ARTICLE

JOURNALISTIC SOURCES

Conceptual bases for a digital system

WALTER TEIXEIRA LIMA JUNIOR
Faculdade Casper Líbero, Brazil

ABSTRACT This article contains definitions of concepts and a bibliographical revision of the first part of the post-doctorate research work which aims at the production of software for the search for and qualitative validation of journalistic sources of information. The text touches on biological memory, decision-making and fundamental concepts for the choice of a journalistic source: nature of the source, credibility, prestige and currency. These aspects permeate and influence the choice (decision-making) of the professional who needs a source to carry out his work. They are classified, categorized, structured and interrelated, in order to serve as consolidated, reliable parameters for software to perform the task of selection of the best journalistic sources without the mistakes/problems pointed out by researchers in the area.

KEY-WORDS Journalistic sources, journalism, technology, cognitive sciences, biological memory.

The post-doctorate project "Formation of conceptual bases and creation of UML (Unified Modeling Language) aiming at the production of software for the search of qualitative validation and journalistic sources of information" is divided into three essential parts. In the first one, which is the current stage of the research, there is a description of the properties of the concepts which theoretically permeate the choices of journalistic sources made by printed media professionals: nature, credibility, prestige and currency. It is necessary to highlight that in relation to electronic media like TV and radio, other variables are taken into consideration to choose a source, such as facility for oral communication and/or the aesthetic aspect.

TThe methodology utilized is based on the intersection of areas which involve Social Communication, Computer Sciences, Neuroscience, Cognitive Psychology and Anthropology, with the task of classifying the journalistic sources used in a daily newspaper in relation to their nature, credibility, prestige and currency, as well as analyzing the importance of these concepts for the quality of journalistic information. From this analysis, the UML will be structured, serving as a basis for the definition of programs which will be used in the production of software for the search for and qualitative validation of journalistic sources of information.

In the field of journalism, the taxonomy of researchers in the area will be used. Nilson Lage, Brain MacNair and Manuel Pinto are the main authors in the conceptualization of journalistic sources. Definitions of journalistic precision contained in the works of the American journalist Philip Meyer will also be used.

For the extraction of the four variables, which the aforementioned researchers pointed out using the same distinctions and terminologies (confronting their investigations), this study leaned on Cognitive Psychology[1] procedures and theories to structure those concepts, based on strategies of decision-making and human judgment. "The human being makes a decision through the selection of an alternative with the aim of producing a result which favors him, therefore from the perspective of the decision-maker" (YATES, 1990: 79).

However, to what extent does a professional use all the possibilities of deductive or inductive reasoning in the search for a better result?

Nowadays, a journalist has an established workday, usually excessive and with various tasks to be accomplished in a short time. The professional feels pressured to make fast decisions without taking into account all the possibilities. Therefore, a journalist makes use of Heuristics to obtain a result, even with incomplete information and limited resources. This way he researches mentally in a universe of possibilities, but the progress of this inquiry may be uncertain or tentative. "Heuristics is the mental shortcut which makes the cognitive weight of taking a decision lighter, but also allows greater chances for an error to occur" (STERNBERG, 2002: 343), when solving a problem.

Another factor interferes in the decision-making process to choose a journalistic source - an unsatisfactory cultural background or a typical human characteristic: lack of ambition. These variables, acting separately or jointly, lead to the theory of limited rationality, that is, cognitive limits induce a decision-maker to resort to a simplified model of the world with which he interacts. The fundamental criterion of this theory is the notion

of *satisfying*, whose presumption is that an individual performs a task having in mind a satisfactory, but not necessarily optimal result.

The deciding process of the choice of journalistic sources is part of the work of the journalist, who generally tries to achieve "a satisfactory, but not necessarily optimal result". This mechanism has affected the quality of journalistic practices and, consequently, their credibility, since they do not fulfill some of the primary requirements of journalism, such as impartiality, precision, disclosure of reliable information with social relevance. Therefore, the institutions or individuals who witness or take part in socially relevant events are the main data and information suppliers that give birth to journalistic content.

The sources are people, groups, social institutions, or the vestiges built or left by them: discourses, documents, data. The sources are related to positions and social relations, to interests and points of view, to temporally situated locations. (GOMIS, 1991: 59)

> In short, the sources to which journalists resort or look for are interested sources, in other words, implicated in determined tactics and strategies. And the fact that there is news is mostly due to the existence of people who want to go public with certain facts (GOMIS, 1991: 60).

