

It will be the Philosophy of Information, a Philosophy for Knowledge Society in the Digital Age?

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ABSTRACT: In this article, it is discussed whether the philosophy of information is a philosophy for the Digital Society? This issue arises, as relevant due to the accelerated development of Information and Communication Technologies, and its dissemination among people, which is contributing to the globalization and the development of the “Knowledge Society”, in the digital age. We have new types of issues, especially about the relationship between action / technology / environment. As we will argue, a new way of understanding the world, human beings, and the relationship between them is emerging.

Second, (Floridi, 2002, 2014), due to the new information context, the thesis that an Information Philosophy will be required to understand current phenomena is analyzed. The basic assumptions of this new area of philosophy and some problems that make up its research agenda are analyzed. As it seeks to contribute to the understanding of the new directions of philosophical research on the Knowledge Society, in the Digital era.

KEYWORDS: *Information, Knowledge, Communication, Philosophy of Information, Ethic.*

Research Theme and Problem

One of the first philosophers to propose the characterization of Philosophy of Information (FI) was Luciano Floridi (2002). It is understood that this type of proposal occurred due to the development of the so-called “informational turn in Philosophy” (Adams, 2003; Gonzalez et al, 2010), from which a philosophical scenario was built around the concept of information. Second, (Adams, 2003), “the informational turn” occurred in Philosophy in 1950, the year of publication of Alan Turing’s article entitled Machinery and Intelligence. This turn started an approximation between the studies of Philosophy and other Sciences, promoting an interdisciplinary discussion about the ontological and epistemological nature of information.

The repercussion of the “informational turn in Philosophy” during the second half of the 20th century influenced both the academic-philosophical scope and the social scope in general (Moraes, 2014). The first is evidenced by the large number of philosophical-scientific works developed around the concept of information (e.g., Wiener, 1948, 1954; Sayre, 1969, 1986; Dretske, 1981; Stonier, 1997). As for the social sphere, the development of information theory studies has promoted the technological advancement that is currently being experienced and that has generated new types of problems, especially related to the relationship between action / technology / environment.

The development of the “informational turn” has led to the emergence of the “Knowledge Society”, in which Information and Communication Technologies (ICT’s) are disseminated in people’s daily lives. This “label” of the Knowledge Society can be understood in two ways:

- Wide: referring to the complex world of innovation and communication, in which new environments are created and changes in the social dynamics of people and companies.
- Restricted: it refers to changes in trends, in the way of life of people and companies, changing the way, how they relate to the world, with others and how they conceive of themselves in the current reality.

In this context, scholars such as (Adriaans & Van Benthem, 2008; Allo, 2011; Gleick, 2011; Demir, 2012; Beavers & Jones, 2014) and, in particular (Floridi, 2002, 2009, 2011) emphasize the relevance and need for the development of an Information Philosophy (FI). Second, (Floridi, 2011, p. 1): «computational and theoretical-informational research in philosophy has become increasingly fertile ... They have revitalized old philosophical issues and pose new problems, contributing to the reconceptualization of new trends of the world.

The characterization of contemporary society, as “Knowledge Society” can, according to (Floridi, 2009, 2013a, 2014), be analyzed before the development of the information revolution, in which a relationship of dependence on people and organizations stands out, in relation to ICT’s. Once resulting from the information revolution, the following hypothesis is presented:

- **Is the Philosophy of Information, an adequate philosophy to understand the “new” dynamics of the “Knowledge Society”, in the Digital era?**

I. INTRODUCTION

The repercussion of the “informational turn in Philosophy” during the second half of the 20th century influenced both the academic-philosophical scope and the social scope in general (Moraes, 2014). The first is evidenced by the large number of philosophical-scientific works developed around the concept of information (e.g., Wiener, 1948, 1954; Sayre, 1969, 1986; Dretske, 1981, Stonier, 1997). As for the social scope, the development of information theory studies promoted the technological advance that is currently experienced with the “informational turn in Philosophy”, which started in the 1950s (Adams, 2003).

In such a turn, the guiding objective of the investigations was that human intelligence could be explained from the construction of computational artifacts, assuming the assumption that “to think is to calculate” (Turing, 1950). Once intelligence is conceived, as the ability to solve problems based on rules (algorithms), if an artifact performed a function equivalent to that of the human mind, then it would also present a certain degree of intelligence.

During the “informational turn in Philosophy” project, the proximity between Philosophy and Sciences, in particular Cognitive Sciences, intensified and the objective was subdivided into others, which concern the attempt to answer questions, such as: “what are mental states?”, “what is the nature of mental representations?”, “what does intelligent thinking consist of?”, among others.

In this context, the Philosophy of Information emerges, as an area of Philosophy that aims to analyze the concept of information itself and its use to solve new and traditional philosophical problems. This promoted the development of computational artifacts that presented characteristics increasingly closer to those of humans, so that they constituted a scenario of human / machine interaction, with an increasing degree of familiarity, that is, the absence of strangeness.

Goals

The occurrence of the informational revolution presents the hypothesis that the FI will be an adequate philosophy to understand the “new” dynamic present in the Knowledge Society. Thus, the purpose of this article is to discuss such a hypothesis. To do so, at first, the central bases of FI are made explicit, identifying its characteristics and the elements that make it possible to understand it, as an autonomous research area of Philosophy. Then, the Floridian thesis is analyzed, according to which the information revolution will be influencing the constitution of the Knowledge Society. Finally, the question that entails this article is discussed: Is the Philosophy of Information, a Philosophy for the Knowledge Society, in the Digital Age?

The Philosophy of information is explored and aspects of the use of information are discussed. We continue with a discussion on aspects of the Knowledge Society and the various mechanisms that have been explored so far. We conclude with clues for further investigations. This research is, by definition, a full and unconditional attempt to combine rigor (academically speaking) and relevance (from a practical point of view). The Philosophy of Information is “strictly relevant” both in theory and in practice.

Focus and Approach Methodology

As for its nature, the research is qualitative, since it does not claim to quantify events nor does it privilege statistical study. Its focus is to obtain descriptive data, that is, the incidence of topics of interest in two fields, Information Science and Philosophical Sciences. Consequently, about the ends, the research is exploratory and descriptive in nature, as the technique used is categorized, consensually, as a study of direct documentation, which provides for consultation with sources related to the study. in different media, print or electronic.

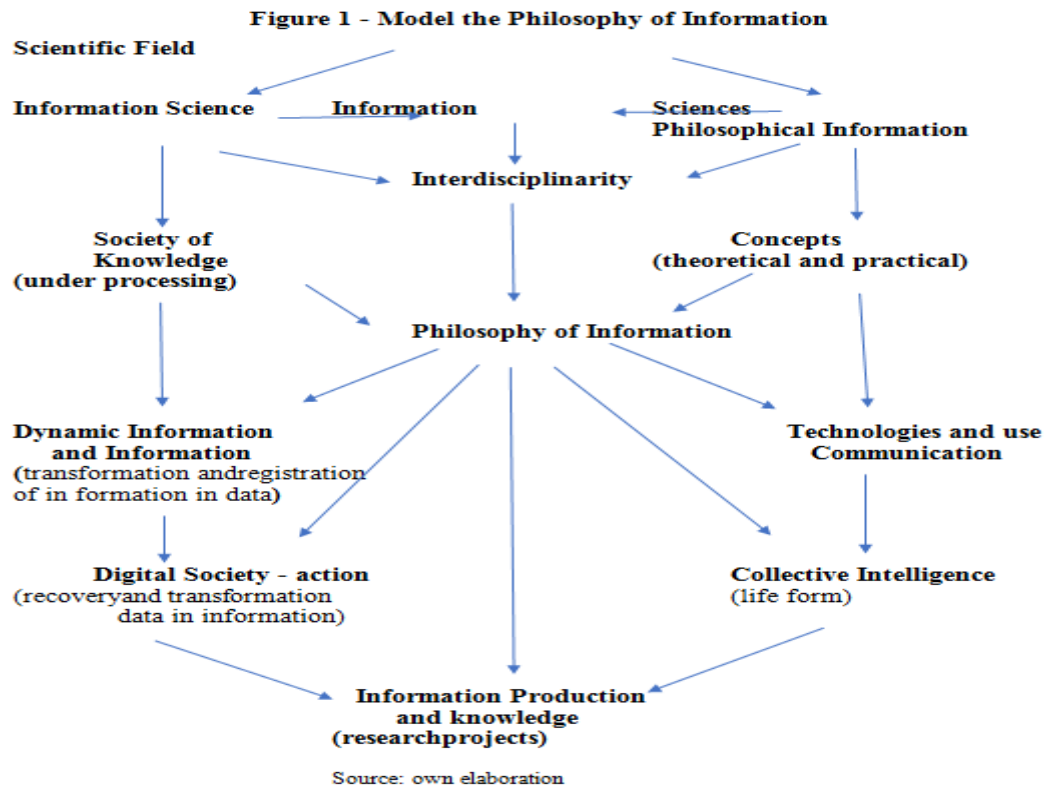
The complexity and turbulence of the Knowledge Society have taken interdisciplinarity and transdisciplinary into consideration, as processes essential to the development and innovation of sciences and technologies. The implementation of these concepts in some areas faces challenges that go through not only the very polysemy of these concepts, but also the rigid visions arising from the disciplinary training and tradition, still dominant.

The research method can make two or more sciences interact with each other. This interaction can range from the simple communication of ideas to the mutual integration of concepts, epistemology, terminology, methodology, procedures, data, and research organization.

It is an exploratory study that seeks to clarify and organize the concepts presented in the literature of Information Science and Philosophical Sciences. It is not a proposal for new terms and concepts, but an organization that allows the identification of a common denominator, among the different concepts already indicated in the literature, in a way that allows its grouping by identity, application / use and relevance / aggregation of value in the context in which the terms are inserted. The survey of data is characterized by bibliographic research, on terms and concepts.

It is necessary to understand, through a theoretical review of concepts, through historical reference documents; a psychosocial analysis of the concept of Philosophy of Information applied to Information Science and Philosophical Sciences; the regulatory framework in which they fit; the Internet as a platform for exercising action and the problems associated with it; digital data, social “engineering”; online social networks and spaces of trust and conflict.

It is a descriptive and analytical approach seeking to know and analyze the existing cultural and / or scientific contributions on this subject, based on the review of the existing literature. The research was structured based on the systemic approach for understanding the problems of the Philosophy of Information, in the Knowledge Society, Complex and Turbulent. We represent this conceptual network, as follows:



It presents the model of approach for intervention in information actions, in the academic space, with the purpose of production and sharing of information and knowledge, among the participants, besides and promote the development of skills of search, recovery, organization, appropriation, production and dissemination of information relevant to scientific researchers, managers and other interest groups, in society.

Theoretical-Methodological Framework for Research

Introduction to the Philosophy of Information

As the art of interpreting reality from the formulation of conceptual schemes about the human being, nature, and society, can Philosophy face the problems that arise from the new organizational dynamics of society today? We understand that Philosophy alone, without interdisciplinary tools of analysis, does not seem able to face, perhaps even formulating, the problems raised by ICT's.

Floridi (2011, p. 14) characterizes the FI as follows: a philosophical area that is related to:

- a) Critical investigation of the conceptual nature and basic principles of information, including its dynamics, use and sciences; and refers to FI as a new area of research in Philosophy, guided by the investigation of the content of information and not only on its form, quantity, and probability of occurrence (thus differing from the proposal of (Shannon & Weaver, 1949/1998). It is important to emphasize that THE does not seek to develop a "unified theory of information", but to integrate the different forms of theories that analyze, evaluate, and explain the various concepts of information defended.
- b) The characterization, in turn, indicates, according to Floridi (2011, p. 15-16), that THE has its own methods for analyzing philosophical, traditional, and new problems. These methods have as central element the information, are interdisciplinary in nature and maintain the relationship with computational methods, besides using concepts, tools and techniques already developed in other areas of Philosophy (e.g., Philosophy of Artificial Intelligence, Cybernetics, Philosophy of Computing, Logic, among others).

Thus, the FI will provide a broad conceptual framework for the treatment of the issues that emerge from the "new" dynamics of contemporary society (Floridi, 2011, p. 25). An example of this dynamic are the possibilities of interaction provided by ICT's that, depending on the degree of familiarity of people with such technologies, promote a sense of dependence on being online. Moreover, even if people do not want to be online most of the time, this sensation remains due to the dissemination of information devices in everyday life, such as cameras, credit cards, among others. In this situation, the question arises: what are the implications of the insertion of ICT's in society for everyday action people?

Considering (a) and (b), Floridi (2002, 2011) argues that FI constitutes a new paradigm and an autonomous research area in Philosophy. It is characterized as a new paradigm because it would break with previous paradigms of Philosophy, since it is neither anthropocentric nor biocentric, admitting information, as the central focus in the analysis of concepts and social dynamics. The autonomy of the FI would be sustained by the presence of topics (problems, phenomena), methods (techniques, approaches) and theories (hypotheses, explanations) of its own, according to other areas already recognized, such as legitimately philosophical (Floridi, 2002, 2011; Adams & Moraes, 2014).

The topics of FI stand out, the question "what is information?", referring to the ontological and epistemological natures of information, stands out. It is the answer to this question that directs the paths to be developed by the IF and delimits its scope of research (Floridi, 2011). The importance of this question is also due to, as we indicate, there is no consensus among scholars in their proposals.

Since the "informational turn in Philosophy", several information conceptions have been developed to respond to concerns with the ontological and epistemological status of information. Although Adams (2003) indicates the landmark of the informational turn in Philosophy with the publication of Turing's article in 1950, there are precursors of information theory in several areas, especially in Semiotics, such as the works of Charles S. Peirce (1865-1895).

Some examples can be given with the following proposals:

- (Wiener, 1954, p. 17): "The commands through which we exercise control over our environment are a type of information that we impose on him". Moreover, for this author, information would be a third constituent element of the world, alongside matter and energy, not being reducible to them.
- (Shannon & Weaver, 1949/1998): the authors establish, the Mathematical Theory of Communication, a technical notion of information conceived in probabilistic terms resulting from the reduction of possibilities of choice of messages and can be understood objectively.
- Dretske (1981): information is understood as a commodity that exists objectively in the world, independent of conscious mind of the first person who captures it. The information would constitute an indicator of regularities of the environment, from which representations, beliefs, meaning, mind, mental states, among others would be made.
- Stonier (1997, p. 21): information would be on the physical level, objectively, and the theorists of physics, in turn, would have to expand their vocabulary and admit info's (particles of information) as a constituent element of the world. «[...] information exists. It does not need to be perceived to exist. It does not need to be understood to exist. It does not require intelligence to interpret it."
- Floridi (2011, p. 106): "Information is a well-formed fact, with meaning and truth". Well-formed and significant data that refer to the intrinsic relationship that the data would need to have in relation to the choice of the system, code, or language in question. These would look "true" and "truth" related to the proper supply of the content to which they refer in the world.
- Gonzalez (2014): conceives information, as an organizing process of dispositional (counterfactual) relationships that gather properties attributable to material / immaterial objects, structures, or shapes) in specific contexts.

Although the concepts of information indicated are different, there is in common the naturalistic attitude in relation to the objective aspect of the information. In addition, proposals such as those by Dretske and Floridi denote an intrinsic relationship between information and truth. According to Dretske (1981, p. 45), characterizing "false information" "as information would be the same as saying that 'rubber ducks would be types of ducks'. Since the information could not be false, the information would be genuinely true and would necessarily say about its source. This source can be interpreted, like the world itself, enabling the treatment of another problem of FI, i.e.: what is the nature of knowledge?

Regarding the nature of knowledge, the theories of knowledge stand out, from which it is analyzed through the relationship between the agent the cognitive and the world. For Dretske (1981, p. 56), information processors of the sensory systems of organisms are channels for receiving information about the external world.

The naturalistic posture in Philosophy consists of disregarding the supernatural in the explanation of nature and mind, conceiving reality consisting only of elements and laws natural, which are explained through scientific methods. The term "natural" would encompass other terms such as "physical", "biological" or "informational" that express a rejection of transcendent assumptions in the foundation of a priori knowledge (Morales, 2014), the acquisition of knowledge. (Adams, 2010), in turn, argues that knowledge acquires its properties from its informational basis; so if someone 'knows that p' it is because he is informed 'that p'. In this relationship, knowledge is about the world, about truth, constituting the bridge between the cognitive agent and the world.

