated, as they fail to address key characteristics of the modern work environment.

CMC: Models of impact

SMS is a form of CMC that uses a two-way, computer-aided telephone communications vehicle capable of conveying and receiving short text in near real time (Chalupa & Harris, 1998). Messages are sent and received independently of one another (Gupta, 2003). Two distinct types of CMC, synchronous and asynchronous, are described in the literature. Tu (2000), Higa et al. (2000), Parks and Roberts (1998), and Galimberti and Giuseppe (1998), concur that synchronous CMC occurs when communication is simultaneous between two or more users, as with telephoning and on-line chat rooms. Conversely, asynchronous CMC is produced when communication is not simultaneous. SMS, then, where a sender leaves a message in a receiver's electronic letterbox, which the receiver must open before being able to read the message, is asynchronous CMC. Because there is very little specific literature on SMS, this article uses analytical frameworks from literature on asynchronous CMC in general, in particular from the analysis of email. The limited data available from SMS-specific studies hinders full understanding of text messages and their contribution to communication management, and highlights the necessity for further investigation. However, although different, email has similar characteristics to SMS, including text, asynchronicity, anonymity, and decreased immediacy of feedback and multiplicity of cues, hence comparative inferences can be made. Those inferences are adapted to suggest some of the opportunities and limitations of SMS as a rich

medium, address its suitability as a communication tool, and outline some of the SMS-specific questions requiring further study.

Numerous scholars and theories have looked at the human impact of communication technology. Some have subsequently specifically identified CMC as a largely inappropriate organisational communication tool. Cited extensively in the literature, Baruch's (2001) analysis and discussion focuses on the individual impact of developments in industrial society, which he argues is becoming very technologically oriented. He suggests that the virtual organization and extended telecommuting might create an "autistic society", where people are detached from each other. He blames CMC for social alienation, with computers described as "buffers between people and the environment" (Baruch, 2001, p.130). Other theories have emphasized structural properties of media and media messages, particularly the sending (encoding) aspect. McLuhan's technological determinism and "media is the message" arguments elucidate the power of the media to construct reality less via message content than via message form (McLuhan & Powers, 1989). McLuhan and Powers (1989) argue that electronic media have altered the way people think, feel, and act. Harrison (1968) argues that advances in computer technology are important to identify and understand the significance and augmentation of non-verbal communication. Some superseded communication theories argue that communication requires three elements; source, message, and destination, described as the parcel post model. For example, SMS involves the source encoding the message by typing it into the phone. When this is sent, the message becomes free of the sender, and will hopefully reach those people who were specified. Galimberti and Giuseppe (1998) challenge the parcel post model because of the unusual characteristics of electronic environments, including the asymmetry between message and sender. The parcel post model assumes that information sent is the same as information received. Asymmetry occurs due to the reduction of language to a code, discounting of

other types of human interaction, or disturbance such as time lag or lack of visual cues (Galimberti & Giuseppe, 1998). The parcel post model is restrictive, failing to account for cognitive, linguistic, and psychosocial distortions. The more recent models have considered these factors with recognition of supplements to verbal communication such as nonverbal and proxemic communication, identification that information is processed and shared and, finally, stressing the significance of context, including both the physical features affecting spatial and temporal performance, and the psychological context, or scene, in which it takes place (Meyrowitz, 1993).

Media richness and social presence theories

MRT and SPT (also described as rational choice theories) are referred to repeatedly in literature on CMC, and are used to explain the positive and negative features of synchronous and asynchronous CMC. They were developed to explain how media forms function in relationship to interpersonal interaction (DiCioccio, Rubin, & Westmyer, 1998). Research regarding media richness and social presence has found a link between the type of information processed and the chosen communication method (Harp, Taylor, & Satzinger, 1998). Daft and Lengel (1986) suggest that by choosing an inappropriate channel to process information, communication can become less effective. They suggest that FtF channels are high in social presence and information richness, as they possess all appropriate cues, including non-verbal gestures (Gay, Lentini, & Sturgill, 1996; Chalupa & Harris, 1998). The classical MRT assumes that each communication medium has a different richness that describes the information-carrying capacity (Higa et al., 2000). This has been defined with four criteria listed by Daft and Lengel (1986): feedback (immediate, fast, slow); channel (audio, visual); source (including personal and impersonal); and language (body language, natural language, and numeric). FtF communication represents the highest level of richness because feedback is immediate, the

