

## Does Digital Truth correspond to Human Truth in the Digital Society (from Theory to Practice)?

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**ABSTRACT** :It seeks to create a space for debate and reflection on the problem of the phenomenon of digital truth, as well as the existing criteria on human truth, in the Information and Knowledge Society, historically constructed and interrelated with disinformation and, as these same concepts will be transported/adapted and adopted, by the Digital Society. This phenomenon poses new questions to Information Science, since it represents a new informational reality, in the literature and epistemological discussion, of Information Science

The exploratory character occurs with the transition phase of the model of society and cognitive development, through an epistemological reflection of the concept of truth. It is understood that it is problematic to think about whether or not the same criteria will be adopted by the Digital Society. However, there is information that is closer to these criteria than others, depending a lot on technological sources, purpose, knowledge and above all the ethics of those who feed/write and use information, in digital technology.

In addition, it is perceived that adults who did not have access to the education process, about the use/use of technologies, tend to believe more in *fake news*. The Digital Society poses great challenges to the (Global) Human Society, among others, the debate on the definition of the concept of digital truth, because the human being is part of a whole, which we call the universe, in time and space. The term digital truth is approached from the discussion about the criteria and responsibility of citizens in the feeding and use of information.

We do not intend to deal exhaustively with this theme, because it is broad and complex for the space of a text, and we do not even know if we can deal with it without incurring in generalizations. Our intentions, which are much more modest, refer to documentary research for the understanding and development of truth in the Digital Society and some of its multiple relationships.

**KEYWORDS:** *Information, Human Truth, Digital Truth, Not Truth, Digital Society.*

### I. INTRODUCTION

Digital truth is a concept that has been little talked about. But digital truth has been used a lot, mixed with non-truth, especially on social networks, without knowing which is true information and which is untrue information, that is, true and untrue information, circulate simultaneously, in digital media.

Digital truth and non-truth has intensified in the fields of computer science, political science, health sciences, among others, and there is a wide range of use, so there are many inaccuracies and confusions regarding its meaning, especially in decision-making. Digital truth and digital non-truth are not the same concept, nor do they correspond to the same phenomenon – in fact, the wide dissemination of false information, especially on social networks and in the digital press, is first and foremost a component element of a reality greater than what human truth intends to encompass.

Other times the digital truth is considered as something "useless", since the "lie" has always existed, as if it were a new name for an old phenomenon. In fact, lies have always existed, but there is a new fact, a recent phenomenon, with which the sciences have to worry, especially Information Science, since Data Science is not concerned with this phenomenon.

In the midst of these scientific concerns, all the efforts and all the scientific production already published, can understand the phenomenon of digital truth and develop practical ways to combat the phenomenon of digital non-truth (fake news), so it is a challenge for Information Science.

World humanity is living in times of uncertainty, of great conflicts (local, regional and global), affecting various aspects of society in human relations, as a process of configuration of the Digital Society. In this phase, information and technology play a fundamental role, opening space for new global (global) references, as a way to guide global human relations. It is in this sense that knowledge, digital truth, ethics and deontology find relevance in the new scenario of the Digital Society.

Faced with this challenge, there is a need to define the concept of digital truth in digital social communication, not only for the use of scientific research, but above all, in the search for new knowledge of human conduct.

The concern with the issue of digital truth stems from the perception and criticism that there is a need to universalize concepts and practices that improve the relationship between humans, regardless of the space and place where they live, that is, to move from illusion, to the time of reason and practical results, for the social and economic well-being of the world population.

Universal digital truth is a human action, practiced by conscience, in decision-making (acting), with respect for human dignity and that leads the world's human beings to have harmony, peace, security and social and economic well-being, in the digital society. All decision-making is guided by human thought and emotions. Negative (not truths), unethical (misconduct) thoughts give rise to decision-making that results in the most undesirable things in which man lives. In today's world, conflicts and wars, (human life is "cannon fodder"), are the result of the actions of humans (men and women), when they do not understand the true relationship between these aspects:

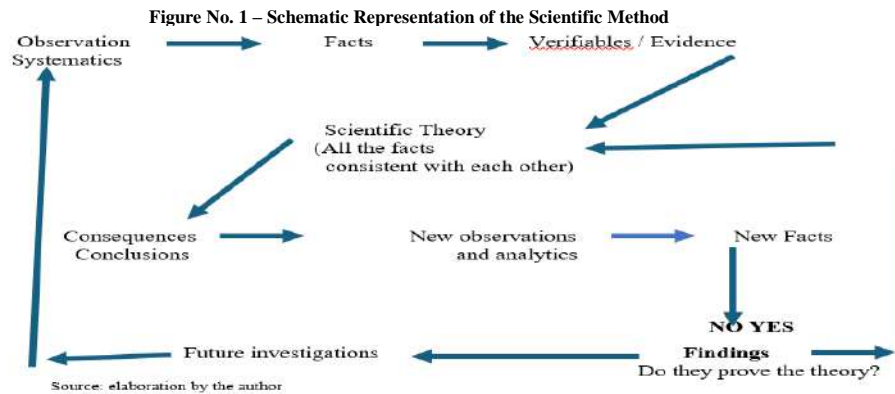
- Digital truth.
- Thoughts and emotions.
- Decision making (decide - act - actions).
- Resulting consequences, which are harmony, peace, social and economic well-being or pain (suffering, conflicts and wars).

