



## Building a theory of multi-media CMC

An analysis, critique and integration of computer-mediated communication theory and research

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### Abstract

In order to provide directions for future computer-mediated communication (CMC) scholarship, in this article, I analyze, critique and integrate contemporary CMC theory and research. Particularly, based upon an analysis of recent developments in multi-media software and the world wide web, I explore the theoretical implications of increased audio, video and three-dimensionality in cyberspace. In general, in this article, I argue that CMC theory and research has been limited by the 'textual bias' of previous scholars. CMC researchers and theorists must begin to reconstruct the communicative, rhetorical and epistemological features of multi-media CMC in order to describe and explain communication in cyberspace. Through an integrated, inter-disciplinary program of multi-methodological empirical research, scholars can build theory that better accounts for multi-media CMC.

### Key words

communication theory • computer-mediated communication • cyberspace • internet • multi-media • world wide web

As readers [of digital text], we have to learn to alternate between two kinds of syntax, verbal and visual. If we add to this binary expansion the sound and color rapidly becoming part of the mix, we can envision how rhetorical practice will literalize all its visual metaphors – beginning, one would think, with the ‘colors’ of rhetoric. (Lanham, 1993: 77)

**As technology is utilized** more and more to facilitate communication processes, researchers and theorists across academic disciplines are diligently working to describe and analyze mediated communication. In particular, computer-mediated communication (CMC) (e.g. email, bulletin boards, user groups, chatrooms, web pages, etc.) has emerged as a dynamic and significant area of study for a number of scholars. Since CMC first emerged as a pervasive and significant medium of communication in the late 1980s, a considerable and diverse body of literature has emerged that explores the characteristics and implications of CMC (e.g. Giese, 1998; Jacobson, 1996; Jones, 1997; Parks and Floyd, 1996; Walther, 1996). Unfortunately, the ‘multi-disciplinary’ research concerning CMC has often lacked unity and focus. In fact, the integrated, dynamic, and highly interactive communication network of CMC is in stark contrast to the often insulated, sluggish, and divided institutions of the academy. Particularly, perhaps due to the relative newness of the technology, very few CMC researchers have explored (or even accounted for) multi-media CMC in order to describe, in Richard Lanham’s terms, CMC’s ‘colors of rhetoric’. The failure to consider the essential communicative issues surrounding multi-media CMC has left CMC scholars without models or theories that adequately describe many CMC contexts. Fortunately, editors of journals and anthologies such as the present volume have recently sought to create forums for the integration and theoretical refinement of scholarship emphasizing new technology.

In order to better describe and explain the shift toward more multi-media communicative forms in cyberspace, in this article I analyze, critique and integrate contemporary CMC scholarship in order to facilitate more integrated and theoretically focused CMC research and theory. Specifically, via this manuscript, I analyze and critique the body of literature concerning computer-mediated communication. In particular, I criticize the ‘text-based’ approach of research and theory involving computer-mediated interaction within interactive CMC contexts. In this article, I emphasize popular and highly interactive CMC contexts such as bulletin boards, news groups, email, list serves, chatrooms, and multi-user domains. Representing the theoretical concerns of the present manuscript, these highly popular CMC domains clearly demonstrate the shift toward more interactive, multi-media, and three-dimensional communicative forms in cyberspace. I argue that these interactive CMC contexts will continue to move toward multi-media, multi-sensory, three-dimensional communication. Unfortunately, current

research and theory fails to completely consider the multi-media dimensions of CMC due to an over-emphasis on the textual aspects of CMC. The 'text bias' of CMC researchers has sometimes precluded the development of appropriate theories and models of CMC. As researchers and theorists, scholars must recognize the significance of the multi-media characteristics of CMC in order to understand CMC's impacts on the communication process.

In preparation for this manuscript, I explored first-hand the burgeoning multi-media aspects of CMC contexts. First, I explored several multi-media applications programs (e.g. Adobe Premiere and PhotoShop) that exemplify the multi-media aspects of the world wide web. I found that these sophisticated programs were quite easy to use and allow the user to create complex visual and audio graphics in a matter of minutes. Furthermore, I explored the internet and the world wide web in order to analyze the current types of multi-media communication in cyberspace. Particularly, at the present date, I am a participant observer in a multi-media chat environment called 'the Palace'. Although cyberspace still contains many 'text-based' contexts, as I explore in the following section, more and more chatrooms, user groups, and web pages utilize sophisticated multi-media communication. Based upon these explorations and the work of other scholars, in this manuscript, I analyze and evaluate the body of research and theory concerning CMC. From the analysis and evaluation of past research, I make a number of general and specific recommendations for future CMC research and theory.