channel is both visual and auditory, the source is personal contact, and language is both natural and embodied. According to these criteria, FtF conversation is considered richer than the telephone, and the telephone is regarded as richer than a textual response such as SMS (Scott, 2001). King, Marginson, and McAuley (2000) suggest that electronic media filter out the cues that are provided by personal contact and are generally considered to be low in richness. Although SPT developed independently of MRT, it supports MRT's preference for FtF. SPT proposes a continuum measuring the degree to which a medium facilitates awareness of the other person during the communication exchange (Scott, 2001). FtF communication is assessed as offering the greatest social presence, followed by video, audio, and finally print. This suggests that tasks such as bargaining, which require a channel that is capable of conveying non-verbal and social-context cues, are best supported by media high in social presence, such as FtF meetings.

Baruch (2001) emphasizes that a lack of non-verbal communication and a lack of immediacy of response weaken social influence, with social anonymity caused by this depersonalising of technology. He argues that although a message can be delivered, body language, gestures, and other essential communication facets are lost. Therefore, using SMS to send an employee a message from a manager could be regarded as negative due to the distance, lack of immediacy, and multiplicity of cues. Dennis and Kinney (1998) define immediacy of feedback as the extent to which a medium enables users to give rapid feedback on the communications they receive. For communication to be successful, both the sender and receiver must mutually agree that the receiver has understood the message and adjusted accordingly (Gay, Lentini, & Sturgill, 1996). Hence, the elimination of feedback tends to reduce accuracy of communication as well as increasing the time required to complete a task. Mehrabian (1968) argues that immediacy and directness are a source of information about feelings. This may cause distant forms of communication to be used when the message or act of communicating is uncomfortable. He suggests that a written message would be easier to use for communicating negative feelings, which implies that SMS could be used for negative purposes and consequently perceived unenthusiastically. Furthermore, receivers in SMS lack cues such as eye contact and body language, which assist in assessing whether or not a message is sincere (Mehrabian, 1968). It is therefore the manager's role to refrain from using this medium to communicate personal and potentially uncomfortable information. However if information is emotionally laden, the receiver may have time to think before responding immediately (emotionally and inappropriately). Finally, lack of FtF cues can have significant affects on social perceptions and loss of social presence. According to this, depersonalisation may cause people to become more self-centred, however this is an area for further investigation (Gay, Lentini, & Sturgill, 1996).

Also requiring further research are the potential for decreased cooperativeness when using SMS, and problems with guaranteeing the user's identity, difficulties that normally do not occur in FtF interactions. Although difficulties in serial transmission of information can be avoided when using the multiple addressee capabilities of SMS, Haney (1962) argues that problems exist with potential distortion and disruption of the original message where omission, alteration, and addition can occur, that subsequently cause anxiety or distress. A good example is a game called Chinese whispers where an original message is whispered along a chain of people. The game normally results in the original message being completely different or distorted even though this involves FtF interaction. Higa et al. (2000) argue that synchronicity enables a high degree of interactivity, with natural voices delivering a variety of communication-related cues between communicators. The inherent delay in typed media and the lack of verbal and non-verbal cues have significant effects on feedback if using SMS. MRT, SPT and even earlier models all identify a

problem with CMC decoding, where misinterpretation and distortion can occur between the sender and the receiver due to lack of nonverbal cues (Tu, 2000; Poster, 1996). Galimberti and Giuseppe (1998) argue that features missing in asynchronous CMC cause a lack of collaborative commitment among participants, as a result of the decreased immediacy of feedback that would allow processing of the message's social meaning. In addition, SMS in particular does not guarantee the user's identity, which can cause anxiety and misinterpretations; i.e. someone in the office can use another person's desk or phone, as DiCioccio, Rubin, & Westmyer (1998) have identified as problematic in CMC in general. Like much other CMC (Galimberti & Giuseppe, 1998), SMS may lack rules of normal interaction between the sender and receiver. Subsequently, the sender transmits information cooperatively, but with no guarantee that the receiver will actually receive the transmission, or that the sender declared is the actual one that sent the message, let alone that the message is interpreted correctly (Galimberti & Giuseppe, 1998). The sender may accomplish his or her own goals and needs, yet violate expectations of appropriateness in the receiver (DiCioccio, Rubin, & Westmyer, 1998). These criticisms of CMC in general require investigation in the specific context of SMS; they should not, however, be used to rule out SMS as a potentially rich medium in distributed organizations, as there are other factors needing consideration in the assessment of SMS's viability as a workplace communication tool.

