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Barthes' Rhetorical Machine: Mythology and Connotation in the Digital Networks / *A máquina retórica de Barthes: mitologia e conotação nas redes digitais*

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ABSTRACT
This article explores the social representation of Information Technology and Network Society from Barthes' semiology, using his ideas about myth creation and the connotation of ideological discourses through naturalization. Supplemented with some concepts from Peirce and Santaella, we try to identify and understand these mystification mechanisms and how they affect the creation of an information order; in this case, a digital order. We conclude that we are before an evangelizing discursive alignment based on mythical elements arisen from our aversion to uncertainty, the energy-saving principle, and an engineering discourse guided by the urgency of profit and power. We highlight the presence of a reckless narrative that permanently repeats the urgent need for information technology and digitalization without considering side effects or costs.
KEYWORDS**:** Internet; Speech; Barthes; Peirce; Technology

RESUMO
Este artigo explora a representação social da Tecnologia Informática e a Sociedade em Rede a partir da semiologia de Barthes, utilizando suas ideias sobre a criação de mitos e a conotação de discursos ideológicos por meio da sua naturalização. Complementando com alguns conceitos de Peirce e Santaella, buscou-se identificar e entender elementos dos mecanismos desses processos de mitificação e como eles incidem na criação de uma ordem informacional; neste caso, uma ordem digital. Conclui-se a iminência da percepção de que se presencia um alinhamento discursivo evangelizante baseado em elementos míticos e apoiados na aversão à incerteza, no princípio de poupança de energia e na engenharia discursiva guiada pelo alvo de lucro e poder. Destaca-se o viés da estrutura narrativa que reitera, de forma irreflexiva, a necessidade imperiosa da presença da informática e da digitalização sem o pleno contraponto de seus custos ou efeitos colaterais.
*PALAVRAS-CHAVE**:** Internet; Discurso; Barthes; Peirce; Tecnologia*

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> [...] I suffered watching all confused, the narratives of our present, nature and history, and wanted to recover from such decorative display of what-is-obvious, the ideological abuse that, in my opinion, is hidden into it.
>
> *Barthes*[1]

Introduction

Information networks, symbolic machines, and globalization seem to be a recent phenomenon, but the world has been globalizing and mechanizing even before the Portuguese Empire. Information networks were based on caravels, wagons and horsemen; the machines were automatons and navigation devices belonging to merchants and the military. With the ideas of Enlightenment and the Industrial Revolution this trend became the center of human activity. The French Cartesianism, the English Pragmatism, and the German Rationalism, all were condensed in the formulation of the mechanical algorithms produced by Babbage, Pascal, and Leibnitz in the creation of the first calculating machines. These devices gained plasticity and became more powerful as social regulation systems. Information circulated through steel rails, cars, and steamboats, and when it was thought it could not flow faster, electricity broke the barriers of time and existing space. The European society marveled at the overwhelming strength of their science and industry, the undoubted evidence the superiority of Western civilization, endorsing the duty of taking the "lights of reasoning" down to the boundaries of earth (MATTELART, 2003).[2]

The Victorian world, crossed by copper wires and rails, reached its effervescence in the twentieth century when "free" territory was not enough to satisfy the expansionist desires of the European powers. The two World Wars awakened sleeping giants: the USA and the USSR, which, despite being situated in opposite ideologies, embraced industrialism (GEORGE, 1972; [3] MATTELART, 2003)[4] and applied it to information flows.

The close relationship between scientific knowledge and productivity through technological innovation triggered the urgent need of organization control, classification

[1] BARTHES, R. *Mythologies*. New York: Macmillan, 1972.
[2] MATTELART, A. *The Information Society*: An Introduction. London: Sage, 2003.
[3] GEORGE, C. S. *History of Management Thought*. Englewood Cliffs: Prentice Hall, 1972.
[4] See footnote 2.

and distribution of information under industrial standards (BRETON, 1991; SARACEVIC, 1996). Computer Science and Information Science were born from this utilitarian view of knowledge, which became the fuel for the technological, productive and military apparatus of the World Powers. Thus, these sciences gained their pragmatic, technical, and ahistorical perspective (MCCRANK, 2001). The Cold War legitimized the importance of computer technology with portents as the hydrogen bomb, the launch of Sputnik I, and the landing of man on the moon. The Knowledge Economy (MACHLUP, 1962) transformed knowledge into a "thing," and this ''knowledge-thing" got associated with communication, using physical analogies drawn from the work of Shannon (SHANNON, 1948). Subjects just needed to be touched by the "Information-Communication" fluid to achieve enlightenment (MATTELART, 2003).[5]

With the popularization of personal computers and data networks, the paradigm of "knowledge-as-a-thing" spread the analogy of knowledge as a "substance embedded into machines and telecommunication networks." Such knowledge got associated with wealth, power, and well-being, determined hierarchical levels within societies, and the power of nations (TOURRAINE, 1972).[6] Our desire for knowledge turned into knowing to dominate and not to understand.

In this context, this paper explores the representation of Computer Technology and Digital Networks from the perspective of Barthes' semiology, using his ideas about connotation and mystification, and how they infuse and naturalize ideological discourses. We complement this analysis with some concepts from Peirce in order to understand the mechanics of mystification processes and how they affect the creation of an information order – in this case, a digital order. This order can be understood as an evangelizing discursive alignment based on the mystical elements of science and information technology, which nowadays hide the permanent pursuit for profit and power under a veil of technicism. This semiotic structure became part of the scenery, as the result of the permanent and mindless reiteration of the urgent need of its presence.

[5] See footnote 2.
[6] TOURRAINE, A. *The Post-Industrial Society*: Tomorrow's Social Clases: Conflicts and Culture in the Programmed Society. New York: Random, 1972.

1 The Gospel of Information Technology and Development

In 2005, reaching the Knowledge Society was declared a world's goal, and its four pillars were established (UNESCO, 2005):

- Science
- Education
- Information and Communication Technologies (ICT)
- Connectivity

Economists and sociologists studied intensively the phenomenon of knowledge in Western society, trying to reveal the secrets of developed countries to apply them on less fortunate territories. Extending the new order could not be postponed, so the concept of Digital Divide was born within the US political discourse (CLINTON; GORE, 1996). It produced a crusade from the Digital Idealists in developed countries looking to rescue all underdeveloped populations from darkness. However, some scholars had the intuition that the Networked Society hid costs. New Media technology broadened some of the perceptual channels of our sensitive consciousness, but it also amputated others (MCLUHAN, 1964).[7] Knowledge gaps would increase (DONOHUE; TICHENOR; OLIEN, 1975), and the power of elites would boost up and concentrate (BROCKMAN, 1996; HINDMAN, 2010). Digital technology could overload our societal cognition and create a technical theology (LÉVY, 1997;[8] 2001), supplying capabilities without clarifying goals, keeping us prisoners of our virtual-beast nature (SERRES, 2001). On the other side, computer technology as offered was not economically viable; neither was it structurally possible nor culturally acceptable in many societies (KENNY, 2002).

