

## **The Interactive Nature of Computer-Mediated Communication**

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## **Introduction**

The several last decades have witnessed a huge revolution in the field of mass media. This revolution has been created by new media such as computers, phone networks, communications networks, Internet, and multimedia technology. These “new media” reflect the many different configurations of communications; their varied forms reveal the connection between the characteristics of interpersonal communication (e.g. interactivity, demassification, and synchronization) and the characteristics of mass communication (e.g. massification, usage of new technology). New media have many advantages that distinguish them from traditional mass media such as: interactivity, demassification, selectivity, synchronization, immediacy, inexpensiveness, pro-democracy forums, marketing tool, speed....etc. However, interactivity is generally considered to be the central characteristic of new media. As such, many researchers in communication technology have attempted to not only explore the level of interactivity that new media involve but also define the dimensions, features, and characteristics of interactive communication within the realm of new media (e.g. Goertz, 1995; McMillan, 2000; McMillan & Downes, 2000, McMillan & Hwang, 2002; Rafaeli, 1988, 2007; Rafeli & Sudweeks 1997; Schultz, 1999, 2000; Zack,1993).

“The contemporary era of person-to-person telecommunication centers on two-way media and this is made possible by computers” (Rogers, 1986, p.30). Thus it is appropriate that we date the beginning of this chapter by reviewing the historical background, conceptual definitions, dimensions, types, and features of interactive communication. Computer Mediated Communication (CMC) will also be examined as an interactive communication format.

### **1. The Concept of Interactivity**

This review will address the historical background of the concept of interactivity in communication. It will weigh in the complexities involved with the meaning of interactivity by classifying the descriptions of interactivity along points of consensus within the many definitions and suggested definitions that exist for this concept.

#### **1.1**

#### **1.2 Historical background**

The concept of interactivity has its roots in the late 1920s, when Bertolt Brecht and Walter Benjamin (date) criticized the limited one-way direction of the mass media. Brecht (date) believed that the radio could serve as a democratic apparatus of communication. Audiences were supposed to "talk back" and play an active part in the program of this new medium at the time - a concept that was directly opposed to the propagandistic misuse of the radio in the era of European fascism. Yet, this misuse was not considered as inherent to the technology. On the contrary, the development of new media seemed to provide ambivalent and powerful tools that at least left open the potential for improving democracy (Schultz, 2000).

“Any discussion of interactivity inevitably draws from its roots in Cybernetic theory” as outlined by Wiener (1948). As a basic communication model, the chief difference between

cybernetic theory and the classic Shannon and Weaver (1949) model is its emphasis on feedback” (Kiouisis, 2002, p.359). A key event in the emergence of interactivity was the publication of a book under the title “*The Process and Effects of Mass Communication*” which was outlined by Wilbur Schramm (1954). This book mentioned, for the first time, the concept of interactivity and focused on the importance of the interchange: the messages between sender and receiver.

One of the fundamental assumptions of the uses and gratifications theory has been that of an active audience (Katz, Blumler & Gurevitch, 1974). This assumption refers to interactivity. Also, most of the communication models (e.g., magic bullet theory, two-step flow model, and selective attention & perception model) have focused on the importance of interactivity in mass communication process.

At the end of the last century, and with the interactive features of new media, the receiver gained recognition as an active participant. People seek information or select information more than they "receive" information sent by senders. To understand why and how people expose themselves to information, communication scholars must consult selective exposure research rather than media effects research. On some websites, online users can do more than actively select information - they can also add information. The distinction between source and receiver, therefore, is dissolving (Kenny, Gorelik & Mwangi, 2000). The huge development of new media technology and CMC has made it possible to deliver evaluative feedback, making interactivity the primary characteristic of new technologies and paving the way for a considerable reassessment of communication research (Heeter, 1989; Morris & Ogan, 1996; Rafaeli & Sudweeks, 1997; Pavlik, 1998; Ha & James, 1998).

### 1.3

#### 1.4 The complexity of the definition

Although interactivity has long been a concept of mass communication and a core concept of CMC, there has been a lack of consensus to the definition of the term (e.g., Ha & James, 1998; Heeter, 1989; Rafaeli & Sudweeks, 1997; Steuer, 1992), this is because of:

(1) The term interactivity is widely used in many fields of science; the reason for this is related with the general concept of interactivity. “Interactivity is a widely used term with an intuitive appeal, but it is an under defined concept” (Rafaeli 1988, p. 110). Researchers from a multitude of disciplines ranging from instructional technology, CMC, computer science, and information science, to advertising and marketing define interactivity differently ( Wu, 2005). “The vast implicit and explicit definitions prepared by researchers from many different academic and professional perspectives” (Kiouisis, 2002, p.357) has led to the lack of consensus for the definition of interactivity.

(2) Researchers in CMC have differing viewpoints - this is related the fact the definitions of the concept of interactivity in CMC vary in focus (media or user), scope (one-dimensional or multidimensional) and temporal orientation (is interactivity a snapshot quality, or a process?) (Rafaeli, 2007). Also relevant is the relationship

between the concept of interactivity and new communication technology (is the interactivity related with communication in general or is it related to CMC in particular?).

### **1.5**

#### **1.6 Classification of the definitions**

Kiousis (2002) divided the concepts of interactivity into three areas: structure of technology (medium), communication context (setting), and user perception. McMillan & Hwang (2002) also categorized the definitions of interactivity based on process, features, perception, and or combined approaches – these categories were the primary focus of several authors on the subject of interactivity. The definitions of interactivity can also be summarized into four areas: the medium, user perception, process, and the combined approaches.

##### **1.6.1**

#### **1.6.2 Definitions that focus on medium features**

The features of CMC media are represented in hyperlinks, chats, downloads, uploads, email, search engines, multimedia, etc. Some researchers consider interactivity as the functional feature of the medium (Durlak 1987; Carey 1989; Massey & Levy 1999; Schultz, 1999; Kenny, Gorelik & Mawangi, 2000; Ahern, Stromer-Galley & Neuman, 2000; Lombard & Snyder-Dutch, 2001). Ahren, Stromer-Galley & Neuman (2000) defined interactivity in terms of features such as audio and video.

Carey (1989) defined interactive media as: “technologies that provide person-to-person communications mediated by a telecommunications channel (e.g. a telephone call) and person-to-machine interactions that simulate interpersonal exchange (e.g. an electronic banking transaction)” (p.328). These conceptual definitions focus on the types of channels involved in the communication exchange: human-to-human or human-to-computer. Jensen 1998 defined interactivity as: “A measure of a media’s potential ability to let the user exert an influence on the content and/or form of the mediated communication” (p.201). This definition confirms the importance of the features that enable user control mechanisms.

Lombard and Snyder-Dutch (2001) identified interactivity as “a characteristic of a medium in which the user can influence the form and/or content of the mediated presentation or experience” (p.10). They described interactivity as a characteristic of a medium and focused on the features that enable user control.

These definitions attempt to define interactivity from the medium perspective; they focus on features, seeking to identify either general characteristics (such as user control and two-way communication) or specific characteristics of Websites (such as search engines, emails, and chat rooms) that characterize interactivity (McMillan & Hwang, 2002).

##### **1.6.3**

#### **1.6.4 Definitions that focus on users perception**

A second team of researchers (e.g., Newhagen, Cordes, & Levy 1995; Day, 1998; Kiouisis, 1999; Wu, 1999) focused on the user's perception in defining the concept of interactivity. They confirmed that the essence of interactive communication is the use of information from the users. The user's perspective is represented in user involvement, user perception, user activity and in the consumer's choice to interact. Newhagen, Cordes, and Levy (1995) conceptualized interactivity based on "the psychological sense message senders have of their own and the receivers' interactivity" (p.165). Day (1998) observed that the essence of interactive marketing "is the use of information from the customer rather than about the customer" (p.47).

Kiouisis (1999) identified interactivity as "the ability of users to perceive the experience to be a simulation of interpersonal communication and increase their awareness of telepresence" (p.18). In his definition on user perception, he focused on the simulation of interpersonal communication, and the awareness of telepresence. Wu (1999) defined perceived interactivity as "a two-component construct consisting of navigation and responsiveness" (p.6). He differentiated between three kinds of interactivity: potential interactivity, actual interactivity, and perceived interactivity (Wu, 2005). He observed that perceptions of navigation and responsiveness are fundamental dimensions in understanding interactivity.