Human beings may aspire to peace and social and economic well-being, but they are always guided by a set of thoughts and emotions. To do so, they need to have adequate knowledge of what human consciousness is (common sense), the truth, as well as the mechanisms by which these thoughts and types of consciousness guide their actions and make them achieve the desired results and abandon mentalities that deteriorate these results. That is, the truth that lies behind conscience and common sense.

### II. Scientific Method

This is an exploratory study that reflects and debates the main challenges of Information Science related to truth in the Digital Society. It is not a proposal for new terms, but a common definition of them, among the different concepts already indicated in the literature, in a way that enables their identity, application, use and pertinence, in the context in which the terms and concepts are inserted. The data collection is characterized by bibliographic research, on terms and concepts, referring to the different scientific fields.

It is a descriptive and analytical approach seeking to know and analyze the existing cultural and/or scientific contributions on this topic, based on the literature review. The research was structured based on the systemic approach to understanding the main challenges that citizens face in the Digital Society, seeking in practical, operational or application terms, the solution of real-life problems of organizations (public and private) and people.



#### Research Theme and Problem

**The Digital Society** allows the relationship and communication between people (1 to 1 and 1 to N), and as such Information Science has a great challenge about digital truth and non-truth. The problem is the distinction between true and untrue information that circulates between digital communications.

With the sophistication of new technologies, information is transformed into data that circulates through technology and these then become information (true or not true), which allows people to use information, in terms of leisure and decision-making, that is, true information is mixed with untrue information. This situation poses dilemmas to people in individual and organizational terms, in decision-making, to solve complex and simple problems, based on the truth of the facts.

Issues:

- I. What is digital truth?
- II. Are human truth and digital truth the same thing?
- III. Is it possible to distinguish digital truth from digital non-truth in the Digital Society?
- IV. What are the criteria that distinguish digital truth from digital non-truth in the Digital Society?

Goals

Information Science seeks the solution to the challenges of digital truth and non-truth, in the Digital Society, that is, to define in terms of concept, which criteria characterize digital truth and distinguish it from digital non-truth. Digital or non-digital information is a multidisciplinary field of study that covers several areas of knowledge and represents a historical milestone, in its interdisciplinary approach that involves the contribution of various areas of human knowledge, such as Information Science, Human Sciences, Social Sciences, etc., provide the theoretical foundations for the modeling and analysis of the universal principles and characteristics of digital information (true or non-true).

This article seeks to contribute to the clarification of the main challenges that people face in the Digital Society (global), taking into account the great complexity and turbulence in which the current world lives, as well as the importance of what criteria and characteristics distinguish digital information from non-true digital information. related to the decisions of the different powers and their meanings, within the scope of the different sciences, from a theoretical framework. The objective is a reflection and debate on the challenges identified by scientific research, developed by Information Science, in the Digital Society. The theoretical discussion of the concepts and meanings of empirical research constitute the basis for the outline of its structure, presented at the end, bringing together their universalization.

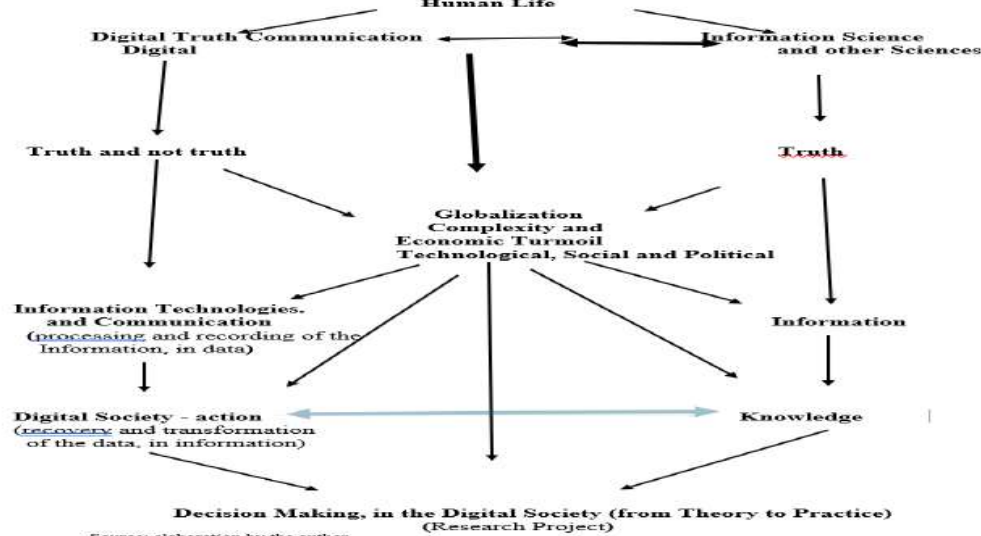
#### Methodological Approach

As for its nature, the research is qualitative, since it does not privilege statistical study. Its focus is on obtaining descriptive data, related to digital truth and digital non-truth, in Information Science, Humanities, Ethics, Social, Economic, Philosophical and Political Sciences, as well as other Sciences. With regard to the extremities, the research is exploratory and descriptive in nature, as the technique used is categorized, consensually, as a study of direct documentation, which provides for the consultation of sources related to the study, in different *media*, printed or electronic. The complexity and turbulence of the digital society have led to the globalization of research, as essential processes for the development and innovation of sciences and technologies. Information is the source of energy that drives the "engines" of the Digital Society, but in order to be able to use it we need to convert it into a usable form : **knowledge**, (Murteira, 2001).