The Frankfurt School already warned about the emergence of a society alienated by technocracy and capital, with its ideology conveyed through Mass Media (MARCUSE, 1998; HORKHEIMER; ADORNO, 2001;[9] BENJAMIN, 2008)[10]. Fifty years later, in the

[7] MCLUHAN, M. *War and Peace in the Global Village*: an Inventory of some of the Current Spastic Situations that could be Eliminated by more Feedforward. New York: McGraw-Hill, 1968.
[8] LÉVY, P. *Collective Intelligence*. New York: Plenum, 1997.
[9] HORKHEIMER, M.; ADORNO, T. W. *The Culture Industry*: Enlightenment as Mass Deception: Media and Cultural Studies. Oxford: Blackwell Publishing, 2001.
[10] BENJAMIN, W. *The Work of Art in the Age of Mechanical Reproduction*. London: Penguin, 2008.

Networked Age, it was thought that New Media would have different effects due to their interactive nature. They were the promise of intellectual augmented capacities for the individual and the chance for new spaces for freedom of expression. Thus, the illusion of an intellectually enhanced man was born, a being detached from his physical and biological limitations. Just like the steam engine released the body from physical effort, the electrical symbolic machines would release the mind from intellectual constrains. This discourse bubbled in Western society during post-war times, under ideas such as the Universal Archive (OTLET, 1934),[11] the Memex (BUSH, 1945), the Human-Machine Symbiosis and the Intergalactic Computer Network (LICKLIDER, 1960; 1963), Artificial Intelligence (TURING, 1950; MCCARTHY *et al.*, 1955), Augmented Intellect (ENGELBART, 1962), the Digital Being (NEGROPONTE, 1996),[12] the Machine Universe (LÉVY, 1998), the Information Galaxy (CASTELLS, 2011a;[13] CASTELLS, 2011b),[14] and the Network Viral Behavior (RHEINGOLD, 1993).[15]

A new relationship of economic, technical and informational flow was created between the technological metropolises and their "global periphery" (DE LA PUERTA, 1995). Information resources were massively virtualized thanks to a multitude of software and hardware encodings, automating data processing into a structure of electronic stocks (GOMES DE ABREU; MONTEIRO, 2011). The organization and classification of information using computer standards were seen as neutral territory. However, we now know that there is no organization, classification, or indexing that could be called "innocent" at all (OLSON, 2002).

The new structures stored, transported, and processed information. They served the interests of dominant cultures and communities, creating an immeasurable industrial machine that swallowed and digested data and converting it into commodities ready to be

[11] OTLET, P. *Treaty of Documentation*: The Book on the Book, Theory and Practice. Brussels: Mundaneum, 1934.
[12] NEGROPONTE, N. *Being Digital*. New York: Vintage, 1996.
[13] CASTELLS, M. *The Power of Identity*: The Information Age: Economy, Society and Culture. 2. ed. London: John Wiley and Sons, 2011a.
[14] CASTELLS, M. *The Rise of the Network Society*: The Information Age: Economy, Society and Culture. London: John Wiley and Sons, 2011b.
[15] RHEINGOLD, H. *The Virtual Community*: Homesteading on the Electronic Frontier. Cambridge: MIT Press, 1993.

marketed globally. The Network-Machine regurgitates slowly and inexorably its products on local cultures and traditions, which still base their information exchange on conversation and personal contact. The Global Metropolises and their "Periphery" collided as they had different ways of perceiving and expressing reality (BLIKSTEIN, 2003). Nevertheless, in this *War in the Global Village* (MCLUHAN; FIORE, 1968), the industrial graphic-centric system (SERRES, 2001) has the advantage because written culture is on the base of universality (MONTEIRO, 2006), and universality is on the base of globalization.

In the past, among expanding societies and overwhelmed communities, despite the egocentric nature of human beings present in every culture (VIVEIROS DE CASTRO, 2004; LÉVI-STRAUSS, 2008),[16] it gave room for Meaning Negotiation.[17] Conquerors and conquered exchanged signs and reconfigured their own representations. However, with the Global Network of Symbolic Machines, the power for automation, control, massification, and instant response has no precedent history. The rules for Meaning Negotiation changed into Symbolic Violence.

2 Peirce, the Sign Reader, and the Networked Symbolic Machine

Charles Sanders Peirce, in his Pragmatic Theory of Knowledge, includes three assumptions that may help in understanding the mechanisms by which the Networked Symbolic Machine affects our mind (PEIRCE, 1998): [18]

- *Premise$_1$*: To perceive is to represent, and representing is thinking; all cognition is consciousness of an object and its representation.

[16] LÉVI-STRAUSS, C. *Structural Anthropology*. New York: Basic Books, 2008.

[17] Meaning Negotiation was a concept that originally referred to educational interaction. Later, it was associated with the process of symbolic reframing of the subject in the interaction with other social actors whether in education or virtual environments (BOUQUET; WARGLIEN, 2002), and within the global socio-economic context. It is the process of arrangements and agreements of meaning in a set of terms (BURATO; CRISTANI; VIGANÒ, 2011). This negotiation may have evangelizing characteristics, as it is the case of the "indigenous-child" established by the Spanish Crown in the Laws of Burgos (1512), reproduced by Victorian England with the exportation of the Industrial Revolution, the French Revolution with the Encyclopedia, and now the United States with the globalization of the Internet. The native must be evangelized with the "true word" to straighten his spirit and tame his soul, saving him from himself, as he is also a human soul and son of the church (bull *Sublimis Deus* of 1530).

[18] PEIRCE, C. S. *The Essential Peirce*: Selected Philosophical Writings. 2. ed. Indianapolis: Indiana University Press, 1998.