In addition to the problems about the ontological and epistemological nature of information, and the nature of knowledge, the following questions are part of the FI research agenda: "what is meaning?", "what is the relationship between mental states and informational states?", "reality could be reduced to informational terms?", "information can support an ethical theory?", among others.

Presented the topics (problems) and theories (hypotheses and explanations) of the FI, we highlight two methods specific to this area of investigation: the "synthetic method of analysis" and the "levels of abstraction".

Such methods come from the influence of Turing's works on Philosophy (marked by the informational turn). The "synthetic method of analysis" is the result of the hypothesis of (Turing, 1950), according to which the study of the mind is appropriate, when performed from the use of mechanical functions that could be manipulated by digital computers (Gonzalez, 2005; Floridi, 2012). Through such functions it would be possible to construct mechanical models of the structure and dynamics of intelligent thinking. The understanding that underlies this conception is that the ability to manipulate information in a mechanical way constitutes thinking.

This understanding allowed the development of mechanical models of the mind, which initially generated two aspects in Cognitive Science (Teixeira, 1998): strong Artificial Intelligence, which defends the thesis according to which mechanical models of the mind, when successful, not only simulate / emulate mental activities, but explain and instantiate such activities; and weak Artificial Intelligence, according to which the model is only a limited explanatory tool of intelligent mental activity. The common point of such nodes is that both accept the thesis of which to simulate is to explain, to attribute to mechanical models, the value of theories. This is an example of an approach to another question specific to THE: what is the relationship between information and intelligent thinking?

The "levels of abstraction", in turn, stem from Turing's algorithmic approach, which is summation by (Floridi, 2013b, p. 210) as follows: We have seen that questions and answers, never occur in a vacuum, but are always incorporated into a network of other questions and answers. Similarly, they cannot occur in any context, without any purpose, or regardless of

any perspective. From this perspective, a philosophical question is analyzed considering its context and purpose, which delimit the field of possibilities of appropriate answers.

Considering the topics, theories, and methods proper to the IF, (Adams & Moraes, 2014) propose the "argument of analogy" to analyze the autonomous aspect of THE. These authors highlight that, like the Philosophy of Mathematics and the Philosophy of Biology, IF has characteristics such as:

- Proximity with the scientific approach, epistemological and metaphysical problems, in addition to the presence of own problems not previously addressed in other areas of Philosophy. Given that THE IF shares characteristics present in areas already recognized by philosophical society, as legitimate, it would be counterintuitive not to accept the FI, as an autonomous area of research in Philosophy.

As indicated, the development of information studies in the philosophical-scientific sphere contributed to the constitution of the IF in the academic sphere. This is illustrated with the constitution of the FI, as an autonomous and interdisciplinary area of Philosophy: interdisciplinary due to its relationship with Computing, Sociology, Engineering, among other areas, generating methods and theories to deal with its problems; and autonomous, due to its own (and new) problems. In a compass with the development of the academic scope of FI, also stands out the influence in the social sphere, illustrated with the growing presence of ICT's in everyday life people and organizations. Such presence would be influencing the dynamics of contemporary society, constituting the "Information Society".

Evolution of Information Concepts

(i) Concept of Perception versus Information

The perception of information not only influences our view of information, but also our perception of the information system (Klein & Hirschleim, 1987), our perception of communication (Mokros, 1993, Schement, 1993) and the conduct of research (Newman, 2001, Schement, 1993). This means that the perception of information, which we prefer to call information concepts, has a profound influence in the field of information science.

The concept of information fascinates many scientists from different fields, such as biology, psychology, computer science, sociology, economics, management, political science, statistics, philosophy, communication and information studies, (Mokros, 1993, Newman, 2001, Ruben 1993, Schement, 1993). In all these areas, information is an important concept, but at the same time none of them can claim that information is relevant only to them.

Information should be an interdisciplinary concept. This means that information concepts must be studied in different disciplines. It also means that information concepts are not only relevant in the field of information science.

The concept of interdisciplinary information did not arise, and no unifying theory is presented as imminent (Schement, 1993). When information is defined "abundance and diversity confuse us" (Braman, 1989, p. 233). A tantalizing conclusion we have reached is that the meaning of information depends on the context. While many argue that we need a theoretical perspective of information (Devlin, 1999, Aefiner, 1999, Newman, 2001).

We do not intend to define a theoretical perspective, but only to present the different concepts in different disciplines, as well as a critical analysis of the different concepts. (Newman, 2001) describes a variety of concepts in different sciences that can be grouped as follows:

- Probabilistic concept.
- Concept of information processing.
- Ecological concept of information.
- Social and organizational concept of information.

The probabilistic concept of information is that low probability events represent a high content of information. An important application of this concept is information theory (Shannon and Weaver, 1949, in Newman, 2001). In this theory, the mathematical representation of the transmission of a message is presented, as if the information were a measure of predictability. Logical, cybernetics and philosophy also correlate information with probability (Fisher, 1934, Carnap & Bar-Hillel, 1952, Popper, 1965, Mackay, 1969 in: Newman, 2001). But these concepts differ in important ways, such as in the interpretation of probability and in the semantics of information. About the semantics of information, many concepts see information as a reduction in uncertainty.

The concept of information processing (or cognitive concept) focuses on the thinking of cognitive psychology. However, this concept, thought and information processing are analogous. Information is the product of thought and this increases knowledge about anything. The model of the cognitive process and the internal representation are the first concern of this approach.

The concept of ecological information is not created, but is present in the world, of the environment, in each situation. Organizations actively collect this information from the outside world. An important extension of the ecological approach is the theory of the situation. This is reconstructed on a mathematical basis and makes a clear distinction between information (content or information) and its representation.

The social and organizational concept of information is part of the sphere of work: work associated with the concept of **information economy**. In this category, the information concerns the processing of the same and the information pyramid model is often used. In this model, it is necessary to analyze a data to produce information and the information must be processed to produce knowledge. An important ingredient of information economics is the quantification of "work information" and "information product", used, among other things, to show the importance of knowledge in modern economies (Wallerstein 2000, Myrtle, 2001, Brandt, 1995, Nicholas, 2000, Handy, 1990, Hauknes, 1999).

In the well-known effort of (Porat, 1997, in Newman, 2001), information is associated with reduced uncertainty. Information science research focuses on the information process in the Organization and on the need for information from decision-making support managers. The satisfaction of this requirement may result in a reduction in uncertainty, which contributes to better decision-making (Schement, 1993).

(i)ii Philosophical concept of Information

(Belkin, 1978) contributed many studies to an important problem of information science: the question of the definition of an appropriate concept of information for information science. Although Belkin discusses the concepts of information used only in information science, many of these concepts originated from other fields and/or are used in a wide variety of these fields (Belkin, 1978, p. 82):

- **Information as Fundamental Category:** Information is seen as something essential to the existence of the universe as a basis, but a different category of matter.
- **Information as Property of Matter and Consciousness:** Information is not considered, as a special category, but as property of matter (i.e., objective information) and or property of consciousness or reflection of an individual (i.e., subjective information);
- **Information as social-scientific information** is based on the classification of (Mikhailov, Chernyi and Giliarevskii, 1975, in Belkin, 1978). This classification divides the intuitive idea of social and non-social information, social semantic information, and not semantic and scientific and non-scientific and non-scientific information. According to (Mikhailov, Chernyi and Giliarevskii, 1975), information is limited by the science socials.
- **Information as Event:** Information is seen as the expression of the mental image that occurs when we receive a message.
- **Information Table:** The information is not seen as an event, but as the resulting structure and event. For example, information is the resulting structure in the mind of a sensory data or some experience.
- **The information as probability of occurrence of an event** comes from the theory of information of (Shannon and Weaver, 1949);
- **Information as Message:** Vague concept in which information is confused with the content of a communication.

(i)iii Concept of information in the context of decision-making

(Cleveland, 1982) characterizes the information as follows:

- **Information is "human"** - there is only information through human observation.
- **The information is multipliable** – the more we use it, the more useful it becomes; the basic limit is the biological age of people and groups.
- **The information is replaceable** - it can replace other resources like money, people, raw material etc. For example, the accumulation of information in the automation area replaces several million workers annually.
- **Information is transferable** - the speed and ease with which information is transferred is a considerable factor for the development of all areas of knowledge.
- **Information is diffuse - it tends** to become public, even if our efforts are the other way around.
- **The information is shareable** – goods can be exchanged, but in the exchange of information, the seller continues to own what he sold.

(Braman, 1989) suggests a hierarchy of information definitions that are used in the context of decision making. The hierarchy is based on three dimensions: the level of opportunity, the level of complexity and associated with power (which is guaranteed for information, streams, and usage). These dimensions group the definitions of information into four groups:

- Information as a resource.
- Information as something useful.
- Information as a standard perception.
- Information as an essential feature of society.

Information as a resource is associated with a lower level of opportunity, complexity, and power, while information as an essential characteristic of society is associated with the highest level in these three dimensions.

- **Information as a resource** treats information as an isolated and distinct entity without energy. Information is divided into the parts that make up the body of knowledge or flows of information in which it can be organized (Braman, 1989, p. 236).
- **Information as something useful focuses on** the process of exchanging information between people. This concept requires chain production, through which information gains **economic value** (Porter, 1980). The chain includes steps such as creation, processing, and distribution. This implies greater complexity of the social structure "including suppliers, customers and the Organization to maintain the market" (Braman, 1989, p. 238).
- **Information as a standard perception** requires information and context. Information "has a past and a future, it is affected by the stimulation of casual factors and the environment" (Braman, 1989, p. 238). Compared to information as useful, the scope of the phenomenon covered by this concept is extended. Information can be used to articulate social structures. This definition sees information as an element of reducing uncertainty.
- **Information as an essential** characteristic of the information-oriented society as "an active function constructed in context" (Braman, 1989, p. 239). Information becomes an actress that affects the environment and creates a social structure.

This definition treats information as an essential feature of society. It applies to all phenomena and processes in which information is involved and can be applied to the social structure with some degree of articulation and complexity (Braman, 1989, p. 241).

(i)iv Concept of Information Process, such as Knowledge and How to Do Thing

(Buckland, 1991) identifies three "primary uses" the term information:

- Information as process.
- Information as knowledge.
- Information as such.

The information process refers to the act of informing/being informed. When it's reported, what you know is changing.

"Information as knowledge" refers to what is seen as process information. It is the knowledge that is communicated. (Buckland, 1991) sees information, as a reduction of uncertainty, as a special case of "information as knowledge". Some information increases uncertainty.

Information as something that refers to things that are informative, things become informed. Buckland also examines different things (data, text, subject material, events) and concludes that everything is or should be informative. It argues that the virtue of being information as a thing is situational and depends on subjective judgments. (Buckland, 1991) summarizes the main concepts of information tree, in terms of two distinctions:

- Between entities and processes.
- Among intangible and tangible asst.

(Buckland, 1991) distinguishes four aspects of information, but only three about the use of information. The fourth aspect of information is information processing. This refers to the execution, manipulation and deduction of new forms or versions of information, as a thing.

(i)v **Interdisciplinary Information Concept**

(Ruben, 1992, 1993) has different proposals to "provide an interdict communication information-communication relationship" (Ruben, 1992, p. 22).

Ruben does not justify this classification and does not refer to any example of these concepts in the literature. However, it sees information as an interdisciplinary concept focused on the relationship between information and communication. Here it explicitly describes a wide variety of fields, such as biology, economics and cyber, mathematics, sociology, and communication studies:

- Information has a potential meaning for a living system, but this potential is not yet up to date.
- The information is the information that has been transformed and configured for use by an individual.
- Information includes the sharing of information/knowledge base of society and other social systems.

(i)vi **Concept of Information in Communication**

(Schement, 1993) reviews 22 definitions of information from different areas, such as economic science, physics, information, and communication. Although its focus is on the study of information and communication, it analyzes its interdisciplinary aspects, because the definitions of the different fields are compared.

Based on these definitions, it distinguishes "fundamental terms whose outline of current of thought is the nature of information" (Schement, 1993, p. 7). Information as something treats information as a thought, being a (non-material) thing. According to Schement this concept is the most used of the three concepts. Two examples of this concept are:

- **Information is an entity**; something that has no mass or energy" (Diener, 1989 in: Schement, 1993).
- **Information is a consistent collection of organized data or messages** that have meaning or can be used by the human system (Ruben, 1988 in: Schement, 1993).

(i)vii **Concept of information as a process.**

This concept of information process sees information as the phenomenon for informing or changing a particular situation. An important subtheme of this concept is the vision of information such as the reduction of uncertainty, a common view among economists, managers, and computer scientists. The last concept, information as a product of manipulation is seen as a thought is something that must be manipulated to exist. Example:

The information is produced because of a process on the data. (Hayes, 1969, in: Schement, 1993)

According to Schement, these information perceptions are related to different perceptions of communication. He argues that these two concepts are inextricably linked to each other.

(i)viii **Real-world information concept**

According to (Gelepithis, 1999) information is the central concept for the information science community. A considerable number of disciplines related to information have been involved in the development of other closed concepts related to information (e.g., sign, symbol and meaning (Shannon and Weaver, 1949, in Newman, 2001).

(Gelepithis, 1999) is concerned with the clarification of these concepts and their consequences in the fields of information science. However, his proposal is not present in the table of contents of the various concepts of information in different disciplines. (Gelepithis, 1999) presents seven concepts of information:

- Information in terms of the probability of a signal.
- Information as a state.
- Information in terms of knowledge and meaning of the mental level and as a mental and non-material entity.
- The information in terms of signal concept as primitive.
- Information designed in terms of the world tree.
- Information in terms of true condition.
- Information as a basic property of the universe.

The problem with these concepts is that they are very brief. Information in terms of sign as primitive is referred to by (Stamper, 1985) in that it proposes semiotics (signal theory), as an appropriation of information theory (Shannon and Weaver, 1949). He argues that the idea of a sign is "the very primitive on which information science is based" (Gelepithis, 1999, p. 195).

Signals can be described as physical objects, events, or properties of objects and events that are available to represent a function in human behavior. The information is a measure of some ownership of a signal. The measurements differ from each other (e.g., entropy measurement and subjective measurement) and, in addition, information has different meanings.

The information designed in terms of Popperian tree design is the basis of (Popper & Eccles, 1977) they argue that we only accept things as real if they can interact with material things. Distinguishes three realities or three worlds:

- **World 1:** The world of physical objects and states.
- **World 2:** The world of states of consciousness (e.g., subjective knowledge, creative imagination experience).
- **World 3:** The world of knowledge for purpose (e.g., products of the human mind, theoretical systems, scientific problems).

According to Popper, these worlds interact with each other. However, it is still unclear what (Gelepathis, 1999) is bad through the information conceived in terms of these three worlds.

Knowledge and Wisdom

Information is not the same as data, although the two words are often confused, so it is understood that the subtle distinction between these concepts is essential. The data do not convey sense or meaning of the facts, images or sounds, since they lack relational elements essential to the establishment of a complete meaning, lacking an internal relational structure for a cognitive purpose.

This structure is one of the attributes of the information. Data becomes information when its creator adds meaning to it (Davenport and Prusak, 1998). (William G. Zikmund, 2000, p.19) defines knowledge as “the mixture of information, experience and understanding that provide a structure that can be applied in the evaluation of new information or new situations”. Information “feeds” knowledge. Knowledge can thus be defined as a person’s ability to relate complex information structures to a new context.

New contexts imply change, action, and dynamism. Knowledge cannot be shared, although the technique and components of information can be shared. When a person internalizes information to the point that he can use it, we call it knowledge (Zikmund, 2000). This is a fluid mix of experiences, values, contextual information, and expert judgment, structured that provide a framework for evaluating and incorporating new experiences and information. Organizations are found not only in documents and reports, but also in organization routines, processes, practices, and standards.

Knowledge originates and is applied in the minds of connoisseurs (Davenport and Prusak, 1998), (William Zikmund, 2000). Knowledge is information as valid and accepted, integrating data, acts, information and sometimes hypotheses. Knowledge needs someone to filter, combine and interpret information. Information can be considered as a “substance” that can be acquired, stored, and owned by a person or a group and transmitted from person to person or from group to group.

Information has a certain stability, and it may be better seen as existing in society (Davenport and Prusak, 1998). Although we can store it using various physical supports, the information itself is not physical, but abstract and neither purely mental. Knowledge is stored in people’s memory, but information is out there in the world. Whatever it is, there is somewhere between the physical world around people and the mental of human thought.