The digital society is a complex society of technological innovation and communication, in which new environments are created and changes occur in the dynamics of people, in the way they understand reality, modifying the form, how they relate to each other and how they conceive themselves in the face of reality itself. Both meanings can be understood, as they result from the technological revolution, promoted, mainly, from the attempts to understand human intelligence, via computational bases. As a consequence, the pre-modern notion of information, as the *in-formation* that shapes or shapes the human mind, is gradually being replaced by information, as "data structure", Boland, (1987), representing intangible realities, too large to be experienced directly by people's senses.

The research method is likely to make meanings 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 the organization of research. This is an exploratory study that seeks to clarify and organize the concepts presented in the literature of the different sciences. It is necessary to understand, through a theoretical review of the concepts, through the reference documents, a psychosocial analysis of the concepts and meanings, applied to the Digital Society, in the context of people's social and economic life. The research was structured based on the systemic approach, to understand people's problems and possible improvements. This conceptual model is represented as follows:

Figure 2 – Human Truth versus Digital Truth in the Digital Society (from Theory to Practice)



Source: elaboration by the author

The model approach for intervention in information actions, in the academic space, with the purpose of production, sharing of information and knowledge, among participants, in addition to promoting the development of skills of search, retrieval, organization, appropriation, production and dissemination of relevant and true information for scientific researchers, in the digital society, is presented.

### III. THEORETICAL-METHODOLOGICAL FRAMEWORK OF THE RESEARCH

#### 3.1 Philosophical Sciences

Considering philosophical practice, 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 capable of facing, perhaps even formulating, the problems raised by ICTs.

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

- The critical investigation of the conceptual nature and basic principles of information, including its dynamics, use and sciences; and refers to IF, as a new area of research in Philosophy, guided by the investigation of the content of information and not only in its form, quantity and probability of occurrence (thus differing from the proposal of Shannon & Weaver, (1949/1998). It is important to emphasize that the IF 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.
- The characterization, in turn, indicates, according to Floridi, (2011, p. 15-16), that the IF has its own methods for analyzing philosophical, traditional and new problems. These methods have information as their central element, are interdisciplinary in nature and maintain the relationship with computational methods, in addition to 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, IF 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 is the possibilities of interaction provided by ICTs which, depending on the degree of familiarity of people with such technologies, promote a feeling of dependence on being online. In addition, even if people do not want to be online most of the time, such a feeling remains, due to the dissemination of informational 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 ICTs in society for people's daily action?

Considering (a) and (b), Floridi, (2002, 2011), argues that IF constitutes a new paradigm and an autonomous area of investigation in Philosophy. It is characterized as a new paradigm, as 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 IF, on the other hand, would be sustained by the presence of its own topics (problems, phenomena), methods (techniques, approaches) and theories (hypotheses, explanations), according to other areas already recognized, such as legitimately philosophical, Floridi, (2002, 2011); Adams & Moraes, (2014).

#### Information what is it?

Among the topics of IF, 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 FI and delimits its scope of investigation, Floridi, (2011). The importance of this issue is also due to the fact that there is no consensus among scholars in their proposals.

Since the "informational turn in Philosophy", several conceptions of information have been developed in an attempt to respond to concerns about the ontological and epistemological status of information. Although Adams (2003) indicates the milestone of the informational turn in Philosophy with the publication of Turing's article (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 it." In addition, for this author, information would be a third constituent element of the world, along with matter and energy, and is not 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, which can be understood objectively.
- Dretske, (1981): information is understood as a commodity that exists objectively in the world, independent of a conscious mind of the first person who captures it. The information would constitute an indicator of the 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 plane, objectively, and the theorists of Physics, in turn, would have to expand their vocabulary and admit *infons* (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 datum, with meaning and truth». Well-formed and meaningful data that refers to the intrinsic relationship that the data would need to have in relation to the choice of system, code, or language in question. These would have their aspect of "true" and "truth" related to the adequate supply of the contents, to which they refer in the world.
- Gonzalez, (2014): conceives of information as an organizing process of dispositional (counter-factual) relations that bring together properties attributable to material/immaterial objects, structures or forms) in specific contexts.

#### Information and Truth

Although the concepts of information are different, there is a naturalistic stance in relation to the object aspect of the information. In addition, proposals such as those of 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 "rubber ducks are types of ducks". Since the information cannot be false, the information would be true, as well as its source. This source can be interpreted as the world itself, making it possible to deal with another problem of IF, that is: 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 cognitive

and the world. For Dretske (1981, p. 56), the information processors of the sensory systems of organisms are channels for receiving information about the external world.

The naturalistic stance of Philosophy consists of disregarding the supernatural, in the explanation of nature and mind, conceiving reality constituted only by natural elements and laws, which are explained through scientific methods. The term "natural" encompasses other terms such as "physical", "biological" or "informational" that express a rejection of transcendent assumptions in the foundation of knowledge, Moraes, (2014). According to Adams, (2010), knowledge acquires its properties from its informational base; Thus, if someone 'knows that P' it is because he is told 'that P'. In such a relationship, knowledge is about the world, about truth, constituting the bridge between the cognitive agent and the world.

The problems of the ontological and epistemological nature of information, and the nature of knowledge, are part of the IF's research agenda the following questions: "what is meaning?", "what is the relationship between mental states and informational states?", "can reality be reduced to informational terms?", "can information support an ethical theory?", among others. Having presented the topics (problems) and theories (hypotheses and explanations) of IF, 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, in particular, by the informational turn). The "synthetic method of analysis" is the result of Turing's hypothesis (1950), according to which the study of the mind is appropriate when carried out from the use of mechanical functions that could be manipulated by digital computers, Gonzalez, (2005), Floridi, (2012). By means of such functions it would be possible to construct mechanical models of the structure and dynamics of intelligent thought. The understanding that underlies this conception is that **the ability to manipulate information, in a mechanical way, constitutes thinking.**

This understanding enabled the development of mechanical models of the mind, which initially generated two strands 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 notions is that both accept the thesis that to simulate is to explain, in order to attribute to mechanical models, the value of theories.