- *Premise$_2$*: The process of thought-and-representation about the universe is an ongoing phenomenon of circular abduction, induction, and deduction. Practical tests guide in a statistical way the approximation to the truth. Truth is ephemeral, rebuttable by future occurrences within a learning process of trial-and-error. Truth is fallible (IBRI, 1992).
- *Premise$_3$*: Human beings tend to be accommodated in a state generated by habit and generalization, fleeing from doubts and surprises, until new and unavoidable occurrences refute their certainties. This situation compels for the search for new truths through the trial-and-error process (IBRI, 1992; PEIRCE, 1998; SILVEIRA, 2007).

Premise$_1$ describes the relation between what our senses perceive and what we stand for in our thinking about the world. Pierce describes it as the trilogy constituted by a *firstness* (power of being, feeling), which relates to a *secondness* (not ego, updating of the being, cessation of consciousness, otherness), and establishes a synthesizing consciousness (*thirdness*), that gains stability through its repeated experience (IBRI, 1992; FRIEDMAN; THELLEFSEN, 2011). In addition to some internal intuitions brought from birth, our being is permanently reflecting *secondnesses* that build up our representation-sense of the world through *thirdnesses*. This idea of the subject-object relation as a oneness in permanent construction makes us suppose that today the "Networked Symbolic Machine" is fused with our ego as we are surrounded by its huge *thirdness*, profuse in signs and automated representations. Clothing, gestures, pictures, music, advertising, Facebook, TV, or the newspapers, all are stimuli to which we apply sign-reading. Modern man in the cities spends all his time "reading signs" (BARTHES, 1988a).[19] As sign readers we can be classified into three groups according to Santaella: *Contemplative*, *Moving*, or *Immersive* readers (SANTAELLA, 2004).

A typical *Contemplative* reader was the medieval man that dealt with books, face-to-face dialogues and paused times. His information architecture flowed slowly, with stability. However, for the reader in the Industrial Age or *Moving* reader, the situation changed dramatically. The media took his senses, and the passage from a rural life to the cities

[19] BARTHES, R. The Kitchen of Meaning. In: *The Semiotic Challenge*. New York: Hill and Wang, 1988a.

overloaded his day-to-day with dense and persistent messages. The *Contemplative* reader was disciplined with physical violence over the body while the *Moving* reader is disciplined in a Foucaultian style, in his mind, through discourse, technical, and informational architectures. The *Contemplative* reader was gregarious, stretching his senses through the senses of his peers to create a collectivized representation of the world, mediated by the word-of-mouth. In contrast, the *Moving* reader is an isolated receptor within the crowd; he expands his perception of the world through the media in an act of technological and scientific faith, escalating his senses to new universes conquered by science and technique: the microscopic world of atoms, the macroscopic world cosmos and stars, and the hidden world of energies.

However, our interest focuses on the last of these three categories: the *Immersive* reader, the one living in the Digital Networks and existing in a society reorganized in time and space by electricity and informational overheating (MCLUHAN, 1964).[20] The interactive nature of computers makes it possible to identify them, register their preferences, and siege their minds precisely. These readers augment their intellectual capacities with a "computerized skin" that captures their senses through seduction, taking advantage of the playful curiosity which is typical of the sign-hunting primate. Captive of this hypnotic sensation of power, this reader is submerged in the digital ether which bathes his senses with permanent waves of multiple screens: the computer, the smartphone, the TV, screens in the stores, at the mall, along the street. Human attention became the most coveted treasure because the supply of meaning exceeds by far the available perceptual demand. Premise$_1$, applied to the Immersive reader, shows that the *secondness* of symbolic machines and their contents are integrated into us, diluting their nature of *secondness* and turning into a *firstness*: "*The machine is Us/ing Us*" (WESCH, 2007).

The digital reality turned more real than reality in itself (SERRES, 2001). This process is transparent in daily life, acting through economy, consumer habits, transport, education, and information. The digitalizing of the self serves the lives of millions, but at the same time it guides, limits, and standardizes their life.

[20] Please refer to footnote 7.

3 A World Flooded with Answers

Premisse$_2$ has several implications. The first is that the representational structure has different levels of certainty. Some *thirdnesses* will have *abduction* level; therefore, they will be a speculative possibility of existence. In the extension that common practice may demonstrate the strength of such relationships through reiteration, they will evolve from speculation to concrete existence and finally to law. In this way, the universe of signs evolves permanently through learning and pragmatism (Fig. 1), from accidental structures of diffuse, polyvalent and probabilistic meaning, to defined, repeated, specific, and strong law structures (SILVEIRA, 2007). Pragmatism supports the entire process on the basis of perceptual experience; it will determine the raw material that will build the representational universe.

In the case of the *Immersive reader*, submerged in the electronic informational flow, his perceptual channels are overloaded with signs of all types and he loses direct contact with practice. Answers override the individual because they pile up in his mind faster than he can check and evaluate them. In the end, the subject is seduced or constrained by the fastest, the simplest, the most striking response, that which is familiar or frequent. So much information flowing into the Networked Symbolic Machine requires users to be assisted by *intelligent agents*[21] to simplify it. Search engines select the most relevant content and the perfect keyword; social networks choose the best person; browsers display the most attractive and efficient views of data.

[21] These are virtual robots that are used in the Semantic Web to search, manage, and retrieve information from cyberspace.

	Representamen relation	Object relation	Interpretant relation	
				Possibility Uncertainty Abduction
I	Possibility Qualissign	Possibility Icon	Possibility Rhema	
II	Existance Sinsign	Possibility Icon	Possibility Rhema	
III	Existance Sinsign	Existance Indicative	Possibility Rhema	
IV	Existance Sinsign	Existance Indicative	Existance Decisign	
V	Law Legissign	Possibility Icon	Possibility Rhema	
VI	Law Legissign	Existance Indicative	Possibility Rhema	
VII	Law Legissign	Existance Indicative	Existance Decisign	
VIII	Law Legissign	Law Symbol	Possibility Rhema	
IX	Law Legissign	Law Symbol	Existance Decisign	**Law Certainty Deduction**
X	Law Legissign	Law Symbol	Law Argument	

Fig. 1: Represents the triadic structure of signs in Peirce, according to their level of uncertainty. If the object, the representamen, and the interpreter are Law, we have a total certainty (black frames); if one of the elements is not Law, the level of certainty goes down to the minimum (gray frames). We have total uncertainty when all elements are only one possibility (light gray frames). Diagram based on Peirce (1998, p.49)[22] and Silveira (2007, p.96).[23]

[22] Please refer to footnote 18.