Individuals rated the interactivity of sites based on their perceptions of two-way communication, level of control, user activity, sense of place, and time sensitivity (McMillan, 2000). Schumann, Artis and Rivera (2001) described interactivity as "a characteristic of the consumer, and not a characteristic of the medium. The medium simply serves to facilitate the interaction." They focused on the user's choice to interact as a core term in defining interactivity.

### **1.6.5**

### **1.6.6 Definitions that focus on process**

From the process perspective, researchers focus on activities such as interchange, responsiveness, action and reaction, and participation as key dimensions to interactivity. For example, Haeckel (1998) observed that "the essence of interactivity is exchange" (p.63). From this perspective, interactivity can be defined as "the degree to which a person actively engages in advertising processing by interacting with advertising messages and advertisers" (Cho & Leckenby, 1999, p.163). This definition shed some light on the interchange between users and senders.

Rafaeli (1988) defined interactivity as "an expression of the extent that in a given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions" (p.111). He indicated that interactivity is a one-dimensional concept, and that this dimension is responsiveness.

Steuer (1992) focused on defining interactivity based on real-time participation: “interactivity is the extent to which users can participate in modifying the form and content of a mediated environment in real time” (p.84).

According to Pavlik (1998), interactivity means “two-way communication between source and receiver, or, more broadly multidirectional communication between any number of sources and receivers” (p.137). This definition reflects the importance of two-way communication.

Heeter (2000) focused on action and reaction in her definition of interactivity. Heeter (2000) proposed that interactivity is “an episode or series of episodes of physical actions and reactions of an embodied human with the world, including the environment and objects and beings in the world”.

In order to characterize the communication process, the preceding definitions all focus on the process of communication and express variations of the concept using different terms such as: exchange, interchange between users and senders, responsiveness, real-time participation, two way communication, action and reactions.

### **1.6.7**

### **1.6.8 Definitions that combine, medium, perception, and/or process**

A team of researcher attempted to combine the terms *medium*, *perception* and/or *process* with their definition of interactivity as follows:

According to Heeter (1989), interactivity is a multi-dimensional concept that includes: the complexity of available choices, the amount of effort users expend, user responsiveness, information monitoring, the ease with which information can be added, and the facilitation of interpersonal communication. Heeter combine the three aforementioned terms - medium (complexity of choice available, and ease of adding information), perception (effort users must exert, and monitoring information use) and/or process (responsiveness to the user, and facilitation of interpersonal communication) – in her definition of interactivity.

Zack (1993) also combined medium, perception and/or process in the definition of interactivity. Zack (1993) suggested that the following key factors emerge from the literature as elements of interactivity: the simultaneous and continuous exchange of information; the use of multiple non-verbal cues; the potentially spontaneous, unpredictable, and emergent progression of remarks; the ability to interrupt or preempt; mutuality; patterns of turn-taking, and the use of adjacency pairs.

“Aspects of interactivity were clustered around three terms: equality (containing aspects such as participants, mutual activity, role exchange, control), responsiveness (e.g.

mutual discourse, nature of feedback, response time) and functional communicative environment (e.g. bandwidth, transparency, social presence, artificial intelligence)” (Hanssen, Jankowski, and Etienne, 1996, p.71). This definition focused on equality (medium), responsiveness (process), and functional environment (process).

“Interactivity should be defined in terms of the extent to which the communicator and the audience respond to, or are willing to facilitate, each other’s communication needs” (Ha & James,1998,p.461). According to Coyle and Thorson (2001), “a website that is described as interactive should have good mapping, quick transitions between a user’s input and resulting actions, and a range of ways to manipulate the content” (p.67). McMillan (2002) identifies four types of interactivity based on intersection of user control and direction of communication: monologue, feedback, responsive dialogue, and mutual discourse.

Kiousis (2002) defined interactivity as “the degree to which a communication technology can create a mediated environment in which participants can communicate (one-to-one, one-to-many, and many-to-many), both synchronously and asynchronously, and participate in reciprocal message exchanges (third-order dependency), with regard to human users. Additionally, it (interactivity) refers to their ability to perceive the experience as a simulation of interpersonal communication and to increase their awareness of telepresence” (p.371).

### **1.7**

#### **1.8 Points of consensus**

Downes and McMillan (2000) confirmed that interactivity increases as:

- two-way communication enables all participants to actively communicate.
- the timing of communication is flexible to meet the time demands of participants.
- the communication environment creates a sense of place.
- participants perceive that they have greater control of the communication environment.
- participants find the communication to be responsive.
- individuals perceive that the goal of communication is more oriented to exchanging information than to attempting to persuade. (Downes & McMillan, 2000).  
Some consensus can also be reached concerning the chief ingredients of an interactive experience (Kiousis, 2002):

- two-way communication should exist, usually through a mediated channel.

- the roles of message sender and receiver should be interchangeable among participants.
- in addition, some third-order dependency among participants is usually necessary.
- for the most part, communicators can be human or machine, often contingent upon whether they can function as both senders and receivers.
- individuals should be able to manipulate the content, form, and pace of a mediated environment in some way.
- users should be able to perceive differences in levels of interactive experiences.

The literature suggested that the examination of interactivity should pay attention to: user effort, sender and receiver roles, timeliness, the characteristics of the medium and the communicator, control, activity tracking, advantages, disadvantages, and potential threats (Downes & McMillan, 2000, p.161).

**1.9**

**1.10 Suggested definition of interactivity**

Based on the different definitions of interactivity and the points of consensus among these definitions, the researcher defines interactivity as a characteristic of the communication process wherein its elements (sender, user, medium, and message) emerge in unique communication settings where time is flexible enough to meet the demands of participants based on their sense of place.

**2. Dimensions of interactivity**

Jensen (2000) classified the dimensions of interactivity according to the numbers of dimensions present for the definition of this term. The researchers have adopted Jensen’s method in reviewing the dimensions of interactivity. Table (1) contains classifications to the most important dimensions of interactivity.

Table 1.10

<b>Numbers of dimensions</b>	<b>Authors</b>	<b>The Dimensions</b>
1	Rogress (1986)	Selected communication technologies
	Rafaeli (1988)	Responsiveness
2	Brodewijk & Kaam (1986)	1. Control of Information Source 2. Control of Time and Subject
	Szuprowicz (1995)	1. Information Flow 2. Interactive Multimedia
	Kiousis (1999)	1. The Structure of The Medium 2. The Context of Communication Setting 3. The Perception of Users



3	Steuer (1992)	<ol style="list-style-type: none"> <li>1. Speed: speed of responsiveness</li> <li>2. Range: range of choice available</li> <li>3. Mapping: Mapping Capabilities of Medium</li> </ol>
	McMillan & Hawang (2002)	<ol style="list-style-type: none"> <li>1. Direction of Communication</li> <li>2. User Control</li> <li>3. Time</li> </ol>
	Colye & Thorson (2001)	<ol style="list-style-type: none"> <li>1. Mapping</li> <li>2. Speed</li> <li>3. user control</li> </ol>
4	Zack (1993)	<ol style="list-style-type: none"> <li>1. The simultaneous and continuous exchange of information</li> <li>2. The use of multiple nonverbal cues;</li> <li>3. The potentially spontaneous, unpredictable, and emergent progression of remarks</li> <li>4. The ability to interrupt or preempt; mutuality; patterns of turn-taking; and the use of adjacency pairs.</li> </ol>
	Jensen (2000)	<ol style="list-style-type: none"> <li>1. Transmissional interactivity</li> <li>2. Consultational interactivity</li> <li>3. Conversational interactivity</li> <li>4. Registrational interactivity</li> </ol>
	Goertz (1994)	<ol style="list-style-type: none"> <li>1. The Degree of Choice Available</li> <li>2. The Degree of Modifiability</li> <li>3. Available Selections and Modifications</li> <li>4. The Degree of Linearity &amp; Non Linearity</li> </ol>
5	Ha & James (1998)	<ol style="list-style-type: none"> <li>1. Playfulness</li> <li>2. Choice</li> <li>3. Connectedness</li> <li>4. Information Collection</li> <li>5. Reciprocal Communication</li> </ol>
	Downes & McMillan (2000)	<ol style="list-style-type: none"> <li>1. Direction of communication</li> <li>2. Timing flexibility</li> <li>3. Sense of place</li> <li>4. Level of control</li> <li>5. Responsiveness and the perceived purpose of communication</li> </ol>
6	Carrie Heeter (1989)	<ol style="list-style-type: none"> <li>1. Complexity of choice available</li> <li>2. Efforts users must exert</li> <li>3. Responsiveness to the user</li> <li>4. Facilitation of interpersonal</li> </ol>

		communication 5. Ease of adding information 6. Monitor system use
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### 2.1 One-dimensional concepts of interactivity

One relatively simple model of interactivity which operates from only one dimension can be found in the writing of Everett M. Rogers (1986) and Sheizaf Rafaeli (1988).

