

## **THE NOTION OF THE TERM 'INFORMATION': LITERATURE REVIEW**

**Jéssica Câmara Siqueira**

São Paulo University (USP)  
Brazil

### **ABSTRACT**

The literature review of the term 'information', starting from a terminological approach, has the aiming to identify traces which help in a better delimitation of the Information Science field. The comprehension of the identity characteristics of the Information Science is a conjectural need, observed in the context of the post-modernity on which the field tries to 'consolidate itself'. The use of the guidance of the *Terminology Communicative Theory*, which considers the pragmatic and social aspect of the terms, was an important resource to stress out how the different perspectives of the term 'information' corroborate the construction of a thematic view of the Information Science area.

**Keywords:** Information Science; Information; Terminology Communicative Theory; Terminology.

### **1 INTRODUCTION**

There are different approaches to the origins of Information Science. To Meadows (1999), for example, the Information Science, as well as the Documentation, owes its origins to the scientific development of the Century XX which had its arising connected to the science on its broadest sense, considered such as a result of the sciences institutionalization. On the other side, Le Coadic (2004) leaves from the historical context post Second War, observing that the Information Science, in the scope of the Social Sciences, turns itself to a "[...] concrete social problem", the information retrieval. The author points out the social demand as propellant element of the interdisciplinary character of the area. Alongside these approaches of the problem, others were developed, identifying different origins of the field.

While in Europe, mainly continental, there was an acceptance of the term Documentation, triggering the creation of documentation centers, congresses,

institutions and the professional formalization of experts, England and the US opted for using a terminology connected to the word information, giving origin to the Information Science studies (ORTEGA, 2009a). Besides that, while the Documentation was developed in Europe, in the USA the Librarianship was developed emphasizing, on one side, its specialized character, influenced by the brief contact with the Documentation and, on the other side, its generalist character, from which the library was seen as an organized social institution and defined according to the parameters from the Chicago School (SIQUEIRA, 2010).

Besides Europe, the Soviet Union also did not follow the expression 'Information Science', creating the term *Informatika*, concept widespread by the authors Chernyl, Gilyarevskii and Mikhailov (1973). The goal of this discipline was to study the structure and the peculiarities of the scientific information, as well as the laws which governed such activity, its history, theory, method and organization forms. The key point was the study of information in the communicative context of a social system turned to the change of knowledge state, idea which considered the information as potential element to the transformation of anomalous states of knowledge (RADAMÉS LINARES, 2005).

The Russian scholars stood out due to the development of a solid conceptual apparatus. They performed attempts of delimitations of the object, of the different types of documents distinction and the search automation, what approached them to the Documentation. However, the end of the socialist regime, the exhaustion of funding to the research and the finding of the ambiguity of the term '*informatika*' in the West, eventually favored the replacement of this designation by the term Information Science (RADAMÉS LINARES, 2005).

The Information Science development, even considering the several investments, showed many edges, mainly relating to its identity, whose delimitation has been marked by the affirmation of the interdisciplinary, due to problems of delimitation of its study object, allegedly stated as 'information', term which, along with 'knowledge' and 'communication' gives it reference, but not enough to limit the field. Besides that, such as an area which flourished in the middle of fragmentations and relativizations brought by the post-modern context, it is expected to bring more questions than answers (SIQUEIRA, 2010).

Currently, the discussion has not still come to a consensus. Even with the dissemination of the term Information Science, it is notorious to observe that the field is not totally 'delimited', what brings about problems on its constitution as knowledge area. On the other side, the term Documentation, which for some is labeled as outdated if compared to the 'comprehensive' Information Science, has as right its wide use in Europe and it is still considered as area which gives foundation to the contemporary studies of the information treatment.

In a general way it can be said that the Information Science is concerned about clarifying a "concrete social problem", the information one, bearing as objective the study of its properties (nature, genesis and effect) and the analysis of its construction processes and use in the context of work with the recorded information. For that, there are basically two chains: one that ratifies the disciplinary bias and another that views the area out of an inter, multi or transdisciplinary view.

In the scope of this article it will be considered the second aspect. What is worth to stress out at this moment is the attribute of the interdisciplinarity which, despite not being enough to characterize the area, shows that the Information Science is less attached to the "disciplinary shackles" when adopting a multifaceted and thematic perspective. On the other side, the fragmentations and the diversity of looks of this model make it difficult the field design. At this point, it is salutary to try to identify aspects and elements which contribute to a wider comprehension of the area, as example of this we propose to analyze the notion of the term 'information', in order to search a better comprehension to the delimitation of the area concerned.

The literature review has the aim to present the main notions of the term 'information', as well as to unveil, starting from different perspectives, how such concept is able to reveal the identity character of Information Science. As methodology to the collection of notions, it was used the Contemporary Terminology Theory, at the level of contexts collection and analysis, in the scope of this article.

