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Ecological Systems Thinking: Luhmann, McLuhan and the Subject

Adriana Braga [1]

Department of Communication, Pontifical Catholic University of Rio de Janeiro, National Council for Scientific and Technological Development (CNPq). R. Marques de Sao Vicente, 225, Rio de Janeiro, 22451-900, Brazil, adrianabraga@puc-rio.br , +55 21 35271144

Adriano Rodrigues [2]

Faculty of Social and Human Sciences, New University of Lisbon, Avenida de Berna, 26-C, 1069-061, Lisbon, Portugal, adrodrigues42@gmail.com, +351 21 371 5600

Abstract: Relationship between Systems Theory from Luhmann and the media ecological perspective from McLuhan are discussed. Luhmann's struggle against structuralism in the 1970's derived in a reversal of the dominance of structure over the Umwelt. Against Habermas, Luhmann proposed that the Umwelt precedes the system just as for McLuhan the medium precedes the message. The notion of figure/ground entails the precedence of the ground over the figure, which is an aesthetical perspective similar to that of Luhmann, in which the Umwelt precedes the System. We intend to explore the notion of environment in these two theories and its relation to the notion of the subject. This approach of McLuhan and Luhmann's has led to some criticism of their work in terms of anti-humanism or technological determinism. Exploring the systemic nature of McLuhan's thought we aim to relate media ecology and systems theory.

Keywords: Communications Theory; Systems Theory; Media Ecology; figure/ground; Umwelt;

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The systemic perspective privileges some features that are ignored or at least relegated to a secondary place by disciplinary paradigms, such as structuralism, functionalism or marxism, used in several studies in Communications. Instead of the anthropocentric, reductionist and simplistic approaches proposed by them, both Marshall McLuhan and Niklas Luhmann propose a complexity-based approach, which at the same time is systemic, ecologic and historical. From such a standpoint, the existence of human beings is an unlikely event that somehow, was accomplished in a tiny spot of the Universe, thanks to the exchanges between the biological, physical, psychic and social systems and their environments. These exchange operations led to the simplification of complexity. Humans do not contribute to the homeostasis or equilibrium of these systems as a voluntary action, but rather because of their use of the several devices provided by these systems for their structural coupling with the environment (or *Umwelt*, in Luhmann's terms). These operations are indispensable to their equilibrium, survival and evolution. To such operations devised to counter the tendency to entropy, maintaining homeostasis and assuring the permanent evolution of the physical, biological (Maturana & Varela, 2005), psychic and social systems, Luhmann denominates respectively 'mass', 'energy', 'perception' and 'communication.' The same way in which Luhmann highlights the precedence of the *Umwelt* over the system, thus replacing the emphasis from isolated objects to the operations of exchange between systems and their environments, McLuhan highlights the precedence of the medium over the message, thus replacing the emphasis on mass media communications to the operations of perception that make mass-media communications possible.

McLuhan uses widely the terms 'communication' and 'mass-media' in his work. However, he notes that most of the studies in Communications takes for granted that 'communication' is about transmission of information, messages or ideas. Such a position is not convergent with an understanding of communication as participation in a common social setting, usually a more meaningful and relevant phenomena (for participants) than the 'idea' or 'information' being transmitted. In communication studies, the systemic turn is sometimes seen as a trivial matter, as a contextual and intersubjective analysis of mass-media discourse, foreshadowing the full approach of systemic thinking.

Even in recent studies this positions rests unaltered, as 'the content' is still seen as the most important part of communication, and 'transmission' still described as the main objective of communication. In order to understand the systemic turn proposed by Luhmann and McLuhan, it is important to have in mind the notion of communication as an autopoietic operation.

Luhmann conceives communication as a circular process, rather than a simple matter of transmitting information. To him, communication involves three components: the information itself, the transmission of the information and the understanding of the information transmitted. Those three components are intertwined in a single complex process. It is important to note that communication, in Luhmann`s terms, does not conclude on the understanding of the information transmitted. This understanding is, at the same time, the beginning of a new turn of communication, and so on, indefinitely. It is this circularity of the communication process that defines what Luhmann called the “closure” of a system (Luhmann, 2006).

This paper wishes to discuss the relations between systems theory, proposed by Niklas Luhmann, and the media ecology theory, particularly the work of Marshall McLuhan.