Rogers (1986) defined ‘interactivity’ as “the capability of new communication systems (usually containing a computer as one component) to ‘talk back’ to the user, almost like an individual participating in a conversation” (p.34), and he confirmed that interactivity is a variable; the mass media (newspapers, radio, television and film) are relatively low in their degree of interactivity.

Based on this definition, Rogers has created a scale, reprinted in figure 1, in which he lists the ‘degrees of interactivity’ for a number of selected communication technologies on a continuum from ‘low’ to ‘high’.

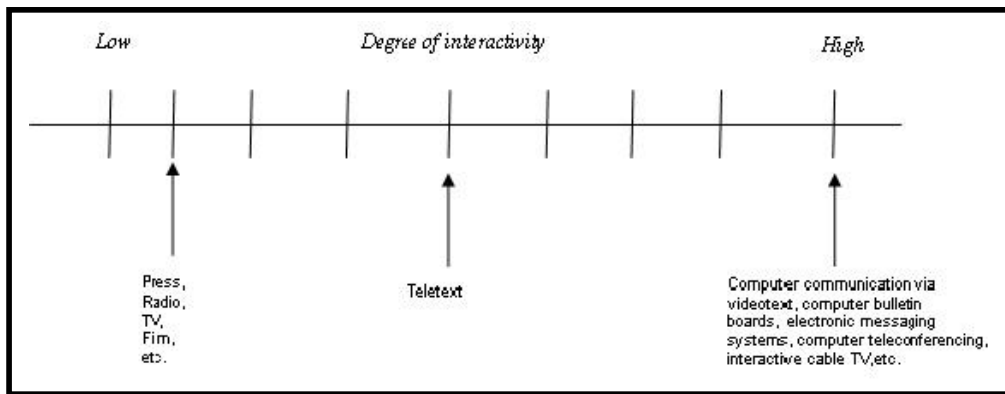


Figure 2.1 Rogers' 1-dimensional Scale of "Selected communication technologies on interactivity continuum" (1986: p.34).

Sheizaf Rafaeli (1988), one of the most frequently cited scholars on the subject of interactive communication, has also presented a one dimensional concept of interactivity, but with a different accent. Rafaeli's (1988) definition centers on the concept of ‘responsiveness’, as a measure of a medium’s ability to be receptive and react in response to a given user, or more precisely, a measure of how much one message in an exchange is based on previous messages. This model uses three progressive levels in its continuum:

- (1) Two - way communication takes place when messages are delivered both ways.
- (2) Reactive communication also requires that a latter message reacts to a previous message.

(3) Full interactivity requires that a latter message responds to a sequence of previous messages.

In this conceptual construction, responsiveness plays a central role. A graphic illustration is shown in Figure 2. Responsiveness requires that the medium in question registers and stores information about a given user's input and actions and is then able adjust to the user's wishes and distinctive characteristics. As such, Rafaeli (1988) focused on the concept of 'responsiveness,' arguing that interactivity is "an expression of the extent that, in a given series of communication changes, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to event earlier transmissions" (p. 111).

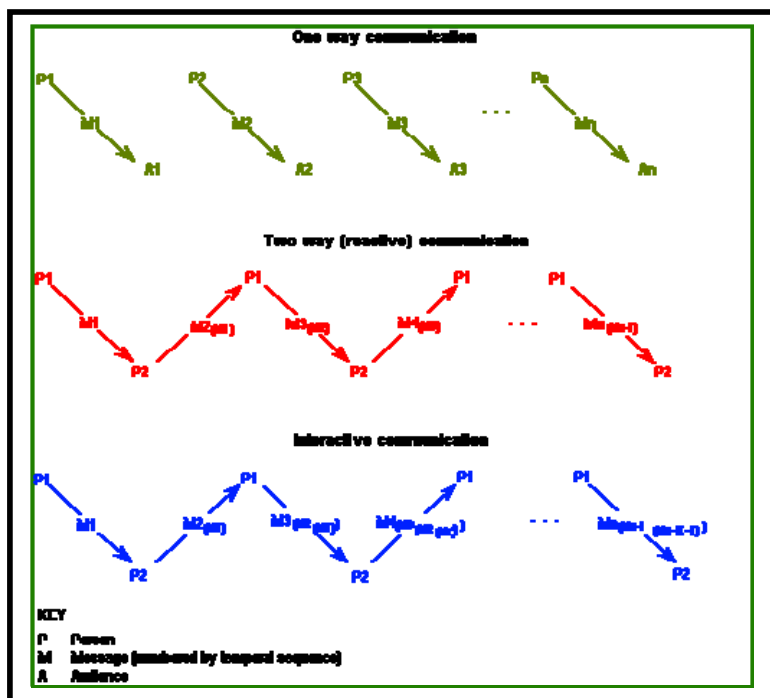


Figure 2.1 Rafaeli's 1-dimensional Concept of Interactivity. From (Rafaeli, 1988, 120).

Several central premises may be derived from the model in Figure 2

- 1) First, not all communication is interactive, and even non interactive communication may contain coherent responses.
- 2) Second, we are made aware that interactivity is not a medium characteristic. Media and channels may set upper bounds, remove barriers, or provide necessary conditions for interactivity levels. But potential does not compel actuality.
- 3) Following from this is the realization that much of the use of new communication technologies is non interactive. Potential interactivity is a quality of the situation or setting.

4) Last, this model distinguishes between interactivity and the feedback of which it is a subset. Interactivity is the feedback that relates both to the previous messages related to those preceding them (Rafaeli, 1988).

**2.2**

**2.3 Two-dimensional concepts of interactivity**

The key element of the Bordewijk and van Kaam (1986) typology is control. One dimension of the model is defined by control of information source, and the other by control of time and choice of subject. For both of these variables, Bordewijk and Kaam (1986) suggested that control may reside either in a central source or with the individual. The resulting four-part typology is illustrated in Figure 3.

	Information produced by a central provider	Information produced by the consumer
Distribution controlled by a central provider	1) Transmission	4) Registration
Distribution controlled by the consumer	3) Consultation	2) Conversation

**Figure 3 Bordewijk and Kaam’s Matrix for the four communication patterns: Transmission, conversation, consultation and registration Scale of “” (1986: p)**

(1) ‘Transmission’ refers to situations in which information is simultaneously distributed from a center to many peripheral receivers. The pattern applies to many mass media as well as to other communication forms such as lectures or concerts. Transmission is typically one-way communication with very little feedback opportunity.

(2) ‘Consultation’ occurs when an individual looks for information at a central information store. In the context of computer-mediated communication (CMC) this may include databases, CD-room, etc.

(3) ‘Registration’ is, in essence, the reverse of consultation. The organization at the center receives information from a participant at the periphery. This applies when central records are kept of individuals in a system and it also applies to surveillance systems. The accumulation of information at a center often takes place without reference to, or knowledge of, the individual. Many communication technologies make registration more feasible. The use of ‘cookies’ to track and customize content for visitors to websites is one example of the registration potential of CMC.

(4) ‘Conversation’ occurs when individuals interact directly with each other, bypassing central controls or intermediaries. Individuals choose their communication partners as well as the time, place and topic of communication.

Szuprowicz (1995) presented a two-dimensional concept of interactivity, saying that: “in order to understand all issues and problems associated with interactive multimedia networking and communications it is necessary to define and classify the various levels and categories of interactivity that come into play. Interactivity is best defined by the type of multimedia information flows” (P.14). The figure (4) clarifies the components of this model

1. Information flow: is one of the two dimensions and he divided the information flows into three main categories:
  - a. User-to-documents interactivity: is a traditional transaction between a user and specific documents.
  - b. User-to-computer interactivity: is explained as more exploratory interactions between a user and various delivery platforms.
  - c. User-to-user interactivity: is explained as collaborative transactions between two or more users.