#### Relationship between information and thought

The "levels of abstraction", in turn, derive from Turing's algorithmic approach, which is summarized 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. Likewise, they cannot occur in any context, without any purpose, or independent of any perspective. According to this perspective, a philosophical question is analyzed, considering its context and purpose, which delimit the field of possible answers.

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

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

As we have 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 IF, as an autonomous and interdisciplinary area of Philosophy: due to its relationship with Computing, Sociology, Engineering, among other areas, generating methods and theories to deal with its problems; and autonomous, depending on its own (and new) problems. With the development of the academic scope of IF, the influence in the social sphere is also highlighted, illustrated by the growing presence of ICTs in the daily lives of people and organizations. Such presence would be influencing the dynamics of contemporary society, constituting the "Information Society / Digital Society".

### 3.2 Information Science

It is difficult to pinpoint the emergence of a new science, even when it is a recent scientific discipline, as is the case of Information Science. However, Foskett (1969) and Ingwersen (1992) point to 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 the specialized libraries (in industries and other organizations). According to Meadows (1990), the discipline underwent a marked development after the Second World War, due to the emergence of the Mathematical Theory of Information, described by Shannon and Weaver, in the late 40s. This theory has been 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, which occurred around 1450, whose effects became more evident after the 2nd world war.

His contribution to the development of Information Science was small, but important for the history of the area, as it attracted attention to two needs. The first to clearly define the nature of the information that people cared about, and the second to define the conceptual framework to be applied in the organization of that type of information. According to (Dias, 2002), it is a consensus among authors in the area that information science emerged in the middle of the twentieth century. According to Pinheiro & Loureiro (1995), Norbert Wiener in 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 information science. Also according to the authors, it is in the 60s that the first concepts and definitions are elaborated, and the debate on the origin and theoretical foundations of the new area of knowledge begins" (Pinheiro & Loureiro, 1995, p. 42). The authors point out several facts that occurred in the 60s that meant the true milestones of the formation of a new disciplinary field:

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

Borko (1968) defined 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 is related 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 applied science component that develops services and products [...]. For Goffman (1970) the objective 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 human beings. Consequently, the subject must be related to the establishment of a set of fundamental principles that govern the behavior of the entire communication process and its associated information systems.

Griffith (1980) proposed a similar definition that establishes 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, knowledge and knowledge records, between human beings, in the social, institutional or individual context, of the use and needs of information. In dealing with these issues, the advantages of modern Information and Communication Technologies (ICTs) are considered of particular interest.

Information Science was born after the Second World War, to solve a major problem, which was also the great concern, both of Documentation and of Information Retrieval, which is to gather, organize and make accessible the cultural, scientific and technological knowledge produced throughout the world. Information science is a recent science and was born from the exact sciences, that is, seeking to achieve exact knowledge from the inspiration of mathematical and quantitative models. Bronowski, (1977, p. 47), based on objectivity, sought to formulate universal laws of the "behavior" of information. Strongly influenced by the empirical sciences, it 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 enters the scene who redirects the focus of information science: "man (decision-maker) and as such the human and social sciences also begin to contribute with their methods and practices to the composition of this emerging science", Cardoso, (1996: 73-74). Initially very connected to computing and automatic information retrieval. According to González de Gomez, (2000, p. 6), from the 1970s onwards, he effectively inscribed himself in the social sciences, as a "symptom of the ongoing changes that would affect the production and direction of knowledge in the West", González de Gomez, (2000, p. 2). It is from this decade onwards that we can refer to the "social foundations of information". However, some relevant questions, if we are asked right now, what is the branch of science to which information science is most close? What are the theories, concepts and methods that feed information science?

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

The subjectivity of information becomes fundamental for understanding the different planes of reality and the distinction, between the different forms of knowledge and mechanisms, of their 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 field of information science studies, such as the *sensemaking approach* inaugurated by Dervin, Atwood & Palmour, the studies of MacMullin & Taylor on the values of people, the studies of a cognitive nature inspired by the theory of Maturana & Varela, 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 the studies of bibliometrics and scientific communication and the contributions of Foucault's Archaeology of Knowledge and the Sociology of Science (Latour, Knorr-Cetina, among others).

Information Science is a discipline that has a very broad field of practices, but it does not yet have a defined theoretical field as is the case with other areas of knowledge, such as Linguistics, Anthropology and others. He has not yet arrived at a theoretical construction that integrates all his concepts and practices. That is why it operates based on more or less fragmented theoretical constructions, for example, the Representation of Information would be one construct, among another, 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 itself from elements "borrowed" among others, by mathematics, physics, biology, psychology, sociology, anthropology, semiology, and communication theory 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 to new stages of dialogue and insertion in the social sciences. Reflection on the evolution of information science, its relations with the social sciences and as a model of science as a whole, is fundamental for research to continue and to incorporate all the knowledge accumulated in this process. Since scientific investigation is one of the main ways for the formulation of theories in an area, what can be seen is that research in Information Science has been consolidating itself over the last decades and opening new horizons of discussions. Great contribution has been made by professors and researchers in the various international universities.

