Information and Knowledge Management
ISSN 2224-5758 (Paper) ISSN 2224-896X (Online)
Vol.3, No.9, 2013

Exploring the computer-mediated communication option for crises management in Nigeria

Chris Uchenna Agbedo*1, Ebere C. Krisagbedo2, Doofan Buluan3 & Virginia O. Eze4
1. Department of Linguistics Igbo & Other Nigerian Languages University of Nigeria Nsukka-Nigeria
2. Department of English & Literary Studies, University of Nigeria, Nsukka Nigeria
3. School of General Studies, University of Mkar, Gboko Benue State Nigeria
4. Use of English Unit, School of General Studies, University of Nigeria, Nsukka Nigeria
* Email of the corresponding author: info@linguisticsafrikana.com +2348(0)36868498

Abstract
A given society is rocked by crisis of malevolence when social misfits take recourse to acts of criminality or other unlawful means for the sole purpose of venting their spleen or frustration on or seeking undue gains from the people and the social institutions, probably with the aim of destabilizing or destroying the entire social system. The successful armed robbery attack on four banks in Nsukka and consequent killing of Nsukka Divisional Police Officer on 17 July 2009, represent a typical instance of crisis of malevolence that has become a regular feature of social life in a good number of Nigerian cities and urban areas. This paper explores the applicability of computer-mediated communication interface as a crisis management strategy in Nigeria. The value of this approach derives from the fact that in crisis situations, decision-making capabilities rely on accurate reports from all parties involved. However, recent crisis events have shown that existing communication infrastructures can become overloaded or even witness unprecedented outright system collapse. The need, therefore for crisis-management technology to cope with nondeterministic environments resulting from the global wired-communication break-down has made imperative a communication-interface prototype to support language-independent communication and reduce the chances of ambiguity and multitude of semantic interpretation of human observers' reports. Herein lies the value of this visual language interface type of computer-mediated communication developed by Siska Fitraine and Leon Rothkrantz as a comprehensive experimental system for maintaining reliable communication in crisis events.

1. Introduction

On the 17 day of July 2009, the sleepy university town of Nsukka in Enugu State, Nigeria woke up to the rude shock of an unprecedented crisis of malevolence triggered by a well-coordinated armed robbery attack on four banks situated along the ever bustling and busy Enugu Road. The commando-style robbery operation launched by a 'battalion' of heavily-armed young men numbering well-over twenty-five commenced with simultaneous invasion of the four banks – Bank PHB (now Keystone Bank), Zenith Bank, Intercontinental Bank (now Access Bank), Fidelity Bank. Amidst spattering staccato of sporadic gun-cackles, the robbers broke into the banks' vaults, carting away undetermined huge sums of money, wounding, maiming, and killing innocent people in the process. An eye-witness account said that while one person was cut down by stray bullets, another victim, Nsukka Divisional Police Officer, was reportedly shot dead during a feeble attempt at challenging the fire-spitting dare-devils. Thereafter, the triumphant robbery gang pulled out of the terror-stricken town in a confident swagger but not before storming the Nsukka Police Division and blowing it into smithereens. Throughout the robbery operation, which lasted for more than two hours, not even a whimper of challenge came from the much-dreaded Special Anti-Robbery Squad (SARS) or the Urban Army Patrol until the robbers made good their escape with their loot. That was when some awe-stricken members of the security outfits emerged from the safe confines of their hideouts, clad in their outworn and disheveled paraphernalia, clutching hunter's *chaka-kpam* type of gun and shouting *wey dem*! *wey dem*!!

Although the people mocked and booed them for abdicating their duties, they glibly justified their timid volt face by taking them through the pedagogical rigours of *tactical withdrawal* as one of the rules of engagement in combat situations. To any discerning mind however, it would have been suicidal for the members of a poorly-equipped ragtag security outfit such as the Nigeria Police to challenge a group armed to the teeth with sophisticated weaponry. Indeed, it was only wise that they responded quickly to self-preservation instinct, which predisposed them to flee without looking back and scurry into safety when the first patter-patter symphony of the robbers' AK 47 boomed. All the same, they could still have succeeded in engaging the hoodlums effectively from the inner sanctuary of their safe haven by sending the necessary signals to Police High Command. Such information could have predisposed the police authorities to map out strategies to contain the crises situation. Not only could the police have foiled the robbery operation, but also nabbed the hoodlums in the process. That

way, the incidence of daylight armed robbery of financial institutions, which had since become a permanent feature of many Nigerian cities and urban areas would be drastically minimized.