[23] A representamen is the broadest possibility of representation, is saying something about a speech (representation of the representation), and it does not need be symbolic or linguistic. A semiotic object is an entity articulated with a sign and an interpreter, anything that can be questionable or thinkable. The interpreter is the product of the interpretative process or a content produced by such process. This product or content can be an act, a state, a behavior, etc. For Peirce these are three basic elements of semiotics that can be used to classify signs, so we have 76 different types. The representamen, for example, includes qualisigns (qualities or possibilities), sinsigns (single elements or events), and legisigns (norms, rules, habits). The object has icons (sign - object references made by similarity), indexes (with factual connection with its object), and symbols (by interpretive habit or standard reference with its object). The interpreter has rhemes (terms referring to qualities), decisigns (prepositions about something), and arguments (defined by custom or law). Each grouping and combination of representamen, object and interpreter and their sign families imply levels of certainty and uncertainty about the permanence of the relationship between what is represented and its representation. The table wishes to emphasize that, in the different combinations of signs proposed by Peirce, cognition has to deal with uncertainty widespread all around. This is an extremely summarized explanation of the complex thinking of Peirce. To deepen these concepts the reader can refer to the original table in PEIRCE, (1995) or the interpretations of experts like Nöth (NÖTH, 1996) and SILVEIRA (2007).

In the end, the thinking processes and practice are limited to an act of faith on the machine and the wisdom of those who have created it: content providers, engineers, investors, and governments. In an ocean of information, freedom of choice extends to the limit where the cost of recovery of information (in energetic terms) is tolerable: Mooers Law and the Principle of Least Effort (ZIPF, 1949; MOOERS, 1996).

4 The Truth by Force of Habit

Premise$_3$ features an elegant and simple explanation for the question about the nature of truth: truth is what is repeatedly confirmed by common practice and critical thinking. The truth is a construct that is born from *abductions* and over time proves itself as a strong *thirdness*, resistant to the sieve of logic and facts. The truth is not a future state. The future is a projection of what today is sensible, and we suppose it is going to be repeated as anticipated by the arguments of proven and reliable laws. Within the processes of knowledge organization, signs tend to create stable interpretative habits based on experience (CÂNDIDO DE ALMEIDA, 2011; FRIEDMAN; THELLEFSEN, 2011), thus building paradigms that support realities. Only an unexpected and strong transgression of this order breaks the dormant state of the subject, forcing him to start a symbolic reconstruction cycle until semiotic balance can be recovered and all corresponding habits can be adjusted.

This mechanism of human cognition had never faced anything similar to the massive capabilities of digital media for profile identification and symbolic siege of the individual. The machine can, by force of repetition, create truths and mark the semiosis of people: habits of action, habits of perception, and habits of thought. And the habit has the ability to exceed the scope of the individual to turn into social genome: the substance that builds organizations, communities, and cultures (HODGSON, 2002; BOURDIEU, 2005).[24]

The concept of habit in Peirce describes an additional feature of beings: self-organizing capacity or *autopoiesis*, as described by Maturana e Varela, Luhmann, Von

[24] BOURDIEU, P. *The Social Structures of the Economy*. Oxford: Polity, 2005.

Foerster and Morin (MATURANA; VARELA, 1987;[25] LUHMANN, 1990; MORIN, 1992;[26] VON FOERSTER, 2003).[27] Unfortunately, in this capacity there is also the seed of manipulation and alienation.

Our thinking evolves form uncertainties and probabilities (*abductions*) to laws and arguments, letting us predict and master the facts around us. Experience enriched by habit is the basis of our representational structure, but only a small portion of these representations are *arguments* and *laws*. This makes us wonder how people can act within a world of uncertainty. The answer is that an important number of our representations are established through mechanisms that are not related to pragmatic semiosis, even in communities of scientists. Paradigm shift is not only related to problems of representational logic, but social structures of costume, faith, and power (KUHN, 2012).[28] If we imagine sign representations as a ring structure wrapping around *layers of certainty* or Law-cores (Legissign + Symbol + Argument), recovered with layers of complementary signs that are only *relations of possibility*, we have a system of large areas of abduction supported by small areas of induction and deduction (Fig. 2).

[25] MATURANA, H. R.; VARELA, F. J. *The Tree of Knowledge*: The Biological Roots of Human Understanding. Boston: New Science Library/Shambhala Publications, 1987.
[26] MORIN, E. *Method*: Towards a Study of Humankind. New York: Peter Lang Pub. Inc, 1992.
[27] VON FOERSTER, H. On Self-Organizing Systems and their Environments. *Understanding Understanding*. New York: Springer, 2003.
[28] KUHN, T. S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago, 2012.