Arguments against MRT and SPT

As a result of rapid technological advancements, MRT and SPT have become outdated as they fail to consider all aspects of CMC. MRT evolved without direct consideration of new media, and fails to identify the appropriateness of SMS in distributed organizations. Many factors appearing in organizations today appear to be ignored in the

older rational theories, including: cost, context, distributed work, manager's influence, hierarchy, training, support and experience. Following McLuhan, communication scholar Donald Ellis notes that as media change, so to do the ways people think and manage information, and relate to one another (Littlejohn, 2002). This implies that theories need to be elaborated and modified in line with technological advancements. Irani (1998) asserts that, although FtF communication is extremely important, various forms of CMC are rapidly supplementing this most basic form of discourse.

Missing from the rational choice theories described are several factors relating to how people actually operate in distributed organizations, including supportive environments, time constraints, and context. DiCioccio, Rubin, and Westmyer (1998) use social presence and media richness to argue that FtF communication satisfies some communication needs (those of the receiver), however they still highlight the appropriateness of using written media to satisfy senders' needs. They also suggest that immediate exchange of information necessitates a need for social presence, however with no time restrictions CMC can be just as effective. King, Marginson, and McAuley (2000) propose several shortcomings of MRT, particularly in relation to email's score on the richness scale. These include: no procedure is established for weighting richness scores; and electronic mail offers richness criteria that are excluded from the MRT, including things such as multiple address ability, speed, ease of use, personal experience, geographic dispersion of individuals within communication networks (distributed organizations), and the impact of job pressure. Poster (1996) argues that time lags in email response give the sender time to think, enhance powers of reasoning, and increase autonomy. King, Marginson, and McAuley (2000) assert that social context provides an important set of factors that shape behaviours and attitudes. Subsequently, social interaction theories can be used to supplement MRT in studies that explain media selection within a supportive environment.

These theories are based on symbolic interactionism and share the premise that groups of individuals define tasks and media according to systems of shared meaning (Griffin, 1997). One group of individuals may define the richness demands of a task or the richness characteristics of alternative media differently from another group. This implies that managers and co-workers can be influential in shaping attitudes towards SMS.

Gay, Lentini and Sturgill, (1996) studied the effect of media richness on group processes and the implications for telecommuting. They found that although media richness is supposed to be a key factor in communication, it did not have a significant effect on group processes within the distributed organization. They argued that the interaction between the medium and its organizational context is correlated with the medium's richness. In other words, the richness of any medium depends on how it is used and whether the organisational culture embraces this medium as a rich communication tool. Gay, Lentini, and Sturgill (1996), suggested that those media traditionally considered 'leaner' will require more interaction between group members, and more effort in order to maintain relationships, but so-called richer media are not the solution. An employee's perception of a medium and its successful adoption depends on whether the medium fits the user's potential processing needs and the appropriateness of the context that helps to clarify medium usage. The study identified the importance of individuals' ability to adapt to media capabilities or constraints when using a medium in particular situations, and correlated that ability to the success of the communication. Applying this finding specifically to public relations communication, where SMS is being used as a tactic in both information and promotion campaigns (for example to support movie launches, such as by Riot Entertainment Ltd, 2001), it becomes clear that the key to its success is careful targeting to certain publics. SMS is not a medium appropriate to many audiences or to delicate campaign management, but can be used

as an effective PR tool if audience research identifies congruent processing needs and abilities. A person's perception of SMS depends on the task at hand, the context, and whether they have available the additional time required for message processing and responding than a FtF interaction.

Task orientation

According to MRT and SPT, "rich" channels of communication are preferred for equivocal or ambiguous tasks where information is vague and data missing (Daft & Lengel, 1986; Gay, Lentini, & Sturgill, 1996). Daft and Lengel (1986) concluded that richer media (FtF meetings) resulted in better performance in equivocal or ambiguous tasks (deciding to acquire a company), while leaner media led to better performance in less equivocal tasks. Harp, Taylor, and Satzinger (1998), and Dennis and Kinney (1998) agree that information processing that requires a reduction in equivocality requires a rich medium, enabling users to communicate more quickly and to better understand these messages. In contrast, leaner media were better for low equivocality tasks because rich media provided communicators with too much information and superfluous messages (Dennis & Kinney, 1998). This suggests that effective communication will occur if media richness and message equivocality are inversely related (Chalupa & Harris, 1998). The amount of ambiguity tolerated in a message will determine the medium used, with an important message requiring a rich medium. However if a user sees SMS as a rich medium, they are more likely to use it for this type of message (Gay, Lentini & Sturgill, 1996; Higa et al., 2000). Higa et al. (2000), assert that when an insufficiently rich medium is chosen for a communication task, performance may suffer. Therefore, using MRT, we would expect that most information seekers would select the richest FtF communication for posing ambiguous inquiries, with SMS being the last resort for conveying complex information. This would be reinforced by SPT. However,