As a counterpart for the structuralist thinking dominant on early 1970s, Luhmann proposed to emphasize the environment (*Umwelt*) over the structure and, opposing Habermas, he proposed that the *Umwelt* precedes the system, just like, for McLuhan, the

medium precedes the message. Through the notion of figure/ground, McLuhan emphasizes the precedence of the ground.

Thus, we intend to explore the notion of environment in both theories and their relation with the notion of the subject. At first sight, the subject seems to be apart of both Luhmann and McLuhan's concerns, and that impression gave rise to accusations respectively of 'anti-humanism' and 'technological determinism.' However, we consider that a conception of the subject remains in their theories, as a paradoxal and transcendent stance between *Umwelt*/system and between figure/ground. Our intention is to explore the systemic nature of McLuhan's writings as well as propose some connections between Media Ecology and Systems Theory.

1 A genealogy of systems thinking

We begin with a brief genealogy of the development of systems thinking. We can find evidence of it in the most ancient civilizations including Sumer, Babylonia, Egypt and China as well as among the pre-Socratic philosophers. It is characterized by a holistic approach towards the understanding of the nature of the world. It includes the description of regularities and the prediction of new events based on the understanding of these regularities. Astronomy was one of the first systemic sciences and continues as such to this Day with its many accurate predictions of astronomical events.

Beside its archaic origins, and despise the fact that it has continued, in Western thought, to orient practical knowledge (which the Greeks called *techné*), systemic thought has been overshadowed, since the XVI Century, by reductionist paradigms. They depart from a perspective grounded on the search for simple, stable and systemic explanations for natural phenomena. The process of disciplinarization of knowledge also has archaic roots in ancient Greece in the IV Century B.C., through the influence of the philosophers Plato and Aristotle. However, it is only with René Descartes' (1588-1679) *Discourse on Method*, Francis Bacon's (1521-1626), *Novum Organon*, Thomas Hobbes' (1596-1650) *Elements of Law, Natural and Politics* and Sir Isaac Newton's (1643-1727), *Philosophiae Naturalis Principia Mathematica* that the disciplinary approach earns its mathematical, mechanistic, and reductionist formulation, that gave rise to our contemporary disciplinary fragmentation of knowledge as is evidenced by the fragmentation of academe into specialized departments.

Contemporary systemic thought, despite its archaic origins, has achieved its successes in opposition to the fragmentary reductionists disciplinary paradigms. It is important to underline that the return of systemic thought has played a decisive role in the technical developments of the last centuries. It is the coalition of systemic thought with practical thought, inherent to technical development that has given rise to contemporary cybernetic-based general systems thinking and thus displacing the reductionist paradigm prevalent since the XVII Century.

McLuhan saw Eastern culture, in which tactile and auditory modes of perception are dominant, as an alternative to the modalities of visual perception that were imposed to Western culture on the following of the introduction of alphabetic writing and the printing press.

According to McLuhan, the imposition of electronic media in Western societies combined with the alphabetization of Chinese writing would bring a progressive equilibrium between these different modes of perception.

The initial formulation of the systemic paradigm was first proposed by in 1934 by Ludwig von Bertalanffy (1901-1972), using the term *General Systems Theory*. Other

contributors to this movement were Norbert Weiner, the father of cybernetics, Claude Shannon (1916-2001) the creator of Information Theory and Alfred Korzybski, the creator of General Semantics Theory, who in his turn, was inspired by Albert Einstein's General Relativity Theory (Strate, 2010).

The systemic paradigm was taken up again in the early 1970s in the works of Niklas Luhmann, who tried to extend this approach to the understanding of society. It is worth noting that both McLuhan and Luhmann were familiar with these ideas. It is unlikely that McLuhan was very much influenced by the works of Luhmann, who in turn was deeply influenced by the theory of social action of Max Weber and Talcott Parsons, two authors never referred to by McLuhan.

The systemic and cybernetic thought have influenced pioneers such as Gregory Bateson (1972) and was also at the core of the developments of scholars such as Erving Goffman (1959), Edward Hall (1959), Ray Birdwhistell (1970), Paul Watzlawick (1976) as well as physicist and philosopher Fritjoff Capra (1975) as suggested by Strate (2010). Departing from the pioneering works of Shannon and Bertalanffy, the systemic paradigm has been established, since the 1980s, as a model for interdisciplinary research, not only on natural sciences, but also in the humanities and social sciences.

