

# COMMUNICATION IN A VIRTUAL ENVIRONMENT: FROM THE ONE-TO-ALL MODEL TO THE ALL-TO-ALL MODEL

**Eliana Santana Lisbôa, Clara Pereira Coutinho**

*University of Minho (PORTUGAL)*  
*eslisboa2008@gmail.com, ccoutinho@ie.uminho.pt*

## **Abstract**

The need to know and explain the human communication phenomena lead to the development of many theories and communication models that gradually evolved through time, in accordance with the cultural and sociopolitical contexts. In this article we will address the transformation from models that approached communication through a “one-to-all” logic, allowed by the spread of printed mass media or even radio and television, to a new communication process approach logic that can be resumed in the slogan “all-to-all”. In fact, with the beginning of the Internet and digital technologies, different ways to communicate arise, since, as communication can now reach global amplitude, it favors multiple user connections, allowing for a multidirectional information flow model, or “all-to-all” model logic.

Keywords: Communication, digital technologies, Internet, Interaction, one-to-all, all-to-all.

## **1 INTRODUCTION**

Communication has always been a part of human being social behavior, bringing with it a whole historic review of human needs, desires and aspirations, contributing to the development of many means that can satisfy the needs on a given historical moment. According to [1], communication has been studied as a social process since the ancient Greece. The author also emphasizes that the communication model emitter-message-receiver was developed by Aristotle.

With the passing of time, we witnessed some discoveries that did, in fact, ease the communication between people. We are more specifically talking about the invention of writing and the mass media.

For [2], mass communication delivers information from a communication center, thus allowing the placement to concentrate in the “one-to-all” model, which is a strategy to ensure the hegemony of power over what is broadcasted or emitted.

With the beginning of the Internet and digital technologies, different ways to communicate arise, since, as communication can now reach global amplitude, it favors multiple user connections, allowing for a multidirectional information flow model, or “all-to-all” model.

On the other hand, [3] believes the present moment comes from stages that evolved over time. The first stage is defined as being the closed societies, that had as a remarking feature orality, where man seek to interact with his fellow man through gestures and voice.

Now, the second stage may be defined as the civilized society stage, which had its exponential with the use of writing, allowing the human being a greater abstraction power [4].

The third period, called the mass communication period, has its reference in the appearance of sound and image recording techniques, thus allowing communication a wider range. Communications that were a mere technical mean of reproduction now become industries, since they develop an own and exclusive language.

At last, we have the cyberculture stage that, according to Levy, can be pointed to “the moment when our species, through economic globalization, through communication and transport network enhancement, converges in a single worldwide community, even if that community is – and is a lot! – uneven and conflicting.” [3].

That way, with the passing of time, and also with the sociopolitical and cultural context change, other communication theories appeared, that came to alter the model that we would call the classic model, in other words, the communication that we would call the Aristotle legacy, that advocated the message sent from “one-to-many”, enabled by the spreading of printed media or even radio and television. With the appearance of the Internet and digital technologies, a new communication model is proposed, where the motto is now “all-to-all”, without a hierarchy between agents and participants in the process.

So, in this communication we will present and discuss some communication theories that allow the understanding of the many communication ways possible in a virtual environment.

## **2 INTERNET AND DIGITAL TECHNOLOGIES AS A MEAN OF COMMUNICATION**

As writing revolutionized the way people communicated, allowing for a greater broadcast and registry of events inside a certain historical context, so did the Internet and Web 2.0 contributed for an effective immeasurable advance in information broadcast, and de appearance of alternative ways of communication.

The Internet, because it is a network of interconnected computers, allows connecting with people from all over the world, of different races, ethnics and cultures. According to [5], it may be considered as an interpersonal means of communication, but it surely is not a mass communication means, although it presents some of the characteristics of mass media, e.g.: i) being organized in structures that have various professionals; ii) broadcast of information to a large number of people, using technological resources, that in turn are supported by the market economy; iii) has a target audience of a range of listeners disperse through all the world and iv) communication is not single way. This last one is, for the author, its distinguishing characteristic, as it is the characteristic that separates it from mass media.

Above that, it is know by all that the Web was developed with the goal of being a human knowledge repository, where all people can share their ideas through a participation architecture [6], thus increasing the communication possibilities between people, that then have the freedom to access the information they desire, in face of the hypertext characteristics that this new paradigm presents.