mixed support exists for the argument that use of richer rather than leaner media leads to better performance on high equivocality tasks. Dennis and Kinney (1998) found no support for the central proposition of MRT that matching medium richness to task equivocality improves performance. They did find significant media differences for decision time due to multiplicity of cues and feedback, but the differences were not those proposed by MRT. King, Marginson, and McAuley (2000) assert that personal experience of using media influences judgments about the fit between media and task (equivocality). Hence, while some studies have found support for these theories, in many cases people may make different choices than those predicted by MRT, picking less rich media for equivocal tasks (Scott, 2001; Dennis & Kinney, 1998). MRT's dismissal of lean media for complex tasks may be too simplistic.

Workplace democracy

Further support for SMS as an effective tool is provided by its ability to promote egalitarian participation within an organization. Chalupa and Harris (1998) argue that technological advancement has caused restructuring in organizations due to the blurring of boundaries that support collaboration and information sharing between various levels. They suggest that hierarchy is becoming less significant when communicating between management and non-management employees and that consequently, organizations should provide employees with several media channels for distributing and gathering information. Marin and Minsky (1999) suggest that CMC provides an avenue of communication that has less centralized leadership and allows for more egalitarian participation. Therefore, as SMS may not provide the richest channel of communication by traditional definitions, it may be useful in overcoming hierarchical communication barriers in an organization, and could assist in preventing feelings of unease when dealing with a high-status person within an organization (Higa et al., 2000).

The elimination of some information cues may in fact make SMS a more useful communication method, rather than less, in these circumstances. Mehrabian (1968) supports this notion by highlighting features of high status and low status patterns of communication that emerge when people of different rank interact FtF. The cues that MRT would consider provided 'richness', in this study were shown to result in feelings of inferiority and discomfort or conversely, disrespect and impertinence.

King, Marginson, and McAuley (2000) suggest a basis for individual-level choice is to be found in theories where individuals act to construct positive images of themselves. This possibility is implicit in the argument that FtF communication conveys trust, or the use of formal reports communicates professional image (Mehrabian, 1968). Consequently, communicators may choose a particular media style as a means of constructing their identity or image in the eyes of others. Individuals are free to judge the validity claims of any communications that they receive and that are capable of distorting their image. This perspective accords a degree of potential richness to email communications that is missed by media richness and social interaction theory. Personal selection of the particular medium is part of the communication about identity; as McLuhan and Powers (1989) suggested, the medium is the message.

Theories to replace MRT and SPT

As MRT and SPT appear to have become outdated, or at the least problematic in application to SMS, other communication models need to be considered.[1]   Social influence theory, channel

---

[1] Lee and Ngwenyama, (1997) offer critical social theory (CST) as a replacement for MRT to study communication richness in CMC. Their study aims to clarify how richness occurs in managerial communication via CMC, and contributes to development of valid theory for communication richness. They argue that the positivist MRT (defined as the physical process of transporting material to a passive recipient) perspective would predict that richness does not occur in SMS due to the thinness of channel

expansion theory, social identity de-individuation theory, and social information processing theory are helpful alternatives to the traditional models of communication, as they consider a variety of factors which were previously ignored and which appear to have direct relevance for SMS.