## CMC AS A MULTI-MEDIA DOMAIN

Over the last few years, computer users have increasingly utilized audio, video, three-dimensional imagery, and animation in their communication online. Software and hardware manufacturers such as Microsoft, Intel, Micrografx, Lotus and Spacial Technology have recently created application programs and processors designed for multi-media interaction that are much more affordable and easy to use (*PR Newswire*, 1997). The new technology provides high-quality visuals, stereo sound and three-dimensional imagery (*Reuter European Business Report*, 1997). Moreover, internet users are buying and downloading these multi-media applications in near record numbers (*M2 Presswire*, 1997). The recent developments of multi-media technology indicate a movement toward more multi-sensory communication in cyberspace including audio/voice interaction (Guernsey, 2000), visual/video interaction (Lewis, 2000), and even olfactory interaction (Platt, 1999). Based upon the interests of computer users and manufacturers, text-based interaction may not be the dominant form of CMC in the coming years.

In effect, the 'text-based' conception of the internet is diminishing while the multi-media, three-dimensional conception of the world wide web is

emerging. The linear, two-dimensional world of print is giving way to the full motion, three-dimensional world of cyberspace (Flohr, 1996). Information and graphics are placed in a three-dimensional plane in which the user can move in any direction and choose to send and receive live action video and audio, previously recorded video and audio, animated graphics and any number of images and sounds. Over the last few years, users and software and hardware manufacturers have begun to shift from the text-based use of the internet toward the new three-dimensional, multi-media based world wide web. The recent push in the computer industry toward 'convergence' demonstrates the emergence of multi-media CMC (Marriott, 1999). More and more technology integrates (or converges) television, film, compact discs, web surfing, chat, email, etc. into a single device. Through convergence, the capabilities and features of the world wide web or dvd are easily accessible when interacting via email or chatrooms. As Edward Mendelson stated in *PC Magazine*, 'The Internet's roots are in plain, text-based documents, but even the last vestige of that legacy is fast slipping away' (Mendelson, 1997). In other words, the process of sending and receiving online information in the form of conventional written communication (e.g. formal letters and linear documents) is shifting to the margins of cyberspace. For instance, electronic mail has traditionally been text-based or in the form of linear letter writing (*Software Futures*, 1997). Today, more and more users of the internet are utilizing technology such as attachment files and web links that make their email a much more complex, multi-media communication experience. Over the next few years, email users will probably continue to incorporate audio, video and three-dimensional graphics into the 'mail' they send one another.

Stated simply, CMC is quickly becoming a more multi-media, three-dimensional form of communication. As researchers and theorists we must begin to understand these interactive, multi-media contexts if we expect to understand contemporary mediated communication. Schuler (1996: 229) argued, 'new forms of electronic network involving film, video, audio, and computer-manipulated images are becoming increasingly widespread. It is important to consider what effects these new media will have on society'. In many regards, multi-media interaction, with its interface of the interpersonal, the public, the mediated and the virtual, represents the new wave of contemporary communication. Scholarship must account for this shift in communication processes. Paccagnella (1997: 12) contended that:

One cannot fail to note that the world of on-line communication is moving toward multimedia systems. Just as early text-based arcade videogames have been replaced by 3D graphic adventures, several types of graphic MUDs – where textual descriptions of personae and places are replaced by their graphical representations – are now preparing to capture the attention of the

general public. Research on virtual communities cannot ignore these new environments.

In short, multi-media interaction contexts represent a shift in the processes of contemporary communication. Waller (1997: 93) discovered that ‘a plethora of articles in the print media claim that three-dimensional, multi-user, on-line virtual environments . . . constitute a new medium – a communications “revolution”, “a whole new metaphor for interaction and connectivity”’. Unfortunately, while the popular press has invested great interest in multi-media CMC, academics have been slow to recognize multi-media CMC in their scholarship. Because multi-media interaction offers unique and remarkable communication processes, researchers and theorists must expand the scope of their theoretical concerns. In the following section, I analyze the status quo of CMC research in order to accurately assess the necessary directions for further scholarship.