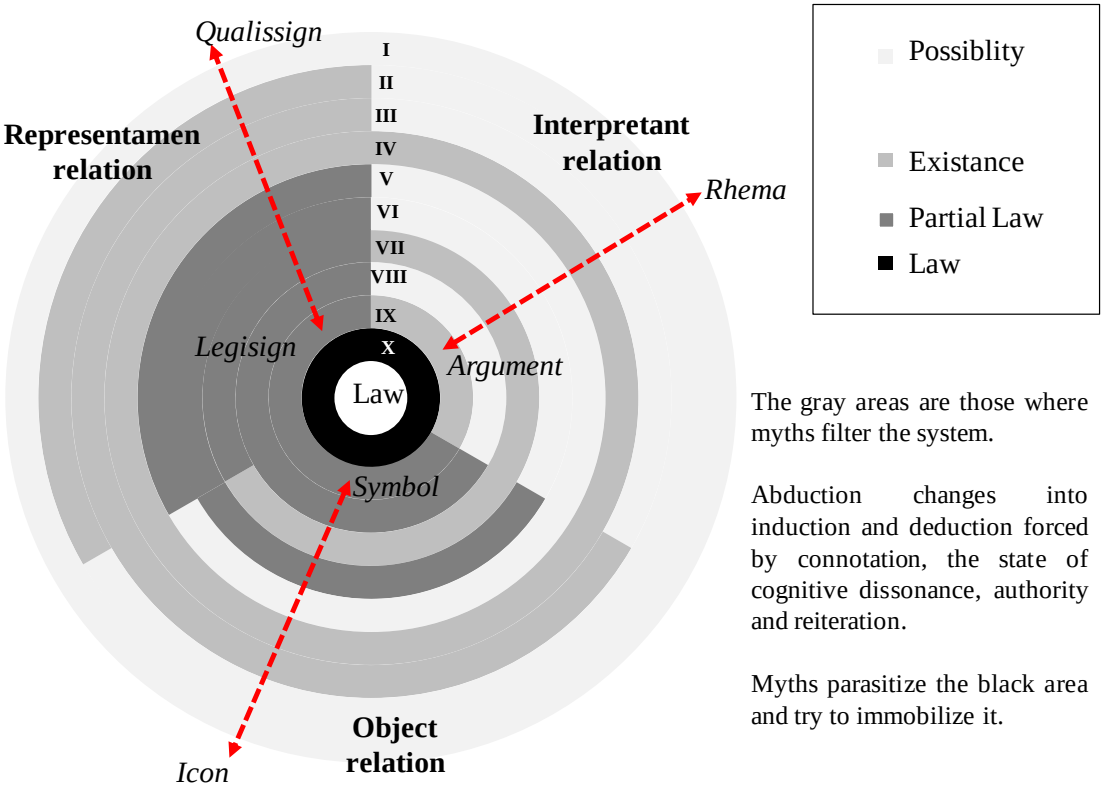

Fig. 2: Representation systems and their semiotic layers. Based on Peirce (1998, p.49)[29] and Silveira (2007, p.96). This illustration shows that the areas of possibility or uncertainty (gray) are dominant and parasitize certainty nuclei. Within the gray areas, our perception and action are based on acts of faith supported by myths.

Several mechanisms may explain this:

A. Our representational structure works under the "principle of closure" (KÖHLER, 1970;[30] KOFFKA, 2013).[31] Received the first indications of a stimulus, our cognition anticipates the outcome and completes the figure. Meaning is designed during the perception-cognition of "reality" (BLIKSTEIN, 2003), but it closes its conclusions hastily, without meeting pragmatic tests or full evidentiary facts.

[29] See footnote 18.
[30] KÖHLER, W. *Gestalt Psychology: An Introduction to New Concepts in Modern Psychology*. New York: W.W. Norton and Company, 1970.
[31] KOFFKA, K. *Principles of Gestalt Psychology*. Abingdon: Routledge, 2013.

B. Our cognitive system does not tolerate doubt or permanent contradiction; we need desperately to give sense of all activity. Otherwise, cognitive dissonance (FESTINGER, 1957) rise anxiety, forcing a response at all cost.
C. A recurring representation can become habit and certainty, regardless of the facts that support it or not, attaching firmly to Law cores and silently becoming part of the cognitive context that is taken for "truth" and rarely is reviewed by the critical consciousness. This process is defined as alienation or doxa.

Mechanism (A) facilitates the cognitive process. Mechanism (B) induces it emotionally, and mechanism (C) spreads it throughout the social setting. Education, for example, is based on this cycle. Education and socialization subordinate to the representation of signs. Education is the normalization of the semiotic worlds that we build and inhabit collectively (BLIKSTEIN, 2003). Habit as a mechanism is useful to build community; however, at the same time, it dangerously facilitates manipulation and alienation, using symbolic machines, if they are part of autocratic and monopolistic semiotics in respect to the representation of the world.

5 Electronic Mythology and Roland Barthes

Roland Barthes studied the phenomenon of interaction between power, discourse, and representation from structuralism. His semiology proposes two concepts that can explain the dangers of the Networked Symbolic Machine: myth and connotation. Before Barthes, Saussure noticed the arbitrariness of the linguistic sign and its social consensus character, Greimas unveiled the hidden richness of the of narrative syntax that live in the deep levels of any text, and Hjelmslev, on his side, supported the need for a Semiotics of Connotation to reveal these deep levels of discourse and concealed speeches in semiotic systems and their narratives (NÖTH, 1995; BLIKSTEIN, 2003). In this context, Barthes concluded that every object can pass from a silent existence to an open state of social appropriation, if it can be spoken. As every speech includes a connoted narrative, any object expressed by language may constitute a myth and be connoted in its genesis or appropriation.

Mystification is a dynamic process as some objects remain within the mythical language while others disappear and are replaced by new myths. For Barthes (1972),[32] the myth is a sensorial speech which can be read by multiple perceptual channels (written, auditive, visual). It is a double semiologic system in its significant,[33] which includes a "second talk" in its meaning or a *meta-language* (associated concepts). Its meaning has *meta-significance*. The correlation between these two levels designates, notifies, explains, and enforces; it is not a critical or a questioning speech. Barthes describes the myth as a complete sensorial reality, rich and self-sufficient; an axiom that defines knowledge, memories, and values. It is an instantaneous reserve of vivid meaning, spontaneous, innocent, indisputable, but always too far away to be tested in the facts. It establishes chains of cause-and-effect, motivations, and intentions. The myth allows building a personal appropriation, identification, and identity.

Myth producers permanently provide neologisms that make it evolve to a meta-language, different from literal language. Socially, the myth is validated by iteration (repetition of the same version by different mouths) and generalization (what everyone knows and everyone accepts). From the point of view of significance, the myth is an axiomatic observation proven on itself. Examined in its motivations, mythical significance is not arbitrary. It is motivated and guided by analogies and fables taken from selected ideologies and sets of values. Hence, language loses its arbitrariness and instantiates an interested version of the world. Myth is not a lie; it is an inflection of the meaning of truth. Those that do not consume them create them, or become *myth busters*: an outcast from the social semiotic regime that often ends marginalized (BARTHES, 1972).[34]

The Digital Era, the Networked Economy, the Information Society, and the Networked Society, all are new myths in Western Society. After World War II and as part of a larger creational myth, that of Technology, Computer Technology and the Electronic Media displaced traditional media from their mythological position. Television and radio became too familiar, and their ability to invigorate their mythical status exhausted. However, computers and data networks still manage to surprise us with their plasticity,

[32] See footnote 1.
[33] It is understood as the sound-word, the graphic word, the image.
[34] See footnote 1.

continuous increases in capacity, and their seductive aesthetics of design. An important part of this mystification is the development of autonomous capabilities of operation, such as Artificial Intelligence, and the conquest of new forms of data recovery that allow speech, visual and gestures recognition (GOMES DE ABREU; MONTEIRO, 2011). Symbolic machines, in their different ways, have become objects of cult.

Networked Symbolic Machines, as well as their contents, are multimedia texts produced by the joint action of the Cultural Industry, the Information Technology Industry and Media Industry, planted on a scientifically mystified and connoted structure produced by the Science of Marketing. Its overall narrative is articulated with multiple meta-narratives of a universalizing neo-capitalist order, at different levels of meaning and acting simultaneously at different depths.