Social Influence Theory

Marin and Minsky (1999) completed a study on individual selection of communication media in organizations, and use MRT and SPT to argue that individuals choose communication media by matching the characteristics and requirements of the task at hand. They found positive relationships between increased CMC (email) and perception, benefits of use, good attitude toward change and innovation, and positive use by group leaders. Scott (2001) and Higa et al. (2000) support this concept and suggest that social influence and individual difference contribute to the process of selecting and using communication media within an organization. Higa et al. (2000) studied how e-mail use, individual attributes, and management support affected the perceptions of e-mail's information richness and productivity. They argue that although e-mail is a lean medium from an MRT perspective, it can become a richer communication tool through the active social construction process of management support. In response, social influence theory (SIT) is used to argue that channel choice is a function not only of

the medium or the task, but also of individual perceptions conditioned by the social context of the task (Marin & Minsky, 1999; Scott, 2001; Higa et al., 2000). Although both these studies involved email, due to the similar characteristics described earlier, inferences can be drawn for SMS. Marin and Minsky (1999) and Scott (2001), recommend that MRT be updated and elaborated by considering the effects of individual differences, which are identified as personality traits, inclinations, and demographic factors, that may then influence choice of medium and social context. SIT assumes that members of a social network or defined group will show similar patterns of media use. Higa et al. (2000) also identify social influence and individual attributes (age, status, and ease of use) in media selection. In organizations, policies and managerial pressures were identified as important social influences. Innovation literature supports individual difference, where adopters of innovation (those that are more inclined to favour change and science), posses a greater ability to deal with the uncertainty and risk in facing new media (Marin & Minsky, 1999). In addition to values, attitudes, and context, Marin and Minsky (1999), and Tu (2000), argue that as people gain experience with CMC their anxiety diminishes. Although individual attributes were correlated with perception, Higa et al.'s (2000) study concluded that individual attributes did not really affect perception of e-mail use as a rich medium. SIT still does not explain why a person chooses one channel over another.

Channel Expansion Theory (and social influence model)

Alavi and Yoo (1996), and Carlson and Zmud (1999), argue against MRT and its assumption that text-based communication technologies would be perceived as lean media. They argue that new media have resulted in reconsideration of the descriptive and predictive validity of this theory. Alavi and Yoo (1996) use the social influence model of technology, similar to that described by

capacity. CST is used to overcome the weaknesses of positivist MRT. They use Habermas's theory of communicative action, which assumes social action has basic norms, to illustrate the richness that is evident in a superficially banal series of electronic messages. What matters is not so much the richness of the communication channel but the propensity of individuals to construct richness based on the communication content. A CST perspective allows exploration of whether communications are achievements of mutual understanding or the product of strategic action. CST recognizes that in attempting to enact meaning from a "text" a reader can use critical reflection to achieve mutual understanding of a message, although this can be distorted (Lee & Ngwenyama, 1997). Space constraints prevent detailed consideration of the complexities of CST here.

Carlson and Zmud (1999) who use the channel expansion theory (CET), postulating that medium richness is also influenced by the social context of technology, where perceptions of media change once more time is spent with the technology and others using it. They suggest that perceptual differences support inconsistencies in studies investigating user perceptions of CMC. Their findings supported CET, where evolving, knowledge-based experiential factors can positively influence media richness perceptions. The study went beyond investigating how media richness effects media selection and use (previous literature), instead focusing on how richness perceptions are developed. Therefore, managers need to understand that, initially, communication effectiveness and richness strongly depend on the channel user's previous communication experiences with SMS. This model could also be applied to other variables such as social presence, communication satisfaction, and communication effectiveness.

Social Identity De-individuation Theory (SIDE)

Parks and Roberts (1998) identify paralinguistic behaviour, gaze, and postural movement as important characteristics in communication. They propose that, although channels and cues are restricted in CMC, limiting information exchange, the problem can be alleviated with longer and more frequent communication. Using (SIDE) theory as a framework, they argue that, in some circumstances, on-line users are more likely to over-interpret the little data available. For example, when that data is positive, they could reach more positive conclusions than FtF interaction, suggesting that even a little bit of data can be interpreted in a high-impact way via SMS. Joinson (2001) used the SIDE model to highlight anonymity in CMC as central to self-disclosure and heightened self-awareness. He challenges the notion that visual anonymity and text-only communication lack richness and social presence. DiCioccio, Rubin, and Westmyer (1998) correlate anonymity and de-individuation with reduction in barriers, and the possibility to connect more intimately. Yet, a receiver who over-interprets the little information they have may be more likely to misinterpret it, with the possibility of negative consequences, and one who lowers their inhibitions may be more likely to contravene workplace behavioural expectations. Gay, Lentini, and Sturgill (1996) argue that CMC lacks social cues that direct FtF interactions with lowered inhibitions, possibly producing inappropriate interactions within an organization. Yet this is only a matter of familiarity, argue Ruhleder and Jordan (2001). They suggest that "people know how to behave in face-to-face meetings" (Ruhleder & Jordan, 2001, n.p.) because there are established, widely used and tested protocols, agendas, and frameworks for the use of such communication. Remote communication technology requires participants to "re-think how they can best conduct the work of the meeting" (Ruhleder & Jordan, 2001, n.p.) rather than simply continue to use the same methods and practices. This rethinking will lead in time to the development of new procedures for common organisational communication occurrences such as meetings. "Out of the moving edge of this chaos will emerge new order that will guide and shape work practices in the coming century" (Ruhleder & Jordan, 2001, n.p.).