It is axiomatic that the credibility and reputation of organizations is heavily influenced by the perception of their responses during crisis situations. The organization and communication involved in responding to a crisis in a timely fashion makes for a challenge in businesses. In essence, a successful crisis communication process is dependent on open and consistent communication throughout the hierarchy. As Competence Centre of Zurich Switzerland observes in its motto, timely crises management can halt or prevent domino effect chain reactions. In a footnote to their foundation application and development plan, the founders of the Competence Centre "Coping with Crises in Complex Socio-Economic Systems (CCSS)" notes that the term, *crisis* "…describes an unstable, threatening socio-economic situation that results in an abrupt change in the system or of the system itself." The Chairman of the Centre, Dr. Dirk Helbing, observes that crises in socio-economic systems – such as the latest financial crisis – are an everyday occurrence in the world and can be handled only with difficulty. Social problems like globalisation, population growth and changes in the age structure unbalance the world and cause further problems such as scarcity of resources, conflicts, terrorism or the failure of institutions. He says the underlying dynamic is often difficult to understand due to the complicated relationships and feedback loops in economic and social systems. Such complex systems often prove resistant for a long time to efforts to modify them. Then, suddenly and unexpectedly, they become unstable as a result of the tiniest variations and can lead to regime change, for example. The problem is that this inherent dynamic is difficult to control and the unexpected events frequently cause crises, most of which are characterised by scarcely foreseeable chain reactions. It is against this backdrop that the plan of the new Competence Centre is to contribute in the future to a better understanding and management of crises and to find new approaches to avoiding them.

The foregoing therefore, points to the urgency of re-inventing the information network of Nigeria Police and other security agencies with a view to repositioning them adequately to respond meaningfully to the security challenges and other exigencies of the moment. It is in this regard that this paper explores the computer-mediated language as a viable option for managing crises of malevolence in Nigeria. Specifically, it argues for a communication infrastructure, which consists of the use of a visual language interface on a Personal Digital Assistant (PDA) for reporting situations in a (Mobile Ad-Hoc Network) MANET-based communication. The developed interface allows users to describe a situation using the combination of icons, geometrical features and icon-strings on map-based interfaces.

2. Compute-mediated language and crises management

Computer-Mediated Communication (CMC), according to *Wikipedia*, is defined as "…any communicative transaction which occurs through the use of two or more networked computers. While the term has traditionally referred to those communications that occur via computer-mediated formats (i.e., instant messages, e-mails, chat rooms), it has also been applied to other forms of text-based interaction such as text messaging. Popular forms of CMC include e-mail, video, audio or text chat, text conferencing, bulletin boards, list-servs and MMOs. These settings are changing rapidly with the development of new technologies. Weblogs (blogs) have also become popular, and the exchange of RSS data has better enabled users to each "become their own publishers." Communication occurring within a computer-mediated format, continues *Wikipedia*, has an effect on many different aspects of an interaction. Some of these that have received attention in the scholarly literature include impression formation, deception and lying behavior, group dynamics, disinhibition and especially relationship formation.

Scholars from different fields of study have taken interest in the emerging phenomenon. (See Adkins, & Brashers, 1995; Adrianson, & Hjelmquist, 1999; Barnes, & Greller, 1994; Baron, 1984; Baym, 1995; Bowers, 1992; Braithwaite, Waldron, & Finn, 1999; Chesebro, & Bonsall, 1989; Chesebro, 1985; Dietz-Uhler, & Bishop-Clark, 2001; Tidwell, et. al., 2002; Trevino & Webster, 1992; Thurlow, Lengel, & Tomic, 2004; Walther, 1996; Walther, & Burgoon, 1992; Garcia, & Jacobs, 1999; Herring, 2004; 1999; Abrams, 2006; Warschauer, 2006; Markman, 2006; Angeli, Valanides, & Bonk, 2003; Bannan-Ritland, 2002; Leinonen, Jarvela, & Lipponen, 2003; Schrire, 2003; Wade, & Fauske, 2004;). CMC is examined and compared to other communication media through a number of aspects thought to be universal to all forms of communication, including (but not limited to) synchronicity, persistence or "recordability", and anonymity. The association of these aspects with different forms of communication varies widely. For example, instant messaging is prototypically synchronous, but rarely persistent since one loses all the content when one closes the dialog box unless one has a message log set up or has manually copy-pasted the conversation. E-mail and message boards are similar; both are prototypically low in synchronicity since response time varies, but high in persistence since messages sent and received are saved.