6 The Rhetoric Machine and the Corrupted Habit

The size and persistence of the Networked Symbolic Machine faced by the *Immersive* reader, the strength and subtlety of its built-in marketing engineering, and its parameterized power of monitoring at global scale all respond to the agendas of economic and political powers, restricting the possibility of any *meaning negotiation* on the side of the citizen. The semiotic principles studied by Barthes in traditional media apply to electronic media. The rhetoric of image and sound also introduces connotations that act as semiotic mechanism of ideologies. Examples of this rhetoric can be seen in the work of artists like Magritte or Dali, able to discover and reveal such subtleties (BLIKSTEIN, 2003). For Barthes, both in sound and image, there is a mix of sensitive hierarchies of meaning that is affected by technique, increasing its denoting richness although each significant material is distinct. Repetitive effects in publicity, mixing visual and auditive elements are particularly dense and invasive, and extremely efficient in building consumer habits.

One of the functions of *habits* is to let the arbitrary relationships of meaning-significant in language to be imposed in society, allowing the individual to appropriate these standards and be alphabetized to adapt to his human niche. The reiteration of these

information patterns creates familiarity with the systems of signs-perceptions of each significant substance within the language, which includes a mixture of sounds, images, and objects. The senses are tributaries of this confluence of images, sounds, and writing. Such a structure of associations is included in education and brought to the representational field of language, as meta-linguistic possibility of discourse, which Barthes named connotation (BARTHES, 1977).[35]

The Networked Symbolic Machine, whose essence is the technical reproduction and automation, takes this structure of semiotic modeling and processes it with its logical algorithms. The final proposal is colossal, but not infinite or unbiased; its rhetoric may be participatory, but it is not democratic or representative.

In this semiotic environment, human brain responds as it has done since millions of years, fixing whatever is repeated innumerous times, following the "consensus of the majority," a dynamic of swarm (KENNEDY; KENNEDY; EBERHART, 2001), sometimes pathetically, as when we end up whistling that fashionable music that we hate so much. Most basic semiotic structures change into Law: *qualissigns* and *sinsigns* of iconic or indicative running in *rhematic* way create "possibilities of meaning" – "possibilities," neither rules, nor laws! The Symbolic Machine becomes a Rhetorical Machine that forces discursive processes that Barthes called Aristotelian Techné: the speculative institutionalization of the power to produce what may exist. A system designed to standardize minds: on the one hand, we to introduce fragments of thematic reasoning, and on the other, the machine throws complete structured speeches ready for use in persuasion (BARTHES, 1988b).[36]

Interactivity and Meaning Negotiation are not equivalent. The subject can make his proposal of sense, but in the world of the "informational wave" it gets lost like raindrops on the sea. Large corporations or governments have the power to shake the water and create waves: the Web is deceptively democratic (HINDMAN, 2010). Behind this mechanical-electrical universe, certain organizations and individuals accumulate power that leads to more power, building the new digital global elite (BROCKMAN, 1996).

[35] BARTHES, R. *Elements of Semiology*. New York: Macmillan, 1977.
[36] BARTHES, R. The Old Rhetoric: An Aide-Memoire. In: BARTHES, R. *The Semiotic Challenge*. New York: Hill and Wang, 1988b.

Considerations and Conclusions: The Semiologic Paradox

The classification of Signs Readers (*Contemplative, Moving, Immersive*) divides the latter category into *Novice*, *Layman*, and *Expert*. Santaella calls the Expert Reader as "provident," because he anticipates every movement of the information flow in the Web. He is farsighted and immersive as the cyberspace matrix of thought- language (auditive, visual, and verbal substance) saturates his nervous system submerging him into the informational ether (SANTAELLA, 2001; 2004; GOMES DE ABREU; MONTEIRO, 2011). But is this expert in control of the situation or is he just another piece of the machine? Which of his senses and perceptions are increased and which are amputated? Does he anticipates the machine or was he standardized by it?

Peirce's Semiotics is a strong base to explain the mechanisms of sign construction in the symbolic world, but they do not deepen the analysis of the extra-cognitive features included into the exchange of meaning: power and domination. Perception is neither naive nor pure; it is conditioned by a system of values, beliefs, and strategies (BLIKSTEIN, 2003).

Every architecture disciplines bodies (FOUCAULT, 1977)[37]; all information architectures discipline minds (BERRÍO-ZAPATA; SANT'ANA; VIDOTTI, 2012). Connotation and mystification are phenomena inherent to human society, and every information technology is closely related to them. The myth fills the spaces of doubt so that people can act without freezing in front of an environment of uncertainty. Connotation fills myths with intentions; it builds architectures of power that humans inhabit without perceiving them. Doubt is energetically expensive and endangers the *status quo*. Therefore, social change walks slowly and takes numerous precautions before persisting.

Berners-Lee, conceptual founder of the Web, placed his hopes for a free Web on the assumption that it would be impossible for anyone to control such a large symbolic space (BERNERS-LEE; FISCHETTI, 2000). Nevertheless, it is not necessary to dominate the

[37] FOUCAULT, M. *Discipline and Punishment*. New York: Pantheon, 1977.

whole Web to control the critical crossings of its information flows. Propaganda can be an alternative way to limit the freedom of citizens via intoxication with reiterated biased information (ALEXANDER, 2003). On their side, users make a restricted and poor use of information sources due to their tendency to save effort. The availability of data does not imply its use or the genesis of a liberating impact, despite being a *sine qua non* condition for it.

Mystification and connotation naturalize speeches and ideological structures from agents that created and control the Web. The Web serves well as a reserve of alibi for the dominant communities and naive hopes for the dominated. It reproduces interested worldviews more quickly and massively than what the targeted communities can process and respond. It is virtually impossible to compete with the marketing and engineering infrastructure of the digital elites. However, this does not invalidate the positive potential of the Web, but it remarks the importance of a careful semiotic and critical reading of the Networked Society in order to deepen our understanding of its discursive structures and its mystifying and axiomatic logic. Otherwise, the Web-Machine will change its liberating promise into a domesticating semiotic power that evangelizing minds will be able to naturalize the interests of a few.