Social Information Processing Theory

Galimberti and Giuseppe (1998) argue that, despite its textual mode, asynchronous CMC has been shown to differ in psychosocial terms from written communication using other, more traditional, devices. They used experiments to demonstrate the differences between CMC and non-electronic written communication. Significant differences were revealed in degrees of media richness and social presence in e-mail and video conferencing, compared with telephone and written text, due to substitutions for non-verbal cues, also available when using SMS. A multitude of literature is used to support the notion that a

computer-using society has attempted to incorporate alternatives to interactive non-verbal cues (Tu, 2000; Galimberti & Giuseppe, 1998; Walther & D'Addario, 2001). The non-verbal cues missing in both synchronous and asynchronous CMC are supplemented by using emoticons, textual devices, and abbreviations to produce the metacommunicative features, such as facial expression, posture, tone of voice, emotions, metaphor, and elocutionary force, of FtF communication (Tu, 2000; Galimberti & Giuseppe, 1998). (Emoticons are graphic representations of emotions, originally created using series of typographical symbols to resemble facial expressions, but now also available as self-contained symbols in many email and SMS fonts, e.g. ☺.) Parks and Roberts (1998), in a study of MOOs (multi-user dimensions, object oriented), a form of interactive synchronous CMC, found that MOOs allowed for synchronous discussion where users can emote language with textual descriptions of actions and emotions (Parks & Roberts, 1998). Although a synchronous form of CMC, MOOs have similar characteristics to asynchronous SMS as they both use text and emoticons. Parks and Roberts found that MOOs were a successful interpersonal communication tool when using these features. Walther and D'Addario (2001) developed the Social Information Processing model (SIP), and use it to argue that on-line users can communicate effectively with the exchange of sufficient messages and subsequently more time. The SIP model maps how users adapt to the medium and find ways to overcome the relative shortage of cues (such as using emoticons as visual cues instead). Galimberti and Giuseppe (1998) argue that the absence of metacommunicative features encourages users to find other ways to make communication possible.

Thus, by combining these four models, it can be said that SMS can be considered a rich medium depending on a variety of factors. These factors, which MRT and SPT ignore, include: the context, time required for the task, personal attributes, management support, supplementation of non-verbal cues, anonymity, and so on.

Management support

Management support is probably one of the most important factors in the implementation of SMS within an organization. Management support and training may influence the medium selected for communication. If such support follows the MRT hierarchy model, FtF is more likely to be chosen over SMS. Higa et al. (2000) assert that when constraints such as norms and culture become substantial roadblocks to media choice flexibility, an organization may under-utilise the potential of CMC. On the other hand, if the communication network is structured such that email is regarded as a rich medium, organizations and workers may substantially benefit from its use. This is especially true for distributed workers who rely on remote communication. In order for SMS to be taken on board successfully by employees within an organization, a comprehensive training program is required in the composition of short messaging as a means to enrich the information being communicated.

A study by King, Marginson, and McAuley (2000) places managerial perceptions at the heart of understanding CMC adoption. Marin and Minsky (1999) argue that, in addition to users' own values, experiences, and attitudes, the attitude (positive or negative) towards CMC of their peers, leaders, and supervisors must also be taken into account. To extrapolate this to the case of SMS, it is important for management to support the perception of SMS as a legitimate and officially sanctioned communication channel if they wish it to be used for legitimate or formal content. Therefore, management's role is to consider the type of message sent, as well as assessing the individual characteristics of users and media, communication task, and context. King, Marginson, and McAuley (2000) argue for cultural change programs that empower individuals to create conditions where personal media style can have a significant impact on

preferences for CMC irrespective of many of the factors suggested by MRT. Higa et al.'s (2000) empirical study confirmed that tele-workers' media choice behaviour was affected by management support. The study identified management support as a key social influence, and argued that it was much more influential than individual characteristics and technical features of user friendliness in explaining tele-workers' media selection. Level of management support acted as a predictor of perceived information richness of email. The results reconfirmed that when tele-workers recognized email as an information rich medium, e-mail's functional diversity and richness could considerably improve their productivity by curtailing process bottlenecks in traditional media. Once again, these findings could be applied directly to SMS.