That changes in a significant way the functions each person performs. They go from mere spectators (passive), to network users, with freedom to choose what to access, and so, more active in what producing and communicating knowledge to a borderless world means.

## **3 CYBERCULTURE**

Before we talk of cyberculture, we must first define what is cyberspace. According to [3], the term was used in a science-fiction novel (Neuromancer) where, in 1984, William Gibson used it to describe the set of digital networks that, in his novel, served as the scenario for countless worldwide conflict. The work approached various countries secret information defence techniques, namely the use of computer programs. Beyond that, it was used to define the new frontiers of economy and culture. Immediately, the term was coined by users and creators of digital networks, who used it to define the range of information flow that has the Internet as a broadcast mean.

In the present article we take as reference the definition used by Levy, who writes that Cyberspace “is a communication space created by the interconnection of computers and computer memories” [3], having the digital binary coding system as its remarkable characteristic.

In general terms, cyberspace is used to define not a geographical space, but a virtual one, where people meet and communicate. So, cyberculture is the cultural, social and economical legacy that, according to the author, is the result of compiling the social, intellectual, cultural and technical capital, what he calls of collective intelligence.

We have to agree that this phenomenon (cyberculture) was a decisive point in the opening of new horizons for communication between people, since it broke the space and time limitations.

According to [7],[2] and [3], cyberculture contributes to turn the communication flexible, since it parts from the existing hierarchy in mass media, like radio or TV, where the one-to-all model prevails, meaning that a few people, organizations or corporations produce the information meant for a great number of receivers.

In that effect, the cooperation between people assumes an added value, as they share video, music, information, and others. And it is in that context that social networks and virtual communities appear in the cyberspace, a result of cyberculture and remarking characteristic of the Web 2.0 paradigm, responsible for the multidimensional communication flow increase.

## 4 EXTENSIVE COMMUNICATION MODEL

Although the main objective of our article is finding a communication model to explain the way communication occurs in virtual environments, we believe it would be interesting to enumerate some of the differences that distinguish it from the previous one, as we believe this will ease the understanding. So, referring to the study from [8], we present in Table 1 a resume of the main differences between the pre-existing model, that the author names "intensive" and the new one, that he names "extensive":

**Table 1:** Differences between Intensive and Extensive Communication

INTENSIVE COMMUNICATION	EXTENSIVE COMMUNICATION
Traditionalism	Informality
Strict Standards	Flexible rules
Restrictions on reading and editing	Expanded reading, interactive editing
Promote the recognition	Promotes the original, the unexpected
Identical references	Different references
Slow, intimate reading	Quick and superficial reading
Vertical configuration	Horizontal Configuration

By analysis of Table 1 we can see that the intensive communication model may be decoded in line with the linear based communication model, since it has as a base the communication between two points, where a single direction prevails, meaning that the messages flow in a single direction and so, the emitter and receiver functions are analyzed separated [9].

Furthermore, we realise that communication in that model is viewed on an essentially technical perspective, with emphasis in the quantitative aspects, because it has as a base premise the measure of information quantity a message has, along with the channel capacity to broadcast it, which may not necessarily occur between two individuals but also between machines or between a machine and an individual. As a way to show what has been said, we quote as an example the Shannone Weaver mathematical model, which describes communication as a single direction and linear process [9].

Now, in what concerns the extensive communication model, we can say that the concept has its beacon in the communication experiences where digital information assumes various formats, namely in the Internet context [8]. According to [10], that model is perceived has the guiding element for communication in this new century, where interaction and knowledge sharing assume great relevance value. For the author, the extensive communication may be defined as an

*Communication without defined rules, without a fixed pattern, without technical borders or control. An interaction with hypertext logic, timely and objective in its goals, but vanishing in storage, without stocks and in constant transformation. Timely and precise, it's also transitory. May be seen as a network of connections, announcing the end of hierarchies and the beginning of an information order, that has as an authority the free space to negotiate and common sense. [11].*

Departing from this base, we realize that this model predicts a communication based in the horizontality, where information sharing is open and democratic, enabling the data to be approached in their multiple dimensions, allowed by the Internet mechanisms, as in the tools and applications that enable a collective approach, ephemeral, without reserves and in constant change.