### **1.1 Brief Historical and Etymological View**

The term 'information', according to Kornwachs and Konstantin (1996), has Greek and Latin origins. The Greek terms *eidós/idea*, *morphé* and *typos* used in

Plato's and Aristotle's philosophy, already brought on their wake the key-concepts of the Greek ontology and epistemology, sending its meaning to 'model' and 'representation'. However, the etymological roots of the term are Latin, coming from the terms *inform* and *informatio*, which denoted the act of molding the mind or communicate knowledge.

In the Middle Age, influenced by scholastic philosophy, the sense of the terms *informatio* e *inform* got other nuances. Besides de Latin heritage, it was incorporated to the meaning of terms a moral and pedagogical use, referring to the forming or modeling of the mind, character or even its training or instruction (CAPURRO; HJORLAND, 2007). Nevertheless, along with the Contemporary Age, the use of the terms changed again, losing their ontological connotations and acquiring a meaning predominantly epistemological, being associated to the notion of information the concept of representation, introducing the term in the context of knowledge and language (GONZÁLEZ DE GÓMEZ, 2002).

A thinker of the modern period who deals indirectly of the term information is Descartes. For him, the ideas would be ways of thought as they informed to the brain about the real things of the world, functioning then as a representation. Different from the scholastic view that viewed the intellect and the nature as elements in immediate fellowship in the rationalist and empiricist modern view among such elements that would be the 'idea', what leaded to an inversion of the meaning of the term information. According to Capurro and Hjørland (2007)

The information, according to the most general global modern view, changed from a cosmos ordered divinely to a system governed by the movement of corpuscles. Under the tutelage of empiricism, the information gradually moved from the structure to the essence, from the form to the substance, from the intellectual order do the sensorial impulses (CAPURRO; HJØRLAND, 2007, p.159).

However, one of the moments of most impact in the history of the term was in the second middle of the Century XX. The post-war, the Information Theory, Cybernetics, the Systems Theory, the birth of artificial intelligence, the development of technologies of information and communication, besides the arising of new areas of knowledge were factors which redefine the use of the term 'information'. Before restricted to an abstract description, it got on this troubled context a status of interdisciplinary concept (ROBREDO, 2005).

As the term information got versatility in the post-modern context, it ended up being used by a diversity of scientific disciplines, what made it difficult a categorical delimitation of the term. As examples of different meanings we have the information 'naturalization', on which it is considered an anthropological category about the phenomenon of the relations among the vertical and horizontal structures of the human messages (KORNWACHS; KOSNTANTIN, 1996); or even the denotation of the term information as "synonym of signal transmission", concept used in the Mathematical Theory of Communication, where their semantic aspects are performed.

In a generic way we can say that from the 50s until the Decade of 60, there was a tendency to study the term information under the bias of the Hard Sciences, fact easily explained by the historic-social context of the time, marked by the bipolar technological competition between the USA and USSR, development of new technologies such as communication, warfare and informational. The own Information Science, which was born at this period, had 'sponsors' professionals from the Exact Sciences as engineers, physicians and mathematicians.

Driven originally by the ideas from the Communication Engineering, cybernetic theories and systems of signals transmission, which developed the foundations to the characterization of the models and processes of information retrieval, the Information Science also took as foundation elements from the Specialized Librarianship and the Documentation. From 1960 on the Information Science was spread to other areas of knowledge, what ended up giving different contours each to perspective adopted (SIQUEIRA, 2010).

González de Gómez (2002), points three main lines of study of the Information Science from the Decade of 1970 on: the line of the Cognitive Sciences, the Linguistic and the Social Sciences. To the author, the dissemination of the Information Science, mainly in the scope of the Human Sciences, is justified by the fact that several disciplines were consolidated at this period, and in a certain way influence the "way to see" the information at these contexts. In the scope of the Cognitive Sciences, for example, the author points out the Psychology, which understands the notion of information as an element from the cognition sphere from the studies of Belkin (1991). In the linguistic perspective, the author highlights the

view of information according to Blair (1992) which is considered under the perspective of language as synonym of sense production; or even in the social scope the author points out the perspective of Capurro (2007), who considers the information as product from the actions of communities and social practices.

After this period, it is noted the proliferation of the use of the term information in different domains. If on one side such use shows the interdisciplinary and multipurpose character of the term, on the other, such “diversity of meanings” demands an insightful use considering the contextual aspect in the definition of the concept. In the special case of the Information Science, in which for some authors the term ‘information’ is the object of the field, the floating of meaning is a factor which shows the difficulties in equating the oscillations and displacements of senses with the diversity of uses in the area.

The information Science, fruit from the post-modern context, is an area that even with considerable development and clear application in different spheres of the knowledge, is not clearly consolidated. Face this scenario we will try to delineate traces of its identity out of the literature review of the term ‘information’, emblematic notion to the area. To do so, we will divide the review into four idiomatic lines, or, notion of information to Anglo-Saxon and Slavic authors; to French-speaking authors; Spanish authors, and at last the national ones.