## AN ANALYSIS OF PREVIOUS RESEARCH

In general, researchers and theorists have approached CMC from three broad perspectives. First, an early group of researchers viewed the CMC context as impersonal, technical and distant. In response to this early research, a second group of researchers viewed CMC as personal, normative and complex. Third, many critical and rhetorical scholars have offered their analyses of the social implications of CMC. Unfortunately, as the following discussion demonstrates, these perspectives have often over-emphasized the textual codes of CMC and failed to account for complex multi-media applications. Even more unfortunate, scholars from each of these perspectives have often worked in isolation of one another, failing to integrate their fundamentally interrelated research and theory. The following discussion explores the limitations of previous researchers’ perspectives toward CMC in greater detail.

First, a number of researchers exploring CMC have approached the mediated context from a ‘reduced cues’ perspective (Dubrovsky et al., 1991; Herschel, 1994; Hiltz and Turoff, 1978; Kiesler and Sproull, 1992; Kiesler et al., 1984). As a derivation of technological determinism, the reduced cues approach assumes that the ‘inherent characteristics’ of the CMC context reduce the amount of nonverbal and contextual communicative cues and thus diminishes the level of intimacy between interactants. Avery and McCain (1986: 124) explain, ‘The potential for total integration is always present in the interpersonal setting . . . technology always inhibits this potential.’ CMC can never achieve the full communicative intensity of face-to-face encounters due to the ‘limits’ in sensory perception. Thus, reduced cues researchers have perceived the CMC context as ‘impersonal, unsociable, cold, and insensitive’ (Lea and Spears, 1995: 214). Because the CMC setting prevents communicators from sending traditional relational cues (i.e.

immediacy cues such as eye contact and body lean), interactants do not develop any significant level of intimacy (Kiesler et al., 1984). According to the reduced cues approach, CMC should tend to remain distant, impersonal, and task oriented. In general, these researchers and theorists contend that interaction is never 'personal' via computers because CMC has 'no nonverbal cues' and thus prevents interactants from sending fully developed communicative messages.

The reduced cues approach is clearly unable to account for intimate or multi-media CMC. First, social observations and empirical research consistently indicate that computer-mediated communicators often develop intense relationships with high levels of intimacy (Parks and Floyd, 1996). The reduced cues model does not account for this 'interpersonal' CMC because the reduced cues approach fails to completely grasp the processes by which users interact online (Walther and Burgoon, 1992). For instance, in contrast to the assumptions of the reduced cues approach, multi-media applications allow users to send complex nonverbal cues and considerable relational information through audio, video and three-dimensional graphics (e.g. immediacy cues like smiles, head nods and vocal responsiveness are sent via two-way interactive video). Even though the physical separation of communicators prevents some nonverbal communicative cues such as touch and smell (although virtual touch and smell may become quite common in the future), CMC offers communicative possibilities that are impossible face to face. For instance, in CMC, an idea that may be difficult to communicate orally (e.g. 'I really miss you') can be more accurately communicated with other media (e.g. a three-dimensional greeting card or a popular song). Because such mediated graphics can be used easily and quickly via computer, CMC settings actually have a number of communicative advantages when compared to face-to-face communication. Thus, as CMC increasingly utilizes more multi-media applications, CMC will increasingly create a conducive environment for personal and intimate communication. As I explore in the following section, other researchers and theorists have tried to more accurately describe the computer-mediated communication process. Unfortunately, these researchers have also overlooked the impacts of interactive multi-media CMC.

As a mechanism for explaining personal and intimate CMC, Joseph Walther (1996) created the concept of 'hyperpersonal communication' as a critique of the reduced cues perspective. Walther (1992: 81) contends that:

... viewing CMC from a relational communication perspective offers an approach to the process that differs from a channel-effects view alone. A relational perspective suggests that functional and social factors should be examined.

Walther uses interpersonal communication research and theory in order to offer a more complex description of the CMC process that accounts for the complex social and relational cues occurring in cyberspace. Through the concept of hyperpersonal communication, Walther demonstrates that although CMC may lose some relational cues (visual, auditory), CMC gains alternative cues (textual/verbal). Walther (1996: 33) states:

When is CMC hyperpersonal? When users experience commonality and are self-aware, physically separated, and communicating via a limited-cues channel that allows them to selectively self-present and edit; to construct and reciprocate representations of their partners and relations without the interferences of environmental reality.

Essentially, the participants are able to adapt to the context in order to develop intimacy. Elements of communication which are 'hindered' (e.g. visual and tactile cues) by the context are 'supplemented' with other forms of communication (e.g. textual 'emoticons' and verbal messages). If the relationship is given enough time to develop, communicators can adapt to the communicative limitations of CMC (Walther, 1992). Walther's (1994) research suggests that when participants anticipate future interaction with partners in the CMC context, the relationship moves toward intimacy. Through longitudinal research, Walther has found that when computer-mediated relationships are given time to develop, the relationships can (and often do) adapt to the 'limitations' of the context in order to develop intimacy (Walther, 1994; Walther and Burgoon, 1992).