Properties that separate CMC from other media also include transience, its multimodal nature, and its relative lack of governing codes of conduct. CMC is able to overcome physical and social limitations of other forms of communication and therefore allow the interaction of people who are not physically sharing the same

space. CMC can be divided into synchronous and asynchronous modes. In synchronous communications all participants are online at the same time, while asynchronous communications occurs without time constraints. CMC demonstrates a mix of features drawn from prototypically spoken and prototypically written media (including sub-types of these— e.g. telegraphic language). Text-type has an important role in determining the nature of the language used in CMC. Overall, however, the trend is towards a more informal, "spoken" style of writing. This is especially obvious at the paralinguistic/graphic level, where additional means have been developed to represent effects that are possible in face-to-face interaction but not in writing. The constraints of real-time interaction seem to be responsible for many of the features of CMC language. These seem then to have diffused into asynchronous text types. Socially, there seems to be some trend towards group solidarity amongst users of CMC. Several linguistic choices appear aimed at reducing social distance and emphasizing group membership.

CMC is widely discussed in language learning because CMC provides opportunities for language learners to practice their language. Warschauer (2006), for instance conducted several case studies on using email or discussion board in different language classes, claiming that information and communications technology, “bridge the historic divide between speech … and writing”. In terms of prospects, Tanskanen (2006) foresees a bright future for CMC. Many new computer-mediated varieties of language, the author observes, will emerge, incorporating new technology language will continue to be adapted to meet the demands of new situations, computer-mediated communication situations are an area of huge potential enrichment for language. It is in this regard that Crystal (2001) avers, “if the Internet is a revolution ... it is likely to be a linguistic revolution.” The gains of this linguistic revolution stand to be maximized in the area of crisis management, which of course consists of skills and techniques required to assess, understand, and cope with any serious situation, especially from the moment it first occurs to the point that recovery procedures start.

Crisis management, according to *Wikipedia*, is the process by which an organization deals with any major unpredictable event that threatens to harm the organization, its stakeholders, or the general public. Three elements are common to most definitions of crisis: (a) a threat to the organization, (b) the element of surprise, and (c) a short decision time. Potential crises are enormous, but crises can be clustered. Coombs (1999) identified nine types of crises: Natural disasters, Malevolence, Technical breakdowns, Human breakdowns, Challenges, Mega-damage, Organizational misdeeds, Workplace violence, Rumors. Lerbinger (1997) categorized seven types of crises: Natural disaster, Technological crises, Confrontation, Malevolence, Crises of skewed management value, Crises of deception, Crises of management misconduct. Although these categories of crises are applicable to Nigerian situation in contemporary times, we shall for the purpose of this paper focus on crises of malevolence.

An organization is said to face a crisis of malevolence when opponents or miscreant individuals use criminal means or other extreme tactics for the purpose of expressing hostility or anger toward, or seeking gain from, a company, country, or economic system, perhaps with the aim of destabilizing or destroying it. The incidences of armed robbery, kidnapping, arson, vandalism, terrorism, human trafficking, ritual killing, assassination, illicit drug trade, oil bunkering constitute crises of malevolence that have been plaguing the Nigerian nation in recent times. Successfully diffusing a crisis requires an understanding of how to handle a crisis – before it occurs. This explains a number of crisis management models and theories that have been propounded. To this effect, Gonzalez-Herrero and Pratt (1995) created a four-phase crisis management model process that includes: issues management, planning-prevention, the crisis, and post-crisis. Other scholars, notably Coombs, (2006; 2007); Shrivastava, (1987); Boin, Hart, & Stern (2005); Barton, (2007); Borodzicz, (2005); Dezenhall & Weber, (2007); Erickson, (2006); Fink, (2007); Mitroff & Anagnos (2000); Mitroff, (2003; 2005); Smith & Millar (2002); Ulmer, Sellnow & Seeger (2006), have also discussed crisis management models. In essence, the aim generally is to define what the crisis specifically is or could be and what has caused it or could cause it.