Knowledge = Internalized information + ability to use it in new situations.

Knowledge is found fundamentally and intrinsically within people. These are more complex and unpredictable at the individual level than an entire society, so it is not surprising that knowledge is much more difficult to obtain than information. Knowledge exists mainly within people; it is an integral part of human complexity and unpredictability.

Knowledge has a fundamental duality: it is something storable (at least sometimes we intend to do it) and something that flows (something that communicates from person to person). It is possibly the duality of knowledge (something that flows and storage process) that makes its treatment and management difficult. According to (Dahlberg, 2006), knowledge is organized into units of knowledge (concepts) according to its characteristics (objects / subjects / subjects). The organization of knowledge is related to a process of conceptual analysis of a domain of knowledge and from there, it is structured / architected generating a representation of knowledge about that domain that will be used for the organization of information about that domain of knowledge.

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Matrix - 1 Data Information Knowledge.

Data	Information	Knowledge
Simple observations on the state of the world: <ul style="list-style-type: none"> • easily structured. • easily obtained by machines. • often quantified. • easily transferable. 	Data with relevance and purpose: <ul style="list-style-type: none"> • requires unit of analysis. • requires consensus on meaning. • necessarily requires human mediation. 	Valuable information from the human mind. <ul style="list-style-type: none"> Includes reflection, synthesis, context. • difficult to structure. • difficult to catch on machines. • often tacit. • difficult to transfer.

Source: (Davenport, 1998).

Data, information, and knowledge should be seen and analyzed from the continuous perspective of values and fundamentally marked by the growing human contribution – processing, management, action, result, learning and feedback, that is, human training for actions that generate the desired results at the organizational level.

Matrix - 2 - Data, Information, Knowledge, Actions / Results

	Data Processing	Information Management	Knowledge Management	Actions/Results
Activities	<ul style="list-style-type: none"> • Data capture • Data definition 	<ul style="list-style-type: none"> • Information Needs • Acquisition of 	<ul style="list-style-type: none"> • Creation of Knowledge 	<ul style="list-style-type: none"> • Strategies, alliances, and

	<ul style="list-style-type: none"> • Data Storage • Data Modeling. 	<ul style="list-style-type: none"> • Information Organization • Information Distribution 	<ul style="list-style-type: none"> • Sharing of Knowledge • Use of Knowledge 	<ul style="list-style-type: none"> • initiatives and Products and Services • Processes • Systems • Structures • Values
Values	<ul style="list-style-type: none"> • Precision • Efficiency 	<ul style="list-style-type: none"> • Access • Relevance 	<ul style="list-style-type: none"> • Enables action. • Generating values 	<ul style="list-style-type: none"> • Innovation • Learning
	"Once we have the data, we can analyze it"	"Bringing the right information to the right person"	"If we only knew what we know"	The ability to learn is the only sustainable advantage"

Source: Adapted from (Choo, 2002, p.258).

Today we know how people learn, but we also know that learning and teaching are not the same thing, that is, that they are two different processes. What must be taught must be taught and cannot be learned otherwise, but what can be learned must be learned and cannot be taught.

Schools and universities have been using the education system for several years, but more and more the phase is put into learning. Today's "masters" teach basically the same way the ancient masters did. Today we know that different people learn differently, and that learning is personal. Each student has a different speed and a different pace of learning.

If a learning rate is imposed on students, a speed, or a degree of attention, there will be little or no learning. There will only be tiredness and endurance. Different people learn different subjects differently and at a different rate. You learn a subject and teach a person.

Information and communication technologies are an extremely important tool in learning and not in teaching, i.e., the teacher teaches students the functionalities of technologies and students learn, how they can use the technologies (support medium) to support them to solve some of the problems of the personal day-to-day and the organization where they work.

Information and communication technologies be a medium or as an end. If they are an end, what students can teach are the features. If they are a means of support for decision making, it means that they can be used to learn problem solving. For example, when we go to the doctor and take a CT scan on a part of the body, it means that information and communication technologies are used as support/support for the diagnosis of the disease so that the doctor can make the best decision on the medication to be taken, what the dosage of the drug, etc., that is, we are using information technologies as an instrument / tool to support the resolution of the problem, the person's disease.

Information and communication technologies are a means of determining which messages can be sent and received. At the same time technologies determine which messages cannot be sent and received, i.e., we are in a phase of rapid transformation of the "means". It is worth remembering that in the 15th century high technology was the paper-printed book and that in the 21st century information and communication technologies are bound to have a profound impact on schools and on how one learns.

Before writing the only way to learn was through manuscripts, listening to lectures and recitations. With the printed book people began to learn by reading. Information and communication technologies are more "friendly" than printed books, especially for children, as their patience is unlimited. No matter how many mistakes the student may make because the computer is always available for another attempt, no matter how many mistakes the student can make and whether the student is fast, slow, or normal to learn, not caring, if the student thinks the subject is easy or difficult and does not care if the student intends to learn new things or review something he has already learned.

There is also the media and with them a whole world of visual pedagogy. There are more hours of compressed pedagogy in an advertising *spot* than teachers can put in a certain long period of teaching. The content of the advertising *spot* is secondary, what matters is the skill, professionalism and the power of persuasion that exists in it.

Therefore, students arrive today at schools and universities with high expectations and can easily be frustrated. Schools and universities use information and communication technologies so that teachers are increasingly "supervisors" and "mentors" of student learning. Teachers' work is increasingly to help, guide, set an example and encourage students, i.e. their work is no longer primarily to transmit the subject itself.

The Evolution of Philosophy

Philosophy does not have the advantage, of which other sciences enjoy, of being able to resuppress their objects, as data by representation; and, the method of knowing, to start and go there. First, philosophy has, in fact, its objects in common with religion. The two have the truth, as an object, certainly in the highest sense: in the sense that God is the truth, and only he is the truth. In addition, both deal with the scope of the finite, nature and the human spirit, the reciprocal relationship, and the relationship with God.

Philosophy can, and must, resuspend a familiarity with objects and is interested in them; since consciousness makes in time, representations of objects, before making concepts about them, the thinking spirit, only through representing and turning to it, is that it advances until it advances to know and conceive the thinking. But in the thinking consider, it soon turnout, that this includes the requirement to show the need for its content, to prove both the being, as the determinations of its object. The familiarity mentioned above, with objects, appears asinsufficient and, as inadmissible to make or legitimize assumptions and asserts.

But the difficulty of instituting a beginning presents itself at the same time, a beginning, as something immediate, makes its assumption; or rather, himself, is an assumption. Initially, philosophy can generally determine as a thinking consideration of objects. If it is correct that man is distinguished from animals by thinking, everything that is human is human, becauseand, just because, it is effected through thinking.

While philosophy is a peculiar way of thinking, a way in which thinking becomes known and known the concept, its thinking will also have a diversity in relation to active thinking, in all that is human, and even that it has done and the humanity of the human; as much as, it is identical to that thinking: there is only one think. This difference is linked to the fact that the human content of consciousness, founded thanks to thinking, does not appear first in the form of thought, but as feeling, intuition, representation, forms to be differentiated from thinking as a form.

It is an old prejudice, a proposition that has become banal, that man is distinguished from animals by thinking. It may seem trite; but it should also seem strange that it had to seem trite; but it should also seem strange that such an ancient belief should be remembered. However, this can be taken for the prejudice of the present time that separates, one another, feeling and thinking, to the point that they should be opposed, and even so hostile that the feeling, especially the religious one, would be tarnished, perverted, or perhaps even annihilated by thinking; and religion and religiosity would not have in thinking its root and its place.

With such separation, one forgets that only man can have religion, but the animal has no religion; nor is it incumbent on him to have the right and morality. When this separation between religion and thinking is affirmed, it is clustered to evoke the thought that can be designated, as reflection, the thinking that reflects, which has by its content and brings to consciousness thoughts, as such. It is the negligence in knowing and considering the difference determined by philosophy about thinking, which raises the grossest representations and censorships against philosophy.

Because only to man belongs to religion, law, and ethics, and this, in fact, just because it is the thinking essence, thinking has not been inactive about religion, law, ethics, be it feeling, belief or representation; and the activity and productions of thinking are present and contained there. Only it is different to have such feelings and representations determined and penetrated by thinking and having thoughts about them. Thoughts about these modes of consciousness, produced by meditation, are what they are understood under, reflection, reasoning, and similar things, and also philosophy.

Metaphysical proofs of God's existence were presented, so that only through his knowledge and conviction about him could the faith and conviction of God's existence be essentially produced. Such a statement would agree with this: that we can eat nothing before we have acquired for ourselves the knowledge of the chemical, botanical, or zoological determinations of food; and we should postpone digestion until we have completed the study of anatomy and physiology. If so, these sciences would certainly gain much in usefulness in their field, as philosophy and even its usefulness would rise to absolute and universal indispensability. Moreover, instead of being indispensable, those sciences would not exist.

The content that fills our consciousness, constitutes the identity of feelings, intuitions, images, ends, duties, etc., and of thoughts and concepts. Feeling, intuition, image, etc., are in this measure the forms of such content, which remains one and the same. In either of these forms or in the mixture of several, content is the object of consciousness. But in this objectivity, the determinants of these forms join the content, so that each of these forms, a particular object seems to arise, and what is the same, may seem a different content.

While the determinants of feeling, intuition, desire, will, etc., as far as they are known, are generally called representations, it can be said, in general, that philosophy puts, in place of representations, thoughts, categories and, more precisely, concepts. Representations, in general, be metaphors of thoughts and concepts. But, because they have representations, their meaning to think is not yet known, their thoughts and concepts are not yet known. Conversely, they are also two different things, having thoughts and concepts, and knowing what are the representations, intuitions and feelings that correspond to them.

One side of what is called the intelligibility of philosophy refers to this. The difficulty lies, in the incapacity that is only a lack of the custom of thinking abstractly; that is, to firmly maintain pure thoughts and to move in them. In our ordinary consciousness are thoughts clothed and united with a sensitive and spiritual common matter; and by meditating, reflecting, and reasoning, we mix feelings, intuitions, and representations with thoughts.

The other side of unintelligibility is the impatience in wanting to have before you, in the mode of representation, what is in consciousness, as thought and concept. There is the expression that one does not know what one should think about a concept that has been learned; now, in a concept there is nothing more to think than the concept itself. But the meaning of this expression is the longing for a well-known, current representation; for consciousness, it is as if, with the mode of representation, the soil in which it has, moreover, its fixed point and domicile, was removed.

When you are displaced to the pure region of concepts, you do not know where you are in the world. Therefore, what is most intelligible are the writers, preachers, speakers, etc., who dictate to their readers or listeners, things that they already know by heart, which are familiar to them, and which are understood for themselves. As for our common consciousness, philosophy would first have to establish the need for its peculiar way of knowing, and even awakening it. But as for the objects of religion, as for truth in general, philosophy would have to prove its ability to know them from itself.

As for a diversity that comes to light by religious representations, philosophy would have to justify its discordant determinations. With a view to a preliminary understanding of the difference presented and the inter-redaction attached to it, that the true content of our consciousness is preserved in its transposition into the form of thought and concept, in fact it is only put in its own light, one can remember another old prejudice, namely that it requires reflection to experience what is true in objects and events, as well as in feelings, intuitions, opinions, representations etc. In any case, reflection makes at least change feelings, representations etc., in thoughts.

To the extent that thinking is only what philosophy claims for the peculiar form of its task, even though every man by nature can think, by virtue of this abstraction, which leaves aside the indicated difference, the opposite of what was previously indicated occurs, as a complaint about the intelligibility of philosophy. This science often suffers from contempt, so that those who have not taken the trouble to study it also declare their presumption of naturally understanding the situation of philosophy; and, as they are capable, in an ordinary culture, especially religious sentiment, of entering and leaving, they are also able to philosophize and judge on philosophy. There is agreement that one must have studied the other sciences to know them; and that only thanks to such knowledge is he authorized to make a judgment on them.

To manufacture a shoe must have learned and exercised, although each shoe has a pattern of measurement and needs hands, and in them the natural aptitude to the required task. Just for philosophizing, one should not require study, learning of similar

things or their effort. This commodity opinion has received its ratification in the present times through the doctrine of immediate knowledge, of knowledge by intuition. On the other hand, it is important that philosophy understands its content is nothing other than the content originally produced, and produced, within the context of the living spirit, and constituted in the world, outside and inside consciousness; and understand that the content of philosophy is the effectiveness of consciousness; and that the content of philosophy is effectiveness.

We call experience to the consciousness closest to this content. A sensible consideration of the world already distinguishes what, in the vast realm of being, outside and within, is only a phenomenon, is transient and insignificant, and what truly deserves the name of effectiveness. While philosophy differs only according to the form of another awareness of this unique and identical content, it is necessary to agree with effectiveness and experience; and even this agreement can be regarded as a touchstone, at least outside, of the truth of a philosophy; thus, as it is to be considered, as the ultimate and supreme endofscience, to raise, by the knowledge of this agreement, the reconciliationof self-conscious reason, with reason positioned with effectiveness.

"What is rational is effective and what is effective is rational." These simple propositions seem shocking to many; have experienced hostility, including from people who do not want them to question their philosophy, and certainly religion. It is unnecessary to adduce religion in this regard because its teachings on the divine government of the world express these propositions in an overly determined manner. But when it comes to the philosophical sense, it is necessary to assume a lot of culture to know not only that God is effective, that he is the most effective, that he alone is truly effective; but also, in the aspect of the formal, which in general the being there, is on the one-part phenomenon and on the other part is effectiveness. In everyday life, it is eventually called "an affectation" any whim; error, evil, and what belongs to this side of things, as well as, any existence, however petty and transitory it may be.

But also, for an ordinary sensibility, a contingent existence will not deserve the emphatic name of something effective. The quota is an existence that does not have a greater value than that of something possible, which, as it is, may also not be. But if effectiveness would be to think of itself in what sense is this expression used? The separation between effectiveness and the idea is particularly grateful to the understanding that takes the dreams of his abstractions for something true, and it is vanity of duty-being that he likes to prescribe, also and especially in the political field, as if the world had waited for him to experience, as it should be, but it is not. If it were, as it should be, where would the precocity of your duty be? Who would not be wise enough to see, in what surrounds him, many things that are not really as they should be? But this prudence is wrong to figure that, with such objects and their duty-to-be, it lies within the interest of philosophical science. This only has to do with the idea, which is not so powerless to just be, and not be effectively; and therefore, philosophy has to do with an effectiveness in which these objects, structures, conjunctures, etc. are only the superficial external side.

While reflecting in general contains the principle of philosophy, and after it flourished again in its autonomy in modern times (after the time of Lutheran reform), while from the beginning it did not behave simply abstractly, as in the beginnings of the philosopherofthe Greeks, but at the same time it was launched on matter, which seemed immeasurable, of the world of phenomena, the name of philosophy was given to all the knowledge that took care of the knowledge of the fixed and universal measure, in the sea of empirical singularities, and of the necessary, of laws, in **the apparent disorder of the infinite multitude of the contingent; and with it, at the same time, took its own content from the very intuition and perceive of the outside and the interior , of present nature, as of the spirit also present, and of the heart of man.**

The principle of experience contains the infinitely important determination that, in to admit and have a true content, man must be there; more precisely, the determination to find such content in unity with the certainty of itself and associated with it. Man must be there, himself, either with his external senses, or with his deepest spirit, his consciousness-of-himself. This principle is the same as we call faith, immediate knowledge, revelation on the outside and especially within man himself. These sciences, which have been called philosophy, we call them empirical sciences, by the starting point they adopt.

But the essential that aim at as an end, and produce, are laws, universal propositions, a theory: thoughts about the given. Thus, Newton's physics was called natural philosophy, while for example Hugo Grotius, through the confrontation of the historical attitudes of peoples, towards each other, and with the support of an ordinary reasoning, established general principles, in a theory that can be called philosophy of external public law.

The name of philosophy still has among the English generally this determination: Newton continues to have the reputation of being the greatest philosopher, in particular science, which is due to more recent times, political economy is also called philosophy; what we usually call rational political economics or eventually political intelligence economics.

As satisfying as this knowledge in his field, that of experience, is also satisfactory, another circle of objects that are not covered in it: freedom, spirit, and God. They cannot be found in this land, not because they do not belong to experience, in fact they are not experienced sensibly, but what is in consciousness, in general, is experienced; this, moreover, is a tautological proposition, but because these objects immediately present themselves, according to their content, as infinite.