Walther's concept of hyperpersonal communication requires modification in the light of multi-media CMC. Primarily, as an extension-by-critique of the reduced cues perspective, Walther reiterates the deterministic assumption of the reduced cues theorists that computer-mediated communicators must 'overcome inherent limitations'. Walther simply builds upon this assumption by arguing that CMC can become intimate if relational partners adapt to these 'inherent limitations' of the context. Although Walther's model allows for interpersonal CMC, Walther perpetuates the assumption that the inherent constraints of the CMC context inhibit the communication process. Walther merely adapts the reduced cues approach by explaining how users 'get around' the impersonal-ness of computer technology. Thus, Walther's framework is a minor revision of the reduced cues conception of CMC.

Walther's limited conception of CMC is related to his failure to account for the complex, multi-media communication of CMC. While scholarship related to text-based CMC is and was certainly warranted, Walther's work overemphasizes the textual aspects of CMC. Perhaps due to the relative newness of multi-media technology, at times, Walther and his colleagues clearly view CMC as an *exclusively* 'text-based' medium. Walther's writings

consistently demonstrate his text-bias. For instance, Walther and Burgoon (1992: 55) state that CMC can be personal because 'verbal and textual behavior can convey relational meanings'. Even as recently as 1996, Walther has described his model as a 'framework that acknowledges that there is less social information per message in CMC because of the absence of nonverbal cues' (Walther, 1996: 14). Recalling basic definitions of nonverbal communication as 'meaning through behavior that does not involve spoken words' (O'Hair et al., 1995: 186), Walther is apparently arguing that CMC involves no behavior or communicative cues other than verbal or textual cues. Such comments demonstrate the model's non-recognition of multi-media CMC. The visual elements of two-way video and animation, the vocalic and aural elements of two-way audio and music, and the complex communicative elements of three-dimensional graphics and social contexts (just to name a few) all provide significant nonverbal communication. Walther's model fails to account for all of this communication.

Furthermore, the model's assumption that CMC has less information per message than face-to-face communication further demonstrates Walther's limited, text-based conception of CMC. Again, Walther highlights his deterministic assumptions concerning the 'inherent limitations' of CMC. If an email message is in a three-dimensional format and contains video, audio and animation, that message certainly contains as much (if not more) social information as many face-to-face comments. Rather than viewing CMC as 'limited' or 'purely verbal' communication, multi-media CMC should be viewed as a unique context with many complex communicative qualities. I describe in the following section more group-oriented research that attempts to move in that direction. Unfortunately, this research also requires modification and expansion.

Similar to Walther and his colleagues' work emphasizing interpersonal communication, a group of researchers have focused on group dynamics in CMC. Particularly, Lea and Spears (1995) developed the social identification/deindividuation (SIDE) model. Lea and Spears state, 'The SIDE model extends self-categorization theory and attempts to specify the situational conditions under which behavior normative to a particular self-category will be made appropriate and possible' (1995: 221). Stated succinctly, users identify with computer-mediated groups and follow the norms for the computer-mediated contexts. In CMC settings, 'the combination of anonymity and group immersion' deindividuates or depersonalizes the individual's identity and creates greater saliency for group identity (Postmes et al., 1998). When individuals' group identity is salient (i.e. he or she is deindividuated or depersonalized), individuals are likely to comply with mediated group norms. Furthermore, the group identity and norms are maintained via the subtle and direct behaviors of group members,



which create heightened group boundaries, and in- and out-group membership.

Research has indicated that the participants in CMC settings adapt mentally and socially in order to create rules and norms for this unique mediated communication. As Rice and Love (1987: 102) found in their content analysis of a large computer bulletin board, 'CMC can support socioemotional communication and the communication reflects the inherent communication traits of the users'. In other words, users merely adapt the norms and rules of the medium in order to meet the needs of their communication. Whether users seek intimate or task-oriented communication, the users adapt these norms to fit their needs. Feenberg (1989: 258) explains how these adaptations occur:

. . . quite complex social interactions take shape on computer conferencing systems. Users act 'as if' they were participating in one or another familiar situation by introducing conventions analogous to those which prevail in everyday settings.