Providing information to an organization in a time of crisis is critical to effective crisis management. Structural-functional systems theory, according to Infante, Rancer, & Womack, (1997), addresses the intricacies of information networks and levels of command making up organizational communication. The structural-functional theory identifies information flow in organizations as "networks" made up of members and "links". Information in organizations flow in patterns called networks. Everett Rogers developed Diffusion of Innovation Theory, which describes how innovation is disseminated and communicated through certain channels over a period of time. Diffusion of innovation in communication occurs when an individual communicates a new idea to one or several others. At its most elementary form, the process involves: (1) an innovation, (2) an individual or other unit of adoption that has knowledge of or experience with using the innovation, (3) another individual or other unit that does not yet have knowledge of the innovation, and (4) a communication channel connecting the two units.

There is also the Common Alerting Protocol (CAP), which is a relatively recent mechanism that facilitates crisis communication across different mediums and systems. CAP helps create a consistent emergency alert

format to reach geographically and linguistically diverse audiences through both audio and visual mediums. There also personal devices, such as Personal Digital Assistants (PDAs), which offer both portability and wireless interfacing for communicating in crises situations. Siska Fitrianie and Leon J.M. Rothkrantz developed a crisis technology-driven communication-interface prototype representing concepts and ideas. This visual communication language for crisis management forms our thrust of analysis in the section that follows presently.

3. The visual language interface option

Perhaps, it is pertinent to state from the onset that before the inception of this communication-interface prototype, several attempts have been made in the recent past to develop computer-based iconic communication, for example: the Hotel Booking System that allows communication on a restricted domain, (Mealing & Yazdabi, 1992); CD–Icon that was designed as pure person-to-person communication system, (Beardon, 1992); Sanyog that was designed for disabled people in India, (Basu, 2002) and the Elephants memory that allows the user to build visual messages by combining symbols from a predefined vocabulary. However, in the years after the terrorists' attack of September 11, 2001, the attention is increasingly shifting toward cutting-edge technologies based on multi-sensor communications, 3D geospatial information, and 3D visualization on mobile devices. (cf. Haala, et. al., 2003; Kwan & Lee, 2005; Kray et. al., 2003; Lee, 2004; Rakkolainen & Vainio, 2000).

The need of emergency response systems that incorporate aspects of human observations informed the increased sophistication in interpersonal communication devices in crisis situations. For instance, the architecture of WHISPER includes a web interface for emergency responders to share information during emergency response activities. The system provides a unified view of an emergency response activity based on the received information and also integrates relevant data repository of all emergency services to support their decision making process. The RESCUE project with their test-bed CAMAS, allows users to send reports via a web interface using natural language messages. This system is able to parse and analyze users' input, classify crisis events and create situation awareness. The VCMC model, which also uses a web interface, allows its users to share data about crisis situations in real-time and to discuss information. An iconic interface for reporting observations in a Mobile Ad-hoc Network (MANET) was developed by Tatomir and Rothkrantz. The system allows its users to share and merge topological maps in damaged buildings using observations from individuals present in an infrastructureless network.

Given that information is the basis for decision-making, and it is essential in crisis situations, the Fitrianie-Rothkrantz model aims at providing a communication interface for sharing information, (http://mmi.tudelft.nl/ siska, http://mmi.tudelft.nl/ leon). The visual language interface, as the originators claim, is a communication infrastructure using a visual language interface in a Mobile Ad-Hoc Network (MANET) for supporting people who must work collaboratively for resolving crisis. These people are rescue teams (that are firemen, police, paramedics, military, and other crisis management organizations), operators in a crisis center room, and civilians (that are victims and witnesses). The users use the developed iconic interface on their PDA to report situations around their location. A distributed-system architecture based on a MANET connects the mobile devices. The MANET allows a peer-topeer wireless network that transmits from PDA to PDA without the use of a central base station (access point). A blackboard structure is used for sharing and distributing information.