The relationship of speculative science with other sciences exists only, while speculative science does not leave aside, the empirical content of others, but recognizes and uses it; and recognizes the universal of these sciences, laws, genres, etc., and uses it for its own content; but also, in these categories introduces and enforces others. The difference refers, to this extent, only to this change of categories.

Speculative Logic contains the Logic and Metaphysics of yesteryear; it retains the same forms of thought, laws, and objects, but at the same time perfecting and transforming with other categories. It must be distinguished from the concept, in the speculative sense, what is usually called concept. And in the last sense, unilateral, which stood and repeated thousands and thousands of times, and stood in prejudice, that infinity cannot be understood through concepts.

The birth of philosophy has experience, immediate and reasoning awareness, as a starting point. Excited by it, as by a stimulus, thinking essentially proceeds to rise above the natural consciousness, sensitive and reasoning to the pure and, without mixing element of itself, and thus is granted, initially, in a negative relationship to move away, towards this beginning. In this way in the idea of the universal essence of these phenomena, first, in their satisfaction; this idea (the absolute, God) can be abstract. Conversely, the sciences of experience bring with them the stimulus to overcome the form, in

which the richness of its content is offered, as something only immediate, as a finding, a multiplicity arranged side by side, in general, as something contingent, and to raise that content to the need. This stimulus takes away the thinking of this universality, and of this satisfaction obtained, and impedes development, from itself.

Empirical sciences do not stand in the sense of the singularities of the phenomenon; but, thinking, they elaborate the material for philosophy, while discovering the universal determinations, the genres, and the laws: they prepare that first content of the so that it can be welcomed by philosophy. They include, to think about the presence of progressing, himself, to these concrete determinations. The welcome of this content in which, thanks to thinking, and at the same time development of thinking, from itself. While philosophy owes its development to empirical sciences, it gives the content the most essential figure of freedom (a priori) of thinking and the verification of necessity, rather than the finding, and the fact-of-experience; so that the fact becomes the presentation and reproduction of the original and perfectly autonomous activity that is a, of thinking.

Each part of philosophy is a philosophical Whole, a circle that closes itself; but the philosophical idea is there in a particular element. The singular circle, because it is totality, also breaks the barrier of its element and founds a later sphere. Therefore, the whole presents itself, as a circle of circles, each of which is a necessary moment, so that the system of its own elements constitutes the complete idea, which also appears in each singular element.

The whole of philosophy is therefore truly a science; but it can also be seen as a whole of many particular sciences. The unit in which, in such an aggregate, the sciences come together, since they are welcomed in an external way, is an equally external unit: an order. This order must necessarily, for the same reason and because the materials are contingent in nature, remain an essay, and always present inadequate sides.

Its beginning, rational, passes to the contingent because it must bring the universal down to empirical singularity and effectiveness. In this field of mutability and contingency, the concept cannot be asserted, but only reasons. Legal science, e.g., or the system of direct and indirect taxes, requires very precise last decisions, which are outside the being-determined-in-si-e-for-si of the concept, and therefore allow a space for determination, which according to one reason can be seized in one way, and otherwise, without being susceptible to anything, which is last with assurance. Likely, the idea of nature in its singularization is lost in contingencies, and natural history, geography, medicine, etc. fall into the determinations of existence, species and differences that are determined by an external fortuitous accident and by the game of chance, and not by reason. History also fits here, to the extent that the idea is its essence, but its manifestation lies in the contingency and in the field of arbitrary.

Such sciences are also positive, while they do not recognize their determinations, as finite nor show the passage of these determinations and from their entire sphere to another superior but admit them as simply valid. The superior, but admit them, as pure and simply valid. To this finitude of form, as the first was the finitude of matter. The finitude of the foundation-of-knowledge, which is, on the one hand, reasoning; on the other hand, the feeling, the faith, the authority of others in general, the authority of intuition. This is also the case in this case philosophy, which wants to be founded on anthropology, the facts of consciousness, inner intuition, or external experience.

It may also be that simply the form of scientific exposure is empirical, but that the full-sense intuition orifices what are only phenomena, according to the inner sequence of the concept. It belongs to such empirical that by opposition and multiple variety of grouped phenomena overlap the external circumstances, contingent of the conditions, and then, through this, the universal arises before the mind.

An experimental physics, a history, etc., endorsed with meaning, will thus expose the rational science of nature, the events and acts of man, in an external image that reflects the concept. As for the beginning that philosophy must establish, it also seems that philosophy in general begins with a subjective assumption, like the other sciences. Namely: you must make a particular object the object of thinking. As in other sciences this object is space, the number etc. here in philosophy is the same thinking. But the free act of thinking is this: to put one yourself in the point of view in which it is for itself, and so it engenders itself and takes place in an object itself.

Moreover, this point of view, which thus appears as immediate, must, within science, be a result; and indeed, the ultimate result of science, in which it reaches from its new beginning and returns on itself. Thus, philosophy is shown, as a circle that returns on itself, that has no beginning, in the sense of other sciences, so that the beginning is only a relationship with the subject, while he wants to decide to philosophies, but not to science as such. Or what is the same, the concept of science and therefore the first concept and, because it is the first, contains the separation, namely that thinking is the object for a philosopher, in a way external, this concept must be apprehended by science itself. And even that its only end, action, and goal: to achieve the concept of its concept, and thus its return, over itself, and its satisfaction.

Since one cannot give a previous, general representation of a philosophy because only the whole of science is the exposition of the idea, so its division can only be conceived from this exposition; division is like the idea, from which it must draw an anticipation. The idea, however, is proven, as thinking simply identical to one's soul, and this, as an activity of cohering to one is, to be for himself; and be in that other, only close to himself. Thus science is divided into three parts:

1. **Logic**- the science of the idea itself and for itself.
2. **The Philosophy of Nature**- as the science of the idea in its being-another.
3. **The Philosophy of the Spirit** - as an idea that in your being-being-other returns to itself.

The Philosophical Sciences

Logic is the science of pure idea, that is, of the idea in the abstract element of thinking. It applies to this determination, as for the others, contained in this preliminary concept, the same that applies to the concepts previously presented about philosophy in general: namely, which are determinations extracted from the overview of the whole and according to it. It can be said that Logic is the science of thinking, its determinations, and laws. But thinking as such constitutes only universal determination or the element in which the idea is as logic. The idea is to think, not as formal thinking, but as the whole, in development, of its own determinations and laws, which the idea gives itself: (e) not that it already has and finds.

Logic is the most difficult science, in that it does not deal with intuitions, not even as geometry with abstract sensitive representations, but with pure abstractions, and requires a force and expertise to withdraw from pure thought, to keep it firmly and to move within it. On the other hand, logic could be the easiest because the content is nothing but the thought itself, and its current determinations; and these are the simplest, and at the same time are the elementary. They are also what is best known, being, nothing, etc.; determination, greatness, etc.; being-in-itself, being-for-one, one, multiple, etc. however, this notoriety hinders, rather, the study of Logic.

On the one hand, it is easily considered that it is not worth dealing with such a well-known thing; on the other hand, it is therefore a question of making it well-known in a completely different and even opposite way to what is already known. The usefulness of Logic about the relation to the subject, to the extent that he acquires a certain formation for other purposes. The formation of this subject, through Logic, consists in which he exercises himself in thinking; because this science is the thinking of thinking; and in which the subject receives in his head the thoughts, and receives them also, as thoughts. But while the logical is the absolute form of truth and, even more so, it is also the pure truth itself, it is at all diverse that simply something useful. But, as the most excellent, the freest and the most autonomous is also the most useful, the logical can also be understood so. Its usefulness must be seen differently than simply the formal exercise of thought.

The first question is this: what is the object of philosophical sciences? The simplest, and easiest-to-understand answer to this question is that the truth is this object. Truth is an excellent word, and the Thing even more excellent. If man's spirit and soul are still healthy, his heart must soon beat harder. But it soon presents itself, however, if we can know the truth. It seems that there is an inadequacy between us, limited men, and the truth is based on themselves; and the question arises about the bridge between the finite and the infinite. God is the truth; how should we know him?

The virtues of humility and modesty seem to be at odds with such a project, but one also questions whether truth can be known, to find a justification for continuing to live in the vulgarity of its finite ends. Such humility is no big deal at this point. A language like this: "How would I, poor worm of the earth, be able to know the truth?" is outdated. In its place came the presumption and the fantasy and one imagined to be immediately infatuated, it was persuaded to the youth that she, as it is, already possesses the true (in religion and ethics). It was also said in this regard that adults, signeted and ossified, are submerged in untruth.

The dawn would shine for the young, while the world of the elders would be in the swamp and the slat of the day. The sciences, in this case, are characterized, as something that must be acquired, certainly, but as a simple means for outside vital purposes. Here it is not modesty that prevents knowledge and the study of truth, but the conviction that one already possesses the truth and for itself. Undoubtedly, the elders now put their hope in their youth, for it must carry forward the world and science. But this hope is only put in youth, to the extent that it does not remain as it is, but it underlies the bitter work of the spirit.

There is yet another figure of modesty in relation to the truth. And vanity before the truth, as we see in Pilate face to face with Christ. Pilate asked, "What is the truth?" in the sense of those who had adjusted accounts with everything, for whom nothing had more meaning—in the sense that Solomon said, "Everything is vanity." Here remains only subjective vanity. Moreover, pusillanimity is opposed to the knowledge of the truth. For the lazy spirit it is easy to say, "do not suppose that philosophism should be taken seriously." One can even pay attention to logic, although this should leave us as we are. It is believed that if the thinking exceeds the usual circle of representations, it will give in bad addresses. Indeed, those who entrust themselves to a sea, where one is fused from one side to the other by the waves of thought, in the end will give again in the sandbar of this temporality that was left for nothing: and twice nothing.

What stems from such an opinion is well seen in the world. You can acquire various skills and knowledge, become a routine employee, and cultivate themselves for your purposes. But it is another thing to cultivate your spirit for what is most important and strive to achieve it. One can expect that in our time a desire for something better has arisen in her youth, and that she does not want to settle simply for the straw of outside knowledge.

That thinking is the object of logic, on this point one universally agrees. But thinking can have a very petty opinion and an extremely high opinion. Thus, it is said on the one hand: "this is only a thought", and it is assumed with this that thought is only subjective, arbitrary, and contingent, but it is not the very thing, the true and effective. On the other hand, one can have a high opinion of thought, and seize it so that only he can reach the highest, the nature of God; and that with the senses nothing can be known of God. It is said that God is spirit and wants to be worshipped in spirit and truth. We agree that what is felt and sensitive is not the spiritual; but that his most intimate is thought, and that only the spirit can know the spirit. The spirit can undoubtedly behave as a soul it feels (e.g., in religion); one thing, however, is the feeling as such, the mode of feeling, and another thing its content.

The feeling as such is, in general, the form of the sensitive, which we have in common with animals. This form, then, may well take over the concrete content, but this content does not belong to that form; the form of feeling is the lower form of spiritual content. This content, GodHimself, is only the truth in thinking and how to think. In this sense, thought is not only thought, but rather is the highest way and, carefully considered, the only way in which the eternal and the supported can be apprehended and for itself. As about thought, also about the science of thought can have itself a high opinion and a low opinion. It is thought that thinking, each can do without logic, as he can digest without studying physiology.

If logic was also studied, then one thinks later as before, perhaps more methodologically, but with little change. If logic had no other function than to familiarize itself with the activity of purely formal thinking, then it would not produce anything that had not been done equally well, in any other way. Also, the logic prior to ours only had this position. In fact, the knowledge of thinking, as a purely subjective activity, also honors man and interests him; by knowing what he is, and what he does, and differentiates himself from the animal.

But Logic as the science of thinking has a high point of view in that only thought can experience what is highest, the true. If, the science of logic considers thinking its activity and its production (and thinking is not an activity without content, because it produces thought and produces thought), the content in general is the supersensitive world, and it occupies itself with thought is to linger in that world.

Mathematics deals with the abstractions of number and space, but which are still somewhat sensitive, although they are the sensitive abstract and needy-to-be-there. The thought says goodbye also to the last sensitive and is free with himself; external and internal sensitivity, removes all interests and inclinations. To the extent that Logic has this basis, we must make it a more dignified idea than is usually.

The need to understand Logic, in the deepest sense that of the science of purely formal thinking, is caused by the interest of religion, law, the State, and ethical life. Once, nothing was wrong to think; thought and that is it. One thought about God, nature, and the State, and one had the conviction that only through thought do we come to know what the truth is, and not by the senses or by some representing and opining contingent. But while we continued to think so, it happened that in life the superior relationships were compromised by it. By thinking, the positive was taken away from him. Political constitutions fell into a holocaust to thought; religion was attacked by thought, the solid religious representations, which were worth simply as revelations, were buried; and the ancient faith was destroyed in many souls.

Thus, for example, Greek philosophers opposed the old religions and annihilated their representations. Therefore, philosophers were banished and killed because of subversion of religion and the state, which were both essentially connected. Thus, thinking was made effective and exercised the most colossal effectiveness. Therefore, he drew attention to the power of thinking, beginning to examine his complaints more closely, and it was intended to have thought that he had excessive pretensions, and could not carry out what he undertook. Instead of knowing the essence of God, nature, and spirit, and, instead of knowing the truth, thought destroyed religion and the state.

For this reason, a justification of thinking about its results was required, and the examination of the nature of thinking and its legitimacy is what, in modern times, was largely the interest of philosophy. Let us take the thought of its representation that gets closer; then it appears: 1) first in its usual subjective meaning, as one of the spiritual activities or faculties, alongside others, such as sensitivity, intuition, fantasy, etc.; desire, desire, etc. The products, the determination, or the form of thought, is the universal, the abstract in general. Thinking, as an activity, is therefore the active universal, and indeed the universal that is active; while the act, the one produced, is precisely the universal. The thinking, represented, as subject, is the thinking subject, and the simple expression of the existing subject as a thinking being is, I.

The determinations set out here and in the following paragraphs should not be taken, as a statement, or as my opinions on thinking. However, because in this preliminary (speaking) manner no deduction or proof can take place, they should be worth as facts, so that in the consciousness of any person, if he has thoughts and considers them, it is empirically found that the character of universality and thus also the subsequent determinations are present. For the observation of the facts of their consciousness and their representations, it is certainly required that a culture of attention and abstraction be present and available. In this preliminary exposition, there is talk of the difference between sensitive, representation and thought, decisive difference to understand nature and modes of knowledge. It will also serve the clarification to make this difference already known here.

For the sensitive, it is first its external origin — the senses or the organs of the senses — that is taken by explanation. Only that the name of the instrument gives no determination for what is captured by it. The difference between the sensitive and the thought must be placed in that the determination of the sensitive is the singularity, and, while the singular (so entirely abstract: the atom) is also in the connection, the sensitive is one (being) out-of-one-other, whose most precise abstract forms are: the (being), of-one-another and the (be)-to-the-side and of-one-another.

The representing has such content-sensitive matter; but put in the determination of mine, [namely], that such content is in me; and in the determination of universality, of the relationship-to-yourself, of simplicity.

Besides the sensitive, the representation has, however, also [a] matter originating from self-conscious thinking, such as representations of the legal, the ethical, the religious and of the same thinking; and it is not easy to situate where is the difference between such representations and thoughts about such content. Here the content is thought, more so that the form of universality is also present, since it is appropriate, that it is to be a content in me, and in general because it is representation. However, in general, the peculiarity of representation must be placed, also in this respect, in which such content remains equally isolated in its singularity. According to time, they certainly manifest themselves as if they were "one-after-the-other"; but its content sits not affected by time, flowing in it and changeable. But such spiritual determinations themselves are equally isolated in the broad terrain of the interior, abstract, universality of the representation in general.

In this isolation they are simple: right, duty, God. Now, representation, or stay in this: in saying that right is right, God is God; or else, more cultivated, indicates determinations, for example, that God is creator of the world, the omniscient, the omnipotent etc. Here are in list many simple isolated determinations, which despite their connection, which was assigned to them in their subject, remain outside each other. The representation here coincides with the understanding, which is differentiated only by universal and particular relations, of cause and effect, etc., and therefore, the relationships of need between the isolated determinations, of the representation; while it leaves them in their indeterminate space, one next to the other, linked by the simple as well. The difference between representation and thought has special importance, because in general it can be said that philosophy does nothing but transform representations into thoughts; but after that, it is true, it transforms simple thoughts into concepts.