In general, previous research has concluded that CMC contexts involve complexly normative interaction (Soukup, 1999). Research suggests that over time, group identity and norms become salient and guide interaction in CMC (Lea and Spears, 1995). This conclusion is also supported by Hiltz and Johnson (1990: 760) who concluded that CMC 'must be viewed as a "socio-technical" system. Characteristics of the users and the social context of the application (cultural, group and task characteristics) will strongly influence its acceptance and use'. As with hyperpersonal communication, group norms develop online. As Wilkins' (1991: 73) content analysis of a newsgroup discovered, 'they (participants) revealed knowledge that they shared prior to the conversation, established new spheres of shared knowledge, and developed norms for membership and for ways of talking with one another'.

Like Walther et al.'s work, group-oriented CMC researchers like Spears, Lea and others, while offering many insights into CMC, also present a very limited view of online settings. Certainly, these researchers insightfully demonstrate how group identification can lead to group norms. As the model states, when group identity becomes salient, group norms become salient and enforceable. Multi-media applications should further enhance the salience of group identity and the enforcement of group norms. Group membership and group norms can be demonstrated in numerous ways with audio, video and visual applications. For instance, the physical appearance cues available through two-way video and the formatting of web sites and chatrooms can provide group membership information that eventually develops into normative patterns of behavior. Thus, previous group-oriented research provides valuable empirical descriptions of online contexts.

Unfortunately, the SIDE model and other group-oriented research also over-emphasized the 'textual limitations' of CMC. Again, while research related to text-based interaction is and was valuable, these scholars' conceptualizations are quite limited. For instance, Lea and Spears continually emphasize how group norms and group identity become salient in light of 'text-based communication' and 'the lack of visual cues' (Lea and Spears, 1995: 229). Their research studies typically occurred in controlled laboratory settings in which the communication was 'purely' textual and anonymous. The theorists' conclusions about CMC consistently emerged from these controlled text-based and visually anonymous examples of CMC (for instance, see Lea and Spears, 1995; Spears and Lea, 1994). As experimental psychologists, Spears and Lea were interested in the effects of 'complete anonymity' on individuals' cognitive perceptions of group behavior. The complete anonymity of their experiments is rarely (if ever) demonstrated in actual CMC. In fact, Postmes et al. (1998: 709) conceded that, 'the specific types of anonymity created in our research are not generally found in "real life" on the Internet.' Not only is contemporary CMC rarely anonymous and completely textual, multi-media applications provide countless opportunities for users to present complex and idiosyncratic identities. Whether via a simple screen name or a well-developed animated persona, CMC users 'mark' their identity in complex and varied ways (Myers, 1987; Turkle, 1995).

Clearly, previous empirical research has over-emphasized CMC's textual characteristics in 'purely' anonymous contexts. Furthermore, the work of these more 'social scientific' scholars has not been effectively integrated with the work of critical researchers (or vice versa) also interested in the CMC domain. In the following section, I explore several critical analyses that could greatly expand the scope of CMC research. Unfortunately, like other CMC scholars, critical researchers have also often overlooked multi-media communication online.

While many critical researchers have published speculative essays concerning the broad macroscopic, ideological implications of CMC, a handful of critical researchers have systematically studied the communicative aspects of CMC contexts. In fact, critical researchers, far more than other empirical researchers, have built a foundation for the theoretical explanation of multi-media CMC. Particularly, Steven Jones (1995, 1997) has compiled anthologies of work that have explored community and CMC. In particular, researchers like Giese (1998), Baym (1995) and Watson (1997) have explored the construction of community through communicative performance. These scholars have discovered that a virtual community differs from previous forms of community in that these communities are not bound to geographic or physical borders. In this regard, virtual communities are purely symbolic or based solely on the collective, context-specific, symbolic experiences of

the community's members. Also, critical researchers have highlighted the issues of identity and virtuality. For instance, Turkle (1995) and Wynn and Katz (1996) have studied the complex construction of identity in computer-mediated contexts. These scholars have discovered that participants have the opportunity to create and play almost any 'role' they choose in the virtual worlds of cyberspace. Further, researchers like Bromberg (1996) and Marvin (1995) have described the communicative constructions of 'virtual' worlds in cyberspace. Put simply, computer-mediated communicators accept, even embrace, the 'fictional' or 'ethereal' nature of the interaction on the computer screen. CMC participants work tirelessly to sustain the belief in the virtual world that they have constructed.