## **2 THE NOTION OF THE TERM ‘INFORMATION’**

### **2.1 Scandinavia and Anglo-Saxon Authors**

One the classical meanings of the term information in the scope of Information Science is the one of Buckland (1991). He distinguishes three meanings for the term: information as process, knowledge and thing. In the first case he highlights the act of informing as synonym of communicating knowledge or any fact. On the other side the information as a “communicated knowledge”, would be that able to reduce uncertainties and along with that generate knowledge. And the information as thing could be attributed to any object, data or document which had the property to community something, spread the knowledge, “be informative”.

From such notions, Buckland (1991) discusses the issue of tangible and intangible information. While the information as knowledge is totally intangible and immensurable, the information as thing, for being tangible, permits the description and expression of information as knowledge. Even that the generic denomination of 'thing' brings on its wake several possibilities of elements which may be considered information, the enunciation of Buckland brought two important discussions to the Information Science area: the indication of a subjective nature of the term and mainly the reintroduction of the concept of document<sup>i</sup> in the scope of Information Science through the concept of information as thing.

From another aspect, Wersig and Windel (1985) considered the social reality in the informational studies. For them, the informational practices occur among a subject double generator and receptor of the information which uses "previous equipment" which makes it possible for him the "communication/action". The intermediation among the consciousness field and the action field is done through the orientation and delimitation from the subject's activity that due to such factors acts in an intentional and conscious way. Thus, the information would work such as a reducer of uncertainty, or, an element able to solve a situation-problem.

Opposite to the naturalist part which views the informational phenomenon as natural what ends up denying or reducing the active and deliberate dimension of the subject, Wersig and Windel (1985) emphasize the role of the social situations of cooperation and conflict to view the information. On this perspective, the informational phenomenon would be reconstructed by the cognitive-social subject, what would give to information a status of something opened and incomplete always conducive to the restructuration of the knowledge subject. The only one but, pointed by Araújo (2002) on this perspective, would be the fact of not considering the possibilities of the information also generate uncertainties, an example the lack of the subject comprehension, or even, informational overload (ARAÚJO, 2002)

Liotard (1990), also in an attempt to understand the concept of information, face the term under two approaches: one systemic and another post-modern. In the first points the function of information as guarantee of stability for a determined social system, what confers to it an essentially operational character. On the post-modern approach, Araújo (2002) understand two functions: one as measurer of processes of

reality apprehension and of the social relations; and another as element which acquires characteristic of 'good', because it becomes essential to the productive contemporary force.

Under the systemic view, Araújo (2002) comments that for being essentially founded in the message and influenced by the Mathematical Theory of Shannon and Weaver (1947), it has as main problem the fact of not consider the influence of the social context in the informational practices, as well as the role of the subject as mentioned previously. Besides that, with the advent of the Critical Theory, as example of the information socialization studies of Habermas, the idea of information assumes a political, economical, cultural and historical dimension since the end of the 1920 Decade.

About the post-modern view, there is another interpretation of the information function in the contemporary scope. To Lyotard (1990), the individual does not enter in contact direct with the information out of its praxis, but through information which is conveyed by the different channels available to him (electronic communication, mass communication, database, etc.). This way, opposite the first meaning which considers the information as something that permits stability to the system, it is actually noted a role of mediation of the processes of apprehension of the real from the social relations, something of difficult measurement and control (ARAÚJO, 2002).

From another perspective, Brier (1998, p.188) highlights to a "fruitful definition" of information there should be considered as its objective aspects as subjective ones. Thus, it is observed that the perception and the interpretation of words force the choices which will give the opportunities of action and conception of meaning. This way, considers fully the transmission model, where "packages of information" are sent through a language from a sender to a receptor, and the moment of the concept interpretation, product of a historic-social context and that is, therefore in constant development (BRIER, 1998).

McGarry (1999), from the studies of the Information and Communication Theory, enunciates information as something that is able to alter the maps/mental structures. Opposite to uncertainty, the information would be the element that we need when we see ourselves front a choice, functioning as a "liberty measure" in the selection of messages. For this the information should be ordered and structured to

be discriminated to the receptor from some form of vehicle of transmission, signals, symbols, or signs.

The classes of transmission vehicles mentioned by McGarry (1999) emphasize the function of ways necessary to the interchange and transference of information which may assume different forms, underscoring thus the power of language in the informational need. This way, even retaking the value of the communicated information, it is observed that the author points out the role of the language in the comprehension of the informational phenomenon. Come out of the characterization of the human language and its role in the network of relationships, the relation language/thought, entities interdependent which corroborate the comprehension of the concepts of knowledge and information.