The sources are more important for the process of news production than the journalist himself, since the sources offer raw material for the news. In addition, a renowned journalist builds his career as a result of the web of relations with his sources. The study of the senders, in the perspective of *newsmaking*, reveals that in the current context of information production, it is necessary to amplify the conventional view of the concept of broadcaster. Thus, it is correct to affirm that besides newspapers, radio and TV, news agencies, institutional sources of information and press and communication offices are broadcasters.

To finally select the object of his choice, the professional has necessarily mingled information from the environment, which will interact with information stored in his biological memory.

Therefore, this study also incorporates an investigation in the realm of Neuroscience, where one finds scientific parameters for establishing relations between biological memory, decision processes (decision-making) and the methods and journalistic criteria for the choice of a source made by a professional. This area of human knowledge has advanced greatly concerning the understanding of how the complex systems of memory work, and in addition, it supplies important elements

for the comprehension of how and why one chooses a certain journalistic source.

The incorporation of diverse knowledge areas, such as Applied Social Sciences, Computer Science, Neuroscience and Cognitive Psychology in the development of software for the choice of journalistic sources can be useful for the creation of an intelligent system in terms of understanding the necessities of the user (journalist). This software could facilitate and qualify the search, which would improve the quality of the information transmitted to the reader, viewer, radio listener and Internet user.

WORK ENVIRONMENT OF THE JOURNALIST

Nowadays, in order to obtain information about possible journalistic sources, journalists make use of digital search mechanisms via computer networks, databases (internal and external), instant messenger, telephone, indication by other professionals, press offices, press releases, guidance contained in a summary of the subject to be developed and observation of the informative contents published and broadcasted in the mass media.

This perception of the world, represented through various means of obtaining information, must be added to biological memory. From that moment, the crosschecking of pieces of information occurs in order to arrive at the best alternative, taking into consideration the amount of time needed to produce informative content, easy access to the source, conformance to the editorial line, and in the case of radio and TV, aesthetic questions.

For the result of this search to be satisfactory in terms of the social interest and relevance of information, it must include the following concepts: nature of the source (origin), credibility, prestige and currency.

Therefore, the definition of the attributes pertaining to those concepts is important for building a value scale, aiming at establishing parameters which may be checked and tested.

SOURCES ARE CHOSEN BY JOURNALISTS

In the present-day business model, in most vehicles of communication – from little ones to media conglomerates – the journalist (reporter or editor) is the link in the news industrial production chain. It is the journalist who decides what is included in or excluded from the formation of journalistic content. What is the objective of the journalist? According to Lage (2001), to obtain some kind

of result, a journalist works with information, his raw material. For news to exist there must be, first and foremost, a piece of news of universal interest. The news consumer may not be interested in the final product, in its package or ideological content, but wants to obtain information which a piece of news must necessarily have. News is the raw material for journalism, since only after being known or widespread, the subjects which a piece of news refer to may be commented, interpreted and researched.

Various decision-making processes included in the news production chain are in the journalist's power, such as the selection of themes to be dealt with; the choice of sources of information (selecting and qualifying as a valid interlocutor); the questioning of the source; data collection (testimonials); the structure of information according to the context; the use of production techniques (example: script for TV documentaries) and the manner in which the content will be presented to the consumer. However, the search for sources is only initiated after preparation of a summary of the subject to be developed[2].

When producing a piece of news, a journalist must find sources that have credibility, currency and that validate information already obtained. The source is important to provide veracity for the piece of news and to help in comprehending a fact. In order for this objective to be achieved, the professional must verify whether the source is reliable, whether he can verify the kind of information it has transmitted, evaluating its maturity (if he has consolidated experience in the subject in question supported by a summary of the subject to be developed), whether it is close to the subject, whether it is the best authority (in the sense of knowing the subject) and whether it is possible to know what another source thinks about the original source.

BIOLOGICAL MEMORY: STORED AND APPREHENDED INFORMATION

Each and every living being has memory system capacity and different configurations. Human beings have one of the most complex evolved systems, which structures what we call conscience.

The journalist makes use of his memory to store, retrieve and relate data as context provided by "concrete reality". This process, as presented above, can take place by using methods of decision-making which seek "optimum" solutions, whether through the analysis of the selection of all the possibilities or Heuristics. But both processes are grounded on the capacities of biological memory.

In the light of an evolutionary perspective, Georges Chapouthier explains that the term "memory" may have two meanings. "In a restricted sense, it is the capacity of some living beings to store, in the nervous system, data or information about the environment that surrounds them, so that they can modify their own behavior" (CHAPOUTHIER, 2005: 9).