However, for us to understand the extensive communication model, we need to take as a reference three characteristics that, according to the author, are the supporting pillars in its construction, that are: interactivity, hypertextuality and hypermediation. The first may be understood as the process of dialogue, interact and exchange information with a range of people, independently of place and geographical space, thus allowing for a more personalized communication, enabled by the existence of interaction applications all over the Internet. Hypertextuality is a way to demonstrate the relations between the various content that approach a given theme. It's a way to maintain the connection between the various content, because, according to [10], "a hypertextual language tends to the Internet user information needs, enabling him to build a personalized speech... The information is

connected to many others through connections that open ways to the unpredictable navigation". And, at last, we have hypermediation, that is the various formats the contents may present (image, text, audio), which can ease the understanding of the given information.

These characteristics or bases make for the foundations in the building of a communication model that is no longer inclined towards single direction, but multidimensional, defined as "all-to-all", with the remarkable feature is horizontality and equal opportunity, for those who can access digital technologies, in the publication and distribution of content about a great range of themes.

#### 4.1 The "All-To-All" Model

According to [10], this model has a remarkable characteristic the autonomy people exercise where it concerns the production and distribution of content, that have in the Internet and digital technologies the tools for interaction and message broadcast.

This model brings a different reality because it gives everyone the opportunity to access and be recognized by their participations in application, and tools that allow the interaction between many, filled platforms, thus creating a kind of common identity with that group that shares common interests. It is in that way that all can be regarded as authors, because "writing is the adequate technical support for a means of communication that makes the author as the origin (paternity) and judicial individual (property) of a production called work" [12].

According to the author, we may deduce that, in this model, setting aside the differences in access and opportunity, all can be an active subject in producing knowledge, in a participative architecture, denying an established practice that the majority of people were mere information receivers, without the right to interfere in the produced knowledge.

To [13], the "all-to-all" communication model (Figure 1), shows itself, so to speak, a suitable paradigm to the current social context, which is filled with digital technology, but tries to preserve the key elements of communication (emitter and receiver). For that purpose, the author believes that it is of great importance to clarify some of the key concepts, namely:

a) Emitter or communicator 1 – in this model, he is the Internet services user. However, this element may be represented not only by an individual, but also by organizations. May also function as a receiver;

b) Receiver or communicator 2 – along with its predefined role in the process, the user of the services, he can also question the information, altering its contents. He can also have the role of an emitter.

According to [14], these agents generate and receive the messages, being mutually influenced, through a dynamic relationship, resulting from their interaction.

c) Channel – in this model we believe the channel may be defined as the cyberspace because, according with the author's definition, it's "all the converging space for the produced content, the broadcasted information, the accumulated knowledge or even contextualized"[13];

d) Message – it's the available information in the various formats and distributed thru the network;

e) Content – different kinds of subjects or knowledge produced by any means in any communication tool, be it analogical, digital, electronic, magnetic, artisan, hybrid, real or virtual;

f) Filters and / or interferences – they are elements that can stimulate the consolidation of the acquired knowledge through the social context the individual is inserted in. It's an element that may add value to the produced content;

g) Social context – social environment where emitter and receiver are a part of, ruled by political, social, historical and cultural values;

h) Context indicators analysis – influences that interfere with the production of knowledge may be considered, which have a direct connection with the experienced reality of each player, working as kind of a filter in the mediating process;

i) Content adaptation to context – it means that content production, be it individually or in community, is the reflection of the social context where the agents of the communication process are inserted;

j) Content feedback – content (oral, verbal and visual) production that is inserted in a hypertextualized, interactive and multimedia interface, thus complying with the extensive communication principles;

k) Objective – is what motivates the users into producing content and, this way, widen the field of knowledge in the virtual space;

l) Social applicability – it's the identification of the importance of the produced content. In other terms, it's the application of content in the various social segments.