McGarry (1999) concludes, in his chapter *About Knowledge and Information*, that it is difficult to distinguish these two terms, even saying that in some contexts they may be interchangeable. However, in the attempt to explicit a synthesis he states that the knowledge is something more theoretical and generalized and the information would be a “potential knowledge”. Thus, we attribute meaning when identifying and relate classes of events, grouping or separating them according to their similarities and distinctions, from our ability to produce, share and transmit information.

Capurro<sup>ii</sup> (2007), strongly founded in a historical, philosophical and epistemological approach of the Information Science, is one of the contemporary authors who is more hold in the comprehension of the information concept. In a 2007 article with Hjørland, he retakes Schrader’s work (1983 *apud* CAPURRO; HJØRLAND, 2007) who researched around 700 definitions of the term information, in the period between 1900 and 1981, coming to the conclusion that there is not a consensus to the definition of the term. The reason is easily justifiable, as on its interdisciplinary content it does not respect the boundaries of the disciplines, varying from meaning according to the area of knowledge, what makes it difficult a consolidation (CAPURRO; HJØRLAND, 2007).

On this same article, the authors show the different meanings of the term information from the analysis of their etymological roots, crossing the modern and post-modern usage, besides of being stopped in the analysis of the concept in the

areas of the natural sciences, cognitive, social and the information one. In another article, *Epistemology and Information Science* from 2007, Capurro dedicates to detail the analysis of the term information, seeing it under three paradigms: the physical, the cognitive and the social one.

The physical paradigm of the information, in the scope of the Information Science, is closely connected to the Information Theory of Shannon and Weaver (1949), to the Cybernetic of Wiener (1961) and coincides with the beginning of Information Science, very related to the Information Retrieval. According to Capurro (2007) such paradigm is referred to a physical object that an emitter transmits to a receptor. Shannon, on his theory, designated the object as message or signal, assuming a quantitative view of the selection of a repertory of physical symbols which could be recognized by the receptor.

The cognitive paradigm on its turn is related to the Ontology and the Epistemology of Popper (1973 *apud* CAPURRO, HJØRLAND, 2007) and to the studies of the anomalous states do knowledge of Belkin (1980), Brookes (1980) and Ingwersen (1992), as Capurro and Hjørland point out (2007). Popper, in discussing about perspective of three worlds<sup>iii</sup>, highlights the second as the responsible by the intellectual contents, with the role to 'represent' the intelligible objects from the other two worlds, and thus bearing proximity with the idea of the *peirceano* sign (SKAGESTAD, 1996 *apud* CAPURRO; HJØRLAND, 2007). On the other side, the theory of anomalous state of knowledge presupposes that the search for information is originated from the need of an individual to solve a problem, or, to solve an anomaly on his state of knowledge. On this bias, Brookes (1980) stresses out the role of the information as element which causes transformation in the mental structures of the knowing subject, taken as social practice which involves actions of attribution and sense communication.

The social paradigm, the one Capurro (2007) defends is influenced by the Hermeneutics of Heidegger (1973), and the proposal of the Games of Language of Wittgenstein (1958), both the critical of separation among the knowing encapsulated subject and the external world. Different from the cognitive paradigm going back alone to the subject in an ideal context, the social paradigm considers the social processes of production, distribution and interchange of information in the social

environment. The social paradigm is directly related to the discursive communities, resulting in an effective dedication to the relation among the speeches, areas of knowledge, documents and the distinct communities of users.

Hjørland (2007), who also defends a subjective perspective of the information, on his article *Information: objective or subjective/situational?* brings first of all the objective view, defended by Parker, Dretske Stonier and Bates, and after contrasts with the subjective one, defended by Bateson, Yovits, Spang-Hanssen, Brier, Buckland, Goguen and himself. In the first he stresses out the definition of Bates (2006 *apud* HJØRLAND, 2007), who faces the information as a standard of organization of the matter and of the energy, while in the subjective/situational aspect, the information performs different roles, as it is linked to the social organizations and the diversity of contexts. While the first aspect tries to map the values of information in an objective perspective, the second should consider the relations among the informative object, the informational structures, and the language of the discursive communities and the context and for them to outline an informative value.

The selection of what is informative is not something easy to be measured, because there are problems of consensus of criteria and paradigms among domains and several areas. Even so, there are authors who prefer to consider the possibilities to get informed, the informativeness, instead of hold themselves to the term information. On this case, it is pointed out the pragmatic aspect, Frohmann (2004), for example, would prefer to use the term informativeness, stressing out its value potentially acquired in a determined discursive context. The term informativeness, from Textual Linguistic origins, assumes a meaning similar to the one of the intertextuality in the scope of the Information Science, emphasizing the fact that the comprehension of a text is dependent of the knowledge and other texts (ORTEGA; LARA, 2010).

It presents the synthesis (Figure 1) of the main notions of the term information for authors Anglo-Saxons and Slavs authors.