Within each of these categories multimedia information flows depend on interactive access interfaces, broadcasting facilities, or object-oriented manipulation of unstructured multimedia elements.

2. Interactive Multimedia elements:
  - a. Object- oriented manipulation.
  - b. Distribution (Broadcasting).
  - c. Interactive access (links).

Object-oriented manipulation	Mail	Database	Groupware
Broadcast	Newsletter	Information Kiosk	Presentation
Interactive access	Hypermedia	Graphical user Interface	Conferencing training
	User-to-documents	User-to-computer	User-to-user

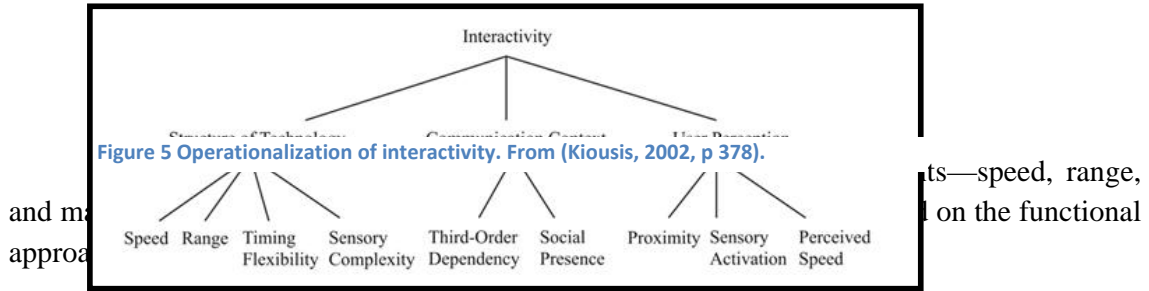
Figure 4 Interactive multimedia information flows. From (Szuprowicz, 1995, p.15).

## 2.4

### 2.5 Three-dimensional concepts of interactivity

Kiousis (2002) focused on the elements of communication to explore the dimensions of interactivity. Kiousis pointed to three factors as being the main dimensions of interactivity; these factors are: the technological structure of the medium used (objective speed, range, and sensory complexity), the characteristics of the communication settings (third-order

dependency and social presence), and individuals' perceptions (proximity, perceived speed, sensory activation and telepresence). The graphic illustration shown in figure 5 clarifies the factors of interactivity.



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1. Speed: speed of responsiveness
2. Range: range of choice available
3. Mapping: Mapping Capabilities of Medium

Coyle and Thorson (2001), identified mapping, speed, and user control as three important dimensions of website interactivity; emphasizing the perceptual rather than functional aspect of interactivity. Coyle and Thorson (2001) manipulate interactivity on the basis of Steuer's (1992) definition: (1) the presence of a clickable image map and (2) the number of clickable areas. The features of feedback mechanisms in the communications dimension (e.g., e-mail links, chat rooms) are derived from the interactivity theory.

McMillan and Hwang (2002) also identified the most frequently mentioned elements of perceived interactivity: direction of communication, user control, and time.

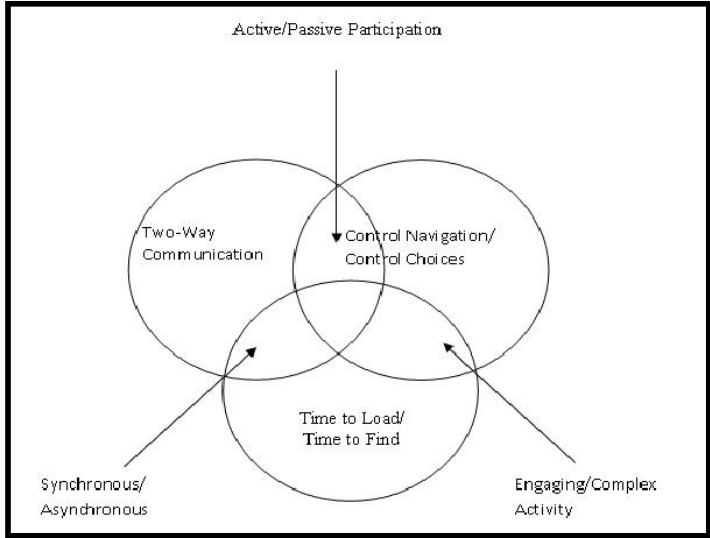


Figure 6 Key dimensions of interactivity (McMillan & Hwang, 2002, p. 35).

Figure 6 illustrates the overlapping of the three dimensions of perceived interactivity that are central to their study. Web-based interactivity involves communication among individuals, the ability those individuals have to control information and to participate in active communication, and time – time to load the message, time to find information, time to communicate with others, and the loss of time as one gets caught in the flow of computer-mediated communication. User perceptions of the direction of communication, control, and time are central to how interactive they perceive Websites to be (McMillan & Hwang, 2002).

### **2.6 Four-dimensional concepts of interactivity**

An example of a four-dimensional concept of interactivity, where four dimensions of meaning constitute interactivity, can be found in the writing of Zack (1993), Goertz (1995), and Jensen (1998). Zack (1993) suggests that the following key factors emerge from the literature as elements of interactivity: the simultaneous and continuous exchange of information; the use of multiple nonverbal cues; the potentially spontaneous, unpredictable, and emergent progression of remarks; the ability to interrupt or preempt; mutuality; patterns of turn-taking; and the use of adjacency pairs. He explicated the importance of managers' use of electronic messaging for ongoing management groups performing a cooperative task. He identified four interactivity dimensions:

1. Simultaneous and continuous exchange of information
2. Use of multiple, non-verbal cues
3. Potentially spontaneous, unpredictable and emergent progression of remarks
4. Ability to interrupt or preempt

Goertz (1995) isolates four dimensions, which are said to be meaningful for 'interactivity':

(1) The "degree of choice available" - the degree of interactivity concerns the choices offered by the media being used.

(2) The "degree of modifiability" - refers to the user's own ability to modify existing messages or add new content where these modifications and additions.

(3) The "quantitative size of the available selections and modifications" - the quantitative number of selections possible within each of the previous two dimensions.

(4) The "degree of linearity/non-linearity" functions as a measure of the user's control over the time, tempo and progression of the reception or communication. For example, a movie; the receiver of a TV movie doesn't have any control over when the movie starts, where, or in which order the scenes are shown. On the other hand, with a hypertext movie, the user is free to determine what, when, and in which order movie or something else will be selected.

Each of these four dimensions also makes up its own continuum which Goertz places on a scale in figure7.

Index Interaktivität	Grad der Interaktivität	Anzahl Kanäle		
		1	2	3 und mehr
0	= Keine		Kino	
1				Homebanking
2				Mailbox
3		Buch: Roman	TV, terr.	
4		Hörfunk	TV, Kabel Pay-per-channel Pay-per-view	
5				
6				
7		SCALL		
8		Zeitung Videotext E-MAIL SENDEL		
9		Buch: Sachbuch		
10				
11		Information via online-Dienst		
12				VR-Walkthrough, z.B. Virtuelles Museum
13			Videospiel	
14				
15	= hohe	Mailbox Textverarbeitung TELEFON	VIDEOKONFERENZ	GESPRÄCH VR-Walkthrough, z.B. Büroeinrichtung

Figure 1-7 Interactivity scale (Interktivitätsindex) from (Goertz, 1995, p.).

Jensen (1998) defined interactivity as: a measure of a media's potential ability to let the user exert an influence on the content and/or form of the mediated communication. This concept of interactivity can be divided up into four sub-concepts or dimensions as follows:

(1) **Transmissional interactivity:** a measure of a media's potential ability to let the user choose from a continuous stream of information in a one way media system without a return channel and therefore without a possibility for making requests (e.g., teletext, near-video-on-demand, be-your-own-editor, multi-channel systems, data casting, multicasting).

(2) **Consultational interactivity:** a measure of a media's potential ability to let the user choose, by request, from an existing selection of preproduced information in a two way media system with a return channel (video-on-demand, on-line information services, CD-ROM encyclopedias, FTP, WWW, Gopher etc).