It can be seen that some important steps have been taken in order to theoretically strengthen the area of Information Science and that research is expanding and has a Scientific Community that over the years has been consolidating internationally. There are many and different challenges that are presented today for Information Science. As an applied science, it needs to respond to society's demand for information and, as an object of research, to the fundamental conceptual needs 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 with other Sciences

Interdisciplinary can be understood as "dialogue between the fields of knowledge", in the words of Japiassu (1976), or "mutual appropriation of methodologies, principles, theories, concepts and constructions between two or more areas of knowledge", Pinho, (2004). For Klein (2004), the concept of interdisciplinarity is linked to complexity. The convergence between these two ideas has significant implications for understanding the nature of knowledge, for solving scientific problems, and for the dialogue between science and humanity. According to Klein (2004), the nature of complex systems provides a comprehensive rationality for interdisciplinary studies, unifies apparently divergent approaches, and serves as a criterion to direct the integration process.

The ultimate goal of interdisciplinary research comprises the portion of the world shaped by a complex system. Interdisciplinarity is characterized by the exchange of knowledge, the transformation of areas of knowledge and the sharing of objectives. Interdisciplinary is not a simple appropriation of concepts, theories and methods from one area of knowledge to another, it only materializes from the concrete dialogue between different areas of knowledge. Effective interdisciplinarity is that which is updated in the field of theoretical abstractions, establishing methodologies, but also interventions that promote different areas of knowledge in the social, Gomes, (2001). According to Klein (2004), the interdisciplinary approach stems from the need to understand complex objects, which constitute a single area of specialization and would be unable to deal with adequate coverage. Among these, the phenomena of the explosion of information and cultural diversity, social and technological problems, multifaceted concepts such as "body", "mind" and "life" are mentioned. A significant number of areas of multi or interdisciplinary knowledge have been developed since the mid-twentieth century, and among them is information science.

#### Information Science and Ethics

The concern with ethical principles and moral values spreads with globalization and makes us reflect on a society with social responsibilities. According to Sá (2007), the word ethics is sometimes understood in the sense of morality, but not always in an adequate way. It has also been understood as a science of human conduct towards the being and its fellow human beings, to study the action of men and their considerations of value. For Du Mont (1991), ethics aims to establish the principles of behavior that help people to choose alternative forms of action. These considerations lead us to the definitions of ethics and morals, instigating us to refer to deontology, such as the study of codes or ethics of professions.

Targino (2006, p. 135) tells us that the definitions of ethics originate from the "Greek term *ethos*, as the etymology suggests, that is, it is the part of philosophy that deals with reflection on customs and actions". As a moral "term from the Latin *mores* refers to acts and customs *per se*, that is, to the set of objective norms of conduct, changeable, in time and space". According to Targino (2006, p.135) ethics "comes from the Greek *deontos*, it is duty; *logos*, discourse or treatise, etymologically equivalent to a treatise or science of duty, and designating the doctrinal precepts related to the various professions", highlighting ethical action in the context of society and, mainly, with regard to its social responsibility.

The confirmation of right or wrong is usually determined by legislation, although not all situations can be included in such codes, since laws are designed for the well-being of society and change over time, in the social groups and locations in which these groups live. Therefore, the social being establishes ethical or unethical actions. From birth, human beings begin to live in social groups, which get involved and go through a process of exchange of knowledge, habits and customs, allowing their moral growth. Thus, Du Mont (1991) says that the basic components of an ethical system are the values accumulated by the individual, the group or society.

Ethical or unethical procedures start from human coexistence and raise ethical questions and discussions, bring paradigm shifts and make us rethink the actions of our daily lives. People, regardless of social origins or groups, live according to the ethical aspects disseminated in society. Among the groups that disseminate these concepts, we mention the family, the school, the church, the favorite club, the university, friends, the political party, among others. Living with these institutions is important, because it is through them that individuals accumulate unique experiences, enriching their knowledge, Targino, (2006).

Ethics is related to the incorporation of moral standards in the conduct of people involved in the dissemination of information, aiming to guide their actions. According to Camargo (1999, p. 31), "professional ethics is the application of general ethics in the field of professional activities", since the professional incorporates his own principles and values to experience them in his professional activities. It is through the profession that people are able to fully realize themselves, exercising theirs: capacities, skills, wisdom and intelligence, affirming their personality, raising their morale, being able to be useful to the community and to elevate and stand out in it.

The concern with ethics and social values leads us to reflect on social responsibilities in institutions, companies and social groups. For Du Mont (1991), social responsibility is an ethical concept that involves notions of change, of how human needs should be satisfied. In addition, the author emphasizes the interest in the social dimensions of the information service, which has to do with improving the quality of life. Social responsibility gained greater prominence from the 90s onwards, with a greater influence of society, the media, in the organizational world. According to Cajazeiras, (2006, p. 13) social responsibility was often confused with "welfare" (donations) and for this reason he proposed "another conception of social responsibility" that stems from industrial advances, globalization and the intense flow of information and technology with immediate prestige, causing degradation of the quality of life, intensification of environmental problems and precariousness of labor relations.

According to Pedro Anunciação, (2012), "The relationship between ethics and information is closely associated with its usefulness, value and respective enjoyment. Information is only economically and socially relevant if it is useful, that is, if there is the ability to interpret, understand and use it. This means that whenever conditions are created for the change in the patterns of interpretation or valuation, one is or may be influencing the conduct or behavior of the receiver and, consequently, entering the ethical domain of information". According to the same author, "Information, when transmitting to people something they do not know, involves the reception and communication of intelligence and knowledge. It is the information recognized as valid, accepted and related to certain contexts that should serve as support for the generation of knowledge, decision and consequent action. The ability to screen, combine and interpret allows the development of skills related to use, responsibility in use and innovation".