**Figure 1: Synthesis of the Anglo-Saxon and Scandinavia Authors to the Term Information.**

| <b>Anglo-Saxon and Scandinavia Authors</b> | <b>Year</b> | <b>Synthesis of the Information Concept</b>   |
|--|-------------|---|
| Wersig e Windel                            | 1985        | Information as reducer of uncertainty, element able to solve a situation-problem.   |
| Lyotard                                    | 1990        | Systemic view -information as guarantee of the system stability<br>Post-modern view – information measuring of the processes of apprehension of the social relations or as value of ‘good’, founding to the productive force.   |
| Buckland                                   | 1991        | Information as process (to communicate something);<br>Information as knowledge (to reduce uncertainties and to generate knowledge);<br>Information as thing (property to communicate something and to be informative).  |
| Brier                                      | 1998        | The packages of ‘information’ are sent through a language from a sender to a receptor, and the moment of interpretation of the concept is product of a historic-social context in development.  |
| McGarry                                    | 1999        | Information as something which is able to alter the mind maps/structures.<br>Information taken as potential knowledge   |
| Frohmann                                   | 2004        | In the place of information talks about informativeness (value potentially acquired in determined discursive context.   |
| Capurro/Hjørland                           | 2007        | Physical Paradigm – information as physical object that an emitter transmits to a receptor.<br>Cognitive paradigm – information as element which causes transformation in the mental structures of the knowing subject<br>Social paradigm- considers the processes of production, distribution and exchange of information in the social environment. |
| Hjørland                                   | 2007        | Considers the objective aspect of the information (as standard of organization of matter and energy) and the subjective aspect (with informative value, fruit of the analysis of relations among the informative object, the informational structure, the language of the discursive communities and the context).                                    |

## 2.2 French-Speakers Authors

An author, who brings other perspectives to talk about the term information, associating it to the term document, is Michel (2000). For this he initially retakes the definition of information in an image purely subjective, something that in a determined context and from a determined looks ‘means’. At a second moment he talks about the materialization of this subjective look through the document (physically real and/or electronic-visual), which would have the function to ‘freeze’ the information in order to be ‘exchanged’. And at last, associating it to the professional demand, he states that currently we are taken to talk about information-

documentation (I&D), expression that would have the merit to show both sides of a same concept: in one face the content, the sense and the intelligence (information) and on the other what communicates, transfers, and is obtained through a support (document).

Another strand of thought, more associated to the line Anglo-Saxony is the one of Frochot (2003), which summarizes two definitions to the information: one of objective character and the other a subjective one. In the first, it is pointed out the meaning Anglo-Saxony, where the term is considered a generic entity from which they may be extracted small parts or a set of specific data which have special meaning to a determined individual. On the other hand, in the subjective view, everything theoretically could be considered information, since what confers to something such 'power' is the individual. Therefore, on this conception the object itself is not considered information until a subject sees it as that, perspective which may generate ambiguities relating to the 'value' of information.

Besides talking about the main properties of information Frochot (2003) also discusses its relation with the document. It would be indeed simplistic, according to the author, to answer only that the document is where the information is recorded. However this objective approach allows us to identify two clues for this 'enigma': the relation between document and information and the fact that the document is a support of information. The document works as a 'support' to the information, that can be taken not only considering its 'naturally' but also as a record of information (a book, for example), or seeing it value attributed, for example a banal object such as a ticket which acquires testimonial importance. On the other side the information, on itself, has a limited interest and, structured in a record, gets higher potentiality, serving as a "trampoline to knowledge", because it helps to establish, reconstruct and even enrich the knowledge (FROCHOT, 2003).

Le Coadic (2004), on his broadcast work *Information Science*, before enunciating his conception of information, retake the physical origins, related to the Signal Theory, according to which the information works as a measure of organization of a system and, the conceptions related to cognition and human communication, distinct meanings assumed by the term which confers to them a feature of "chameleon notion". However, in the attempt to show higher clear in the

sense of the term, the author distinguishes information of data, knowledge and communication, terms, that according to him, are easily confused with information.

In the case of the term 'data', we can easily associate it to the domain of informatics, as it means "[...] a conventional representation, codified, of information in a form that permits to submit it to an electronic processing" (LE CODIAC, 2004, p.8). On the other hand the term 'knowledge', is the act through which we learn an object, or, the capacity to form an idea or knowledge related to the information. When an anomalous state is verified, or information is obtained we could "correct such anomaly", what would result in a "new state" of knowledge. And about 'communication', the author points out the mistake of using the concept of information in the process of human communication, saying that communication in fact is an intermediary process which permits the change of information among people, or, while communication is an act, process and mechanism, the information is a product, substance and matter (LE CODIAC, 2004, p.11).

From such reflections, Le Codiac (2004) defines synthetically information as knowledge written in a support. Such inscription is done through a system of signs, in which the sign, basic element of the language, associates a meaningful to a meaning, conferring to information, therefore, a sense element. Such sense on its turn is transmitted to a 'conscious' being.