(3) **Conversational interactivity:** a measure of a media's potential ability to let the user produce and input his/her own information in a two way media system, be it stored or in real time (video conferencing systems, news groups, e-mail, mailing lists etc).

(4) **Registrational interactivity :** a measure of a media's potential ability to register information from and thereby also adapt and/or respond to a



given user's needs and actions, whether they be the user's explicit choice of communication method or the system's built-in ability to automatically 'sense' and adapt (surveillance systems, intelligent agents, intelligent guides or intelligent interfaces, etc).

## 2.7

### 2.8 Five-dimensional concepts of interactivity

Ha and James (1998) pointed out the invalid assumptions of 'exchange' and 'mutuality' as the key elements of interactivity when applied to CMC context. They propose that interactivity is "the extent to which the communicator and the audience respond to, or are willing to facilitate, each other's communication needs" (p. 8). They suggest playfulness, choice, connectedness, information collection and reciprocal communication as the five dimensions of interactivity in CMC. Following are the expanded definitions of these terms:

(1) **Playfulness:** to the extent that the communicator is able to electronically satisfy the self-communication needs of the audience, the games on websites can qualify as interactivity devices. Therefore, it is reasonable to conclude that playfulness as a critical aspect of interactivity.

(2) **Choice:** the choice dimension of interactivity may be seen as consisting of the availability of choice and the unrestrained navigation in cyberspace. Choice is closely related to the first dimension of interactivity (playfulness) because it is also an internal emotional sense of satisfaction.

(3) **Connectedness:** the textual information, video-clips, audio-clips, and animated graphics available on the Web can enhance the feeling of connectedness by showing non-verbal cues such as action, facial expression, and tone. These tools help people to understand their communication counterparts as well as face-to-face communication after acquiring experience with the context of the communication. With the advantage of asynchronous interaction, more time is given to develop relationships between computer user groups than face-to-face groups.

(4) **Information collection:** with more information about the audience, an organization can customize messages according to the interest and prior knowledge level of the audience. In the mass media industry, audience measurement is a term used to describe the process by which the communicator systematically collects data about individuals who consume media. Such information generally includes demographics, psychographics, and sometimes personality characteristics of the audience. Although it is a common belief that better informed communicators can provide better communication to potential consumers, many audiences do not think in this way. Information collection on the Web takes on more varied forms than with traditional media. It can be in the form of admission requirements such as visitor registration or can be recorded automatically as cookie files without the awareness of the visitor.

(5) **Reciprocal communication:** by providing information and other content to consumers on a website, the company expects response and feedback in return, forming a reciprocal communication loop.

Downes and McMillan (2000) provided a five-dimensional definition of interactivity comprised of:

- (1) Direction of communication;
- (2) Timing flexibility;
- (3) Sense of place;
- (4) Level of control;
- (5) Responsiveness and the perceived purpose of communication

## 2.9

### 2.10 Six-dimensional concepts of interactivity

Heeter (1989) adopted Rafaeli's one-dimensional interactivity concept and included responsiveness as one of her six dimensions of interactivity which includes the following:

(1) Complexity of choice available - this dimension referred to selectivity and concerns the extent to which users are provided with a choice of available information (information in this context includes any sort of media content, be it entertaining, persuasive or educational).

(2) Effort that users must exert - it is the amount of efforts users must exert to access information.

(3) Responsiveness to the user - the third dimension of interactivity is the degree to which a medium can react responsively to a user. (Media systems can also interpose a human who responds to user queries, for example, the telephone operator. Thus media system can be technologically or humanly responsive to users).

(4) Monitoring of information use (when a system can track users for example). New technologies are changing the nature of feedback. With traditional media such as television, radio and newspaper feedback refers primarily to media users calling or writing to the station management or editors. With some of new technologies, user selection of information can be a continuous monitoring of system use such as videotext central computers, and interactive cable television. The potential for continuous monitoring of system use has implications for billing and for programming system content to meet user interests.

(5) Ease of adding information - with some new technologies, users actually act as an information source, providing information that is carried on a media system to other users. Broadcasting television carries virtually no user-programmed content (with the occasional exception of an editorial comment). Electronic bulletin boards, on the other hand, are computer-based system that link users by telephone to public message databases comprised almost entirely of user-generated content. A fifth dimension of interactivity is the degree to which users can add information to the system that a mass, undifferentiated audience can access.

(6) Facilitation of interpersonal communication. This dimension means the degree to which a media system facilitates interpersonal communication between specific users. (Many technologies such as broadcast television allow for no interpersonal communication).

## 2.11

### 2.12 Suggested dimensional concept of CMC interactivity

In light of the previous review of the dimensions of interactivity and based on the suggested definition of interactivity, the researcher suggests the following model for describing the dimensions of interactivity since the elements of communication can be used to form a model of interactivity.

According to this model, we can differentiate among three types of interactivity:

- 1) User to user interactivity: this is human interaction and it takes place directly in interpersonal communication and indirectly (through new media) in CMC.
- 2) User to media interactivity: to send or receive the message.
- 3) User to message interactivity: to encode or decode the content of message. Figure 8 presents this model.

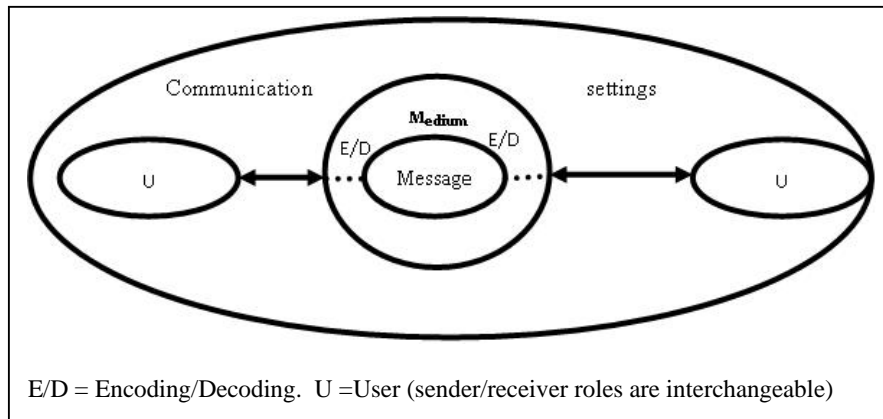


Figure 8 CMC Interactivity model

The elements of the communication process are illustrated with circles indicating the basic players or actors of interactive communication. The direction of interaction is illustrated with arrows or lines. The communication should contain four types of conditions to be interactive:

#### 1. Users (sender/receiver)

In interactive communication, one cannot differentiate between sender and receiver because their roles are interchangeable.

a) Users should perceive that they have greater control of the communication environment and they should be able to control the communication process.

b) Users should find the communication to be responsive.

c) Users should perceive that the goal of communication is more oriented to exchanging information than attempting to persuade. (Downes & McMillan, 2000).

d) The roles of sender and receiver should be interchangeable among participants.

e) Exchange and activity among users is usually necessary.

f) For the most part, communicators can be human or machine, often contingent upon whether they can function as both senders and receivers.

g) They should be able to perceive the differences in levels of interactive experiences.

## **2. Medium**

The characteristics of an interactive medium could be summarized in the following points:

h) An interactive medium enables all participants (users) to actively communicate. For example internet enables the users to communicate actively through its tools such as email or chat.

i) It provides alternatives of communication time to meet the time demands of users. Regarding this point, CMC is more interactive than interpersonal communication because the interaction of CMC can be done synchronously or asynchronously since chat enables users to communicate synchronously, but e-mail enables them to communicate asynchronously.

j) Speed – an interactive medium should transmit the messages among the users speedily.

k) Giving the sense of place through the use of multimedia applications such as photos, video, and audio.

l) Having an interactive environment and tools (such as: email, chat, electronic bulletin board, newsgroups, search engine, and capacity of adding comment or feedback).

## **3. Message**

m) The interactive message should be not only sent from sender, but also selected from receiver.

n) The message should be updated

o) It should be personal, interconnected and exchangeable.

p) It should be related to the interests of the users.

**4. Communication settings**

q) Timing of communication is flexible enough to meet the time demands of participants.

r) The communication environment creates a sense of place.

**3. Types of interactivity**

There are many classifications of interactivity; the figure (3-9) highlights the most popular classifications of interactivity.