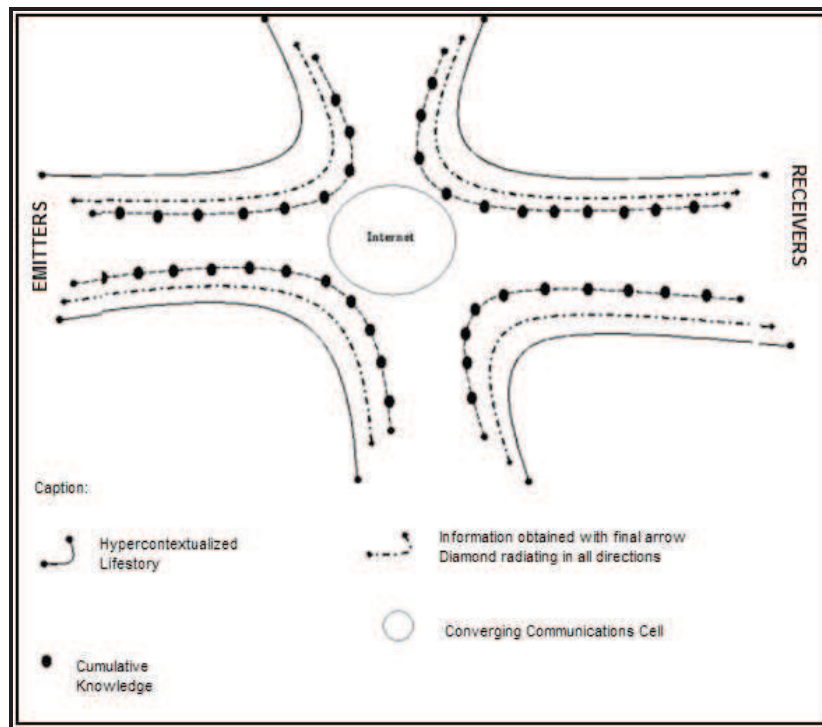


Fig. 1: “all-to-all” communication model [13]

Figure 1 gives us an interesting interpretation of the model, for we realize that both the emitter and the receiver have similar functions (emission and receiving of messages) and so they suffer constant influences, acting as natural filters in regard to content production. However, they keep flexible enough to be influenced by communication noise in its wider sense, meaning social context, life history, cultural questions, or even by the constant beams of interaction that populate that space.

For that, they reach “a set of interconnected information units, in a computer supported associative network, which the subject explores – when he navigates on the Internet” [15], that also serve as information broadcasting means.

## 5 FINAL REMARKS

Along this text, we realized that the “all-to-all” communication model has as media space the Internet and the Web, in searching and producing content. Its productions are the result of a space marked deep by spoken language, written language, audio, video, among many others, pervaded with the desire that each user has of being seen, heard and recognized. That creates a virtual social imagination that flows to a universe of people who share opinions, world vision and common values.

We also believe that, in this model, the concept of connectivity is underlying because, for [3], connectivity ends planetary borders, enabling and cooperating to the creation of more engaging interaction between people spaces, because it “digs an oceanic means of information, diving beings and things in the same interactive communication bath”.

That way we believe that “all-to-all” communication disrupts the traditional communication models, based in communication verticality and where the existing hiatus between emitter and receiver persists, thus meeting the needs and demands of a highly technological society.



## 6 ACKNOWLEDGMENTS

This paper presentation was financed by CIED, University of Minho, Braga, Portugal.