2 The Systemic Thought of Marshall McLuhan

It is important to take into consideration the context in which the retrieval of systemic thought has taken place, so that we can understand not only the perspective that underlies McLuhan's writings, but also the resistance to his ideas. Maybe we can understand this resistance if we think that McLuhan works were published at a time when everything seemed to deny his prognostications. How could someone accept, in early 1960s, that electronic media would turn our planet turn into a global village, when in Berlin, a wall isolated the world in two blocs?

Even if Lance Strate have devised the metaphor of the galaxy (used by McLuhan in *The Gutenberg Galaxy: the Making of Typographic Man*), as a synonym of systems thinking (Strate, 2004, p. 6), it is only in the posthumous book, *The Global Village* (McLuhan & Powers, 1989), that the systemic nature of McLuhan's thought is stated more clearly.[1] In this book, McLuhan and Powers present the laws of technical evolution, formalized as a tetrad, and highlight the tension between electronic media and alphabetic-based print media.

The tetrad is affirmed by McLuhan and Powers as a systemic logic, a counterpart to the triad that regulated Aristotelian dialectics. The tetrad permits a better understanding of the paradoxical effects of technical inventions. For McLuhan and Powers, the logic of the Aristotelian triad regulates disciplinary thought and is connected to the left side of the brain, while the logic of the tetrad regulates holistic thought and is connected to the right side of the brain. The tetrad is constituted by four components, that describe not only the relations that each new technology has with the former artifacts from which it springs, but also the effects it creates in our perception of the world. Each new technology enhances some meanings, obsolesce some others, retrieves formerly obsolesced meanings and finally flips into the reversal of its original effects. Contrary to the disciplinary logic of the triad, that isolates the figure and blurs its ground, the logic of the tetrad permit one to grasp at once the figure (enhancement, retrieval) and its ground (obsolescence, the flip).

1 This is also pointed by Lance Strate: “An alternate way to understand the four laws is that they represent the dynamics of a system or ecology as it reacts to disturbances in its equilibrium” (Strate, 2004, p. 7).

3 Ecological Systems Thinking

According to Luhmann, the idea of 'world' (Welt) can be conceived as the group of all systems and their environments (Umwelt). The world is, thus, unlimited, endless, like the *apeiron* conceived by Anaximander, one of the pre-Socratic philosophers of the VI Century B.C.

For both McLuhan and Luhmann, the exploration of the interface between Figure/Ground, Umwelt/System and Medium/Message is a powerful methodological strategy for dealing with the position of the subject in communication phenomena. We will explore this interface by parallelling the terms of these three binomials.

3.1. Ground / Umwelt / Medium

The distinction between figure and ground, proposed by McLuhan, earns a wider range when considered under a systemic framework. The dominant scientific paradigms that have dominated the Western intellectual tradition since the days of the Ancient Greece usually start by detaching the phenomena from its particularities and from its context. On the contrary, the systemic paradigm seeks to explore the relations between different phenomena, as well as with the environment in which they are embedded.

The systemic paradigm accounts for the historicity of the process of technical invention, along with the simultaneity of the relations between the four components of tetradic theory, which can be expressed as follows:

- Every medium or technology enhances some human function.
- In doing so, it obsolesces some former medium or technology, which was used to achieve the function earlier.
- In achieving its function, the new medium or technology retrieves some older form from the past.
- When pushed far enough, the new medium or technology reverses or flips into a complementary form.

A system, thus, is composed by the relations between the components and phenomena of which it is composed. However, this relations demand relations with the environment, as the environment provides a system with the resources needed to avoid the effects of entropy, i.e. the natural tendency to disorganize.

For McLuhan, technologies create the environment for a society, and communication is considered as a process of interaction between members of a society and its environment. For him, past, present and future coexist at once with all technologies, because they precede logically any perception of time, just like for Luhmann, the environment precedes logically the system.

McLuhan considers the establishment of the dominant paradigms in Western science as the result of the transformations brought about by the invention of alphabetic writing. By privileging the sense of sight, alphabetic writing atrophies the sense of hearing and thus, replaces the auditory environment by the visual one. In its turn, the sense of sight, by privileging the left hemisphere of the brain, would also favor a fragmented quantitative perception of phenomena, instead of the sense of hearing, that privileges the right side of the brain, and favours a global, holistic and qualitative perception of the world. By privileging the sense of sight instead of hearing, alphabetic writing has favoured the emergence of dominantly visual environments in Western societies, and as such contributed to the

process of the disciplinary fragmentation, specialization and reductionism of science.