Perspectives of Classification	Kinds of interactivity			
	Communication type	Interactivity of Interpersonal communication	Interactivity of Mass communication	Interactivity of Computer-mediated communication
Communication elements	User-to-documents interactivity	User-to-computer interactivity	User-to-user	
Communication direction	Monologue	Feedback	Responsive Dialogue	Mutual Discourse
Communication periods	Expected Interactivity	Actual Interactivity	Perceived Interactivity	
Interaction tools	Navigational Interactivity	Functional Interactivity	Adaptive Interactivity	

**3.1** Figure 9 Types of Interactivity

**3.2 Dividing Interactivity according to communication type**

Interactivity is divided into three main communication types:

**(1) Interactivity of interpersonal communication**

Interpersonal communication is characterized as one-to-one or one-to-few, face-to-face, and direct (without any equipment or technology intervening between the sender and the receiver) (Norman & Russell, 2006). Many researchers in the field of interactive communication have confirmed that interpersonal communication and especially face-to-face communication is the ideal type of interactive communication: “face-to-face communication is held up as the model because the sender and receiver use all their senses, the reply is immediate, the communication is generally closed circuit, and the content is primarily informal or ‘adlib’” (Durlak, 1987, p.744). This means media which use interpersonal communication are considered to have the highest degree of interactivity (Jensen, 1998). The

model in Figure 10 clarifies the interactivity of interpersonal communication - it incorporates a feedback view of interactivity.

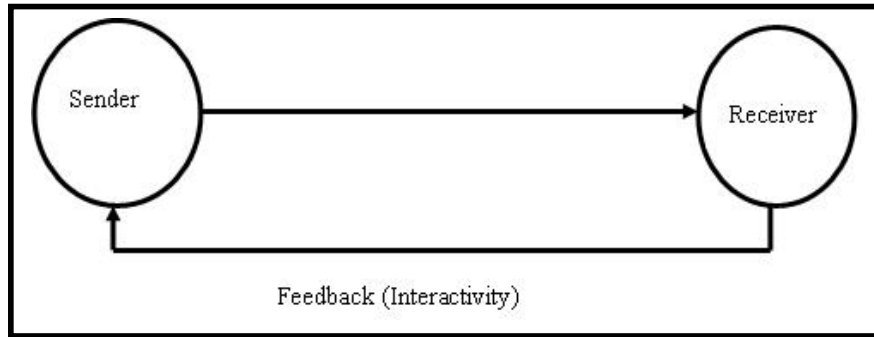


Figure 10 Interactivity of interpersonal communication

The degree of interactivity in mass media (e.g. newspaper, radio, television) is so weak that “there is a long tradition of dissatisfaction regarding the limited one-way communication of mass media. Lack of interactivity was a concern for media critics long before the term “interactive” became an inflated buzzword in the age of the Internet” (Schultz, 1999, p.2). Some researchers ignored the feedback of mass media audience and they considered it non interactive (e.g. Rafaeli 1988).

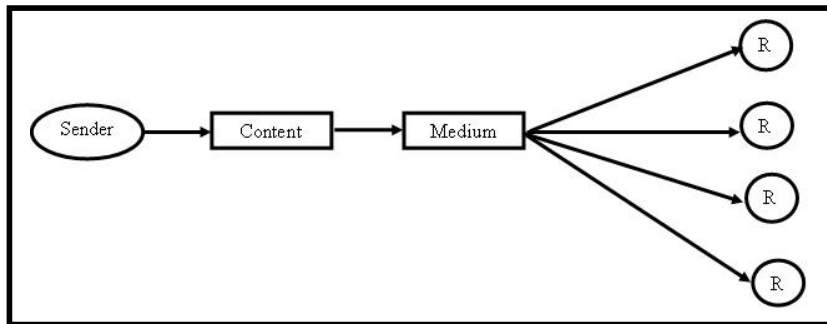
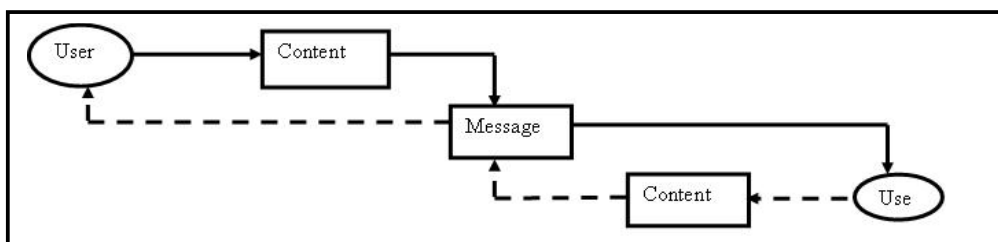


Figure 10 presents a simplified model which typifies many models of mass communication. The primary feature of this figure is a one-to-many communications process, whereby the Sender transmits through a medium to receivers (R). Depending upon the medium (i.e. broadcast, print, billboards), either static (i.e. text, image and graphics) and/or dynamic (i.e., audio, full motion video and animation) content can be incorporated. No interaction between audience and senders is present in this model. Virtually all contemporary models of mass media effects are based on this traditional model of the communication process (Hoffman, Novak & Chatterjee 1995).

**(3) Interactivity of Computer-mediated communication**

Computer-mediated communication is an interactive communication process that is presented through new media, particularly the Internet. It has a high degree of interactivity:



### 3.3

#### 3.4 Dividing interactivity according to communication elements

Figure 12 Interactivity of computer mediated communication (Hoffman & Novak, 1995)

Interactivity could be divided into three basic communication elements, which are as follows: 1) the user-to-user; 2) user-to-documents; and 3) user-to-system traditions of interactivity that have been evolving for decades. However, in many ways, distinctions among these traditions are arbitrary. For example, the user-to-user tradition focuses on human communication but issues such as how readers respond to newspaper editors, while clearly part of the human communication tradition, also cross over into the user-to-documents literature that addresses how people interact with content and content creators. Yet, despite the relatively arbitrary nature of the distinctions, these three research traditions do provide a basic framework for investigation of the past, present, and future of interactivity. While each tradition is treated separately, areas of overlap among these traditions will also be probed (McMillan, 2006).

#### 3.5 Dividing interactivity according to the direction of communication

McMillan (2002) has divided interactivity according to the direction of communication, as follows:

1. **Monologue:** involves primarily one-way communication and relatively little receiver control over the communication process. It resembles both allocution and press gentry. Senders create and disseminate content to attract an audience, promote a product or service, build a brand, or perform some other persuasive communication function. Most corporate websites provide an example of monologue.
2. **Feedback:** still primarily one-way communication but it allows receivers to have limited participation in the communication process. Feedback tools such as e-mail links allow the receiver to communicate with the sender. However, in this model, the sender and receiver roles are still very distinct. Even though the receiver may communicate with the sender, there is no guarantee that the sender will respond to the Feedback that has been received. In some ways, feedback resembles both consultation and public information. The receiver can consult with the provider of information in terms over which the receiver has some control. In other words, there may be some symmetry in the communication goals.
3. **Responsive dialogue:** enables two-way communication but the sender retains primary control over communication. This type strongly resembles the two-way asymmetric model. It may also use techniques typical of the registration model for monitoring the communication process. Responsive dialogue may take place in environments such as e-commerce in which the sender makes goods and services available, the receiver selects and orders desired goods/services, and the sender acknowledges receipt of the order. Online customer support sites, and sites that solicit

volunteer participation in non-profit organizations, may also utilize Responsive dialogue.