#### Information Science and Human Cognition

According to Saracevic, (1996, p. 16), in the 60s information science was concerned with the properties of information and with the "forces" that managed its flows and the means to facilitate its use, that is, it tried to formalize "...the properties of information by applying information theory, decision theory, and other

constructs of cognitive science, logic, and/or philosophy." According to Lima, (2008, p. 78) information science studies have focused on the processes of information communication. From the years management was included and in the 90s studies focused on the use/needs of information by people and organizations.80 a

In understanding the informational phenomenon there are multiple perspectives in understanding it and it operates with language. According to Saracevic, (1996), information science is "a field dedicated to scientific issues and professional practices focused on the problems of the effective communication of knowledge and its records among human beings, in the social, institutional or individual context, of the use and needs of information. Among the various functions is that of intellectually describing information."

Capurro, (1991, p. 3-4), states that "human beings are biological processors of information. Information is a doubly encoded reality... Information science aims to study information itself, that is, to contribute to its analysis and construction and that it proposes to establish a consistent scientific approach to the study of the various phenomena that surround the notion of information, whether they are found in biological processes, in human existence, or in machines".

#### Understanding the Human Mind

Cognitive science is an area of interdisciplinary studies that, among others, is related to cognitive psychology, computer science, neurosciences and Linguistics, Lima, (2003). According to the same author, the research developed on human cognition has sought to apprehend the way people think, interpret and perceive the world. Studies on the nature and cognitive development of human beings are focused on four main theories of cognitive development:

- ✓ Piaget's - "human cognition is a form of biological adaptation in which knowledge is built little by little from the development of cognitive structures that are organized according to the stages of development of intelligence. Thus, cognitive development is linked to the processes of assimilation and accommodation that promote balance that varies according to age" Flavell; Miller, P.H.; Miller, S.A., (1999); Sternberg, (2000).
- ✓ The neopiagetians - "emphasize cognitive skills, such as processing and coordinating elements that enable the differentiation of information in the determination of subjectives to achieve a goal. In addition, they include the concept of mediation and interaction in problem solving".
- ✓ Vygotsky's (1998) - "knowledge is built during interactions between individuals in society, triggering learning. Thus, the mediation process is established when two or more people cooperate in an activity". Flavell, (1979); Miller, P.H.; Miller, S.A. (1999).

Information processing research encompasses text comprehension, i.e., cognitive activity that involves perception, memory, inference, and deduction. The comprehension of the text occurs from the knowledge of the world and of various types of text, requiring semantic awareness. According to Sternberg, (2000) the processing of text in memory occurs in the following way and sequence: 1st there is the perception of graphic representation; then the translation of letters into sounds and the chaining of these sounds into a word, being necessary to master the lexical processes that are used to identify letters and words and activate the relevant information in memory about these words.

According to Sternberg, (2000); Koch; Travaglia, (2001) the process of comprehension involves semantic coding, the acquisition of new vocabulary, the creation of mental models and the comprehension of the ideas of the text. Semantic coding is the process by which sensory information is translated into words. Vocabulary acquisition adds to the existing vocabulary of new meaningful terms. Mental models are a set of propositions that can lead to more than one mental model and simulate the reality that surrounds us, Johnson-Laird, (1983).

According to Eysenck and Keane, (1994) and Seterberg, (2000), among others, the most used mental models are the following:

- Schemas – are cognitive structures related to a set of knowledge stored in temporal or causal sequence, in which the sets of characteristics of the objects and beings that surround us are maintained. For example: procedures to make a piece of equipment, mobile phone, etc., work;
- Plans – are a set of knowledge on how to act to achieve certain goals. For example: how to win a chess game;
- Scripts – are stereotyped and predetermined actions applied to defined situations. For example, the script applied, when we go to the cinema or a restaurant;
- Superstructures or textual schemes – a set of knowledge acquired as we read different types of texts and correlate them.

When we read a text, we try to keep as much information as possible in our memory for the comprehension of the text. We do not seek to store the exact words, but rather to try to extract the ideas from a group of words, to store them in order to try to retrieve them later.

Authors such as Kintsch and Van Dijk, (1983), in the information processing model, also included the model of production through analysis and synthesis, called situational model, that is, a model common to all readers. They affirm that essential thematic propositions last longer in the memory of those that are considered less important. According to Jacob and Shaw (1998), from the cognitive point of view of information science it implies that each act (preceptive or symbolic) of information processing is mediated by a system of categories and concepts which, for the information processing mechanism, constitute a model of the world, that is, all actions performed involve cognitive activities.

#### Information Science and Knowledge

Although the terms information and knowledge are used very often, they are not the same thing. Information is not the same thing as data, although the two words are often confused, so it is understood that the subtle distinction between these concepts is essential. Data do not carry the meaning or significance of facts, images or sounds, since they lack relational elements indispensable to the establishment of a complete meaning, lacking an internal relational structure for a cognitive purpose. This structure is one of the attributes of information. Data is transformed into information when its creator adds meaning to them, Davenport and Prusak, (1998).

The concept of **information** can be understood from very different perspectives. Information is an object created by man, with the purpose of representing an event identifiable by him in the real world, integrating and relating a set of records or data, [Le Moigne, 1979, Steven Alter, 1992]. It is the difference that makes the difference [Bateson, 1972].