In a broader sense, however, memory is also each trace left in the world or in its components by a determined event. We mean here traces, residues or fossils, as well as genetic, cytoplasmic or immunological memory. There are also the artificial memories created by human beings.

> Memories are stored in the form of modifications in the specific relations among neurons and not as alterations in molecules or specific neurons for the memory (FUSTER, 2005: 27).

According to Laroche, for a long time it was thought that the fundamental mechanisms of the superior mental functions, for example, memory, would escape any biological analysis, but nowadays "we understand better how the different forms of memory are organized and which are the circuits and structures of the brain involved" (LAROCHE, 2006: 43).

There has been progress in the analysis of intra- and intercellular communication and the neuronal plasticity which take part in the formation and conservation of mnemonic traces[3].

Thus, memory is made up of various systems which treat and store specific components of information. In normal conditions, these subsystems have a collaborative relation: the same event may have semantic and episodic content, and the same piece of information may be represented in an explicit or implicit form.

Various regions of the brain treat different dimensions of a piece of information and place them in the memory as diverse contents. But these regions are joined by temporary or permanent webs, in which the recollection as a whole is based. Therefore, we are not conscious of all memories at the same time (LAROCHE, 2005: 37-39)

> An essential part of the processing of information carried out by the brain is not conscious, and, therefore, we cannot be aware of this process. Being conscious of the shape and the color of a pencil, for example, is a result of many mental operations which allow the recognition and identification of the object. On the other hand, the mechanisms which make us reach our hand towards the pencil are unconscious (SQUIRRE; KANDEL, 2005: 50).

To recover such contents, it is essential to understand how the human memory system works, to know its types and its multiple and interconnected functions. The study of memory mechanisms is necessary for one to have confidence in the results obtained.

> The study of the memory is a central concern for Neuroscience and Cognition Sciences. In Neuroscience, memory is studied by neurophysiologists to determine the synaptic changes which will be the basis for neural plasticity, and by molecular biologists to determine the molecular processes which govern synaptic behavior. In Cognitive Sciences, memory is studied by Computer Science which is interested in creating learning electronic systems and by cognitive psychologists to understand the performance of human memory (BECHTEL; GRAHAM, 1999: 85).

But what is memory? For many researchers, it is "the ability to consciously recollect, to remember what happened days, weeks or years ago" (LE DOUX, 2002: 97). In the view of Henry L. Roediger III and Lin M. Goff, "memory is a simple word which refers to a set of complex and fascinating abilities that people or other animals possess, enabling them to learn through an experience and retain what they have learned" (ROEDIGER; HENRY; GOFF, 1999: 250). In the memory, an experience affects the nervous system, leaves residues or traces, and later changes behavior. The types of memory are tremendously varied just as the techniques used in Cognition Sciences to study them.

> Memory is the process through which what is learned is retained (stored) with the possibility of being recovered later. Much of what human beings know about the world is not built at the time of birth, but it is acquired through experiences. A piece of information is apprehended, stored in the brain as memory, and is available to be retrieved later (SQUIRE, 1999: 520).

According to Iván Izquierdo, contrary to what is usually thought, "the process of memorization does not occur only when something new is apprehended, or something is recollected"(IZQUIERDO, 2005: <www.universia.com.br/materia/materia.jsp?materia=6979>). All types of information are memory formation, since the brain works 24 hours a day.

The piece of apprehended information, therefore stored information, will help in the construction of consciousness. Although the term and the process of acquiring consciousness are still indefinite when one uses scientific rigor, it is believed that there is much more behind this term,

like the memories, levels of attention and other activities, properties and characteristics of the nervous tissue. Joseph Le Doux asserts that "without memory and learning processes, the personality could be an empty, impoverished expression of our genetic constitution. Learning allows us to transcend our genes" (LE DOUX, 2002: 9).

Today, we that study the Neurosciences and see in this study how much we have advanced and how much we still ignore about the human mind, are surprised by the fact that some years ago there could have existed such phantasmagorical ideas about it (IZQUIERDO, 2005).

However, for Ivan Izquierdo "he human mind encompasses much more than memory (IZQUIERDO, 2005). There are many elements which take part in the mental functions: perception, level of attention, selection of what one wants to perceive, to recollect or to learn, the decision about what one wants to do or stop doing, the will, comprehension, feelings, emotions, mood and all that is encompassed by the concepts of intelligence and consciousness. All these variables are strongly influenced by memories and vice-versa; but they are separated from them and have their own mechanisms.