Unfortunately, again, these researchers have focused primarily on text-based communication. While scholars such as Jacobson (1996), Giese (1998) and Watson (1997) engaged in close analysis of a single community, collectively, these research studies indicate a continuing trend toward research exploring text-only CMC contexts. Perhaps relating back to the technological deterministic origins of CMC research or the difficulty of analyzing multi-media data/artifacts (and the relative simplicity of analyzing text-only contexts) or the relative newness of multi-media technology, CMC researchers and theorists have been slow to study multi-media CMC. While a few scholars are just beginning to explore multi-media applications (McLaughlin et al., 1997; Waller, 1997), most CMC researchers seem to view CMC as primarily the exchange of uniformly formatted words. The text-based bias of previous research has significantly limited the conception of CMC and the development of theory. As CMC becomes more multi-media over the next few years, the utility of models and theories that emphasize the text-based qualities of CMC will become increasingly diminished. Furthermore, far too much published work is unsystematic, non-empirical, and isolated from similar research studies. In order to provide direction for the diverse, unfocused and scattered state of CMC research related to multi-media applications, the following provides several specific recommendations for an inter-disciplinary research program.

## DIRECTIONS FOR FUTURE RESEARCH AND THEORY

In order to build effective theory, more effective empirical research is required. Considering the previous discussion, research and theory needs to move in a number of directions in order to better describe and analyze CMC contexts. Nonetheless, I am not suggesting that scholars should disregard previous research or judge previous research as merely shortsighted. Past researchers were dealing with significant questions concerning CMC. Unfortunately, CMC changed (and will continue to change) far more quickly than anyone expected. Scholars must simply be prepared to account for the dynamic complexity of mediated communication. The following

outlines directions for future research and the essential components for an effective theory of CMC by building upon, both through critique and extension, the research and theory of other scholars.

### **Directions for future research**

First, researchers must integrate empirical research across disciplinary and methodological lines. The current manuscript provides a preliminary synthesis of inter-disciplinary and inter-methodological research. A much more integrated 'body' of CMC research must begin to develop in order for effective theory to be built. Second, while integrating research and theory across the diverse world of the academy, researchers need to empirically describe the non-textual components of CMC. As CMC utilizes more and more multi-media applications, the nature of multi-media CMC requires research. The research can take many forms, from controlled laboratory experiments to naturalistic ethnographic observations of the CMC context to rhetorical and critical analyses. Ideally, triangulated research could provide a vivid picture of the nature of CMC. For instance, naturalistic ethnography could describe the complex process of communication between computer users in multi-media, online contexts. Furthermore, controlled laboratory experiments could help discover the specific effects of variables such as the medium (e.g. video or audio) or the context of communication (e.g. email or chatrooms) on the communication styles and norms of participants. Diverse research methods will paint a much clearer picture of multi-media CMC. The following provides several specific suggestions for research.

Primarily, research needs to explore the nonverbal components of CMC. As stated previously, scholars have fallaciously assumed that CMC lacks any nonverbal components. This assumption is obviously misguided in light of audio, video and three-dimensional imagery in cyberspace. New technology allows for complex forms of nonverbal communication. Researchers need to better understand how nonverbal communication is utilized in CMC. For instance, a popular world wide web site called the Palace allows for interactive, animated virtual chat. In these chat environments, users can send audio messages, create animated objects and create nonverbal codes such as gestures and movements. While interacting with a romantic partner, a user can instantly present an animated rose, play a popular love song, or 'wear' revealing lingerie (via their avatar or the visual image representing their self). Researchers should consider: How does two-way audio and video communication in cyberspace affect nonverbal codes? Also, are the nonverbal codes of cyberspace related to face-to-face norms or are new codes created for the specific context? Computer-mediated nonverbal communication is a virtually unstudied phenomenon that requires considerable research.

Also, CMC is incorporating new nonverbal communication codes beyond the traditional visual and aural elements of nonverbal interaction. The visual

form and structure of email, chatrooms, user groups, or web pages can communicate significant information to users. Certainly, the form of the web page communicates information about the organization the web page represents. For instance, a web site like the Palace is designed as a three-dimensional space with complex links to video and interactive applications and communicates information by its very design. Also, the chat environments of the Palace can be designed in a number of ways, from a linear, text-based context, to a three-dimensional, interactive context. The 'space' itself is also defined via the animated images that surround the users' icons that can visually indicate any context from a coffee shop or bedroom to the city of Paris in 1845 or Peking in the 23rd century. Each design communicates different information about the group and the individual users. The relationship between the form and structure of the communication context and the communication of groups and organizations requires serious investigation.