Moreover, if they were indicated for the sensitive, the determinations of singularity and the being out-of-one, it can also be added that these same determinations are, in turn, thoughts and universal. In Logic it is shown that thought and the universal is precisely this: it is itself and its other, it is taking possession of this other and nothing escapes it. While language is the work of thought, there too is nothing to say in it that is not universal. What I only aim at is mine, belongs to me, while to this individual; but, if language only expresses the universal, I cannot say what I just aim at. And the undazed feeling, feeling, is not the most excellent, the truest; but the most insignificant, the most untrue. If I say: the "singular", "this singular", "here", "now", all this are universalities; everything and each is something singular, one this: and, if it is sensitive, it is one here, one now. Likely, if I say, "I," I look at myself, like this one that excludes all others; but what I say "I," each one is precisely: a Me that excludes all others from him.

Kant used the inappropriate expression that I follow all my representations, and sensations, desires, actions etc. The I am the universal itself and for itself, and the community is also a form of universality, but an external form. All other men must be common with me to be an I, just as it is common for all my sensations, representations, etc. to be mine. But, I, abstractly as such, is the pure relationship with one himself, in which one abstracts himself from the representation, of the feeling, of the whole state, as well as of the whole particularity of nature, of talent, of experience, etc. I am, to that extent, the existence of totally abstract universality, the abstractly free. Therefore, the Self, is the thinking, as subject, and, while I am at the same time in all my sensations, representations, states etc. thought is everywhere present and crosses, etc. Thought is everywhere present and crosses, as category all these determinations.

When we speak of thinking, it appears initially, as a subjective activity, as a faculty, among the various that we have, such as memory, representation, the faculty of wanting, and others similar. Were thought simply a subjective activity and, as such, the object of logic, then it would have, like other sciences, its determined object. It could appear then as agency, to make one think the object of a particular science; and not do the same also of the will, imagination, etc. That it was up to thought to have this honor, that might well have its reason that it is given a certain authority, and which is regarded as the true of man, as what its difference with the animal consists. Learning to know thinking, also simply, as a subjective activity, is not without interest. The most precise determinations would then be the rules and laws whose knowledge is acquired through experience. Thinking, considered in this relationship, according to its laws, is also what ordinarily constituted the content of Logic. Aristotle is the founder of this science. He had the strength to assign when he thought about what is incumbent on him as such. Our thinking is very concrete, but in the multiform content one must distinguish what belongs to the thought or abstract form of the activity. A discreet spiritual bond, the activity of thinking, brings together all this content; and Aristotle stressed and determined this bond, such a form.

To this day, this Logic of Aristotle is the logic that was only unfolded more broadly, mainly by the scoliotics of the Middle Ages, although they have not increased, but only further developed the content. The action of modern times in relation to Logic consists mainly, on the one hand of rejecting many logical determinations elaborated by Aristotle and the scoliotics, and, on the other hand, in grafting numerous psychological materials. In this science, the interest is to learn to know its proceeding to finite thinking, and science is correct, when it corresponds to its presupposition object. Occupation with this formal logic has undoubtedly its usefulness; by it, as they say, "the head gets tidy"; it learns to concentrate, it learns to abstract itself, while in ordinary consciousness one deals with sensitive representations that intersect and embarrass each other. However, in abstraction there is the concentration of the spiriting a single point, and thereby the habit of dealing with interiority is gained.

Familiarity with the forms of finite thinking can be used as a means of formation for empirical sciences, which proceed according to these forms; and in this sense logic was characterized as instrumental logic. However, it can undoubtedly act more liberally and say that Logic should not be studied by utility, but by itself, because the excellent should not be searched for simple utility. In fact, this on the one hand is entirely accurate; but on the other the excellent is also the most useful, for it is the substantial that stands firm by itself, and for this reason it is the support for the purposes, which it promotes and takes to term. We do not have to consider the purposes, as what is first, but the excellent promotes them. Thus, for example, religion has an absolute value; at the same time the other ends are supported and fulfilled by it. Christ says, "Seek the Kingdom of God before, and the rest will be given to you in addition." Purposes can only be achieved to the extent that the essential itself is achieved.

The Science of Information

Origin

It is difficult to specify the emergence of a new science even if it is a recent scientific discipline as is the case of information science. However (Foskett, 1969 and Ingwersen, 1992) mark the date of 1958 as one of the milestones in the formalization of the new discipline when the Institute of Information Scientists (IIS) was founded in the United Kingdom. (Meadows, 1990) describes the origin of the new discipline from specialized libraries (in industries and other organizations). Second (Meadows, 1990) the discipline underwent a sharp development after world war II due to the emergence of the Mathematical Theory of Information described by Shannon and Weaver in the late 1940s. This theory was adopted by many other areas because it explains the problems of transmitting messages through mechanical communication channels. The industrialization of the commercial press promoted the bibliographic explosion, a phenomenon no less important than the advent of the Gutenberg press around 1450, the effects of which were more evident after World War II.

His contribution to the development of information science was small but important to the history of the area, as it attracted attention to two needs. The first to clearly define the character of the information with which professionals in the area cared and, the second, to define the conceptual structure to be applied in the organization of that type of information. Second (Dias, 2002), there is consensus among the authors of the area that Information Science arises in the mid-twentieth century. Norbert Wiener, (1948), in his work "*Cybernetics or control and communication in the animal and machine*", and Claude Shannon and Warren Weaver in 1949, in the book "The mathematical theory of communication", marked the beginning of what would become the information Science. Also, according to the authors, it is in the 1960s that the first concepts and definitions are elaborated, and the debate begins on the origin and theoretical foundations of the new area of knowledge" (Pinheiro & Loureiro, 1995, p. 42). The authors point out several facts that occurred in the 1960s that signified the real milestones of the formation of a new disciplinary field:

- The conference held at the *Georgia Institute of Technology* in 1962,
- The *Weinberg Report* in 1963,
- Mikhailov's Computer Work in 1966
- The study by Rees and Saracevic in 1967 and,
- Borko's definition, in *Information Science: what is it?*, in 1968.

(Borko, 1968) set an information science as a discipline that investigates the properties and behavior of information, the forces that govern its flow and the means of processing to optimize its accessibility and use. It relates to the body of

knowledge related to the production, collection, organization, storage, retrieval, interpretation, transmission, transformation and use of information. This includes the investigation of the representation of information in natural and artificial systems (...). It has a pure science component that investigates the essence of the subject without considering its application and another component of applied science that develops services and products (...). For (Goffman, 1970), the goal of Information Science is to establish a unified scientific approach to study the various phenomena that involve the notion of information, whether such phenomena are found in biological processes in human existence or in machines created by humans. Consequently, the subject matter should be related to the establishment of a set of fundamental principles governing the behavior of the entire communication process and its associated information systems.

(Griffith, 1980) proposed a similar definition that establishes an Information science as a discipline that seeks the creation and structuring of a body of scientific, technological, and systemic knowledge related to the transfer of information.

(Saracevic, 1991) studied the evolution of Information science and defined it as "a field dedicated to scientific issues and professional practice focused on the problems of effective communication of knowledge and knowledge records between human beings, in the social, institutional or individual context of the use and needs of information. In addressing these issues, the advantages of modern information and communication technologies (ICT's)" are considered of particular interest.

Information Science was born after the Second World War, to solve a major problem, which was also the major concern of both documentation and information retrieval, which is to gather, organize and make accessible the cultural, scientific, and technological knowledge produced worldwide. Information science is a recent science and was born from the exact sciences, that is, seeking to achieve an exact knowledge from the inspiration of mathematical and quantitative models. (Bronowski, 1977, p. 47), based on objectivity, seeking to formulate universal laws of the "behavior" of information. Strongly influenced by empirical sciences, it was intended to establish universal laws that represented the informational phenomenon and hence the need to resort to mathematical (information theory), physical (entropy) or biological (epidemiological theory) models.

In the seventies, a character comes into play that redirects the focus of information science: "man (decision-makers) and as such the human and social sciences also start to contribute with their methods and practices, to the composition of this emerging science" (Cardoso, 1996: 73-74). Initially linked to computing and automatic information retrieval, according to Gonzálezde Gomez, 2000, p. 6, from the 1970s onwards, he effectively enrolled in the social sciences as a "symptom of the ongoing changes that would affect the production and direction of knowledge in the West" (GonzálezdeGomez, 2000, p. 2). It is, from that decade on, that we can refer to the "social foundations of information". However, some relevant questions are put to us right now, what is the branch of science that Information Science is closest to? What are the theories, concepts and methods that feed Information Science?

The first studies in information science as social science were to study social reality from a statistical perspective, that is, quantitative. (Berger & Luckmann, 1985) presented reality as something that is built socially and not as an existence and paved the way for the understanding of information not as a given, a thing that would have meaning and an importance per itself, but as process. That is, something that will be perceived and understood in various ways by people, which according to the definition of (Borko, 1968) on behavior and information flows, is something that is outside people and with the definition of (Buckland, 1991) that sees information as "thing" outside people.

The subjectivity of information becomes fundamental for the understanding of the different planes of reality and the distinction between the different forms of knowledge and the mechanisms of its configuration and legitimation. People need to be included in studies on information and in their daily interactions, forms of expression and language, rites, and social processes. Several studies can be presented as an example of the incorporation of these concepts in the context of information science studies, such as the do sensemaking approach inaugurated by Dervin, Atwood & Palmour, MacMullin & Taylor's studies on people's values, cognitive nature studies inspired by Maturana's theory & Varela of the hermeneutic approach to Information Science, the studies of (Capurro, 2003) on information networks based on the theoretical framework of (Bourdieu, 1983. p. 46-81), as well as bibliometric studies and scientific communication and the contributions of Archaeology of knowledge of Foucault and sociology of science (Latour, Knorr-Cetina, among others).

Information Science is a discipline that has an overly broad field of practices but does not yet have a theoretical field defined as is the case of other areas of knowledge such as Linguistics, Anthropology, and others. It has not yet reached a theoretical construction that integrates all its concepts and practices. Therefore, it operates based on theoretical constructions fragmented, for example, the Representation of Information would be a construct, among others, etc. The most important feature of information science is its interdisciplinary nature in which the magnitude of the problems faced (ecological, ethnic, and demographic) is demanding innovative solutions. Information science has been consolidating from "borrowed" elements among others, by mathematics, physics, biology, psychology, sociology, anthropology, semiology and the theory of communication and other sciences that contributed to its foundation and applicability, (Cardoso, 1996, p. 74). *"Information science is not to be looked at as a classical discipline, but as a prototype of the new kind of science"* (Wersig, 1993, p. 235).

Information science evolves into new stages of dialogue and insertion in the social sciences. The reflection on the evolution of information science, its relations with the social sciences and as a model of science, is fundamental for research to continue and to incorporate all the knowledge accumulated in this process. Since scientific research is one of the main paths for the formulation of theories of an area, what is perceived is that research in Information Science, has been consolidating and opening new horizons of discussions over the last decades. Great contribution has been made by professors and researchers at various international universities.

Some important steps have been taken to theoretically strengthen the area of Information Science and that research in Information Science is expanding and has a Scientific Community that over the years has been consolidating internationally. There are many different challenges for information science today. As applied science, it needs to respond to the search for information from society and, as an object of research, to the needs of fundamental conceptual members of the area. The realization and sociability of research are the safest ways to create and share new paradigms. Thus, it becomes increasingly important to seek the theoretical, philosophical, and social foundation in the field of information science and above all to further strengthen its scientific community.

Interdisciplinarity

There are at least four distinct currents of thoughts that reflect on interdisciplinarity in information science (Fernandes and Cendón, 2009). The first places that information science, not having a defined theoretical framework, captures concepts from other sciences to be theoretically based, and the interdisciplinary characteristic is born from the unique amalgam established within the Information Science. The second to the company / organization that the object of research of information science, information, is common to all areas of knowledge, so information science is interdisciplinary in nature, being present in the epistemological core of science, as a whole. For the third, there is only interdisciplinarity when conceptual discoveries and practices modify both disciplines involved, at times when concepts and methodologies, shared by both disciplines, merge, and change each other. Finally, the fourth current of thought the company / organization that the interdisciplinarity of information science, the way it is proposed and discussed does not exist, since there is no mutual influence of the knowledge of both disciplines, occurring a mere juxtaposition of concepts.

(Borko, 1968), lists the following interdisciplinary areas: Mathematics, Logic, Linguistics, Psychology, Computer Technology, Operations Research, Graphic Arts, Communication, Librarians and Administration. (Merta, 1968; Cherni and Gilyarevsky, 1969; and Mikahilov and al, 1969) highlight the following fields of knowledge, in which there is an interdisciplinary dialogue with Information Science, with explanations related to each contribution, including methodological: Mathematics and Mathematical Logic; Linguistics and semiotics; Communication, Cognitive Science, Psychology, Librarian economics, Cybernetics and Mathematical Theory of Communication; Reprography and Theory of Automatic Knowledge; Systems Engineering and Computer Science.

(Harmon, 1971), synthesizes Kitwanga's thinking, from which identifies the strongest interdisciplinary relationship of the field with behavioral sciences, and all those that have "... a marked common trend for model construction" and concludes that Information Science is an "area of objective, subjective and practical research". (Wersig and Neveling, 1975), in the search for the "place" of information science, the reasons for its emergence and what social needs it meets, considering different orientations: for the phenomenon, for the media, for technologies and for purposes.

Second (Japiassou, 1976), interdisciplinarity can be understood as the "dialogue between the areas of knowledge. For (Foskett, 1980), the field "... it arises from a cross-fertilization of ideas that include the old art of librarian economics, the new area of computing, the arts of the new media, and those sciences such as Psychology and Linguistics, which in its modern form has to do directly with all the problems of communication – the transfer of information".

(Japiassou and Marcondes, 1991), define interdisciplinarity as: "method of research and teaching capable of making two or more disciplines interact with each other; this interaction can go from simple communication of ideas to the mutual integration of concepts, epistemology, terminology, methodology, procedures, data and research organization.

(Farm, 1995) explains that the interdisciplinary movement emerged significantly in Europe in the 1960s, a period in which a new university and school status was claimed that broke with education in parts, which was completely alienated from everyday issues. The evolution of the movement towards interdisciplinarity was divided didactically by the author into three periods, including the 1970s, 1980s and 1990s, also presenting information on the context of the development of interdisciplinarity, mainly in education:

- 1st period - 1970: characterized by the search for a philosophical explanation of interdisciplinarity; with the participation of institutions such as UNESCO in 1961 and the Organization for Economic Cooperation and Development (OECD) in 1972.
- 2nd period – 1980: period of search for a sociological guideline; attempts to explain a method for interdisciplinarity.
- 3rd period – 1990: phase of search for an anthropological project, towards the construction of a theory of interdisciplinarity.

There are two main approaches to studies on interdisciplinarity: the search for the unity of knowledge (objective of constructing a universalizing perspective from the gathering of knowledge around a given situation, especially scientific *knowledge* and the search for a solution to concrete problems (particular and specific practice to deal more with situations related to everyday existence, especially social problems, than those that are specific to science, with emphasis on the instrumental issue) (Fourez, 1995; , apud Lavaqui; Batista, 2007).

Second (Cardoso, 1996, p. 74) the interdisciplinarity of information science is present as a component of the current Society Science, in which the magnitude of the problems faced (ecological, ethnic, demographic) are demanding innovative and plural solutions. Information science is consolidated from the elements "borrowed" by mathematics, physics, biology, psychology, sociology, anthropology, semiology and communication theory and many other sciences that contributed to its foundation and applicability.

Second (Gomes, 2001) the "Information science is a contextual science, that is, it is a science applied to contexts and can be characterized as an interdisciplinary science". Interdisciplinarity is often confused with the mere incorporation of concepts, theories, and methods of one discipline on the other, since it uses terms and concepts of a diversity of other sciences, in which it seeks its theoretical bases, such as computer science, business sciences, linguistics, communication, cognitive sciences, education.

Interdisciplinarity is not a simple appropriation of concepts, theories, and methods from one area of knowledge to another. It is only realized from the concrete dialogue between the different areas of knowledge. Effective interdisciplinarity is one that is updated in the field of theoretical abstractions, the establishment of methodologies, but also in the interventions that the different areas of knowledge promote in the social.