There exist basic guidelines and standards for designing icons and interfaces for mobile devices. To this effect, they used semiotic approach, in particular, for designing language and culture independent icons. For purposes of fast interaction enhancement, the developed interface provides a next icon prediction tool, which met the expectations of their test participants after the iconic interface testing. The proof of concept was tested on a serious game environment of a disaster and rescue simulator and they were able to capture the interactions between people and the developed interface in a scenario. The experimental results showed that the visual language interface offers a usable communication tool to investigate as the test users were capable of reporting situations using arrangements of visual symbols for the given situations. The proposed communication paradigm, as Fitrianie and Rothkrantz note, is not meant for replacing any primary communication, i.e. speech, but to open up new possibilities for obtaining information about the crisis. The value of this visual communication interface derives from the use of icons to represent concepts or ideas, which makes user interactions on the developed interface particularly suitable across user diversity in language independent contexts.

4. Government and crisis management

Crisis management, in theoretical and practical terms, involves a number of issues, notably methods used to respond to both the reality and perception of crises; establishment of metrics to define what scenarios constitute a crisis and should consequently trigger the necessary response mechanisms; and communication that occurs within the response phase of emergency management scenarios. The incidences of armed robbery, kidnapping, arson, vandalism, terrorism, human trafficking, ritual killing, illicit drug trade, oil bunkering constitute crises of

malevolence that have been plaguing the Nigerian nation in recent times. There is no gainsaying the fact that politics and crisis, considered from historical perspective, are synonymous. Perhaps, this predisposed the former American President, Abraham Lincoln to capture the seismic relationship in the following words: "We live in the midst of alarms, anxiety beclouds the future; we expect some new disaster with each newspaper we read."

The foregoing explains the situation whereby crisis management has become a defining feature of contemporary governance. It is therefore not unexpected that in times of crisis, the citizens, who are the most vulnerable to the perils of crisis, look up to the political authorities of the land for realistic and enduring crisis management policies, strategies, and best practices to minimize the impact of the crisis at hand. And given that no sector of any society is totally immune to crisis, it becomes imperative for such political authorities to develop crisis management plans to cover a wide variety of incidents including sectarian/ethnic conflicts, natural disasters, criminal activities, mega-damage, economic melt-down, electoral violence, etc.

Therefore, political leaders in all ages and climes have a sacred responsibility to safeguard society from the adverse consequences of crisis. As some experts in crisis management aver, leaders who take this responsibility seriously would have to concern themselves with all crisis phases: the incubation stage, the onset, and the aftermath. Crisis leadership then involves five critical tasks: sense making, decision making, meaning making, terminating, and learning, (Boin, Hart & Stern 2005). In essence, political leaders caught up in the vortex of crisis, must learn to brace to "the strategic challenges they face, the political risks and opportunities they encounter, the errors they make, the pitfalls they need to avoid, and the paths away from crisis they may pursue."

The thrust of reasoning being pursued here fits perfectly into the Nigerian situation. The crisis of malevolence that has been rocking the nation in recent times provides good reasons for the political authorities to take crisis management seriously. They should as a matter of urgency take a cue from more responsible nations and saner societies of our contemporary world in the all-important issue of crisis management strategies, if the government policies and programmes couched in the much touted 7-point agenda and Vision 2020 would ever be actualized. Of particular relevance here is the USA's National Response Plan, (NRP). This plan is intended to integrate public and private response by providing a common language and outlining a chain-of-command when multiple parties are mobilized. It is based on the premise that incidences should be handled at the lowest organizational level possible. The NRP recognizes the private sector as a key partner in domestic incident management, particularly in the area of critical infrastructure protection and restoration. The NRP is a companion to the National Incidence Management System that acts as a more general template for incident management regardless of cause, size, or complexity. There is also the Common Alerting Protocol CAP), which is a relatively recent mechanism that facilitates crisis communication across different mediums and systems. CAP helps create a consistent emergency alert format to reach geographically and linguistically diverse audiences through both audio and visual mediums.