Limitations

Gay, Lentini, and Sturgill (1996) use literature to support the notion that, over time, CMC may be compared to FtF communication. However, they argue that as many studies are short-term in nature, they are unable to identify the long-term benefits of CMC. Meyrowitz (1993) argues that the lack of consistency in the way media scholars define media, a result of the rapid growth of new media, is problematic. He suggests that when media are described differently, they foster different perceptions, leading to different research findings. Furthermore, as there is virtually no refereed research on SMS or text messaging at this stage, generalizations cannot be made until further research is completed. In this article, email was compared directly with SMS, and results of email studies were extrapolated to make speculative predictions about SMS adoption. However, they are not identical media.

Conclusion

FtF communication is extremely important to the outcome of most endeavours within an organization, yet various forms of CMC including

SMS are rapidly supplementing this most basic form of discourse. SMS can change patterns of information distribution in organizations, and introduces an avenue for communication when FtF interaction is not feasible for a group of people. Organizations could benefit from having a communication network where SMS is a reliable and productive medium, especially in a distributed environment. SMS can be used with other traditional and non-traditional channels of communication to assist information flow between employees and management as it can enhance the ease and speed of communication inside an organization, and can change patterns of information distribution in off-site situations. It is important that the content of the message and the communication goals are considered when deciding on the appropriate channel of communication. Therefore, training should focus on message content as well as channel functions to enable employees to use this tool to its full potential.

MRT suggests that most communication requirements should lead to people preferring FtF communication above technological solutions, yet many studies with CMC do not bear out its predictions. As a result of this discrepancy, more complex models are required in order to assist in determining channel selection and use by individuals in organizations. The simple one-dimensional rational choice theories (MRT and SPT), and the more multidimensional models of social influence theories, should move to include complex comprehensive models that consider a range of human behaviours mentioned earlier. The major conclusion to be drawn from this study is the importance of interrelationship between structure and action. This implies that the interactions between SMS characteristics, task, management support, and social and organizational factors, act as important influences for the individual. SMS could benefit distributed work and distributed organizations through enhanced work productivity and could therefore be regarded as a rich medium within a supportive environment.

References

Alavi, M. & Yoo, Y. (1996). *Electronic mail as a rich medium and desktop video-conferencing as a lean medium: A theoretical explanation on paradoxical results.* Publisher: University of Maryland. Retrieved February 15, 2002 from http://hsb.baylor.edu/ramsower/ais.ac.96/papers/yoo2.htm

Baruch, Y. (2001). The autistic society. *Information and Management Journal, 38,* 129-136.

Carlson, J.R., & Zmud, R.W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal, 42*(2), 153- 70.

Chalupa, M.R., & Harris, T.M. (1998). Technology-based communication methods used in a Fortune 500 company. *Office Systems Research Journal, 16*(2), p. 1.

Daft, R.L., & Lengel, R.H. (1986). Organizational information requirements, mediarichness and structural design. *Management Science,* 32, 554-571.

Dennis, A.R., Kinney, S.T. (1998). Testing media richness theory in the new media: The effects of cues, feedback, and task equivocality. *Information Systems Research, 9*(3), 256-274.

DiCioccio, R. L., Rubin, B. R., & Westmyer, S.A. (1998). Appropriateness and effectiveness of communication channels in competent interpersonal communication. *Journal of Communication,* summer, 27-48.

Galimberti, C. & Giuseppe, R. (1998). Computer-mediated communication: Identity and social interaction in an electronic environment. *Genetic, Social, and General Psychology Monographs, 124*(4), p. 434.

Gay, G., Lentini, M., & Sturgill, A. (1996). Effect of media richness on group process variables: Implications for telecommuting. *Telecommuting Conference 1996.* Retrieved March 1, 2002, from www.terry.uga.edu/misTC96/papers/sturgill

Glassberg, B.C., Kettinger, W.J., & Logan, J.E. (1999). *A conceptual model of the effect of privacy, ethical and policy concerns on electronic media usage.* Retrieved February 21, 2002, from http://hsb.baylor.edu/ramsower/acis/papers/glassb2.htm

Griffin, E.M. (1997). *A first look at communication theory* (3rd ed.). New York: McGraw-Hill.