**Figure 2: Synthesis of French-Speaker Authors to the term Information.**

| <b>French-Speaker Authors</b> | <b>Year</b> | <b>Synthesis of Information concepts</b>  |
|-------------------------------|-------------|---|
| Michel                        | 2000        | Expression Information-document (two sides of the same concept):<br>In one face the content, the sense and the intelligence (information) and on the other that which communicates, transfer, and is obtained through a support (document).         |
| Frochot                       | 2003        | Objective view – set of specific data which have a special meaning to a determined individual.<br>Subjective view – any object on which the subject 'sees' its informative value.<br>Relation document/information (real value X attributed value). |
| Le Coadic                     | 2004        | Information as knowledge written in a support.  |

### **2.3 Spanish Authors**

Currás (1986) retake the origins of the term information, relating them to “give shape to something” to ratify her view about the term. For her, the information would be a vital element of our lives which could manifest basically in two ways: as phenomenon, or what is produced around us regardless us, and that we capture in a conscious or unconscious way; or a process, prepared by us using, for example, the documents to its representation. The author stresses that differently from the Anglo-Saxon school in which the information represents the ‘whole’ and the Documentation is responsible by the ‘part’ which prepares the documents to obtain the data converted into information, in the European school, mainly Spanish and French, the document is the ‘whole’ and the information is the one which represents the ‘part’.

Lund (2009) highlights another author who retakes more remote studies of the term, Martinez Comeche (2000) who, when rescuing Stonier, talks about the negative entropy of information, or, its capacity almost unlimited to organize a system, permitting the structuring and the consolidation of a knowledge in the memory. Stresses the relation of information with Communication, saying that the idea of what is informative is related to the previous knowledge of a receptor, or the ‘nature’ of information is transient, as it only assumes its value in contact with the individual who means it in its context.

Immersed in a context of fast, conjectural and paradigmatic technological change, concepts such as document and information are not neither stable nor static. According to Pérez Torero (2000) both the information and the document became simultaneous and transverse elements of a reality each time more dynamic. For him, such phenomenon is perceptible in the relations established among information, document and language. The documental contents, for example, interact with the different systems of signs establishing syncretistic and simultaneous relations, and they may also establish hierarchical relations among them. However, they are generally marked by instability and variability, as the content of document, the information, would derivate of the conjunction and of the complementarity of several types of signs.

Moreiro González (2005) when talking about information, resumes the importance of the intervention of technology in the informative processes, as for him the idea of getting informed is associated to the combination of a mental effort with a technological processing. From the evolution of writing to the press, after the later technologies and channels employed in the material representation of the information, many factors which influenced the own documental conception today are reviewed under the digital optical. The idea of support before associated to the document receives another perspective in the digital concept characterized by the unrestricted access, facility of handling and document update, informative retrieval of information and the possibility of internal and external intertwining of the electronic documents due to their use of logical hypertext structures.

Even with so many advantages, Moreiro González (2005) points as problems the progressive and unlimited quantity of documents and the resulting constraint of selective retrieval; the reduction of the average informative life of messages, result of the dynamic volatile of the communicational interactivity; the dispersion of publications about specific subjects; the growing of self-edited documents, generating more problems in the indexing and retrieval of contents. Still with the clear proximity among the terms document and information, Moreiro González points that the purpose of the documents would be to communicate information, or, the documentary process would only be complete when the message were effectively provided, and such action would only be completely concrete when it acquired meaning by the interpersonal communication. Such statement denotes his view toward to information and communication as concepts in continuous dialogue.

On the other hand García Gutiérrez (2002), believes that the idea of recorded information would be a paradox, as for him information is synonym of flow, so, it could not be 'contained' and fixed in a support. Influenced by the Reception Theory and studies of the cognitive slope, García Gutiérrez (2002) states that information is a process which corroborates the construction of our knowledge, because as metacognitive element it changes our mental structures:

Thus, the information oxygen the knowledge (registered and experienced) in a public oxygenation process (and cleaning dialectic) of *exoteros* organized to interact (for mutual enrichment) with individual *endoteros* (knowledge live). Therefore, the information

(which is not oxygen but the oxygenation) isn't confinable, or archival, or recordable (GARCIA GUTIERREZ, 2002, p.58).

Considering, therefore, the information as a *continuum*, García Gutiérrez (2002) uses the metaphor of an "unlimited spiral" to talk about another aspect of this 'flow', its power to influence and to be influenced by the subject, or, the information would be a micro universe which manipulate us, but that we also manipulate it, what would confer to it a dynamical character, fruit of an intersubjective relationship.