These dominant reductionist paradigms are now being questioned, as they have become obsolete with the emergence of electricity and ICT. Electronic media would create an environment that is at once acoustic, holistic and qualitative, one that privileges the right side of the brain, instead of the visual, fragmentary and quantitative environment created by literacy.

McLuhan (1975) is quite emphatic on describing his approach as completely absent of a theory or a point of view. To him, the idea of a 'point of view' results from the primacy of sight in literacy, and limits the range of observation to a single perspective: that of the Newtonian observer. The method devised by McLuhan for his exploration program is not related to the traditional methodology, in which a hypothesis is proposed and the observation that follows allows its confirmation or refutation. Observation derived from a 'point of view' suggests classifications and taxonomies, while observation derived from exploration of the interfaces suggests patterns recognition (Logan, 2014).

In one of his provocative statements, McLuhan declared he didn't have a theory of communication, and did not use theories in his investigations. To him, to start a research with theories is to start with the answers, while starting with observation means to start with the questions (McLuhan, 2008).

McLuhan's definite inclination towards pattern recognition instead of following a single point of view expresses the priority he gives to the media (*ground*) over its contents (*figure*).

System and Umwelt are both part of a same unit, so Luhmann considered the relation between them as a constituent element in the formation of a system. For him, the conception of Umwelt is not residual, but a component of the system (Luhmann, 2006).

In other words, every system constitutes its Umwelt, as well as every Umwelt is constituted as such by its system. McLuhan has a similar formulation:

> *"The section on 'the medium is the message' can, perhaps, be clarified by pointing out that any technology gradually creates a totally new human environment. Environments are not passive wrappings but active processes." (McLuhan, 2003, p.12)*

To McLuhan, the notions of *medium* and *ground* seem to merge with the notion of *environment*, since he sees the technical medium as environment. For Luhmann, the idea of *Umwelt* (literally, 'the world around') seems to be static, as a source of power and information for the system, while the dynamic element lies on the borders between the system and its Umwelt, which he calls 'membrane.'

In an intracellular analogy, a membrane selects from the environment only the things that the system (in this case, a cell) needs. In order to complete this paralleling of the binomials of Luhmann and McLuhan, we will explore the notion of self, membrane and language as selective borders between systems and their Umwelten, respectively the subject, the organism, and the social group.

3.2. System / Figure / Message

When we talk to the people we meet, we naturally pay attention to what we are saying and to what they say. When we read a book, our attention is on the text we are reading. Communication studies usually have a similar focus on the contents of the medium whether it is the words in a text or the images and sounds of a TV show or a movie. However, McLuhan has insisted that the understanding of the content of a medium i.e., the understanding of the *figure*, depends on the relation that each of these messages establishes with the context in which it is embedded, with its *ground*. This ground is

constituted by the technology that brings the figure to the user. The understanding someone takes from hearing a story told on TV news will be different from the understanding of hearing the same story told during a dinner party.

This is why McLuhan always pointed out that media effects are not effects due to the information or message being transmitted, but rather due to the ground it creates. Once our attention has been captured by the messages, the real effects of the medium carrying the message which are of a more subtle nature, pass unnoticed.

> *"For use in the electronic age, a right-hemisphere model of communication is necessary, both because our culture has nearly completed the process of shifting its cognitive modes from the left to the right-hemisphere, and because the electronic media themselves are right-hemisphere in their patterns of operation. The problem is to discover such model the yet is congenial to our culture and its residua of left-hemisphere orientation. Such a model would have to take into account the opposition of both figure and ground (left and right hemispheres working together and independently when necessary) instead of an abstract sequence or movement isolated from ground" (McLuhan & Powers, 1989, p. 80).*

The concept of *autopoiesis* was introduced in systems theory by Maturana and Varela (2002) in order to apply systems theory to the analysis of biological systems. An autopoietic system separates itself from the environment, opening selectively to it.