Furthermore, researchers must consider issues surrounding group-based communication via multi-media channels. Traditionally, interpersonal and small group communication researchers have explored the multiple levels of meaning within face-to-face interpersonal communication (i.e. the content and relational levels of communication). Individuals and groups define relationships through both explicit statements and subtle verbal and nonverbal codes. Researchers have discovered that intimate relationships form in cyberspace quite frequently (Parks and Floyd, 1996). Unfortunately, how these communicators share relational information via multi-media channels is unknown. Users may adapt face-to-face norms to fit the context, as other researchers have suggested (Feenberg, 1989; Lea and Spears, 1995). On the other hand, the unique characteristics of CMC (e.g. form and structure, video-audio, etc.) may inspire people to create unique forms of communication. Computer-mediated communication processes such as self-disclosure, conflict negotiation, and metacommunication require investigation. Specifically, in the Palace, communication is highly context-specific because each 'room' has a unique virtual identity and utilizes posted 'rules' for the group to follow and maintain. Furthermore, users create virtual identities with a screen name and visual representation. For instance, participants, represented as avatars (i.e. visual images of cartoon characters or celebrities), are expected to follow the rules of a 'virtual' bar or casino. While researchers have explored the textual representation of identity (Turkle, 1995; Wynn and Katz, 1996), researchers must continue to understand how users utilize this multi-media technology in order to create identities in these unique communication contexts.

Also, more generally, researchers must consider how the media of cyberspace alter the communication process. A few insightful theorists such as Richard Lanham and Theodore Nelson have argued that multi-media

CMC creates a rhetorical environment for communication (Lanham, 1993; Nelson, 1992). Previously, scholars have described communication processes such as public discourse as rhetorical or as symbolic action (Foss, 1996). Via a number of perspectives including discourse analysis and semiotics, scholars have explored the dynamic and complex rhetorical processes of diverse communication contexts and situations. Similarly, unlike the world of print (the modern era), the digital world or the multi-media world of cyberspace (the postmodern era) is filled with motion, unconventionality, dynamism and three-dimensional imagery. To summarize the position of Lanham (1993) and Nelson (1992), the digital world creates a new epistemology and new forms of communication. Thus, communication in the digital world is generally more playful, stylistic, rhetorical and postmodern than previous forms of communication. The ability to alter images and ideas indefinitely and create highly stylized and artistic images easily creates new, more rhetorical (i.e. less linear and logical) communication processes. How will these changes impact the process of CMC? Researchers must consider the dynamic process of communication in light of the changing nature of communication technology. Some potential questions that communication scholars may need to consider include: Will individuals view the communication process in cyberspace as linear (as we have previously) or will the three-dimensional characteristics of cyberspace create a more fluid and dynamic view of communication? Will the eclecticism and pluralism of the digital world create more 'context-specific' norms for interaction and less culturally defined norms for interaction? And will the style and play of cyberspace lead to more playful and stylistic forms of interaction? As these questions illustrate, the very essence and nature of the communication process are related to CMC research. Theorists must consider the fundamental issues surrounding CMC and the future of the communication process.

### **The essential components of a theory of CMC**

Finally, researchers should begin to work toward an effective, forward-thinking theory of CMC. After a preliminary body of integrated multi-media CMC research has emerged, scholars will have the tools to develop a clear model for CMC researchers. The theory must take into account the rapidly changing technology that will continue to be integrated into the CMC process. As the above discussion illustrates, a theory of multi-media CMC requires several components. As I explore in greater detail in the following section, a theory of CMC must consider CMC as unique, highly dynamic, fully communicative and rhetorical. I argue that theories related to CMC must be grounded in further empirical research. In other words, I am not so presumptuous as to present a fully developed theory of multi-media CMC without the benefit of empirical research. Rather, in the following

section I provide a general blueprint for a theory of multi-media CMC that can be filled in and fleshed out with the aforementioned program of empirical research.

First, a theory of CMC must view CMC as a unique communication context. Like other communication contexts, CMC must be considered unique or having distinctive characteristics that separate CMC from other communication contexts. Previously, researchers and theorists such as Walther and Spears and Lea have sometimes assumed that users merely apply the norms and roles of face-to-face communication to CMC (and thus, researchers and theorists merely apply the theories of face-to-face interaction to CMC). As users integrate more and more multi-media forms of communication into CMC, the CMC context will require even more context-specific rules for interaction. As researchers empirically study CMC, rather than continually comparing and contrasting CMC with other communication contexts, CMC should be viewed as a distinct and complex communication context. In other words, CMC should not be viewed as merely a 'computerized' version of face-to-face communication. Theorists must avoid judging CMC from a deficiency model or by the 'standard' of face-to-face communication. If theorists exclusively emphasize the face-to-face elements (or lack thereof) of CMC, theories will fail to consider the unique characteristics of CMC. Theorists must begin to understand the unique communicative characteristics of the CMC context.