Gupta, P. (2003). *Short message service: What, how and where?* Retrieved February 27, 2003, from http://www.wirelessdevnet.com/channels/sms/features/sms.html

Haney, W.V. (1962). Serial communication of information in organizations. In J.A. Devito (Ed.), *Communication: Concepts and processes* (pp 149-166). New Jersey: Prentice Hall.

Harp, C.G., Taylor, C., & Statzinger, J.W. (1998). Computer training and individual differences: When method matters. *Human Resource Development Quarterly, 9*(3), 271-283.

Harrison, R.P. (1968). Other ways of packaging information, In J.A Devito (Ed.), *Communication: Concepts and processes* (pp. 88-105). New Jersey: Prentice Hall.

Higa, K., Liu Sheng, O.R., Shin, B., & Figueredo, A.J. (2000). Understanding relationships among tele-workers e-mail usage, e-mail richness perceptions, and e-mail productivity perceptions under software engineering environment. *Institute of Electrical* and Electronics Engineers (IEEE) Transactions on Engineering Management, *47*(2), p. 163.

Irani, T. (1998). Communication potential, information richness and attitude: A study of computer mediated communication in the ALN classroom. *ALN Magazine, 2*(1). Retrieved February 24, 2002, from http://www.aln.org/alnweb/magazine/vol2_issue1/irani.htm

Joinson, A.N. (2001). Self-disclosure in computer mediated communication: The role of self-awareness and visual anonymity. *The European Journal Social Psychology, 31,* 177-192.

King, M., Marginson, D., & McAuley, L. (2000). Executives' use of information technology: Comparison of electronic mail and an accounting information system. *Journal of Information Technology, 15*(2), 149-164.

Lee. A.S., & Ngwenyama, O.K. (1997) Communication richness in electronic mail:

Critical social theory and the contextuality of meaning. *MIS Quarterly*, *21*(2), 145-167.

Littlejohn, S.W. (2002). *Theories of human communication,* (7th ed.) CA: Wadsworth.

Marin, D.B., & Minsky, B.D. (1999). Why faculty members use e-mail: The role of individual differences in channel choice. *The Journal of Business Communication*, *36*(2), p. 194.

McLuhan, M., & Powers, B.R. (1989). *The global village.* New York: Oxford University Press.

Mehrabian, A. (1968). Communication without words. In J.A. Devito (Ed.), *Communication: Concepts and processes* (pp. 106-114). New Jersey: Prentice Hall.

Meyrowitz, J. (1993). Images of media: Hidden ferment and harmony in the field. *Journal of Communication*, *43*(3), 55-67.

Parks, M.R., & Roberts, L.D. (1998). 'Making moosic': The development of personal relationships on line and a comparison to their off-line counterparts. *Journal of Social and Personal Relationships*, *15*(4), 517-537.

Poster, M. (1996). *The second media age.* Cambridge: Polity.

Rao, M. M. (2000). *Wireless web: What's the impact on your e-business?* Retrieved February 27, 2003, from http://www.netgalactic.com/whitepapers/pdf/wirelessweb1.pdf

Riot Entertainment Limited. (2001). *Bridget Jones reveals diary secrets to mobile users in Asia*. Retrieved February 23, 2003, from http://www.waymaker.net/bitonline/2001/08/16/20010816BIT00760/bit0001.pdf

Ruhleder, K., & Jordan, B. (2001) Managing complex, distributed environments: Remote meeting technologies at the chaotic fringe. *First Monday*, *6*(5). Retrieved from http://firstmonday.org/issues/issue6_5/ruhleder/index.html

Scott, C. (2001). Media choice in library reference communication interactions, Retrieved February 21, 2002, from http://www.gslis.utexas.edu/~ssoy/newtechnologies/soypaper1.htm

Telecommunications systems and the internet. (2001, August/September). *Copy Editor, 17*(3), p. 12.

Tu, C-H. (2000). Critical examination of factors affecting interaction on CMC. *Journal of Network and Computer Applications,* 23, 39-58.

Walther, J.B., & D'Addario, K.P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social Science Computer Review, 9*(3), 324-347.