For (Pinheiro, 2004), is the "mutual appropriation of methodologies, principles, theories, concepts, and constructs between two or more areas of knowledge (Pinheiro, 2004). (Klein, 2004) the company / organization that the concept of interdisciplinarity is linked to that of complexity. The convergence between these two ideas has significant consequences for understanding the nature of knowledge, the solution of scientific problems and the dialogue between the sciences and the humanities.

Second (Klein, 2004) the nature of complex systems offers a comprehensive rationality for interdisciplinary studies, unifies the apparently divergent approaches, and serves as a criterion to direct the integration process. The goal of interdisciplinary research is the understanding of the part of the world modeled by a complex system. Interdisciplinarity is characterized by the exchange of knowledge, the transformation of the areas of knowledge and the sharing of objectives.

Second (Klein, 2004) the interdisciplinary approach originates in the need to understand complex objects, which a single area of knowledge would be unable to treat with the proper scope. Among these we can mention the phenomena of the explosion of information and cultural diversity, social and technological problems, or multifaceted concepts such as "body", "mind" and "life". It is perceived the development of a significant number of multi- or interdisciplinary areas of knowledge since the mid-20th century and among them is information science.

The interdisciplinary experiences present three basic characteristics, according to (Domingues, 2005):

- Approximation of different disciplinary fields for the solution of specific problems.
- Sharing methodology.
- Generation of new disciplines after cooperation and merger between the fields.

From the many ideas around the term, many taxonomy possibilities have also emerged to better understand how interdisciplinarity occurs. Classifications of interdisciplinarity individually or collectively, several proposals have been and continue to be presented by scholars. (Lenoir, 2003) proposes two categories based on the type of action in which they occur, that is, scientific interdisciplinarity and school interdisciplinarity.

Regarding the scope of scientific interdisciplinarity, the OECD (Klein, 1990) presents two categories: endogenous interdisciplinarity and interdisciplinarity exogenous to the scientific community, that is, the methodology was adopted by will or internal requirement of the discipline or it is a requirement of an external character to science. Some authors have a more specific classification, dividing interdisciplinarity according to the way it is found in research.

For (Heinz Heckhausen, 1972, 2006), interdisciplinarity can be categorized from the levels of interaction in which they occur. In increasing order, they would be heterogeneous interdisciplinarity; pseudo-interdisciplinarity; auxiliary interdisciplinarity; composite interdisciplinarity; complementary interdisciplinarity; and unifying interdisciplinarity.

For (Boisot, 1972), the level of interaction present in interdisciplinarity is divided into: structural interdisciplinarity; linear interdisciplinarity; and restrictive interdisciplinarity. (Huerkampet al., 1978) proposes the following classification: methodological interdisciplinarity; conceptual interdisciplinarity; interdisciplinarity of problems; and border interdisciplinarity, or interdisciplinarity of neighboring disciplines.

The existence and need for information for almost *all professions, sciences and cultures*, is one of the proofs of the interdisciplinarity of information science. In any circumstance, information acts as a driving force for the development of the various areas of human knowledge, nations and peoples and also as an element of unification of inter- and transdisciplinary relations.

On the interdisciplinary fields, the authors highlight part of Mathematics, Logic, Philosophy of Science, Transformational Grammar and Mathematical Theory of Communication and recognize that there is connection of information science with some traditional areas, including "Psychology (Information **Psychology**), Sociology (Information **Sociology**), Economics (Information **Economics**), Political Science (Information **Policy**) and Technology (Information **Technology**)".

Transdisciplinarity

It is pertinent to approach some ideas that announce it or converge it to interdisciplinary philosophy, long before the introduction of this concept, such as the notion of system, as well as those that follow it, as transdisciplinarity. (Morin, 1997), rethinks the concept of system, as an organized whole that "... produces or favors the emergence of a certain number of new qualities that are not present in the separate parts", capable of connecting the parts to the whole.

(Japiassu, 1976), illustrates the concepts of multidisciplinary, interdisciplinarity and transdisciplinarity, based on (Jantsch, 1970, 72 apud Japiassu), and describes them as systems "... with successive degrees of cooperation and increasing coordination of disciplines." Transdisciplinarity is a concept of reciprocity between specialized investigations, but it situates these links within a total system, with no boundaries established between disciplines.

For (Pombo, 2004), transdisciplinarity is a way to promote the integration of knowledge, to ensure a higher level of interaction, that is, it is a fusion that overcomes disciplinary barriers allowing its transcendence.

The theoretical-methodological approach to transdisciplinarity is under construction, being discussed and debated today. Some theories are related to the transdisciplinary approach, such as systems theory and information theory, as well as terms related to it, such as passage, transition, change, transformation, complexity, (Nicolescu et al., 2000).

Transdisciplinarity, as the prefix "trans" indicates, concerns what is at the same time between disciplines, across different disciplines and beyond the whole discipline. Its purpose is the understanding of the current world, and one of the imperatives for this is the unity of knowledge, Project (Ciret-Unesco, 1997, p. 4).

Discipline

To understand interdisciplinarity, it is necessary to start from disciplinarity, since the specialties of knowledge are the "foundations on which everything is built" (Clerk apud Klein, 1996). Second (Japiassu, 1976), disciplinarity is the "... Specialized scientific exploration of a certain homogeneous field of study, that is, the systematic and organized set of knowledge that has its own characteristics in the plans of teaching, training, methods, and subjects: this exploration consists in the emergence of new knowledge that is replaced by the old ones". Disciplines have specific focuses and the real of each is always reduced to the angle of view of their specialists, which expands to the extent of interconnections with other disciplines.

For (Morin, 2002), the term discipline is related to the academic-scientific knowledge that culminated with the emergence of various branches in the field of science, and which developed thanks to the progress of scientific research. In a broader view of epistemology (Morin, 2002) presents the discipline as a category that organizes scientific knowledge and divides it and specializes in work to respond to the diversity of domains that the sciences cover. A discipline naturally tends to autonomy

by the delimitation of its borders, by the language it establishes, by the techniques it is led to elaborate or to use and, eventually, by the theories that are property it, (Morin, 2002, p. 37).

Second (Gusdorf, 2006), each discipline tries, "an approximation of human reality according to the dimension that is proper to it, with man as a common center", presenting different patterns of formality and organization. Some criteria identified by (Heckhausen, 2006) help to understand the nature of a discipline, characterizing it or differentiating it from others by aspects not always very definitive, as explained by the author himself. They are:

- **Study domain** - specific angle of your material domain. Vaguely defined notion that depends on the constitution of a given discipline.
- **Own methods** – to apprehend and transform phenomena. A discipline becomes autonomous when it has perfected its own methods, which must be adapted to the nature of the field of study, with correspondence between concrete application of methods and general laws at the theoretical level.
- **Instruments of analysis** - they are based on logical strategy, mathematical reasoning, and the construction of process models. They apply to several domains and are neutral criteria.
- **Applications** - guidance for the application and practical use in the field of professional activity.
- **Level of theoretical integration** – construction of the "reality" of its domains in theoretical terms, that is, its fundamental and unifying concepts must be comprehensive, enough to explain and predict the phenomena of its domain of study. Defines the maturity of the discipline and is the most important criterion for identifying a discipline.
- **Historical contingencies** – a moment through which discipline passes in its process of historical evolution, in which both the internal logic of the domain of study and external forces interfere.
- **Material domain** - set of objects they are dealing with. Many disciplines overlap in this area.

The disciplines are made up of groups of researchers who have common intellectual goals. For example, when talking about "physics" or "biology", it is not referring to the representation of knowledge of physics or biology of epistemic value, but to an institutionalized organizational structure with criteria, interests, and objectives of researchers, within the scope of scientific policy.

As a practical example of a disciplinary research, the study of sound made in different disciplines: in physics - vibration and amplitude (acoustics); in physiology - production mechanisms (phonatory organs); in linguistics - significant and generation of meaning; in music - rhythm, melody, harmony, and timbre.

Interactions between Scientific Disciplines

There is a general recognition, based on various studies and investigations, that information science is more debtor than creditor in relation to contributions from other disciplines. Information Science incorporates a vast body of knowledge from various disciplines, transferring relatively little in return. And many published works establish interdisciplinary relations between information science and various disciplines "without explicitness, deepening or theoretical foundation that justifies them" (Pinheiro, 2008, p. 29).

Inter and transdisciplinarity propose to offer alternatives to the ways of thinking and making of science, providing, in addition to analytical reductionist thinking, forms of scientific research that respond to the needs of understanding facts and phenomena in all their complexity.

The levels of integration of the disciplines are classified under different perspectives and formats, starting from simple loans of theories and methodologies to displacement or dilution of boundaries between the scientific fields involved, without a very precise distinction of the limits between these levels, within a successive and growing "conceptual chain", as it says (Pinheiro, 2006, p.1).

(Saracevic, 1999) considers in the panorama of the development of Information science its origin and social role, the nature of its object, information, its structure in terms of problems, evolutionary trends in information retrieval, and the relationship with other areas, issues and educational models.

Second (Wersig and Nevelling, 1975), under the name of Information Science (plural) is systems theory, communication theory, philosophy, science of science, mathematics, linguistics, law and information science itself, in addition librarian, archival science, Museology, Communication and Education. This set of disciplines appears linked to information theory, contains areas and theories that relate to information science, namely cybernetics, semiotics, computer science theory.

The areas are related by theories of a general nature, such as systems theory, applicable to different sciences. The interdisciplinary fields of Information Science are constituted by three levels or hierarchies, where this area appears linked to Philosophy and consists of subareas very similar to those recognized by (Wersig and Nevelling, 1975), as Sociology of Information, Information Economics and Information Policy.

Complementarity between concepts

In the scope of Epistemology, when studying interdisciplinarity, other related concepts emerge, including those that are founders, such as field and area of knowledge, or complementary concepts, including applications related to professional activities. The interaction between disciplines involves different tasks at numerous human levels and categories, so interdisciplinarity needs to be researched in the plurality of its constitution.

(Japiassu, 1976) briefly cites applications, oriented to professions, and in the Information science this aspect gains importance by another quality of this area, sometimes called horizontality, or rather, the ability of information to go through all fields, in its condition of specialized information.

According to (Pinheiro, 1999) "... Applications (contexts, areas, sectors, organisms), that is, scientific, technological, industrial, or artistic information, or application in fields of knowledge, such as in economics (economic information mix with interdisciplinarity itself – are distinct concepts, although they may present interdisciplinary contributions".

For (Amaral, 1990) "... field designates the total territory whose research is intended to operate, such as Medicine, Philosophy, Communication are fields. Area is a subdivision of the field, a cut artificially introduced for reasons of

exploratory studies. Theories of Communication and Culture and Image Technologies are areas such as philosophy or surgery."

It complements its explanation of concepts, with the line of research, the company /organization that there will be a line each time, within an area (which is characterized by a certain informality, in the sense of the absence of a clear individualizing form), certain unifying themes form cooperation between researchers. They come together to, working together on these themes, to deepen the area and develop the field." (Amaral, 1990).

Human Intelligence

(i) Introduction

The last few decades have been dominated by a certain type of people who are skilled at manipulating codes (objective information - quantified), that is, experts in manipulating numbers. The future belongs to a profile of different people generally endorsed with a comprehensive overview (Daniel Pink, 2006). According to the same author we are moving from an economy and society based on the skills characteristic of the information age, logical, linear, almost the decal of the operation of a computer, to an economy and society based on creative, empathic, and holistic thinking capacities (subjective information – not quantified).

Since a few years ago, society has been dominated by a way of thinking and an extremely analytical and reductive approach to life, but the situation is changing, since the growth of immaterial needs resulting from the comfort achieved at the material level, the mobility of work caused by globalization and the disappearance of some forms of work by the development of technologies is provoking new ways of thinking and facing life.

These encompass the ability to recognize patterns and opportunities (business, work, leisure, etc.) and combine seemingly disconnected ideas into something new. It also includes the ability to empathize with others, understand the subtlety of human interaction, find human satisfaction, and pursue a meaning for life beyond daily routine (Daniel Pink, 2006).

The agents of change are in our heads. Our brain divides into two hemispheres despite the immense complexity. According to the theory, the left hemisphere of the brain will be the crucial part, the half that will make us humans. The right side will be secondary. The left hemisphere is sequential, logical, and analytical. The right is non-linear, intuitive, and holistic. The differences between the two hemispheres provide a powerful metaphor for interpreting the present and orienting ourselves towards the future (Sperry, 1994).

Currently the key capabilities are the skills of the hemisphere on the left that remain necessary, but that are no longer sufficient. The characteristics of innovation, empathy, good humor and the pursuit of life's purpose will be increasingly important in determining personal and professional success.

(ii) Reality

The two hemispheres of the brain do not work as if they have a switch to turn on and off alternately, that is, as if one started working when the other stop working. After more than three decades of research it is possible to frame the discoveries made in four major differences (Daniel Pink, 2006):

- The left hemisphere controls the right side of the body; the right hemisphere controls the left side.

Each half of the brain controls the opposite half of the body. A stroke that reaches the right hemisphere will cause locomotion difficulties on the left side of the body, while a problem in the left hemisphere will cause difficulties on the right side. Because many people are dextran, this means that the left hemisphere controls important movements such as eating, writing by hand or moving the computer mouse.

Usually reading and writing implies a left-to-right movement, thus involving the left hemisphere. Maybe that is why the left hemisphere has dominated "gambling" so far – after all it's the only side of the brain that knows how to write the rules.

- The left hemisphere is sequential; the right hemisphere is simultaneous – the left hemisphere is good at recognizing serial occurrence – occurrences whose elements occur one after another – and controlling behavioral sequences, this includes verbal activities such as speaking, understanding other people's discourse, reading, and writing (Carlson, Neil R., 2004, pp. 84-85).

The right hemisphere does not function according to the linear succession scheme of A-B-C-D His talent lies in the ability to interpret things simultaneously, that is, he specializes in seeing many things at the same time, such as seeing all the elements together of a situation and understanding their meaning (Carlson, Neil R., 2004, pp. 48).

This feature makes the right hemisphere particularly useful for interpreting facial expressions, giving humans an advantage over computers. To better understand the sequence/simultaneous difference think of the well-known phrase "An image is worth a thousand words": the right hemisphere is the image; the left represents the thousand words.

- The left hemisphere specializes in text; the right hemisphere is an expert in the context.

In most people, language originates in the left hemisphere, although the right does not deliver all the responsibilities of this process to the left hemisphere, instead the two halves of the brain perform complementary functions.

Imagine that your wife was to organize a party for the X and that a few moments before found that his wife forgot to buy for example sparkling wine. Imagine that he grabbed the keys of the car, frowns and that casts a fierce look at his wife and articulates between his teeth: "I'm going to the supermarket".

Everyone with a healthy brain understands two things about their words. First you go shopping and second you are furious. The left hemisphere realized that it goes shopping, that is, deciphered the sounds and syntax of the words heard and understood its literal meaning. The right hemisphere has realized the second aspect of this communication, that is, that the normally neutral phrase "I go to the supermarket" has nothing neutral. The expression of the eyes and the manner with the phrase was said show that he is angry (Chris McMannus, 2002, p. 181).

Synthesizing the left hemisphere is responsible for what is said, while the right hemisphere controls the way things are said – i.e., the nonverbal and emotional signals conveyed through the look, tone of voice and facial expressions.

The text/context difference has a wider reach. Certain written languages depend heavily on context, such as Arabic or Hebrew languages using only consonants in written form, so the reader has to understand which vowels are through the

context and ideas in which the words are included. For example, if an expression such as "pg n sgnd" appeared in this language and you were reading the instructions of a furniture, the most likely would be to place the vowel in order to obtain "take the second" (e.g. screw, etc.); if the same phrase appeared to you in a story, in a dialogue between two people in the bookstore of a large surface, then it would fill the missing vowels by obtaining a phrase such as "pay in the second" (e.g. box, etc.). (Daniel Pink, 2006).

The context assumes relevance in other dimensions of language. Many studies show that the right hemisphere is responsible for our ability to understand metaphors. For example, if you are told that Sofia has "a heart the size of the world", the left hemisphere understands and evaluates who Sofia is, what a heart is and how big the world is. But when the literal meaning of the phrase is unlogical – how can the world fit into Sofia's chest cavity? – the left hemisphere summons the right to resolve the incongruity. Neither side of the brain can do its job without the help of the other (R. Ornstein, 1997).

- The left hemisphere analyzes the details; the right hemisphere synthesizes the entire image.