**Figure 3: Synthesis of Spanish Authors to the Term Information.**

| Spanish Authors  | Year | Synthesis of Contexts  |
|------------------|------|--|
| Currás           | 1986 | Information as phenomenon;<br>Information as process;<br>(the document is the whole and the information is what represents the part).  |
| Martinez Comeche | 2000 | The idea about what is informative is related to the previous knowledge of a receptor.   |
| Pérez Torero     | 2000 | Relation document/information. Information as content of the document, derived from the conjunction and from the complementarity of several types of signs.  |
| Moreiro González | 2005 | The idea to get informed is associated to the combination of a mental effort with a technological processing.<br>Relation document/information (purpose of documents: to communicate the information). |
| García Gutierrez | 2002 | The information is a process which corroborates the construction of our knowledge, because as metacognitive element it changes our mental structures.  |

## 2.4 Brazilians Authors

Considering the polisemy and the diversity of the use of the term information in the current context, it is difficult to delimitate a group of authors to represent such notion in Brazil. But, making the time frame of about one decade, and searching authors worried about understanding such concept to the light of the Information Science, they were selected three categories of definitions: one of more generalist aspect, another essentially founded in the relation knowledge and information, and the last more turned to the pragmatic aspect of the term notion.

In a more comprehensive view of the term, we have González de Gómez (2002) who as well as Capurro and Hjørland (2007), presents a review of literature of the term, pointing out three main lines of study: the cognitive, which relates information and knowledge; the textual, which faces the information as language and

production of sense; and the social, which considers the information as a cultural artifact product of the social practices of a community. Thus, to the author even with the “floating of meaning” of the term information, resulting from the difficulties of the constitution of the Information Science area, considers the contemporary notion associated to the concept of representation<sup>iv</sup>. Such notion brings on its wake the capacity to introduce the information in the sphere of the human both in the knowledge context and in the language one.

In the definition which approaches information and knowledge we highlight two authors, Miranda (2003) and Barreto (2002). The first remembers the value of information as raw material of all areas of knowledge, pointing that to the Information Science it is focused the view of information as knowledge recorded, relating thus the notion of document in the *popperiana* conception<sup>v</sup>. Barreto (2002) on his turn, considers the information as being a structure symbolically meaningful which has the competence to generate the knowledge in the individual, acting then as an instrument modifier of the human consciousness, “[...] tuning the man with the memory of his past and with the perspectives of his future” (BARRETO, 2002, p.49)

Tálamo and Smit (2007) stress out that the notion of information should not be faced only as intangible idea, synonym of knowledge, but to be visualized under the aspect of the tangible, or, considering its role in representing different shapes of knowledge organization. Thus, we have:

[...] the information is not presented as object, but as point of view adopted to analyze the processes and objects of the world [...] On this picture the object of the Information Science is not the intangible anymore – the knowledge – it is not the support or the local, but something tangible – the information represented in different formats of organization (TÁLAMO; SMIT, 2007, p.23).

This way, the knowledge would be a cognitive individual production, but in order to be assimilated it would need a representation, which would permit the Access, use e its socialization, the information (ORTEGA, 2009b). Tálamo (2005 *apud* ORTEGA, 2009b) synthesizes such distinction among knowledge and information saying that the information would be the flow and the knowledge would be the stock. While the stock would be passive, the flow would have the role to activate it through the varied informational products.

On this more pragmatic perspective we also find other authors. Silva (2002), for example, considers the information as the structured set of codified representations, which may be socially contextualized, or permit the record in any material support, thus they may be communicated and spread in time and space. Robredo (2005, p.8) takes the information as “energy of proper reality” associated to a system of organization, being then susceptible to be recorded, codified, doubled, reproduced, stored, preserved, measured, qualified, organized, processed, retrieved and transmitted into different levels.

Araújo (2002) resumes the perspective which associates the information with knowledge, but adds to its definition aspects of the informational practices. First he assumes that the concept of information would have two complementary senses: one as process of attribution of sense and another as process of representation. The first, regarding information practices, would be related to the actions of reception/selection of the information received; while the second, related to the actions of codification, emission, decoding/use of information, would be turned to the generation and transference of information. As complementary notions the information could be faced as a social practice which involves actions of attribution and communication of sense.

Another interesting work to be pointed out is the *Concept of information in the Information Science* by Araújo (2010). From Capurro’s work that performed a dense review of literature about the term, Araújo verifies on his article how Capurro’s paradigms are manifested in the subareas of the Information Science denominated in the Work Groups of *Associação Nacional de Pesquisa em Ciência da Informação* (ANCIB). It is interesting to observe that even presenting the nuances of each paradigm – the material dimension of the physical aspect; the classic measure of change of the anomalous state of knowledge of the cognitive aspect; and the notion of information as element constructed contextually from interpersonal relations, in the case of the social aspect – associated to the thematic groups<sup>vi</sup>, it is noted complementarity among the aspects, what shows to the author that for the comprehension of the concept it would be necessary to see the interrelated paradigms.