There is no gainsaying the fact that the Nigerian crisis management system has a semblance of what obtains in the USA. However, the essential difference is that while the system works in the USA, the reverse is the case in Nigeria. Otherwise, the crisis of malevolence, for instance, would not have been rising steadily as is being currently experienced in Nigeria. Of course, the generic effect of the seeming endemic crisis on the nation is everything but salutary. Apart from questioning the ability of government to protect life and property of its citizens as well as ensure national stability, it paints a very frightening scenario for foreign investments, thus putting all the nation's development drives in reverse gear. This is why crisis of malevolence such as the recent Nsukka armed robbery incident must be viewed seriously with the aim of stymieing the ugly trend. One practical step in this direction is radical re-invention of the nation's response plan for crisis of malevolence along the line suggested in this paper, that is, the visual communication interface as an aspect of computer-mediated language option.

Conclusion

In this paper, we have tried to explore the potentialities of visual language interface as an aspect of computer-mediated communication for managing crisis of malevolence in Nigeria. The Nsukka bank robbery as well as the killing of a Divisional Police Officer and destruction of Nsukka Police Division represents another sore point in the nation's rising profile in crisis of malevolence. The uncanny dare-devilry, overweening ease, feline fluidity, combative precision and clinical efficiency with which the robbers carried out the operation not only constitutes grave security challenges but questions the nation's crisis management system. Although the robbers were reportedly confronted later at Omoo in Ayamelumu Council Area of Anambra State by a combined team of police and army during which some members of the robbery gang were shot dead, the havoc wrecked at Nsukka in the process could have been avoided if the nation's crisis management system had in place an effective risk management template for assessing potential threats and finding the best ways to avoid those threats.

The obvious helplessness of Nigeria's security and law enforcements in the event of crises such as the Nsukka robbery incident summons on the part of the political authorities a kind of strategic rethinking of the crisis management infrastructure with a view to streamlining and repositioning it in a manner that would predispose it to respond meaningfully to security challenges. On our own part, the intellectual rearmament predisposes us to suggest that such strategic rethinking stands to benefit immensely from the inescapable option provided by a visual communication interface, an iconic computed-mediated language for providing and sharing information in crisis situations.

Given Nigeria's laughable level of technological development, this proposal may sound utopian, futuristic and would perhaps read more like a science fiction script. Nonetheless, it is pointless to ignore the hard fact that Nigeria can no longer continue to afford the luxury of massaging her *underdeveloping* ego. This seeming atavistic pathological allergy to the dictates of modern development paradigms is certainly not a quality to be associated with a nation, whose current leaders are romanticizing with the idea of dragging her into the elite comity of developed economies by the year 2020. The necessity for crisis management as experts have observed, is even more significant with the advent of a 24-hour news cycle and an increasingly internet-savvy audience with ever-changing technology at its fingertips. As part of the globalised system, Nigeria cannot remain immune to modern technological innovations recorded so far recorded in the interpersonal communication domain. To do otherwise is to adorn the inebriating toga of an amputee, precariously latching onto his clutches and limping back and forth, on the fast lane of information superhighway.

References

Abrams, Z. (2006). From Theory to Practice: Intracultural CMC in the L2 Classroom. Book chapter, forthcoming in Ducate, Lara & Nike Arnold (Eds.) Calling on CALL: From Theory and Research to New Directions in Foreign Language Teaching.

Abrams, Z. (2006). From Theory to Practice: Intracultural CMC in the L2 Classroom. book chapter, forthcoming in Ducate, Lara & Nike Arnold (Eds.) Calling on CALL: From Theory and Research to New Directions in Foreign Language Teaching.

Adkins, M., & Brashers, D. (1995). The power of language in computer-mediated groups. *Management Communication Quarterly, 8*, 289-322.

Adrianson, L., & Hjelmquist, E. (1999). Group processes in solving two problems: Face-to-face and computer-mediated communication. *Behaviour & Information Technology, 18*, 179-198.

Angeli, C., Valanides, N., & Bonk, C.J. (2003). Communication in a web-based conferencing system: The quality of computer-mediated interactions. British Journal of Educational Technology, 34(1), 31-43

Bannan-Ritland, B. (2002). Computer-mediated communication, elearning, and interactivity: A review of the research. Quarterly Review of Distance Education, 3(2), 161-180.

Barnes, S., & Greller, L. M. (1994). Computer-mediated communication in the organization. *Communication Education, 43*, 129-142.

Baron, N. S. (1984). Computer mediated communication as a force in language choice. *Visible Language, 18*, 118-141.