TYPES OF MEMORY

The idea that memory is not a single faculty of the mind is not new. One can find expressions of this idea in the writing of psychologists and philosophers more than a century ago. For example, it is frequently mentioned that in 1804 Maine de Biran wrote about mechanical, sensitive and representative memory. "William James (1890) wrote separate chapters about memory and habits in the book *Principles of Psychology*. Another important writer was Bérgson (1910), focusing on habits" (SQUIRE, 2004: 171).

Therefore, the studies about types of memories are not recent, and research works have advanced considerably to discover their location, function and types, besides measuring their duration and content.

> All the captured pieces of information are stored in the brain. However, for each sort of information there is one type of memory; that is why it is believed there are as many memories as there are accumulated experiences. Memory is located in many parts of the brain. Each type has a different location (IZQUIERDO, 2005, www.universia.com.br/materia/materia.jsp?materia=6979)

For Ivan Izquierdo, from the point of view of its context, there are basically two major types of memory: "the declarative or explicit (a text, a fact, an event, many facts, faces, knowledge) and the memories of procedures, or implicit memories, which are often called habits, which are acquired and evoked in a usually automatic way" (IZQUIERDO, 2004: 81-87).

> The memories which persist are called short-term memory and long-term memory, declarative or procedural. The first lasts from 30 minutes to 6 hours, and the latter, many hours, days or years. In this case, they are also called remote memory. The process of formation of long-term memory requires a sequence of molecular steps which last many hours, during which it is susceptible to numerous influences. Short-term memory is a process which keeps memory working during the time in which long-term memory has not yet acquired its definite form (IZQUIERDO, 2004: 81-87).

As for Joseph Le Doux, he uses the terms implicit and explicit to describe the procedural and declarative memories, respectively. For the French researcher, they themselves are not completely neutral. "They are borrowed from the study of memory, where it is now widely recognized that the brain system involved in forming explicit, consciously accessible memories is distinct from a variety of other systems that are capable of learning and storing information implicitly, which is to say without conscious awareness" (LE DOUX, 2002: 28).

CONCEPTUALIZING AND CLASSIFYING ATTRIBUTES

The definitions of the words nature[4], credibility[5], prestige[6] and currency[7] can be encountered in the Houaiss dictionary. Nevertheless, etymological definitions do not include the necessary classifications, instances and attributes that are appropriate for the field of journalism.

To formulate those concepts, some classifications and typifications of sources are used. They were catalogued by Nilson Lage and Brian McNair, quoted by Manuel Pinto in Journalistic Sources: contributions to the mapping of the field. Lage and McNair are the most complete texts, whose concepts contribute to the cataloguing of the sources.

Theories of Cognitive Psychology are also useful mainly in the part of the formation of concepts and judging processes. "Value and property judgments need to be combined in order for a final choice to be made" (EYSENCK, 1990: 82).