In complex systems, such as living organisms and human societies, each system is composed of several subsystems. Each of these systems and subsystems is a whole, organized in terms of the interaction between its elements and the specificity of the autopoietic operations that oppose the entropic disintegration of the system and assure both its homeostasis and its evolution. McLuhan makes an explicit mention of such specificity in Chapter 10 of *Understanding Media*:

> *"The Greek word ponos, or 'toil,' was a term used by Hippocrates, the father of medicine, to describe the fight of the body in disease, Today this idea is called homeostasis, or equilibrium as a strategy of the staying power of any body. All organization, but specially biological ones, struggle to remain constant in their inner condition amidst the variations of outer shock and change. The man-made social environment as an extension of man's physical body is no exception. The city, as a form of the body politic, responds to new pressures and irritations by resourceful new extensions – always in the effort to exert staying power, constancy, equilibrium, and homeostasis" (McLuhan, 2003, p. 98)*

As systems naturally tend to disorganize through entropic disintegration, they need to exchange resources with the environment, such as energy and information, to keep the integrity of their inner organization. Thus, living organisms as well as social systems exchange nutrients or energy and information with their environments converting the resources into structures and meanings that maintain the integrity of the system. The processes of symbolic exchange between social systems and environment that Niklas Luhmann terms 'communication'.

The complexity of a system is not measured by its size but rather by its capacity to develop specialized subsystems, with their own boundaries and specialized languages.

Luhmann understands that a social system uses language as a membrane, as its boundary, that extracts from its environment the information needed for its operation.

> *"McLuhan (2003) argued that language is a form of perception, indeed, that languages are organs of perception. And for Luhmann (1982, 1989, 1995, 2000), perception and language both contribute to the maintenance and functioning of the boundaries of self-organizing social systems" (Strate, 2010, p. 35).*

In a society, considered as collective action, people perceive the action of others at the same time they can imagine their own subsequent actions for providing an adequate response, as in the form that Goffman (1998) calls 'impression management'. A society can be thus considered as a system of cooperative interactions, mediated by symbols, with meanings that are shared by individuals. As Mead poses it, a gesture with a shared meaning is a 'significant symbol' (Mead, 1974, p. 327).

Self-consciousness, as well as the possibility of putting oneself in the place of others, is an interesting topic to consider in terms of systems thinking and the ideas of George H. Mead, a contemporary of Freudian psychoanalysis. Mead proposes a distinction between 'I' and 'Me,' the former, referring to the spontaneous and unpredictable impulses of the individual and the latter, a 'generalized other', self-conscious of the social roles and values shared by the group, usually considering thing in terms of 'social adequacy' (Mead, 1974, pp. 154 and 255).

The distinction between 'I' and 'Me' accounts for the conception of an inner life, the interaction of the individual with herself. This inner reflexion allows the individual to postpone the action for a moment, while the subject interprets and articulates meaning of stimuli, willing to preview possible outcomes, to select options and to align her response strategically (ibid, p. 26). Under such a perspective, the individual is seen as an active agent in the world and not a merely 'reactive' device. By interpreting the Umwelt, an individual can foresee upcoming situations, and adapt or get prepared for them (Braga & Gastaldo, 2010).

Mead's perspective points out to the significance of social roles for the preservation of personality. Social roles are codifications of behavior, widely shared across society, and, as collective representations, they are also guides for the reaction of an individual in public situations. Such a *generalized other* orients the subject in defining social strategies and limits for public participation, preserving the personality of the individual.

Language, as a symbolic system, gains stability when its symbols are isolated from their concrete contexts and start to be employed in unforeseen situations. The symbolic generalization we find in Luhmann and Mead accounts for the synchronization between individuals and society (Bachur, 2009).

Following Luhmann's metaphor of the membrane, the selectively-permeable boundary that isolates a system from its Umwelt, the social self can be thought of as a 'membrane' that isolates the subject from her social environment. In the same way a specialized language operates as a selective barrier for a social group, defending the group and allowing its *autopoiesis.* The social self work as a psychological barrier, allowing the integrity of the individual to function as a social subsystem.

> *"All systems must maintain boundaries with their environments in order to establish and maintain their integrity as systems. Indeed, it is only by closing itself to its environment to a significant degree that a system can organize itself, that is, that an independent system can come together as a system (...). We create barriers for our own protection, biologically, psychologically, and sociologically" (Strate, 2010, p. 34).*

The articulation between the notion of social self and its role as a public interface for the individual personality evidences many possibilities for the exploration of the position of the subject in communicational processes within the systemic framework, as we shall see next.

4 Systems Thinking and the Subject

One of the most controversial topics in general systems theory and of the systems theory of society as proposed by Luhmann is the notion of the subject. The notion of 'subject' acquired relevance in all Western philosophy, particularly in projects associated with different ideals for clarification throughout the history of philosophy. These ideals, which are direct heirs of the Enlightenment of the eighteenth century, gave rise to great controversy especially by Nietzsche in the late nineteenth century and by members of the Frankfurt School, in particular the critique developed in Adorno and Horkheimer's *The Dialectics of Enlightenment*.