#### In terms of equation: Information = data + meaning

When a person internalizes information to the point of being able to use it, we call it **knowledge** [Zikmund, 2000]. This is a fluid blend of experiences, values, contextual information and expert insight, structured that provides a framework for evaluating and incorporating new experiences and information. In organizations, it is found not only in documents and reports, but also in organizational routines, processes, practices, and standards. Knowledge originates from 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 requires someone to triage, combine and interpret the information. Information can be considered as a "*substance*" that can be acquired, stored and possessed by a person or a group and transmitted from person to person or from group to group. Information has a certain stability and is perhaps better seen as existing at the level of society [Davenport and Prusak, 1998].

#### Knowledge = Internalized information + ability to use it

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 structures of information to a new context. New contexts imply change - action, dynamism. Knowledge cannot be shared, although technique and information components can be shared. When a person internalizes information to the point of being able to use it, we call it knowledge Zikmund, (2000). This is a fluid blend of experiences, values, contextual information and expert insight, structured that provides a framework for evaluating and incorporating new experiences and information. In organizations, it is found not only in documents and reports, but also in organizational routines, processes, practices, and standards. Knowledge originates from 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 requires someone to filter, combine and interpret information. Information can be considered as a "*substance*" that can be acquired, stored and possessed by a person or a group and transmitted from person to person or from group to group. Information has a certain stability and is perhaps better seen, as it exists at the level of society, Davenport and Prusak, (1998). Although we can store it using various physical supports, the information itself is not physical, but abstract and not purely mental. Knowledge is stored in people's memory, but information is out there in the world. Whatever it is, it exists somewhere between the physical world around people and the mental world of human thoughts. Knowledge = Internalized information + ability to use it in new situations.

Knowledge is fundamentally and intrinsically found within people. These are much 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, Davenport and Prusak, (1998). Knowledge has a fundamental duality: it is something that can be stored (at least sometimes we intend to do so) and something that flows (something that is communicated from person to person). It is possibly the duality of knowledge (thing that flows and the process of storage) that makes it difficult to treat and manage. According to Dahlberg, (2006), knowledge is organized into units of knowledge (concepts) according to their 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 such domain that will be used for the organization of information about that domain of knowledge.

### 3.3 Computer Science

#### Evolution

Before the 1920s, *computer* was a term associated with people who performed calculations, usually led by physicists. Thousands of computers were employed in projects in commerce, government, and research sites. After the 1920s, the term *computational machine* began to be used to refer to any machine that performed the work of a professional, especially those according to the methods of the [Church-Turing Thesis \(1936\)](#).

The term *computational machine* ended up losing ground to the reduced term *computer* in the late 1940s, with digital machines becoming more and more widespread. [Alan Turing](#), known as the father of Computer Science, invented the [Turing Machine](#), which later evolved into the modern computer.

Computer Science studies computational techniques, methodologies and "instruments" as well as their technological applications, which computerize processes and develop solutions for processing input and output data in the computer, that is, not restricted only to the study of algorithms, their applications and implementation in the form of software. They also cover data modeling techniques and database management, involving telecommunications and the respective communication protocols. Computer Science also deals with the theoretical foundations of information, computation, and practical techniques for their applications.

As a science, it is classified as an exact science, despite inheriting elements of Aristotelian philosophical logic, and therefore has an important role in the mathematical formalization of algorithms, as a way of representing problems that are susceptible to reduction to basic elementary operations, capable of being reproduced through any device capable of storing and manipulating data. One of these devices is the [digital computer](#), which is widely used today. Also of fundamental importance for the area of Computer Science are the methodologies and techniques related to the implementation of software that address the specification, modeling, coding, testing and evaluation of software systems.

Studies from Computer Science can be applied in any area of [human knowledge](#) in which it is possible to define methods of solving problems, based on previously observed repetitions. Recent advances in Computer Science have had a strong impact on contemporary society, in particular applications related to the areas of computer networks, Internet, Web, data science and mobile computing, which have been used worldwide by people.

#### Mathematical Foundations

The mathematical foundations of Computer Science began to be defined by [Kurt Gödel](#), (1931), with his [incompleteness theorem](#). This theory shows that there are limits to what can be proven or not in a formal system; this led to later work by Gödel and other theorists to define and describe such formal systems, including concepts such as [recursion](#) and [lambda calculus](#).

In 1936 [Alan Turing](#) and [Alonzo Church](#) introduced the formalization of an algorithm, defining the limits of what can be a computer and a purely mechanical model for computing. Such topics are addressed in what is now called the [Church-Turing Thesis](#), a hypothesis about the nature of mechanical calculating devices. This thesis defines that any possible calculation can be performed by an algorithm running on a computer, as long as there is enough time and storage to do so.

Until the 1930s, electrical engineers built electronic circuits to solve logical and mathematical problems, but most did so without any process, without theoretical rigor. [Claude Shannon](#), (1937), while teaching Philosophy, was exposed to the work of George Boole, and realized that he could apply this learning to electromechanical assemblies to solve problems. Shannon, (1948), developed the [theory of information: A Mathematical Theory of Communication](#), whose content serves as a foundation for areas such as [data compression](#) and [cryptography](#).

Computer Science has given rise to several fundamental contributions to [science](#) and [society](#). This science was responsible for the formal definition of [computation](#) and [computability](#), and for proving the existence of [computationally intractable](#) or intractable problems. It was also possible to construct and formalize the concept of [computer language](#), especially [programming language](#), a tool for the precise expression of flexible methodological information, enough to be represented, at various levels of abstraction.

For other scientific fields and for society, Computer Science provided support for the [Digital Revolution](#), giving rise to the [Information Age](#). Scientific computing is an area of computing that allows the advancement of studies, such as the mapping of the human genome.