Baron, N. S. (1984). Computer mediated communication as a force in language choice. *Visible Language, 18*, 118-141.

Barton, L. (2007). *Crisis leadership now: A real-world guide to preparing for threats, disaster, sabotage, and scandal*. New York, NY: McGraw-Hill.

Basu, A, Sankar, S. Chakraborty, K. Bhattarcharya, S, Choudhury, M. and Patel, R. (2002) Vernacula Educationand Communication Tool for the People with Multiple Disabilities, *Development by Design Conference*. Bangalore.

Baym, N. K. (1995). The emergence of community in computer-mediated interaction. In S. G. Jones (Ed.), *Cybersociety: Computer-mediated communication and community* (pp. 138-163). Thousand Oaks, CA: Sage.

Beardon, C. (1992) CD-Icon: an Iconic Language-Based on Conceptual Dependency, *Intelligent Tutoring Media*. 3(4), 1992.

Boin, A.; P. Hart and E. Stern (2005). *The politics of crisis management: Public leadership under pressure*. New York: Cambridge University Press.

Borodzicz, Edward P. (2005). *Risk, Crisis and Security Management*. West Sussex, England: John Wiley and Sons Ltd.

Bowers, J. (1992). The politics of formalism. In M. Lea (Ed.), *Contexts of computer-mediated communication* (pp. 232-261). London: Harvester Wheatsheaf.

Braithwaite, D. O., Waldron, V. R., & Finn, J. (1999). Communication of social support in computer-mediated groups for people with disabilities. *Health Communication, 11(2)*, 123-151.

Braithwaite, D. O., Waldron, V. R., & Finn, J. (1999). Communication of social support in computer-mediated groups for people with disabilities. *Health Communication, 11(2)*, 123-151.

Chesebro, J., & Bonsall, D. (1989). *Computer-mediated communication: Human relationships in a computerized world*. Tuscaloosa: University of Alabama Press.

Chesebro, J. W. (1985). Computer-mediated interpersonal communication. In B. D. Ruben (Ed.), *Information and behavior* (Vol. 1, pp. 202-222). New Brunswick, NJ: Transaction Books.

Computer-mediated communication (CMC) Retrieved from "http://en.wikipedia.org/wiki/Computer-mediated_communication" 20 July 2009.

Coombs, W. T. (2007). *Ongoing Crisis Communication: Planning, Managing, and Responding* (2nd ed.). Thousand Oaks, CA: Sage.

Coombs, W. T. (1999). *Ongoing crisis communication: Planning, managing, and responding*. Thousand Oaks, CA: Sage.

Crystal, D. 2001. *Language and the Internet*. Cambridge: Cambridge University Press.

Dietz-Uhler, B., & Bishop-Clark, C. (2001). The use of computer-mediated communication to enhance subsequent face-to-face discussions. *Computers in Human Behavior, 17*, 269-283.

Erickson, Paul A. (2006). *Emergency Response Planning for Corporate and Municipal Managers* (2nd ed.). Burlington, MA: Elsevier, Inc..

Fink, S. (2007). *Crisis management: Planning for the inevitable*. Backinprint.com.

Fitrianie, S. & Rothkrantz, J. M. A Visual Communication Language for Crisis Management Retrieved from (http://mmi.tudelft.nl/ siska, http://mmi.tudelft.nl/ leon) 21 July 2009

Garcia, A. C., & Jacobs, J. B. (1999). The eyes of the beholder: Understanding the turn-taking system in quasi-synchronous computer-mediated communication. Research on Language & Social Interaction, 32, 337-367.

Haala, N and Bhn, J. (2003). A multi-sensor System for Positioning in Urban Environments, *ISPRS Journal of Photogrammetry and Remote Sensing*. 58: 31-42.

Helbing, D. (2009). Competence Centre: Coping with crises in complex socio-economic systems. ETH Zurich

Herring, S. C. (2004). Computer-mediated discourse analysis: An approach to researching online behavior. In: S. A. Barab, R. Kling, and J. H. Gray (Eds.),

Herring, S. (1999). Interactional coherence in CMC. Journal of Computer-Mediated Communication, 4(4). http://jcmc.indiana.edu/vol4/issue4/herring.html

Herring, S.C. (ed). 1996. *Computer-Mediated Communication: Linguistic, Social and Cross-Cultural Perspectives*. Amsterdam & Philadelphia: Benjamins.