Second, a theory of CMC must view CMC as highly dynamic. Considering the significant changes in CMC over the last five years (even the last year), a theory must be prepared to change with CMC. As stated throughout this article, virtually all experts within the computer industry and the popular press feel that CMC is moving (and will continue to move) toward more multi-media applications. Nonetheless, how users integrate multi-media applications into their communication will surely change greatly over the next several years. Previously, researchers have emphasized the detailed characteristics of CMC that change before the research can be published. Rather than merely emphasizing the details of CMC (e.g. the types of profanity in chatrooms or the sentence structure of email), researchers must also consider the underlying, fundamental characteristics of CMC in order to effectively build theory. In other words, research should be theoretically grounded. Only when broad macroscopic theorizing is integrated with rigorous empirical research will integrated research and theory develop. As stated later in this section, the rhetorical characteristics of CMC are an excellent starting point for the discovery of an underlying basis of empirical studies of CMC.

Third, a theory of CMC must view CMC as a full and rich communicative context. As stated previously, past researchers have emphasized the 'limitations' of CMC. Scholars have considered CMC an

'extension' of other forms of communication rather than a complete communication context. For instance, researchers have often emphasized how CMC can supplement face-to-face communication (for instance, in romantic CMC or business-related CMC) (e.g. Dubrovsky et al., 1991). In other words, CMC is a secondary form of communication while face-to-face interaction is a primary form of communication. Nonetheless, current research suggests that users consider CMC a complete and full form of communication (e.g. Parks and Floyd, 1996). In essence, for users, CMC is not a means to some other end, CMC is an end in itself. As multi-media forms of interaction allow users to increasingly communicate complex verbal and nonverbal information, the depth and complexity of CMC will grow even further. A theory of CMC should conceptualize CMC as a complete and integrated form of communication.

Finally, a theory of CMC must approach CMC as a rhetorical context. As stated previously, digital technology creates a rhetorical, stylistic and playful process for CMC. Previous researchers and theorists have approached CMC from a text-based bias. In the process, researchers and theorists have overlooked the rhetorical and non-textual aspects of CMC. In order to completely describe the CMC context, theorists must explore the underlying rhetorical dynamics of CMC. Clearly, communication is quite different when passed through the diverse media of cyberspace. Communication appears to be more virtual, playful and dynamic in computer-mediated settings. Theorists should begin to emphasize the values, assumptions and attitudes that surround CMC and influence the various styles of communication within cyberspace. Fortunately, scholarly outlets such as this journal represent inter-disciplinary forums for CMC theory and research. Through scholarly venues such as these, theorists should try to understand the fundamental basis for the communication forms in CMC. Scholars such as Lanham and Nelson are beginning to develop a body of literature from which the underlying foundation of cyberspace can be discovered. By following the previously stated research suggestions of this article, the rhetorical dynamics of cyberspace can be better understood. In other words, by exploring the unique, complex and dynamic elements of CMC through triangulated research, researchers will begin to understand both how and why users interact in various ways in cyberspace.

## CONCLUSION

In conclusion, CMC will continue to change more quickly than scholarship can be published. Nonetheless, with foresight and vision, scholars can consider the implications and directions of these changes years in advance. In order to obtain this foresight, theorists must explore the unique communicative complexity of CMC. Cultures worldwide will continue to be significantly influenced by the pervasive and profound impacts of



cyberspace. As scholars, we must be prepared to consider the implications of CMC in order to effectively deal with the impacts of cyberspace. CMC cannot be set aside as a 'computerized' version of face-to-face interaction. CMC must be viewed as the most significant new communication context to emerge in decades. As historians and epistemologists often discover, academics are especially vulnerable to forcing 'round pegs' into 'square holes' due to political and career investments and alliances. In this case, scholars are trying to understand multi-media communication (a round peg) with a text-based approach (a square hole). Scholars should embrace a new cross-disciplinary perspective that better fits the CMC process. As a primary stepping stone, scholars must begin to integrate CMC research and theory across methodological and disciplinary lines. Only by recognizing the revolutionary impact that CMC will have on our communication, epistemology and values, will researchers and theorists begin to effectively grasp the complexity and power of CMC.

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