The subject, despite taking different historical configurations such as Cartesian *bon sens*, Kantian *reason*, Hegelian *Absolute Spirit,* Freud's unconscious or Marx's collective entity of the proletariat, always held a central place in the project of emancipation from all forms of coercion and tyranny that the different ideals of the enlightenment opposed. These ideals are associated with what we call 'modernity.' No wonder, therefore, the controversy raised by Luhmann with his proposal for an anti-humanist theory of society that eliminates the subject from the system. McLuhan, in his turn, when speaking of subliminal effect, of numbing of consciousness caused by media, considered as extensions of the organs, the senses and the central nervous system, enters evidently into the same controversy and to the accusations of technological determinism.

According to Luhmann, the subject is the result of autopoietic operations of the social system. As McLuhan reminded us, our perception of the world does not follow the functioning of our sense organs, but of the technological inventions that prolong or extend them.

Final Remarks

This study aimed to discuss the relation between the systems theory perspective, as proposed by Niklas Luhmann, and the media ecological perspective of Marshall McLuhan. The problem with the reception of Luhmann's ideas is his refusal to find 'solutions' for intellectual problems, as well as his penchance for paradoxes and tautologies, among other word-games; we may also add Luhmann's mastery in counter intuitive aphorisms, such as 'money is the most spiritual of resources.' Finally, Luhmann's struggle against structuralist thinking in early 1970's gave rise to his reversal of the dominance of structure over the Umwelt. Instead, against Habermas, Luhmann proposed that the Umwelt precedes the system, which parallels McLuhan's the medium is the message.

For Luhmann, society can be taken as a social system made not by individuals and institutions but by acts of communication (Strate, 2010).

For McLuhan media are extensions of the body, but we can say that each of the technologies does this so as to enhance the functions of the body and the psyche and at the same time create some disfunction. Thus, for example, the nature of the hammer or the wheel relative to the body is not the same as a car or a computer. The nature of the relationship of orality with the psyche is not the same as that of alphabetic writing or phone. Strate, in this regard, points out that, for McLuhan, each technological extension of the body also implies an amputation:

> *"McLuhan insisted that every extension is also an amputation. The medium that extends our reach into the world does so by situating itself between ourselves and the*

> *world, so that it also becomes a barrier between ourselves and the world. And as a barrier, the medium becomes part of our world, part of our environment, the boundary that separates system from environment. In sum, as we relate to our environment, we reject as well as select. We filter. We mediate. Or as I like to say, the medium is the membrane (and the membrane is us). We dance along the edge of chaos and order, opening and closing, extension and amputation, the external and the internal" (Strate, 2010, p. 35)*

When considering the need to form borders or membranes to close the system to ensure its integrity and self-organization, Luhmann resents the lack of inherent connection between the media and the outside world. However, information about the external world produced by the media, and offered as "the" reality of inevitably simplified and distorted abstractions – are subject to mutual comparison and are critical with respect to their reliability.

It is not our intention to solve the question of the subject in the communication process, but to stress that many of the criticism against the confessed anti-humanism of Luhmann, and the supposed technological determinism of McLuhan, stem from misconceptions that persist, particularly, in hasty readings of their works. After all, what both Luhmann and McLuhan wish to emphasize is the autonomy of the system regarding the Subject, independent of whether it is designated as conscious, unconscious, reasonable, thoughtful or proletariat. However, recognizing the autonomy of the system does not presuppose an automaton subject, a servo system; but rather a social agent as more participatory and more familiar with the logical and technical operations of the system.

McLuhan and Luhmann thus draw attention to the materiality of communication as a system operation, standing out from the ideological prejudices that are usually associated with them for disciplinary-oriented theories.

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About the Authors

Adriana Braga

Professor at Pontifical Catholic University of Rio de Janeiro, and researcher of the National Council for Scientific and Tecnological Development – CNPq / Brazil. Author of the books *Personas Eletronicas* (2008) *CMC, Identidade e Genero* (2005), and many articles in refereed journals on social interaction, gender, and digital communication.

Adriano Rodrigues

Professor Emeritus at Universidade Nova de Lisboa. Author of several books and many articles in refereed journals on media studies, conversation analysis, and linguistics. Main works: *Estrategias da Comunicação* (2001), *Comunicação e Cultura* (2010), *A Partitura Invisível* (2005) e *O Paradigma Comunicacional* (2011).