Infante, D.; Rancer, A., & Womack, D. (1997). *Building communication theory* (3rd ed.). Prospect Heights, IL: Waveland Press.

Kray, C. Elting, C., Laaksoand, K. & Coors, V. (2003). Presenting Route Instructions on Mobile Devices, *Proc. of IUI'03*. USA, 2003.

Kwan, M and Lee, J. (2005). Emergency Response After 9/11: the Potential of Real-Time 3D GIS for Quick Emergency Response in Micro-Spatial Environments, *Computers, Environment and Urban Systems*. 29: 93-113.

Lee, J. (2004) 3D GIS for Geo-Coding Human Activity in Micro-Scale Urban Environments, In M. Egenhofer, C. Freksa and H. Miller, eds., *Geographic Information Science: Springer's Lecture Notes in Computer Science Computers (LNCS 3234)*. 162-178.

Leinonen, P., Jarvela, S., & Lipponen, L. (2003). Individual students' interpretations of their contribution to the computer-mediated discussions. Journal of Interactive Learning Research, 14(1), 99-122.

Lerbinger, O. (1997). *The crisis manager: Facing risk and responsibility*. Erlbaum.

Markman, K. M. (2006). Computer-mediated conversation: The organization of talk in chat-based virtual team meetings. Dissertation Abstracts International, 67 (12A), 4388. (UMI No. 3244348)

Mealing, S and Yazdabi, M. (1992) *Communicating Through Pictures*. Department of Computer Science, University of Exeter, England, 1992.

Mitroff, Ian I. (2005). *Why Some Companies Emerge Stronger And Better From a Crisis: Seven Essential Lessons For Surviving Disaster*. New York: AMACOM.

Mitroff, Ian I. (2003). *Crisis Leadership: Planning for the Unthinkable*. New York: John Wiley.

Mitroff, Ian I.; Gus Anagnos (2000). *Managing Crises Before They Happen: What Every Executive Needs to Know About Crisis Management*. New York: AMACOM.

Rakkolainen., I and Vainio, T.A. (2000) A 3D City Info for Mobile Users, *Computers and Graphics, Special Issues on Multimedia Appliances*. 25(4): 619-625.

Schrire, S. (2003). A model for evaluating the process of learning in asynchronous computer conferencing. Journal of Instructional Delivery Systems, 17(1), 6-12.

Shrivastava, P. (1987). *Bhopal: Anatomy of a Crisis*. Ballinger Publishing Company.

Smith, Larry; Dan Millar, PhD (2002). *Crisis Management and Communication; How to Gain and Maintain Control* (2nd ed.). San Francisco, CA: International Association of Business Communicators.

Tanskanen, S-K (2006) The politics of computed mediated language. Renvall Institute, British and Irish Studies Guest Lectures.

Thurlow, C., Lengel, L. & Tomic, A. (2004). Computer mediated communication: Social interaction and the internet. London: Sage.

Tidwell, L. C., & Walther, J. B. (2002). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. *Human Communication Research, 28*, 317-348.

Trevino, L. K., & Webster, J. (1992). Flow in computer-mediated communication. *Communication Research, 19*, 539-573.

Ulmer, R. R.; Sellnow, T. L., & Seeger, M. W. (2006). *Effective crisis communication: Moving from crisis to opportunity*. Thousand Oaks, CA: Sage Publications.

Wade, S.E., & Fauske, J.R. (2004). Dialogue online: Prospective teachers' discourse strategies in computer-mediated discussions. Reading Research Quarterly, 39(2), 134-160.

Walter, J. B. (2004) 471 things to read about CMC

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. Communication Research, 23, 3-43.

Walther, J. B., & Burgoon, J. K. (1992). Relational communication in computer-mediated interaction. Human Communication Research, 19, 50-88.

Warschauer, M. (2006). Electronic literacies: Language, culture and power in online education. Mahwah, NJ: Lawrence Erlbaum Associates.

Wikipedia "http://en.wikipedia.org/wiki/Crisis_management" Categories: Management | Government. Retrieved 21 July 2009.