In his analysis of fashion, in 1967, Barthes (BARTHES, 1983)[38] drew conclusions that are applicable to the current context, just by changing the word "*Fashion*" to "*ICT*" (Information and Communication Technologies):

1) ICT myth is rhetorical and fosters a representation of the world that embodies a general ideology. It supports and participates in a conversion that can be described as ideological alienation, providing it with a fixed mundane system of meanings. The deities in this mythology (interactivity, informational galaxy, artificial intelligence, human-computer symbiosis, the digital divide) produce unquestionable improvement by the grace of a natural imprescriptible order.
2) ICT myth masks, and alienation consists of all the implied meanings behind the mask. The mask of the rhetorical system confuses utopia and reality: a unified mankind for a global project called the Information Society. The repetition and

[38] BARTHES, R. *The Fashion System*. Berkeley: University of California Press, 1983.

semantic nature of these statements is transformed into an equivalent of reason and thought. The reality of the ICT myth is assertive.

3) ICT myth is based on a neutral view of "advance." It stems from world utopias from some elites in the Western Society. It never claimed to be the representation of such elites nor the fact that it is imposing such *significance* as the only one, displacing the representations from other communities. The representations from powerful societies create a praxis that becomes an ideological alignment and physical architectures through which their structures of meaning flow with all the *isotopies* of their culture. These isotopies are scattered across the globe and they quietly dull human diversity.
4) The result is a *semiotic paradox*: on the one hand, Western society tries to penetrate the reality of significance, forming strong and critical semiotic systems through what we call science. By contrast, the same systems and societies develop equally strong activity to mask the particular nature and interests of these structures, changing them into a single axiomatic rationality.

REFERENCES

ADORNO, T. W.; HORKHEIMER, M. A. A indústria cultural: O Iluminismo como mistificação das massas. In: LIMA, L. C. (Org). *Teoria da cultura de massa*. Trad. Júlia Elisabeth Levy. São Paulo: Paz e Terra, 2002, p.169-214.

ALEXANDER, M. The Internet in Putin's Russia: Reinventing a Technology of Authoritarianism. *In:* Annual Conference of the Political Studies Association, 53, 2003, Leicester. *Proceedings of the Annual Conference of the Political Studies Association*. Leicester: University of Leicester, 2003, pp.1-28.

BARTHES, R. *Système de la mode*. Paris: Éditions du Seuil, 1967.

_____. *Elementos de semiologia*. Trad. Izidoro Blikstein. São Paulo: Cultrix, 1971.

_____. La cocina del sentido. In: *La aventura semiológica.* 2. ed. Trad. Ramón Alcalde. Barcelona: Paidós Ibérica, 1993a, p.223-225.

_____. La retórica antigua: Prontuario. In: *La aventura semiológica*. Trad. Ramón Alcalde. 2. ed. Barcelona: Paidós Ibérica, 1993b, p.85-161.

_____. *Mitologias*. 11. ed. Trad. Rita Boungermino e Pedro de Souza. Rio de Janeiro: Bertrand Brasil, 2001.

BENJAMIN, W. *Discursos interrumpidos I*: Filosofia del arte y de la historia. Trad. Jesús Aguirre. Buenos Aires: Taurus, 1989.

BERNERS-LEE, T.; FISCHETTI, M. *Weaving the Web*: The original design and ultimate destiny of the World Wide Web by its inventor. New York: Harper Collins, 2000.

BERRÍO ZAPATA, C.; VIDOTTI, S. A. B. G.; SANT'ANA, R. C. G. Brecha digital e arquitetura da informação digital: estudo de novas perspectivas para o fenômeno das desigualdades do mundo em rede. In: V Congreso de WAPOR Latinoamérica, 5, 2012, Bogotá. *Proceedings of the WAPOR Latinamerica Conference*. Bogotá: Universidad Externado de Colombia, 2012, p.1-17.

BLIKSTEIN, I. *Kaspar Hauser ou a fabricação da realidade*. São Paulo: Cultrix, 1983.

BOUQUET, P.; WARGLIEN, M. Meaning Negotiation: An Invitation. In: BOUQUET, P. *Meaning Negotiation Papers from AAAI Workshop*. Edmonton: AAAI Press Edmonton, 2002.

BOURDIEU, P. *Les structures sociales de l'économie*. Paris: Edition du Seuil, 2000.

BRETON, P. *História da informática*. São Paulo: Unesp, 1991.

BROCKMAN, J. *Digerati:* Encounters with the Cyber Elite. San Francisco: Hard-Wired, 1996.

BURATO, E.; CRISTANI, M.; VIGANÒ, L. *Meaning Negotiation as Inference*. New York: Cornell University, 2011.

BUSH, V. *As We May Think*. Washington: The Atlantic Monthly, 1945.

CÂNDIDO DE ALMEIDA, C. Sobre o pensamento de Peirce e a organização da informação e do conhecimento. *Liinc em Revista*, Rio de Janeiro, v.7, n.1, p.104-120, mar. 2011.

CASTELLS, M. *La era de la información*: La Sociedad Red. Buenos Aires: Siglo Veintiuno, 1999a.

_____. *La era de la información*: El poder de la identidad. Buenos Aires: Siglo Veintiuno, 1999b.

CLINTON, B.; GORE, A. *Excerpts from Transcribed Remarks by the President and the Vice President to the People of Knoxville on Internet for Schools*. Knoxville: U.S. Government Printing Office, 1996.

DONOHUE, G. A.; TICHENOR, P. J.; OLIEN, C. N. Mass Media and the Knowledge Gap: A Hypothesis Reconsidered. *Communication Research*, v.2, n.1, pp.3-23, 1975.

ENGELBART, D. C. *Augmenting Human Intellect*: A Conceptual Framework. Standford: Stanford Research Institute, 1962.

FESTINGER, L. *A Theory of Cognitive Dissonance*. Standford: Stanford University Press, 1957.

FOUCAULT, M. *Vigilar y castigar*: nacimiento de la prisión. México DF: Siglo Veintiuno, 2000.

FRIEDMAN, A.; THELLEFSEN, M. Concept Theory and Semiotics in Knowledge Organization. *Journal of Documentation*, v.67, n.4, pp.644-674, 2011.

GEORGE, C. S. *Historia del pensamiento administrativo*. México DC: Prentice-Hall Hispanoamérica, 1972.

GOMES DE ABREU, J.; MONTEIRO, S. D. Matrizes da linguagem e a organização virtual do conhecimento. *Ciência da Informação*, Brasília, v.39, n.2, p.9-26, maio/ago. 2011.

HINDMAN, M. *The Myth of Digital Democracy*. Princeton: Princeton University Press, 2010.