4. **Mutual discourse:** enables two-way communication and gives receivers a great deal of control over the communication experience. This strongly resembles the conversation and two-way symmetric models. The sender and receiver roles become virtually indistinguishable in environments such as chat rooms, bulletin boards, etc. A key to mutual discourse is that all participants have the opportunity to send an

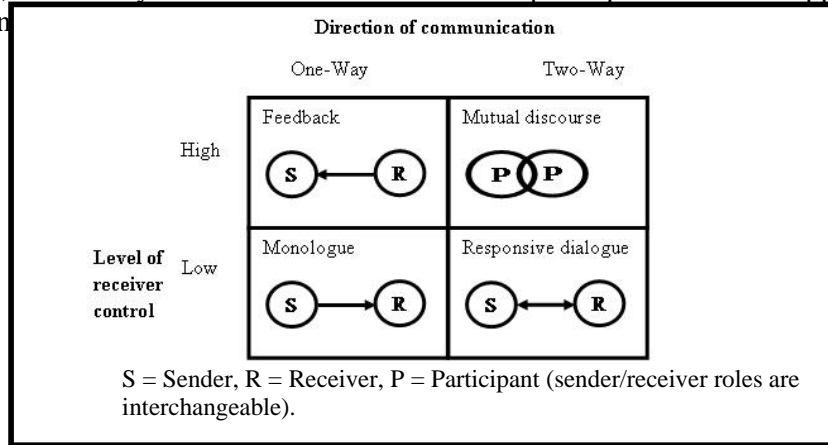


Figure 13 Four Models of user-to-user interactivity. From, ( McMillan, 2002. p. 276)

### 3.6 Dividing interactivity according to Periods of the Commutation Process

Interactivity could be divided according to these communication elements:

1. Expected interactivity can be defined as the extent of interactivity that a person expects to experience during a prospective interaction with a medium. (Sohn, Leckenby & Lee, 2002).
2. Actual interactivity could be defined by focusing on the features of a medium, or capabilities of creating interactive content or messages (Wu, 2005).
3. Perceived interactivity of websites by site-visitors is defined as the psychological state experienced by a site-visitor during the interaction process (Wu, 2005).

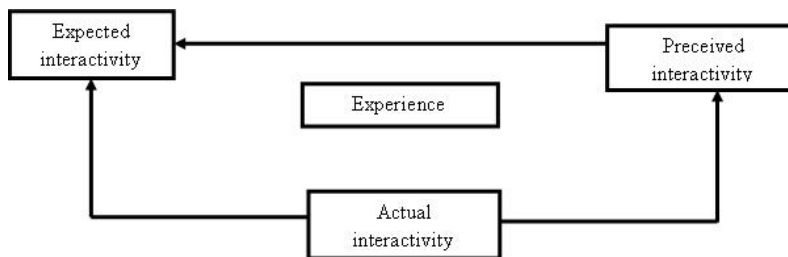


Figure 14 Types of interactivity according to periods of communication process. Sources: from (Sohn, Leckenby & Jee, 2003, P.4)



Figure 13 illustrates the circular process of the interactivity perception formation based on the interplay between prior-expectation, interaction, and post-evaluation. For example, a consumer may have a certain level of subjective expectancy about an interaction with the Web in general before he or she experiences an actual interaction with a website. His or her evaluation of the interactivity of the website may be made based upon his or her prior expectancy of interactivity after having an actual interaction experience. In turn, this post-evaluation of interactivity of a website makes him or her modify his or her expectation of interactivity toward the web.

### **3.7 Dividing Interactivity according to interaction tools**

Interactive options on websites can be subdivided into three types or forms: 1) navigational interactivity (through 'Next Page' and 'Back to Top' buttons or scrolling menu bars), 2) functional interactivity (through direct mailto: links, Bulletin Board Systems (BBS) and moderated discussion lists, and 3) adaptive interactivity (offering chat rooms and personal customization through 'smart web design' (Mark Deuze, 2003). Because of the importance of CMC as interactive communication, the researchers allocate the following part of this chapter to exploring the concept of CMC, its characteristics and online communication as the most important type of CMC

## **4. Computer-Mediated Communication (CMC)**

New media technologies (e.g. Internet, cable television, home computer, video cassette recorder (VCRs), satellite transmission, electronic delivery of information (videotext and teletext), hypermedia (a new medium that combines publishing, video, audio, and computers), CD-ROMs, high definition television (HDTV) (Severin & Tankard, 1992) have created a new type of communication and “have led to strikingly different communication behaviors that require a high degree of individual involvement”(Rogers, 1986, p.31). This new type of communication, or what has been called computer-mediated communication, has unique characteristics that distinguish it from other types of communication (interpersonal communication, group communication, and mass communication) and it contains many different configurations of communication; its varied forms show the connection between interpersonal and mass communication.

### **4.1 Concept of CMC**

Computer-mediated communication (CMC) is not only “communication that takes place between human beings via the instrumentality of computers” (Herring, 1996, p.1), but also “it is an umbrella term for a range of computerized information and communication technologies of which the most notable is electronic mail, but which also includes electronic discussion groups, electronic bulletin boards, computer conferencing systems, groupware and more recent Internet applications such as the World Wide Web” (McMurdo & Meadows, 1996, p.348).

It has become a truism that CMC systems, as compared with previous communication technologies, are cheap, fast, and democratic; as such, their popularity continues to grow.

Every year, it seems, a new type of CMC enters the scene: ICQ ('I Seek You'), instant messaging (IM), short-messaging service (SMS, also known as text messaging or 'texting'), and web logs (blogs) (Herring, 2004, p.26). Terms like 'digital convergence', 'online media' 'new media' and 'virtual community' began to spread both in practice and also in scientific research. As a consequence, the question of the impact of the internet on classical mass media has developed into a number of fruitful empirical studies and theoretical discussions (Oblak, 2005).

"CMC systems are becoming alternative media for communication as organizations implement electronic mail, computer conferencing, computer bulletin boards, videotext, and related systems. The communication aspects of these share certain attributes: text may be entered into a computer file from a hardcopy or video terminal at a place and time of the sender's choosing. The creation, storage, format, distribution, and receipt of the text may be processed by using the capabilities of the computer; and the receiver may scan, read, print, forward, copy, edit or delete the text at place and time preferred" (Rice & Love, 1987, pp.85-86).

#### **4.2 Characteristics of CMC**

CMC is fundamentally different from other modes of informational exchange (Greenberg, 2008). Its technology has made communication much easier and less expensive. New media have many advantages that distinguish it from traditional mass media such as: interactivity, multimedia, demassification, selectivity, synchronization, asynchronization, immediacy, inexpensiveness, pro-democratic forums, speed ...etc. CMC represents more than a mere technological advance over what has gone before. "It cannot be accurately assessed by only measuring the speed and efficiency with which it is capable of communicating messages or the diverse array of modes that it can employ in reaching its audience. CMC is capable of bridging huge geographical distances, and creating communities of persons where there had before been only groups of isolated individuals. But it has also fundamentally altered the nature of communication by permitting communicators to create their own identity and reality" (Greenberg, 2008, p.230).

##### **1. Interactivity**

Interactivity is generally assumed to be a natural attribute of face-to-face conversation, but it has been proposed to occur in computer-mediated communication settings as well. For example, interactivity is one characteristics of two-way cable systems, electronic text systems, and some programming work as in interactive video games. Interactivity is present in the operation of traditional media, as well. The phenomena of letters to the editor, talk shows on radio and television, listener participation in programs, and in programming are all characterized by interactivity.

"In the early 1990s, use of the term 'interactivity' exploded in the popular, trade, and scholarly press. Researchers are actively engaged in scholarship that explores how people interact through media, the nature of interactive content, and how individuals interface with

the computers and telecommunications tools that host interactive communication. Interactivity is generally considered to be the central characteristic of new media” (McMillan, 2006, p163).

## 2. **Two-way communication**

Interactive communication (CMC and interpersonal communication) is two-way communication. In interactive communication, both sides (sender and receiver) exchange messages. Two-way or multi-ways communication is present as soon as messages flow bilaterally (Schultz, 1999).

## 3. **Synchronization & Asynchronization**

Interactive communication (particularly computer-mediated communication) can be done synchronously or asynchronously; chat rooms are an example of this type of information exchange that often occurs synchronously. On the other hand, some site producers welcome the use of message boards and used them actively to create a public space for users of the website. The message boards, or forums, allow the audience to communicate asynchronously with other users, sometimes publicly and sometimes privately, one-on-one. Message boards thus exist outside the traditional journalistic sphere of mass communication in which the roles of senders and receivers are distinct. In the online message board environment, the audience can become both senders and receivers of information in an open environment (Chung, 2007). CMC is synchronous or asynchronous electronic mail and computer conferencing (Walther, 1992 p.52).

## 4. **User control**

Rogers and Allbritton, (1995) defined control as “the degree to which an individual can choose the timing, content, and sequence of a communication act, search for alternatives, enter message content into storage, etc., the two or more participants in the interactive communication usually share control over their exchange of information” (p.180). For this reason, Rogers and Allbritton, (1995) prefer to call the individuals involved in interactive communication ‘participants’ rather than sources and receivers. The participants have roughly coequal roles in exchanging messages and creating a common meaning for the information that they exchange.