**Figure 4: Synthesis of the Brazilian Authors to the Term Information.**

| <b>Brazilians Authors</b> | <b>Year</b> | <b>Definition</b>  |
|---------------------------|-------------|--|
| González de Gómez         | 2002        | Historical review (cognitive, textual and social aspect). Information as synonym of representation.  |
| Barreto                   | 2002        | Structure symbolically meaningful which has the competence to generate the knowledge in the individual.                                    |
| Silva                     | 2002        | Information as the structured set of codified representations which may be socially contextualized.  |
| Araújo                    | 2002        | The concept of information would have two complementary senses: one as process of sense attribution and another as representation process. |
| Miranda                   | 2003        | Knowledge recorded, related thus to the notion of document in the <i>popperiana</i> conception.  |
| Robredo                   | 2005        | Energy of proper reality associated to an organization system.   |
| Tálamo                    | 2005        | Information is flow, which has the role to activate the stock (knowledge).   |
| Smit; Tálamo              | 2007        | Under the aspect of the tangible, it should be considered its role in representing different formats of the knowledge organization.        |
| Araújo                    | 2010        | Information result f the interrelation of the physical, cognitive and social aspects.  |

### 3 FINAL CONSIDERATIONS

Besides considering the contemporary conjuncture of the Information Science, influenced by the fragmentations and the relativizations of post-modernity, we should also consider that, when observing the notions of the term 'information', we realize other nuances about the own area. One of them, and maybe the most evident, is the diversity of looks about the same object. The definitions of the term 'information' reveal not only a diversity of perspectives, but also mainly, a complementarity and a dialogue among these notions, what shows a view each time more turned to scientific subjects and problems, and no more to objects delimited and isolated of a context.

Different from the model of modern science, in which it is chosen the most pertinent concept to determined situation, the post-modern perspective brings us the opportunity to see a same object under different angles, considering for this not only its positioning in determined place, but mainly the role in which an element performs in determined context.

Thus, when looking at the different notions of the term 'information' and its possible interrelations we may understand how the area is changing and still there is a wide field to be discovered and seen.

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## Notes

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- <sup>i</sup> The classical work of the Documentation, today revisited to the light of the Information Science, were practically ignored in the Anglo-Saxon scope, until the work of Buckland and Rayward, which brought out the work of Otlet. However, until today the classic of the author, *Traité de Documentation* (1934) has not been translated into English yet (ORTEGA, 2004).
- <sup>ii</sup> Rafael Capurro had a hybrid formation. From Uruguayan Nationality (Montevideú, 1945), majored in Philosophy in Argentina (Buenos Aires, 1970), he attended Ph.D. (Frankfurt, 1978) and post- PH.D. (Düsseldorf, 1989) in Germany, where since then he lives and is a Professor. On the scope of this work, as most of his articles were published in German or English, it was opted to put him among the Anglo-Saxon authors with this small qualification about his origins (MATHEUS, 2005, p.143).
- <sup>iii</sup> Popper (1973), in an ontological perspective, divides the world into three parts: the first world, formed by objects and physical states; the second constituted of psychic states and the consciousness; and the third, formed by intelligible elements which represent a content of information. The author on this case uses the words knowledge and information as interchangeable terms (CAPURRO; HJØRLAND, 2007, p.190).
- <sup>iv</sup> The concept of representation refers to something (represented) which has a way of being which is something of its own, but that, not being accessible in the way of presence, for being absent here and now, is represented in a different way of manifestation (the representation) (GONZÁLEZ DE GÓMEZ, 2002, p.27).
- <sup>v</sup> The theory of the Objective Knowledge of Karl Popper is divided into three worlds: the world 1 constituted by the knowledge related to the physical world (“the world of the material states”); the world 2 comprehends the knowledge related to the metaphysical world (mental and subjectivity states); and world 3, the objective knowledge (“the world of the intelligible”). Thus and the worlds 1 and 2 problematize the physical and metaphysical phenomenon or, the world 3 has something with the knowledge recorded, with its theories, propositions and other linguistic entities which enter into the codification and the record of knowledge (POPPER, 1975 *apud* MIRANDA, 2003).
- <sup>vi</sup> The thematic groups of ANCIB are GT1 – Historical and Epistemological Studies of Information; GT2 – Organization and Representation of Knowledge; GT3 – Mediation, Circulation and Appropriation of Information; GT4 – Information and Knowledge Management in the Organizations; GT5 – Politic and Economy of Information; GT6 – Information, Education and Work; GT7 – Production and Communication of Information in C & T; GT8 – Information and Technology; GT9 – Museum, Heritage and Information; and GT10 – Information and Memory. In the case of Araújo’s article, they were excluded from the analysis the groups GT1, GT6, GT8, GT 9 and GT 10 (ARAÚJO, 2010).

**Jéssica Câmara Siqueira**  
**São Paulo University**  
**Brazil**  
**E-Mail: [jessica.camara@yahoo.com.br](mailto:jessica.camara@yahoo.com.br)**