The left hemisphere participates in the analysis of information (objective), instead the right hemisphere specializes in making syntheses (subjective information), that is, it is an expert at gathering isolated elements and apprehending things. Analysis and synthesis are perhaps the two most important ways of interpreting information (R. Ornstein, 1997).

Both processes are crucial to human reasoning. However, they are directed by different parts of the brain. The left hemisphere converges to a single answer, the right expands in an overview. The left focuses on the categories, the right in the relations. The left can grasp the details, but only the right can see the image in its entirety (R. Ornstein, 1997).

The right hemisphere specializes in recognizing faces and interpreting facial expressions. These skills are not based on sequential and analytical reasoning – we do not recognize a face looking first at the mouth, then at the eyes, then at the nose and then at the teeth, but on the ability to interpret the different parts of the face simultaneously and synthesize all the details, in a more comprehensive image.

The two hemispheres work together, but are experts in different things, while the left deals with logic, analysis, sequence and literalness, the right takes care of synthesis, emotional expression, context, and vision, that is, the left has logical and right capabilities, global perception capabilities (Chris McMannus, 2002, p. 183-84).

Nevertheless, the contrast between the functioning of each half of the human brain certain people feel more comfortable with a logical, sequential, and analytical reasoning and tend to choose professions such as accountant, engineer, computer scientist or lawyer. Others feel better with a comprehensive, non-linear, and intuitive thinking, tend to become entrepreneurs, psychologists or professionals in the field of entertainment.

The first approach (left hemisphere) with its greatest paradigm in computer science and valued for many years by organizations and emphasized in schools and universities. The second approach (right hemisphere) much ignored by companies and universities has its best examples in entrepreneurship and service providers.

We need both approaches to build a productive and fair society. However, it is to draw attention to a weight indicator that binary and reductionist thinking has so far had on society. The style of thought dominated by the left hemisphere was so far the conductor, while the reasoning of the right hemisphere was always fleeting. The right hemisphere has begun to "grab the wheel", that is, to take command and decide where we go and how we get there. It's a crazy but basically inspiring change (Daniel Pink, 2006).

(ix) The symphony

The symphony is also an attribute of the right hemisphere of the brain both in literal and metaphorical terms. The right hemisphere works simultaneously, contextually and inphonically. He cares about the forest and not a tree, just as the conductor of an orchestra cares about the whole orchestra and not just the first violinist or the bassoon player (Daniel Pink, 2006).

The phonic thinking is an aptitude of some professions, especially those who must direct teams, projects, organizations, etc. The developed world is overcrowded with material goods, information and opportunities for choice begin to add value to this aptitude in the field of personal and professional life. The richness of the stimuli and options offered by the market can be so oppressive that people possessing a more comprehensive reasoning ability, are able to see things as a whole and distinguish the essential from the accessory and enjoy a notorious advantage in their pursuit of personal and professional well-being.

To be more successful in the future, one must know the relationships between different areas of knowledge and relate the seemingly disconnected elements to create something new and have to acquire the domain over the analogy, that is, to understand one thing through another. The future offers more opportunities to three types of professionals: to innovators, metaphor creators and those who do not respect delimitations (transgressors) (Daniel Pink, 2006).

The most creative people can see relationships that others have never realized. This capacity will be highly valued in a world where the activities performed by knowledge workers can be relatively easily automated or relocated. For example, the relocation of jobs related to new information and communication technologies (e.g., teleworking) to other locations (continents, countries, etc.) will lead to the search for people with skills capable of managing the relationships between technicians and their customers worldwide.

These professionals use both sides of the human brain and are experts in more than one culture and dominate both the exact sciences, such as business sciences such as management, marketing, accounting, and finance, etc. and can move between different and sometimes antagonistic groups, with the at-will of a diplomat. These professionals will be able to solve problems that leave experts perplexed.

The ability to make great leaps of reasoning and have a rich imagination are characteristic of creators /innovators. This quality is seen in people with diverse training, multidisciplinary intelligences, and a wide spectrum of experiences (Nicolas Negroponte, 2003).

Transgressors reject binary pair options (one thing must be true or false – computer science; one thing must be this or that) and look for multiple choices and fusion solutions. This explains the growing number of students with more than one degree, as well as the growing proliferation of multidisciplinary training.

The ability to establish inventive and inspiring relationships is a function of the hemisphere on the right side of human cerebrum. Cognitive neuroscientists have found that the moments of clairvoyance in which we remember our ideas or new solutions are accompanied by an intense outbreak of neural activity in the right hemisphere of the brain. However, when we look at problems in a more methodical way, guided by the left side of the brain, this area of the brain remains serene (Jung-Beemna, M., Bowden, E.M.; Haberman, J.; et al, 2004).

The ability to activate the right hemisphere of the brain is becoming emerging. In the business world the product life cycle is increasingly slow that people and organizations must be guided by an energetic and tireless activity if they want to succeed and so they will have to focus on innovation, while automating or relocating the production of products.

In a complex world, the mastery of metaphor – a skill that brings together the use of the entire brain and which scientists have called "imaginative rationality" - has become more valuable than ever. Every day we spend most of our time compiling data and information. We know that certain *types of* software are already able to automatically analyze this data and information and detect trends and patterns. However, only the human mind can think and see the relationships that computers will never be able to discover (Lakoff, George and Turner, Mark, 1989, pp. 214-15).

The whole vision is becoming a vital skill in the business world. In the past knowledge workers performed typically compartmentalized tasks that constituted a small part of a much wider whole. This type of activity is being automated or relocated for low-cost professionals. These have great difficulty in integrating and having the vision of the whole.

According to Michael Gerber (2003) entrepreneurs are people with systemic thoughts, that is, they see business. According to a scientific study by Daniel Goleman (1998, pp. 33) in large organizations what distinguishes top managers from intermediate and operational managers are cognitive abilities, i.e., the ability to recognize standards (e.g. performance, etc.), the overall vision that allows top managers, especially strategists, to detect significant trends between the amalgam of data and information with which they are flooded and to define the paths of the future to medium and long (the strategy).

These managers develop their activity less in deductive reasoning, of the cause/effect type and more in the kind of intuitive and contextual thinking characteristic of the aptitude of the symphony (conductor). This is leading some of the professionals to mainly use the left hemisphere of the brain, rethink their identities and activities. More and more managers are looking for professionals with these skills. Managers who have a systemic thought observe the reality in which they live and feel forced to interpret and express it in a way that allows them to understand the world (Hartman, Sidney, 2003).

The ability to see things will perhaps assume its greatest relevance as an antidote to the wide range of spiritual concerns resulting from the prosperity of the time in which we live. Many managers live a life where time is scarce, overwhelmed by the overabundance of information and increasingly have difficulty choosing in the face of the high number of alternatives that arise to them. The best solution is to look at these modern "evils" and look at the problems of management in a contextual and comprehensive way, which will allow them to distinguish the essential from the accessory.

(ix) Empathy

Empathy is the ability of someone to put themselves in the place of the other and to intuit what that person is feeling, that is, it is the ability to go to meet another individual and to see the world with his eyes and his heart. Empathy allows us to see the other side of the issue, comfort someone who needs support and think twice before saying something unpleasant, promotes individual self-awareness, unites parents and children, allows one to work together and provides the foundations of moral principles.

According to Daniel Goleman (1998) hyper-brain knowledge workers and efficiently productive and highly technological companies placed the emotional emphasis and logical reasoning, that is, in the ability of managers to distance themselves from situations, to evaluate them and to make decisions not influenced by emotions. The skills that the computer is unable to reproduce and that professionals connected by bundles of electrons find great difficulties in putting into practice is empathy.

The interpretation of facial expressions is one of the competencies attributed to the right hemisphere of the brain. The human being expresses his emotions and interprets the emotions of others first using the right hemisphere. For example, since babies cannot speak, the only way to understand their needs is to interpret their expressions and intuit their emotions. Whenever this happens it is resorted to our right hemisphere which is called to act whenever one uses the left side of the body, since the two hemispheres of the brain are complementary (Richard Restak, 2001).

Computers have extraordinary mathematical abilities, but when it comes to interacting with people, they are autistic. Voice recognition software can decipher words but cannot guess emotions. Empathy is much more than a vocational capacity necessary to survive in the labor market in the 21st century, since it is an ethic for life and a means of understanding other human beings, brings joy and is an essential element to live a life with meaning.

The Evolution of ICT's

The concept of technology is immediately understood by those who serve it and who constantly refer to it. There is unanimity on an implicit concept, but it is indispensable to explain, that is, technology is a complex set of knowledge, *means and know-how*, organized with a view to production. This can be said about high density and measured integrated circuit production technologies, supported by a worldwide network of design and manufacturing centers connected to each other by satellites (Jean-Michel Ribaut and Bruno Martinet and Daniel Lebidois, 1991, p.13). Any technology covers three components:

- Knowledge – which does not constitute a technology.
- The means – which characterize technology, but which are not reduced to them; in non-specialized hands any technology represents a waste of investment.
- *Know-How* – without means is a specialization but cannot get any results and quickly falls into disuse due to lack of application.

Organizations to improve their competitive position do two ways, i.e., on the one hand, they observe and analyze the needs of customers to be met and this can lead to technological innovations or analyze the advantages of replacing one technology with another that allows them to *improve their performance*. Any technology always appeals to various scientific disciplines,

such as laser *technology* brings together knowledge of optics, electronics, fluid mechanics and thermodynamics. Scientific research aims at acquiring or strengthening knowledge (provisional certainties), while the creation of technologies aims at production under industrial conditions. Technology only makes sense because of a guaranteed result: a technology only exists, when it is validated and when it allows production in precise conditions, that is, technology solves a problem.

Information and Communication Technologies can be defined as the set of knowledge, material means (*infrastructure*) and *know-how*, necessary for the production, marketing and/or use of goods and services related to the temporary or permanent storage of data, as well as the processing and communication thereof. The emergence and evolution of technologies represent a decisive impetus for the emergence of new forms and perspectives of addressing issues related to how to compete. The use of information and communication technologies has been expanding progressively, so *the English* expression "Information Systems" represents what in Portuguese can be translated by "Computer Systems" which do not represent a systemic, complete, and organized form of the collection, selection, treatment, analysis, and dissemination of information from organizations.

Information and communication technologies allow the storage, processing, accessibility and transmission of data flows (information), so that process technology (hardware) and product (software) cannot be confused with the product (information). Understanding the difference between what information is for business management and information and communication technologies is vital for managers for the simple reason that information helps managers make decisions, whatever the support technology. But managers also cannot forget that information and communication technologies, as a support, allow to obtain competitive advantages regardless of market share and the size of the business.

In the reflection on this topic, it is important to distinguish support for the collection, processing, and transmission of data (technological infrastructures - hardware, software and communications) and the information resulting from the collection, selection, processing and analysis of information, i.e., the information embodied in the flow system (i.e., between the information resource, i.e., data and the product information).

The Post-Shannon Era in Communications Theory

The research work of (Claude Shannon, 1916-2001) led to the definition of the theory of information and classical communication, whose first publication in 1948 was one of the pillars of twentieth century science, and Shannon was compared to Einstein and Darwin in terms of their intellectual impact on a significant number of problems and the applications of digital transmission and encryption of information in investment theory. The theoretical concepts of information are now also very rapidly penetrating the field of genetic biology, the transmission of cellular signals and neuroscience. Shannon's theory was a perfect theory, that is, complete, proper to all the appropriate definitions or interesting problems of communications – mathematically rigorous that it is, produces results that are "heavy" in several useful paths and provides a definition of what is possible with respect to the signal capacity of sufficiently unequal communication channels.

Shannon's theory was on the "shelf" for thirty to forty years and was forgotten by the actual practical part of engineering (to be discussed elsewhere). But in the last ten to fifteen years the scientific method of engineering abruptly broke with the theory and even more surprisingly that has surpassed it in some fields of research. The impulse of the method for many of these fields has emerged in the field of engineering and wireless communications, where the unique feature of the wireless channel has created an interesting number of changes in classical information theory.

The readjustment with the practical problems of the engineering method was clarified, when Shannon's theory stopped on certain key assumptions, since not all were fully defined or explored (or perhaps more properly understood) in the original development of the field of research. While we can understand these assumptions, it also becomes possible to see beyond them and what we are seeing is the emergence of the various concepts of post-Shannon signal architecture in which Shannon's conventional theoretical work is being expanded or even replaced by the latest engineering methods (many examples can be discussed).

The Informational Turn

The repercussion of the "informational turn in Philosophy" during the second half of the 20th century influenced both the academic and the social sphere in general (MORAES, 2014). The first is evidenced by the large number of philosophical-scientific works developed around the concept of information (Wiener, 1948, 1954; Sayre, 1969, 1986; Dretske, 1981; Stonier, 1997; among others). As for the social sphere, the development of studies of information theory promoted the social changes that we currently experience and that have generated new types of problems, especially those that relate to the relationship between action/technology/environment. Given its impact on the academic and social spheres, the approximation between Philosophy and Science, and the role of computers in the development of theories, theoretical production occurred concomitantly with technological improvement.

As highlighted (Floridi, 2008, p. 3-4), during the second half of the twentieth century there were events such as: the massification of the computer, which promoted the generation of the "personal computer"; the advancement of scientific discoveries due to the use of ICT and the emergence of new ways of experiencing the world from such technologies. These events illustrate the influence of ICT's in various areas of society (sociological, economic, scientific, and cultural), providing elements for the characterization of it as an information society. In addition, he says (Floridi, 2002, p. 127): "The most developed post-industrial societies live fed by information"⁵. To deepen the understanding of how ICT's are changing the way individuals understand each other in the world, how they interact with each other and with their environment, we rely on the following analysis developed by (Floridi, 2013a, 2014). The philosopher proposes three fundamental aspects of the informational revolution that would have contributed to the constitution of the information society, which are: Hyper history – relative to time; ionosphere - relative to space; identity - relating to the individual.

Floridi (2013a, 2014) argues that contemporary society would be present in what he calls Hyper history. This is marked by the growth and immersion of ICT in the everyday life of individuals, of whom they have become dependent. The notion of Hyper history involves the analysis of historical eras from the concept of information and how it is handled. In this sense,

instead of considering temporality as a demarcating factor of the ages, (Floridi, 2014, p. 3, our italics) suggests that the terms prehistory, history, and Hyper history be used as adverbs: "they tell us how people live, and not when or where they live". From this perspective, ICT's acquire central role in the characterization of eras as follows: in prehistory there would be no ICT's, while in history of ICT's would be present and related to the individual and his well-being, and in hyper history the continuous use of ICT's in everyday situations (e.g., leisure, work, etc.) would constitute relationship of dependence between individual/ICT's. This relationship is strengthened, according to Floridi, from the following factors:

- Increasing the potency of ICT's, while reducing their production and marketing costs.
- Improvement of ICT's in their interaction potential (machine-machine and human machine).
- The rise of the zettabyte's era (dated 2010).

The factors indicated are responsible for the constitution of hyper history and for the approximation between people and ICT's, generating a deep relationship of dependence for the performance of routine actions in the current world. It should be noted that such analysis is only one of others possible, which we consider relevant because it provides elements that contribute to the understanding of the restructuring of the conception of the bias of the world of people, which implies, in situations that involve novelties of ethical aspect.

It is worth mentioning that the notion of space presented is not limited to physical space, since Floridi's proposal corroborates Wiener's understanding that the structure of the universe would consist of matter, energy, and information. We are referring only to digital ICT's, otherwise such a statement would not be consistent since language can be considered an ICT's of great relevance and it was already present in prehistory. In this case, specifically, the acronym ICT's can be understood in its pre-digital and digital sense.

ICT's as mediators of common actions, such as: financial movement (home banking), acquisition of products and services (virtual stores, e-commerce), personal and professional inter-relationship (via social networks such as Facebook, Twitter, or dating apps, such as Tinder), access to movies (via streaming, YouTube, Netflix, etc.), urban mobility (via app, Uber, Taxi 99), networking (using the network, via Skype, Whatsapp), physical activity (Runkeeper, for example), professional activities via SOHO (small office/home office), political organization (via websites or social networks), among others. We can also highlight situations in which there is no mediation of artifacts connected to the Internet by the individual, but that require technological mediation by the service to be requested, for example: payment by credit card for face-to-face purchases, biometric systems for the removal of books in libraries, among others (Broens; Moraes E Cordero, 2017).