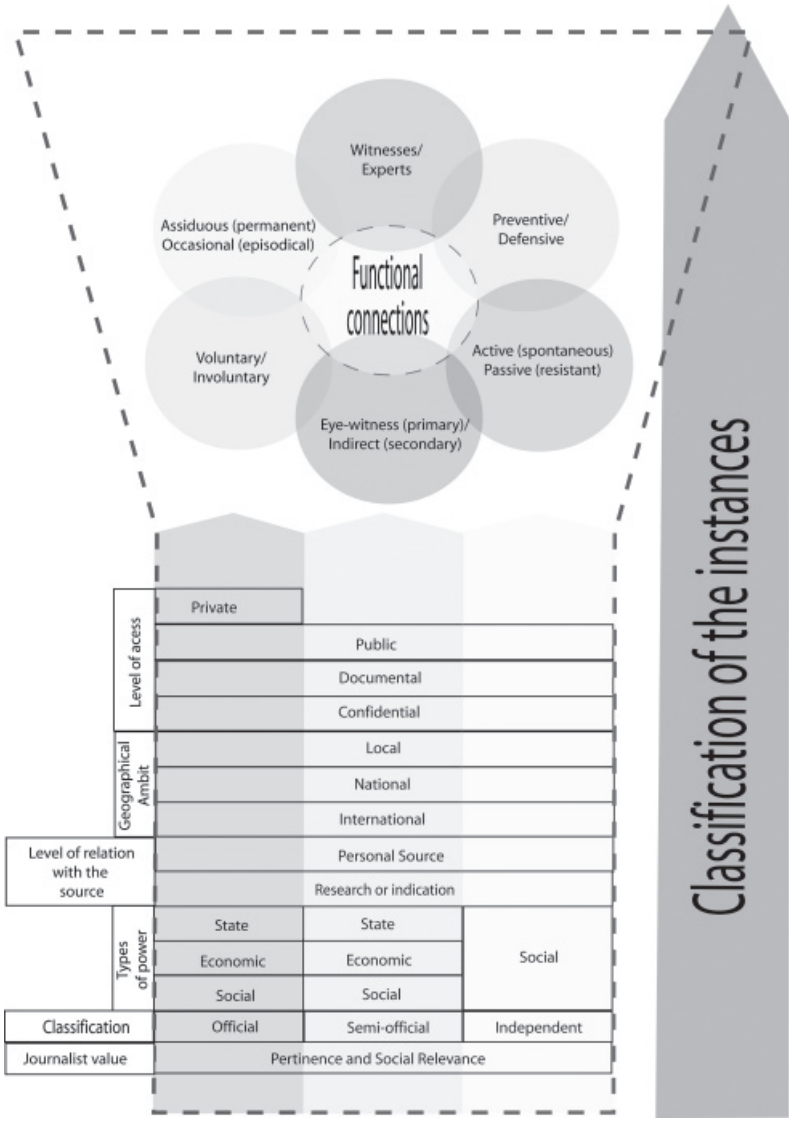
NATURE OF THE SOURCES

Among the four important concepts for the occurrence of a decision-making process involving an appropriate journalistic source for the development of socially relevant informative content, the nature of the source is the starting point of a possible web of connections. Through this concept, one achieves the instances and attributes which will be valued and chosen in the search for an optimal decision. Not knowing the origin of a source makes it impossible to achieve the other concepts, namely, credibility, prestige and currency.

It is important to highlight that the journalist acquires those concepts from the real (the representation that he makes of the real), that is, from the "concrete", transferring it to the abstract (mind).

> People tend to assume that concepts have essences and that the identification (superficial) of the characteristics of the concepts is connected to the depth, essential properties of the concepts. Taking that into consideration, people can use similarity heuristically, since things which are superficially similar are frequently similar in many fundamental forms (EYSENCK, 1990: 82).

Figure 1 below is the result of the first part of this research. It condenses all the concepts demonstrated by researchers of the area of journalism mentioned in this article, including the concepts which structure the term "journalistic sources", and revealing the functional connections among them. "Choices require the establishment of the relevant attributes and the strategy for the integration of pieces of information about the attributes for a global/total judgment about each object. Thus judgments can be compact and the final decision can be reached (EYSENCK, 1990: 90).


Witnesses/
Experts
Preventive/
Defensive
Assiduous (permanent)
Occasional (episodical)
Functional
connections
Voluntary/
Involuntary
Active (spontaneous)
Passive (resistant)
Eye-witness (primary)/
Indirect (secondary)
Classification of the instances
Level of acess
Private
Public
Documental
Confidential
Geographical Ambit
Local
National
International
Level of relation with the source
Personal Source
Research or indication
Types of power
State
State
Economic
Economic
Social
Social
Social
Classification
Official
Semi-official
Independent
Journalist value
Pertinence and Social Relevance

CREDIBILITY, PRESTIGE AND CURRENCY

Those three concepts depend exclusively on the perception of the journalist, after his complementary analysis of the instances which are part of the concept of "nature". In *Cognitive Psychology, Person Perception* refers to a sub-area of Social Psychology (Social Cognition[8]), which is concerned with the ways in which human beings use information about other people to form impressions, make judgments, anticipate behaviors and interact (EYSENCK, 1990, p. 271).

The observer (journalist) tends to project his own attributes on others, in this case, the source, analyzing the latter's facial appearance, manner of dressing, body type (body language) and the confidence with which the source gives information.

FINAL COMMENTS

The article presents the first part of the research whose objective is to simplify the ways of solving problems of decision in the choice of journalistic sources, conceptualizing variables and transferring them to a computer version, made up of intelligent digital systems.

These would help in the search for an "optimal" decision, that is, finding an appropriate journalistic source, relevant and without any undesirable variables, like lack of goals and acting with dissimulation when complying with other person's objectives. According to researchers in the area of journalism, those variables impair the quality of journalistic practices and, consequently, their credibility, since they do not fulfill some of the primary requirements of journalism, such as impartiality, precision and production of reliable information with social relevance.