## REFERENCES

- [1] SARTORI, Ademilde Silveira (2004). Gestão Da Comunicação: Relações Entre Educação e Comunicação na Educação a Distância. In: Comunicação Educativa, do IV Encontro dos Núcleos de Pesquisa da Intercom. Available at: [http://galaxy.intercom.org.br:8180/dspace/browse-title?starts\\_with=Gest%C3%A3o+Da+Comunica%C3%A7%C3%A3o:+Rela%C3%A7%C3%B5es+Entre+Educa%C3%A7%C3%A3o+E+Comunica%C3%A7%C3%A3o+na+Educa%C3%A7%C3%A3o+a+Dist%C3%A2ncia](http://galaxy.intercom.org.br:8180/dspace/browse-title?starts_with=Gest%C3%A3o+Da+Comunica%C3%A7%C3%A3o:+Rela%C3%A7%C3%B5es+Entre+Educa%C3%A7%C3%A3o+E+Comunica%C3%A7%C3%A3o+na+Educa%C3%A7%C3%A3o+a+Dist%C3%A2ncia). Accessed on 03/11/10.
- [2] LEMOS, A (2002). Ciberultura. Tecnologia e Vida Social na Cultura Contemporânea. Porto Alegre: Sulina.
- [3] LÉVY, Pierre (1999). Ciberultura. São Paulo: Ed. 34.
- [4] SILVA, Bento Duarte da (1998). Educação e Comunicação: Uma análise das implicações da utilização do discurso audiovisual em contexto pedagógico. Braga. Instituto de Educação e Psicologia: Universidade do Minho.
- [5] MONTEIRO, Luís (2001). A internet como meio de comunicação: possibilidades e limitações. In: Actas do INTERCOM – Sociedade Brasileira de Estudos Interdisciplinares da Comunicação. XXIV Congresso Brasileiro da Comunicação – Campo Grande /MS – Setembro. Available at: <http://galaxy.intercom.org.br:8180/dspace/bitstream/1904/4714/1/NP8MONTEIRO.pdf>. Accessed on: 12/02/11.
- [6] BERNERS-LEE, Tim; CAILLIAU Robert; LUOTONEN Ari; NIELSEN Henrik Frystyk; SECRET, Arthur (1994). The World - Wide Web. In: Communications of the ACM, 37, 8, 76-82. Available at: <http://delivery.acm.org/10.1145/180000/179671/p76-berners-lee.pdf?key1=179671&key2=7630964621&coll=GUIDE&dl=GUIDE&CFID=75306608&CFTOKEN=88873173>. Accessed on 12/12/09.
- [7] CASTELLS, Manuel (2000). A Era da informação: Economia, Sociedade e Cultura. Volume I. A Sociedade em Rede. Lisboa: Fundação Calouste Gulbenkian.
- [8] SIMEAO, Elmira (2006a). O modelo de comunicação extensiva e as implicações no contexto da comunicação científica: Metodologia para mensuração de indicadores do formato eletrônico em rede. In: Actas da 1 Conferência de Publicações Eletrônicas no Contexto da Comunicação Científica. Universidade de Brasília. Available at: [http://repositorio.bce.unb.br/bitstream/10482/994/1/EVENTO\\_ModeloComunicacaoExtensiva.pdf](http://repositorio.bce.unb.br/bitstream/10482/994/1/EVENTO_ModeloComunicacaoExtensiva.pdf). Accessed on 12/02/11.
- [9] FREIXO, Manuel João Vaz (2006). Teorias e Modelos de Comunicação. Lisboa: Instituto Piaget.
- [10] MIRANDA, Antonio Lisboa Carvalho de; SIMEÃO, Elmira Luzia Melo Soares; MENDONÇA, Ana Valéria Machado (2009). Da comunicação extensiva ao modelo todos-todos: Fundamentos da política de comunicação e acervamento da Biblioteca Nacional de Brasília. In: Actas dos anais do IX Congresso- Spain. Nuevas perspectivas para la difusión y organización del conocimiento. Valência 11 a 13 de Março. Available at: <http://www.iskoix.org/comunicaciones/>. Accessed on 10/02/11.
- [11] SIMEÃO, Elmira (2006b). Comunicação extensiva e informação em rede. Brasília: Departamento de Ciência da Informação e Documentação. pag. 277
- [12] SODRÉ, Muniz (2002). Sobre o texto na rede cibernética. IN A mídia impressa, o livro e as novas tecnologias. Organizado por Cicília M. Krohling Peruzzo e Fernando Ferreira de Almeida. São Paulo Campo Grande: Intercom UNIDERP, 2002. p. 61-66 Coleção Intercom de Comunicação, v. 15. 85-87392-24-7. Available at: <http://hdl.handle.net/1904/9416>. Accessed on 12/02.11.
- [13] MENDONÇA, Ana Valéria Machado (2007). A Integração de redes sociais e tecnológicas: Análise do processo de comunicação para inclusão digital. Tese de Doutorado em Ciência da

Informação. Brasília - Brasil: Universidade de Brasília - UNB. Available at:  
<http://hdl.handle.net/10482/1080>. Accessed on 12/01/11.

- [14] TUBBS, S.L.; MOSS, S.(2003) Human Communication: Principles and Contexts. 9 ed. Boston: McGraw-Hill
- [15] COUTINHO, Clara P.; BOTTENTUIT JUNIOR, João (2008). Comunicação educacional: do modelo unidireccional para a comunicação multi-direccional na sociedade do conhecimento. In M. Lemos Martins & M. Pinto (Orgs.). Comunicação e Cidadania - Actas do 5º Congresso da Associação Portuguesa de Ciências da Comunicação. 6 - 8 Setembro 2007, Braga: Centro de Estudos de Comunicação e Sociedade (Universidade do Minho), pp. 1858-1879. ISBN 978-989-95500-1-8.