HODGSON, G. M. The Mystery of the Routine: The Darwinian Destiny of an Evolutionary Theory of Economic Change. *Revue Économique*, Paris, v.54, n.2, pp.355-384, 2003.

IBRI, I. A. *Kósmos Noetós*. São Paulo: Perspectiva, 1992.

KENNEDY, J. F.; KENNEDY, J.; EBERHART, R. C. *Swarm Intelligence*. San Mateo: Morgan Kaufmann, 2001.

KENNY, C. Information and Communication Technologies for Direct Poverty Alleviation: Costs and Benefits. *Development Policy Review*, v.20, n.2, pp.141-157, 2002.

KOFFKA, K. *Principios de psicología de la forma*. 2. ed. Buenos Aires: Editorial Paidos, 1973.

KOHLER, W. *Psicologia de la forma*. Buenos Aires: Paidos, 1969.

KUHN, T. *La estructura de las revoluciones científicas*. 3. ed. Bogotá: Fondo de Cultura Económica Ltda., 1992.

LÉVI-STRAUSS, C. *Anthropologie structurale*. 2. ed. Paris: Plon, 1973.

LÉVY, P. *A inteligência coletiva*. São Paulo: Loyola, 1994.

_____. *A máquina universo*. 1. Rio Grande do Sul: Artmed, 1998.

_____. *Cibercultura*. Trad. Carlos Irineu da Costa. São Paulo: Editora 34 Ltda., 1999.

LICKLIDER, J. C. R. Man-Computer Symbiosis. *IRE Transactions on Human Factors in Electronics*, n.1, pp.4-11, 1960.

_____.. *Memorandum for Members and Affiliates of the Intergalactic Computer Network*. Washington: Kurzweil AI, 1963.

LUHMANN, N. *Organización y decisión*: Autopoiesis, acción y entendimiento comunicativo. Trad. Dario Rodríguez Mansilla. Barcelona: Anthropos Editorial, 1977.

MACHLUP, F. *The Production and Distribution of Knowledge in the United States*. Princeton: Princeton University Press, 1962.

MARCUSE, H. Some Social Implications of Modern Technology. *In:* KELLNER, D. *Technology, War, and Fascism*. New York: Routledge, 1998, pp.39-66.

MATTELART, A. *História da sociedade da informação*. São Paulo: Loyola, 2002.

MATURANA, H.; VARELA, F. *El árbol del conocimiento*: las bases biológicas del conocimiento humano. Madrid: Debate S/A, 1999.

MCCARTHY, J.; MINSKY, M. L.; ROCHESTER, N.; SHANNO, C. E. A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence. *AI Magazine*, v.27, n.4, pp.12-14, 1955.

MCCRANK, L. J. *Historical Information Science*: An Emerging Unidiscipline. Medford: Information Today Press, 2001.

MCLUHAN, M.; FIORE, Q. *War and Peace in the Global Village*. New York: Bantham Books, 1968.

MCLUHAN, M.; PIGNATARI, D. *Os meios de comunicação como extensões do homem*. São Paulo: Cultrix, 1969.

MONTEIRO, S. O ciberespaço e os mecanismos de busca: novas máquinas semióticas. *Ciência da Informação*, Brasília, v.35, n.1, p.31-38, 2006.

MOOERS, C. N. Mooers' Law or Why Some Retrieval Systems are Used and Others are not. *Bulletin of the American Society for Information Science and Technology*, v.23, n.1, pp.22-23, 1996.

MORIN, E. *El Método III*: El conocimiento del conocimiento. Madrid: Ediciones Cátedra S.A., 1988.

NEGROPONTE, N. *Ser digital*. 2. ed. Buenos Aires: Editorial Atlántida, 1998.

NÖTH, W. *A semiótica no século XX*. São Paulo: Annablume, 1996.

OLSON, H. A. *The Power to Name*: Locating the Limits of Subject Representation in Libraries. Dordrecht: Kluwer Academic Pub, 2002.

OTLET, P. *Traité de documentation*: le livre sur le livre, théorie et pratique. Bruxelles: Editiones Mundaneum, 1934.

PEIRCE, C. S. *Semiótica*. 2. ed. Trad. José Teixeira Coelho. São Paulo: Perspectiva, 1995.

PUERTA, E. D. L. Crisis y mutación del organismo empresa: Nuevo protagonismo de los factores tecnológicos como factor de competitividad. *Economía Industrial*, Madrid, n.289, p.73-87, 1995.

RHEINGOLD, H. *The Virtual Community*. Cambridge: MIT Press, 2000.

SANTAELLA, L. *Matrizes da linguagem e pensamento*: sonora, visual, verbal: aplicações na hipermídia. São Paulo: Iluminuras, 2001.

_____. *Navegar no ciberespaço*: o perfil cognitivo do leitor imersivo. São Paulo: Paulus, 2004.

SARACEVIC, T. Ciência da informação: origem, evolução e relações. *Perspectivas em ciência da informação*, Belo Horizonte, v.1, n.1, p.41-62, 1996.

SERRES, M. H. *Hominescências*: O começo de uma outra humanidade. Rio de Janeiro: Bertrand Brasil, 2003.

SHANNON, C. E. A Mathematical Theory of Communication. *Bell System Technical Journal*, New York, v.27, n.3, pp.379-423, 1948.

SILVEIRA, L. F. B. *Curso de semiótica geral*. São Paulo: Quartier Latin, 2007.

TOURRAINE, A. *La sociedad programada y su sociología*. Barcelona: Ariel. 1969.

TURING, A. M. Computing Machinery and Intelligence. *Mind*, Oxford, v.59, n.236, pp.433-460, 1950.

VIVEIROS DE CASTRO, E. Perspectivismo e multinaturalismo na América indígena. *In:* ALEXANDRE SURRALLÉS, P. G. H. *Tierra adentro*: territorio indígena y percepción del entorno. Lima: Tarea Gráfica Educativa, 2004. p.37-80.

VON FOERSTER, H. On Self-Organizing Systems and their Environments. *In: Understanding Understanding*: Essays on Cybernetics and Cognition. New York: Springer, 2003. pp.1-19.

WESCH, M. *The Machine is Us/ing Us*. Kansas: Kansas State University 2007.

WSIS. *Declaration of Principles*: Building the Information Society: a Global Challenge in the New Millennium. Tunis: World Summit on the Information Society, 2005.

ZIPF, G. K. *Human Behavior and the Principle of Least Effort*: An Introduction to Human Ecology. Oxford: Addison-Wesley Press, 1949.

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