## 5. **Telepresence**

Telepresence involves a moment-by-moment feeling. It indicates that, at a given time, the sense of presence is limited to one environment and the sense of presence in the mediated environment, or telepresence, cannot be mixed with the sense of presence in the unmediated environment. This indivisible sense of presence does not allow such concepts as auditory presence or visual presence, though such modality-based classification is possible in the cases of attention, perception, and awareness (Kim & Bicco, 1997).

## 6. **Massification & demassification**

The central findings presented here go hand-in-hand with an argument that is stated in more recent theories of computer-mediated communication emphasizing the effects of present day 'massification' of the computer mediated communication, the interactive forms of computer-mediated communication, such as Usenet conferences, Internet Relay Chat or mailing lists. Searching for information, service providers or entertainment through the Web does not require the kind of active personal involvement which is associated with engagement in specialized discussion groups. In this sense, it is often argued that computer mediated communication population today more resembles the passive audience of the classical mass media than the expected ideal vision of an engaged, informed and active citizenry (Oblak 2003).

The convergence of communication technologies, as represented by the computer, has set off this fear of demassification, as audiences become more and more fragmented. The political and social implications of mass audiences and mass media go beyond the scope of this paper, but the current uneasiness and discussion over the terms themselves seem to indicate that the old idea of the mass media has reached its limit (Morris & Ogan, 1996).

#### 7. **Selectivity**

Selectivity in interactive communication is the extent to which users are provided choices of available information. So, the more choice the user has or the more choices the medium provides, the higher interactivity of the user or the medium (Chung & Zhao, 2004).

#### 8. **Communication technology**

Barnes (2003) explained that the term computer-mediated communication "(CMC) is used to refer to a wide range of technologies that facilitate both human communication and the interactive sharing of information through computer networks, including e-mail, discussion groups, newsgroups, chat, instant messages, and Web pages" (p. 4).

#### 9. **Speed**

The ideal interactive medium responds in "real time" to user input; the response or lag time is not noticeable. Although it accepts and responds to only audio input and uses only a limited frequency range, the telephone is highly interactive in terms of this criterion because interactions via telephone seem to occur in real time (except with calls over exceptionally long distances) with bandwidth limitations and explosive growth in the number of users. For example, the issue of response time is an important consideration on the World Wide Web. The computational difficulty of processing inputs related to the user's position can cause even an advanced virtual reality system to present images and sounds that lag quite noticeably behind user movements and the problem is recognized as an important one (Lombard & Snyder, 2001).

#### 10. **Impersonal, interpersonal, hyperpersonal**

CMC is impersonal, interpersonal and hyperpersonal communication (Walther, 1996):

a) CMC is impersonal in natural or experimental settings where participants have restricted time frames for interaction or when the purpose of the interaction does not include interpersonal goals in the first place, conditions that may be uncommon. Additionally, CMC is impersonal when such an effect is desired and implemented through specific technological aids such as anonymity and thick layers of software imposed interaction structures.

b) CMC is interpersonal when users have time to exchange information, to build impressions, and to compare values.

c) CMC is hyper-personal when can users create impressions and manage relationships (PP 32-33).

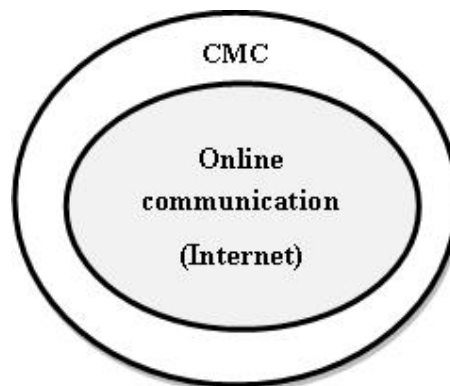
#### 11. **The medium CMC is primarily textual**

Unlike FTF or audio communication, the medium in CMC is primarily textual. There are no nonverbal cues to embellish meaning or social context cues regarding gender, age, or status. Not only can the absence of cues hamper communication efficiency, it seems to create a semblance of anonymity and lack of awareness of the social context. These conditions, in turn, have been held responsible for a perceived higher incidence of rude, offensive, and uninhibited behavior (Prashant Bordia, 1997, pp.99-120).

These characteristics of CMC are interconnected and related with interactivity; for example selectivity is related with user control and all the characteristics (such as: speed involved with using communication technology, Massification & demassification, Telepresence, Synchronization & Asynchronization) lead to interactivity.

#### 4.3 **Online communication**

Online communication is considered the most important format of CMC and it is practiced on the Internet. Consequently, online communication technology contains emails, bulletin boards, user groups, chat rooms, and webpages. It has applications such as online journalism, online advertising, e-commerce, etc, and it emerged as a pervasive and significant medium of communication in the late 1980s (Soukup, 2000). Figure.15 clarifies the relationship between CMC and online communication.



**Figure 15 Relation between CMC and online communication**

When the internet began to emerge in the public consciousness around 1995 or 1996, no one really believed that it would diffuse through the global economy as quickly as it has. Consumers were generally indifferent and business executives thought they had ample time to understand and adapt to the requirements of the new medium. To the surprise of all, it has diffused throughout the global economy more quickly than any other medium. The radio took over seven times as long to reach 50 million users. Even cable television took twice as long (Roberts, 2003, p. 6). The internet has a number of characteristics those differentiate it from any other medium or channel in history and that have contributed to its rapid diffusion. We can identify the unique characteristics of the internet or online communication:

1. “It provides a single, common platform for communications and transactions throughout the world.
2. Consumer and business can obtain information from any web-enabled organization quickly and a little or no cost.
3. The interactive nature of communications in this medium; since the Internet has many interactive tools such as: Internet Relay chat (IRC), Multi-User Dungeons (MUDs), e-mail, search engines, Electronic Bulletin Board, Newsgroups.
4. It is global in scope. Assuming that the necessary infrastructure is available, any individual, business or nonprofit organization in the world can connect to the internet and access its functions in exactly the same way as other users.
5. It offers the opportunity for organizations to compete on a level playing field regardless of the size or distance.
6. The internet is an always-on communication network. It allows consumers and businesses alike to access information, entertainment, and businesses services.
7. It is a many-to-many communications network, as compared to one-to-one networks like telephone or one-to-many systems like television or radio broadcast” (Roberts, 2003 p. 7-8).

#### **4.3.1 Online communications formats**

##### **(1) Online Marketing**

Online communication allows millions of people to surf the net in search of entertainment, information, sense of community, and/or commercial exchange (Roehm & Haugtvedt, 1999). The tremendous growth of the Internet, and particularly the World Wide Web, has led to a critical mass of consumers and firms participating in a global online marketplace. The rapid adoption of the Internet as a commercial medium has caused firms to experiment with innovative ways of marketing to consumers in computer-mediated environments. These developments on the Internet are expanding beyond the utilization of

the Internet as a communication medium to an important view of the Internet as a new market (Hoffman, Novak & Chatterjee, 1995).

(2) Social interaction

The use of the internet has now shifted from an exhaustive information store, to another means with which to create and maintain group and individual social relationships. The proliferation of chat rooms on the internet has created opportunities for individuals to engage in social influence attempts 24 hours a day, 7 days a week, and 365 a year. Owing to the unique properties cyberspace affords its users, social influence attempts over this new medium may not be similar to that of face-to-face interaction (Okdie & Guadagno, 2008, p.478).

(3) E-learning

Uses of Internet for teaching and learning, such as course outlines and lectures notes posted on a website, email, assignment submissions, class mail lists, online references, and online contact with the instructor, are perfectly legitimate uses of online communication and new technology (Amundsen & Sohbat, 2008).

(4) Political medium

The nature of the technology itself has opened up a space of much greater democratic possibility (McChesney, 1996). Proponents of cyberspace promise that online discourse will increase political participation and pave the way for a democratic utopia. From this perspective, the alleged decline of the public sphere, or civil society, will be halted by the democratizing effects of the internet and its surrounding technologies (Papacharissi, 2004).

Aside from the aforementioned areas, there are many fields (e.g. Health, lifespan, instructional, virtual organizations, online journalism, online TV, and radio stations) that use the internet for many purposes (Thurlow, Lengel & Tomic, 2004).

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