To conceptualize the nature, credibility, prestige and currency of journalistic sources, the taxonomy of the field of journalism was used, supported by theories from the area of Cognitive Psychology (decision-making, person perception and social cognition), incursions into Neuroscience (biological memory) and modulation of concept in attributes and instances.

With the formation of a table of concepts, values and relations, in the light of the aforementioned areas, it will be possible to modulate a system based on the UML and eventually to create a computer program to be used in journalism offices.

NOTES

1 Cognitive Psychology is a science, a branch of psychology which studies cognition, the mental process that is hypothetically the basis for behavior. It is one of the subjects of Cognitive Science. That area of investigation covers a variety of fields, examining questions about work memory, attention, perception, knowledge representation, reasoning, creativity and problem-solving.

2 Pauta: First plan of action for the production of journalistic texts and iconographic material. In *Manual de Redação da Folha de São Paulo*, PubliFolha, São Paulo, 2001, p. 46.

3 Consolidation of mnemonic traces (or engram, the mark which the memory of a fact or of an action leaves in the brain).

4 Original condition

5 Attribute, quality or characteristic of someone or something that is believable; reliability.

6 Great influence exerted by a person or thing on other people and recognition of the qualities of someone or something; admiration, respect.

7 Quality of that which arouses interest in the present.

8 Social cognition is the study of how people process social information, especially its encoding, storage, retrieval, and application to social situations. Social cognition's focus on information processing has many affinities with its sister discipline, cognitive psychology.

BIBLIOGRAPHY

BECHTEL, William; GRAHAM, George. *A Companion to Cognitive Science*. USA: BlackWell, 1999.

CHAPOUTHIER, Georges. "Registros evolutivos" In *Viver mente & cérebro*, n.2, Edição Especial, São Paulo: Duetto Editorial, 2005.

EYSENCK, Michael W. *Blackwell Dictionary Cognitive Psychology*. Massachusetts: Basil Blackwell, 1990.

FUSTER, Joaquim. "Arquitetura de rede". In *Viver mente & cérebro*, n.2, Edição Especial, São Paulo: Duetto Editorial, 2005.

GOMIS, Lorenzo. *Teoría del Periodismo: Cómo se Forma el Presente*. Barcelona, 1991

IZQUIERDO, Ivan. "A Mente Humana". In Revista Multiciência. < www.multiciencia.unicamp.br/art01_3.htm> Accessed on June 19, 2005.

IZQUIERDO, Ivan. "O Mecanismo da Memória". In *Universia*. Available at <www.universia.com.br/materia/materia. jsp?materia =6979>. Accessed on June 19, 2005.

IZQUIERDO, Ivan. "Tipos e mecanismos de memoria". In *Revista Mente e Cérebro*. São Paulo: Dec. 2004.

LAGE, Nilson. *A reportagem: teoria e técnica de entrevista e pesquisa jornalística*. Rio de Janeiro: Record, 2001.

LAROCHE, Serge. "Marcas da identidade". In *Viver mente & cérebro*, n.2, Edição Especial, São Paulo: Duetto Editorial, 2005.

LE DOUX, Joseph. *Sinaptic Self: how our brains become who we are*. New York: Penguin Book, 2002.

ROEDIGER III, HENRY L.; GOFF, Lin M. "Memory". In BECHTEL, William; GRAHAM, George. *A Companion to Cognitive Science*. USA: BlackWell, 1999.

SQUIRE, Larry R. "Memory systems of the brain: A brief history and current perspective". <Available at www.sciencedirect.com.> Accessed on June 19, 2005.

SQUIRE, Larry. "Human Neuropsychology Memory". In WILSON, Robert A., KEIL, Frank. *The MIT Encyclopedia of the Cognitive Sciences*. Massachussets: The MIT Press. 1999.

SQUIRRE, Larry; KANDEL, Eric. "Memória não-consciente". In *Viver mente & cérebro*, n.2, Edição Especial, São Paulo: Duetto Editorial, 2005.

STERNBERG, Robert J. *Psicologia Cognitiva*. Porto Alegre: Artes Médicas, 2002.

YATES, J.F. "Judgment and Decision-Making". In BECHTEL, William; GRAHAM, George. *A companion to cognitive science*. USA: Blackwell Publishing, 1990.

Walter Teixeira Lima Junior is professor of the Master's Program at Casper Líbero College, postdoctoral student in Communication and Technology (Methodist University) and Doctor of Communication Sciences (São Paulo University).