In other words, actions that were previously carried out without the need of ICT's are essentially mediated by them, hardly being carried out without the use of them. In this sense, in Floridian terms, Hyper history would constitute a new era of human development. This was also responsible for structuring a new environment in which individuals interact with each other, with machines and, finally, in which machines interact with each other, sometimes without the active presence of an individual. This "new" environment is called infosphere (Floridi, 2014, p. 23). According to Floridi, in the infosphere there would be an approximation between the natures of organisms and ICT's, in which three degrees of mediation in which technologies can act stand out.

The first-order relationship concerns mediation in which technology relates organisms to nature, for example, the grave in the mediation of an animal with its food. The second-order relationship, in turn, consists in the mediation of humanity with technology through technology itself; an example is the use of the key, which mediates between the individual and a locked door. The third-order mediation relationship is constituted, when the human being is situated outside such a relationship, that is, when the relationship constitutes the "technology-technology-technology" scheme. An illustration of the third-order mediation relationship is the Internet of Things (IoT). According to (Broens, Moraes and Cordero, 2017, p. 153), IoT is a concept of computing used to describe the network formed by everyday artifacts that can connect with each other through the Internet, providing new services to users and producing a large amount of information.

According to the authors, the novelty of IoT is that such information was not created only by users who interact with the devices; they are also created by the devices themselves in a way that is not necessarily controlled by their users, allowing artifact/artifact communication without human intervention. An example of technologies that act without direct interference from humans is the badge that communicates with a sensor (wireless network) to record the frequency of the worker in the company, without the need to present the badge in a specific artifact. Faced with a context in which ICT's have the potential to generate new possibilities of action and interaction, Hyper history would carry with it a change of ontological perspective also to understand the relationship between the objects that constitute it.

In the scope of Floridian analysis, it is a materialistic ontology, in which objects, physical processes and individuals situated and incorporated play a central role in the conception of the world, for an informational ontology, in which information (immaterial) is the central element. In this perspective, the natural life forms of individuals, as well as artifacts, involve informational relationships inserted in a world of data and communication. In this context, ICT's and organisms would share the same informational ontology. Thus, the infosphere is constituted, which is characterized by (Floridi, 2014, p. 40-1) as follows:

Infosphere is a neologism coined in the 1970s. It is based on the 'biosphere', a term that refers to a limited region of our planet anchored in 'life'. It is also a concept that has rapidly evolved. Minimally, infosphere denotes the entire informational medium consisting of all informational entities, their properties, interactions, processes, and mutual relationships. It is a medium comparable to, but different from cyberspace, which is only one of its sub-regions, since the infosphere includes the offline and analog information spaces. Maximally, infosphere is a concept that can be used as a synonym for reality since it interprets it informationally. In this case, the suggestion is that what is real, is informational, and what is informational, is real. It is in this equivalence that lies the nature of some of the deepest transformations and challenging problems that we will experience soon.

The Digital Society

It will not be an exaggeration or a blatant misunderstanding, to affirm that the current society is increasingly qualified by the digital adjective, where new information and communication technologies (ICT's) have constant daily influence, configuring themselves as mediators of social relations, the economy and even the way to produce / disseminate knowledge. There are forms of knowledge absorption about users in a ubiquitous way, in which ICT's benevolent forms of surveillance (Lupton, 2015, p. 02; p. 189). Digital ICT's play a crucial role in the process of globalization, as a phenomenon characterized by the wide circulation of people, ideas, and habits, which although it has not started historically with technologies, develops at high speed through them (De Mul, 2015, p. 106).

The increasing insertion of Information and Communication Technologies (ICT's) in people's daily lives has promoted a deep dependency relationship between them. In this context, daily actions have become essentially informational, given the need for mediation for their performance.

The society digital is a complex society of technological innovation and communication, in which there is the creation of new environments and changes in the organizational dynamics of people, in the way people understand reality, changing the way they relate to the environment, with other people and how, they conceive in the face of reality itself. Both senses can be understood, as arising from the informational revolution, promoted mainly from the attempts to understand human intelligence, via computational bases.

The works developed by (Turing, 1950), had great influence in the studies of the second half of the twentieth century, including in Philosophy, mainly by its algorithmic approach to the nature of thought, in which he proposes the thesis, according to which, "thinking is calculating" (Turing, 1950, p. 436). This is that, given that digital computers operate from calculations and manipulate rules for the organization of symbols, if we consider that thinking consists, in the activity of manipulating symbols, according to a set of logical rules, constituting algorithms, then digital computers could, in principle, think. Once intelligent thinking is understood mechanically, it would be possible to construct mechanical models of the structure and dynamics of this type of thought. This understanding allowed the development of mechanical models of the mind, which initially generated two aspects in The Teixeira Cognitive Science, (1998):

- Strong Artificial Intelligence - is one in which mechanical models of the mind, when successful, not only simulate/emulate mental activities, but explain and instantiate such activities.
- Weak Artificial Intelligence – is one in which the model is only an explanatory, limited tool of intelligent mental activity.

The common point of such nodes is that both accept the thesis that to simulate is to explain, in order to attribute to mechanical models, the value of theories, in which the computer is used, as a fundamental tool. As for the social sphere, the development of studies of information theory promoted the social changes that we are currently experiencing and that have generated new types of problems, especially those that relate to action / technology / environment. Given its impact on the academic and social spheres, the approximation between Philosophy and Information Science, and the role of computers in the development of theories, theoretical production occurred concomitantly with technological improvement.

(Floridi, 2008, p. 3-4), states that during the second half of the twentieth century there were events such as: the massification of the computer, which promoted the generation of the "personal computer"; the advancement of scientific discoveries due to the use of ICT's; and the emergence of new forms of experience the world, from such technologies. These events illustrate the influence of ICT's in various areas of society (sociological, economic, scientific, and cultural), providing elements for the characterization of it, such as the information and knowledge society. Second (Floridi, 2002, p. 127): "Post-industrial societies live fed by information".

ICT's acquire a central role in the characterization of the digital society, to the extent that they are present and related to the person and their well-being, and in their continuous use in everyday situations (e.g., leisure, work, etc.). Constitution relationship of dependence, between the person and the TIC's. This relationship is strengthened, according to Floridi, from the following factors:

- Increasing the potency of ICT's, while reducing their cost of production and marketing.
- Improvement of ICT's in their interaction potential (machine-machine and man-machine).
- The rise of the zettabyte's era (dated 2010).

The factors indicated are responsible for the approximation between people and ICT's, generating a deep relationship of dependence for the performance of routine actions in today's world. This dependence is based on the digital presence, as a mediator of common actions, such as financial movement (home banking), the acquisition of products and services (virtual stores, e-commerce), personal and professional interrelationship (via social networks, such as Facebook, Twitter, or dating apps such as Tinder), access to movies (via streaming, YouTube, Netflix, etc.), urban mobility (via app, Uber, Taxi 99), making connections (using the network, via Skype, Whatsapp), the practice of physical activity (Runkeeper, for example), professional activities via SOHO (small office / home office), political organization (via websites or social networks), among others. Situations in which there is no mediation of internet-connected artefacts by the **persons**, but which require technological mediation by the service to be requested, such as: payment by credit card for face-to-face purchases, biometric systems for the removal of books in libraries, among others.

In addition to the understanding of the influence of ICT's in the constitution and alteration of people's self, the three types of self-highlighted by (Floridi, 2014, p. 60) are explained:

- **Personal Identity** - it concerns "who we are". We live in an era where people spend a great deal of time transmitting information about themselves, interacting digitally with other people, and that is a good example of how ICT is affecting and shaping people's personal identity.
- **Self-conception** - consists of "who we think we are".
- **Social self** - it concerns what we are from the thought of other people.

It is mainly this third notion of self that ICT's have deeper channel of action in the conception of people's identity, because there is a growing support and overvaluation of social networks, illustrated, for example, by the intensification of a "narcissistic culture".

The Web enhances narcissistic culture, typical of our time, by expanding the forms of self-celebration and self-promotion. Relationship sites, in turn, end up encouraging vanity and competition. [...] young people strive to show in their profiles, photos and texts that value them and promote the increase in the number of people they add as "friends". [...] This type of behavior is justified by a constant search for attention and recognition. The ease of access to information about themselves generated by third parties, promotes self-understanding from others (social self), constitutes a scenario in which people, especially those who correspond to Generation Z, feed the network, with personal information intensely.

The greatest of all changes is the transformation of the information and knowledge society into the digital society. The center of work was 'distance work - telework'. In developed country societies, access to good jobs and a professional career will increasingly depend on a university degree with distance work, anywhere, in a country, in the globalized world. That is, the logical result, since we stopped working in the office and in large urban centers, it was through intellectual work and teleworking was reached at home or elsewhere, outside the large urban centers. This last step represents a break with the past.

- The fact that knowledge and education have been a passport to the achievement of good jobs and a career has meant above all that in society, companies are no longer the only way for someone to progress in life and have become one of several opportunities available.
- Knowledge has become the capital of developed economies and knowledge workers, which determines the values and norms of society.

The great challenge for developed countries is to maintain the commitment, with the economic performance necessary for organizations and countries to continue to be competitive. Governance and entrepreneurship contain the entrepreneurial spirit. They are not antagonistic concepts, nor mutually exclusive. Both are always necessary and at the same time. Both have to be coordinated, i.e. both have to work together. No existing organization can survive without innovation and at the same time without being managed.

Conclusions and Clues to Future Investigations

We seek in this article to discuss the possibility of the Philosophy of Information (FI) being or not a Philosophy for the Knowledge Society, in the Digital Age. This name stems from the influences, those that ICT's plays in the social dynamics of people and organizations, globally, changing the way they are conceived in the world and in the way they interact with each other and with the environment. We argue that THE is constituted autonomous and legitimate discipline of Philosophy, possessing methods, theories, and problems of its own, among which are those about the relationship person / technology / action.

In the course of the article, the problems related to definitions and concepts were addressed, among others: "What is information?", "What is the nature of knowledge?", "What is the nature of mental states?", "What is possible to analyze personal identity in the light of informational perspective?", "What is the impact of ICT's on the daily action of people?", among others, which represents for Philosophy a conceptual enrichment of new problems and the development of other traditional ones.

This demonstrates the potential of the innovative paradigm of the Philosophy of Information, but it can also become a problem if it is used without a critical content: thinking that the mere description of x in informational terms would be equivalent to the description of the nature of x as genuinely informational (Floridi, 2011, p. 16). To avoid a possible loss of identity, Floridi (2011, p. 17) suggests the following criterion for demarcation of a genuine problem of the Philosophy of Information: "the informational analysis of a problem x is not in verifying whether x can be formulated in informational terms [...], but in asking what it would be like for y if it were not an informational problem". We share Floridi's perspective about Philosophy, and we also add Rafael Capurro's understanding of this topic.

As Floridi (2014, p. ix) says: "we need a Philosophy of Information, as a philosophy of our time, for our time". Capurro (2014), in turn, understands that the Philosophy of Information would be a historical response to the philosophical challenges (technological, political, economic, among others) posed by the revolution that ICT's are promoting in contemporary society. In relation to such considerations, there is the development of an ethical aspect of the Philosophy of Information, in which moral issues are analyzed, called Informational Ethics. As Quilici-Gonzalez et al (2010) argue, at first ICT may seem neutral or have only positive aspects for society, but careful examination of the possible consequences of integrating ICT's into people's daily lives can reveal transformations in social interactions and moral and ethical conduct.

There is no single conception of Informational Ethics, but a consensus according to which it is characterized, as an area that aims to reflect on moral issues related to the impacts of the insertion of new technologies in everyday life. Currently, inspired by the classical tradition of ethical studies, but recognizing their limits. The main factors responsible for the emergence of new problems, which make up the research agenda of the Philosophy of Information and Informational Ethics are: the amount of information available on the Internet, in social networks and the presence, increasingly frequently, of technologies in the daily life of people and organizations, promoting a process of tacit acceptance of ICT's (Adams et al, 2003, 2010, 2014). Tacit acceptance generates the problem of informational privacy, which is one of the central problems of Informational Ethics.

Since ICT's expand the possibility of access to information that people enter on social networks, reducing their privacy, there is also interference in the constitution of their social self, and can change their personal identity. According to Floridi (2009), once people are considered users, they are typified, they do not present an initial differentiation, thus generating a sense of anxiety. As a result, many people increasingly provide information to feed their profiles on social networks, with the hope of differentiating themselves from other users. Thus, generation Z's current design of the information available on digital platforms differs from the traditional sense of privacy.

According to Marwick et al (2010, p. 13): [...] for young people, 'privacy' is not a singular variable. Different types of information are seen, as more or less private; choosing what to keep or reveal is an intense and continuous process [...] the real distinction between 'public' and 'private' is problematic for many young people, who tend to see privacy in various nuances, conceptualizing the internet space as 'semi-public' [...] disclosing information is not necessarily a risk or problematic; this has a lot of social benefits that are typically not mentioned. In addition to the problem of privacy protection in the information context, there is also the need to rethink this concept due to the social changes promoted by ICT's in the Knowledge Society.

Another notion that has been put under discussion due to technological development is that of humanity, with the project of Transhumanism. According to Nick Bostrom (2005), this project aims to improve the human, in his condition and essence, due to the opportunities that arise with technological advances. This advance in relation to existing technologies and those that may come to exist with Engineering, Artificial Intelligence, Nanotechnology, among others.

Improvement means the eradication of diseases and suffering, improvements in cognitive abilities (e.g., intelligence, emotions, and the search for superintelligence), etc., Bostrom (2005, p. 3-4). The scope of Transhumanism is not limited to artifacts or remedies, but encompasses economic, social and institutional aspects, cultural development, and psychological skills and techniques [...] Transhumanists conceive of human nature as a work-in-progress, to an immature beginning that we can learn to reshape according to the desired paths. Today's humanity does not have to be the final stage of evolution.

The development of the Transhumanist project may culminate in what is meant by Singularity, which has as precursor and central defender Ray Kurzweil (2006). The notion of Singularity concerns the time when humans and machines will be amalgamated with each other, in an environment in which such machines would be smarter than humans. Yudkowsky (1996) explains the process towards Singularity as follows: "Computers double their speeds every two years of subjective work. Two years after these artificial intelligences reach the human, their speeds double. A year later, its speeds double again. Six months - three months - 1.5 months [...] Singularity'.

Chalmers (2010) analyzes Singularity in two practical perspectives – in which Singularity would bring profound changes on the planet (pros: end of poverty, extraordinary scientific advances; against: potential to destroy the planet, end of humans) – and philosophical – in which it would be necessary to rethink the nature of intelligence, and the potential risks of developing artificial systems with great intelligence potential, which could involve issues of moral values.

Projects such as Transhumanism involve research on the manipulation of genetic, behavioral, and social information, and have gained ground in universities and industries, including war (such as drone construction). We understand that the discussion about the transformations that contemporary society has undergone because of the development and dissemination of ICT will justify the analysis of the existence and/or legitimacy of a Philosophy of Information, as an area of autonomous research in Philosophy.

Second, the elements indicated reveal the potential of the Philosophy of Information for the analysis of the dynamics of people and organizations today. Although it deals with conceptual and philosophical-scientific problems, the Philosophy of Information has a branch of research to deal with issues of a moral nature, Informational Ethics. Thus, the impacts of the informational turn in the academic and social spheres are illustrated.

Key Terms and Definitions

Date: The data does not carry any sense or meaning of the facts, images or sounds, since they lack relational elements essential to the establishment of a complete meaning, requiring a relational structure internal to a cognitive purpose.

Information: The information as "data with value for decision making". The description of this concept refers to the effect that information, such as reduction of uncertainty, we consider, as an example of how to process information.

Knowledge: The information can be considered as a "substance" which can be acquired, stored, and possessed by a person or group and transmitted from person to person or from group to group. The information has certain stability and perhaps is better faced as existing at the society level.

Ethics: According to (Du Mont, 1991), ethics aims to establish principles of human behavior that help people choose alternative forms of action. These considerations lead to the definitions of ethics and morals, instigating us to refer to deontology as the study of codes or ethics of professions. (Targino, 2006, p. 135) states that definitions of ethics originate from the "Greek term ethos, as etymology suggests, is the part of philosophy that deals with reflection on customs, encompassing the guidelines". While the moral "term of Latin mores concerns the acts and customs per se, that is, the set of objective norms of conduct, changeable in time and space".

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