There are alternative definitions for Computer Science. It can be seen as a form of science, a form of mathematics, or a new discipline that cannot be categorized according to current models. Most computer scientists are interested in innovation or theoretical aspects that go far beyond just programming, more related to [computability](#).

Despite its name, Computer Science does not only involve the study of computers. In fact, the well-known computer scientist [Edsger Dijkstra](#) is considered the author of the phrase "*Computer science has as much to do with the computed as astronomy with the telescope [...]*"element. The design and development of computers and computational systems are generally considered disciplines outside the context of Computer Science. For example, the study of [hardware](#) is generally considered part of [computer engineering](#), while the study of commercial computer systems is usually part of [information technology](#). Computer science is also criticized for not being scientific enough, as stated in the sentence "*Science is to computer science what hydrodynamics is to the construction of plumbing*", credits [Stan Kelly-Boole](#). Despite this, its study often crosses other fields of research, such as [artificial intelligence](#), [physics](#) and [linguistics](#).

She is considered by some to have a great relationship with mathematics, greater than in other subjects. This is evidenced by the fact that early work in the field was heavily influenced by mathematicians such as [Kurt Gödel](#) and [Alan Turing](#); the field remains useful for the exchange of information with areas such as [mathematical logic](#), [category theory](#), and [algebra](#). Despite this, unlike mathematics, Computer Science is considered a more experimental than theoretical discipline.

### 3.4 Data Science

#### Multidisciplinary approach

Data Science is the study of data to extract meaningful insights for organizations. It is a multidisciplinary approach that combines principles and practices from the fields of mathematics, statistics, artificial intelligence, and computer engineering to analyze large amounts of data. This analysis helps data scientists ask and answer questions such as what happened, why it happened, what will happen, and what can be done with the results.

Data Science is important because it combines tools, methods, and technology to generate meaning based on data. Modern organizations are inundated with data; There is a proliferation of devices that can automatically collect and store information. [Online](#) systems and payment portals capture more data in the areas of e-commerce, medicine, finance, and all other aspects of human life. We have text, audio, video and image data, available in large quantities.

While the term Data Science is not new, the meanings and connotations have changed over time. The word first appeared in the 1960s, as an alternative name for statistics. In the late 1990s, computer science professionals formalized the term. A proposed definition for Data Science saw it as a separate field with three aspects: data design, collection, and analysis. It still took another decade for the term to be used outside of academia.

Artificial intelligence and *machine learning* innovations have made data processing faster and more efficient. The demand from the sector has created an ecosystem of courses, diplomas and positions in the area of Data Science. Due to the cross-functional skill set and experience required, Data Science shows strong projected growth in the coming decades.

Data Science is used to study data in four ways:

1. **Descriptive analytics** - Descriptive analytics analyzes data to gain insights into what has happened or what is happening in the data environment. It is characterized by data visualizations, such as pie charts, bar charts, line charts, tables, or generated narratives. For example, a flight booking service may record data such as the number of tickets booked per day. The descriptive analysis will reveal booking spikes, booking dips, and high-performing months for this service.
2. **Diagnostic analysis** - Diagnostic analysis is an in-depth or detailed analysis of data to understand why something happened. It is characterized by techniques such as *drill-down*, data discovery, data mining, and correlations. Various operations and data transformations can be performed on a given dataset to discover unique patterns in each of these techniques. For example, the flight service can *drill down* into a particularly high-performance month to better understand peak bookings. This can lead to the discovery that many customers visit a particular city to attend an event.
3. **Predictive analytics** - Predictive analytics uses historical data to make accurate predictions about data patterns that may occur in the future. It is characterized by techniques such as machine learning, prediction, pattern matching, and predictive modeling. In each of these techniques, computers are trained to reverse-engineer causal connections in the data. For example, the flight service team can use Data Science to predict flight booking patterns for the next year at the beginning of each year. The computer program or algorithm can analyze past data and predict booking spikes for certain destinations in May. Having anticipated the future travel needs of its customers, the company could start targeted advertising for these cities from February.
4. **Prescriptive analytics** - Prescriptive analytics takes predictive data to the next level. It not only predicts what is likely to happen, but also suggests an optimal response to that outcome. She can analyze the potential implications of different choices and recommend the best plan of action. Prescriptive analytics uses graph analysis, simulation, complex event processing, neural networks, and machine learning recommendation engines.

- Going back to the flight booking example, prescriptive analytics can analyze historical marketing campaigns to maximize the upside of the next booking spike. A data scientist can project booking outcomes for different levels of marketing spend across multiple marketing channels. These data predictions would give the flight booking company more confidence to make its marketing decisions.

Data Science is revolutionizing the way businesses operate. Many companies, regardless of size, need a robust data science strategy to drive growth and maintain a competitive edge. Some of the key benefits include:

**Uncover unknown transformative patterns** – Data science enables businesses to uncover new patterns and relationships that have the potential to transform the organization. It can reveal low-cost changes in resource management to achieve maximum impact on profit margins. For example, an e-commerce company uses Data Science to discover that many customer inquiries are being generated after business hours. Research reveals that customers are more likely to buy if they receive an immediate response rather than a response on the next business day. By implementing 24/7 customer service, the company increases its revenue.

**Innovate new products and solutions** – Data science can reveal flaws and problems that would otherwise go unnoticed. More insights into purchasing decisions, customer feedback, and business processes can drive innovation in internal operations and external solutions. For example, an online payment solution uses data science to collect and analyze customer feedback about the company on social media. The analysis reveals that customers forget their passwords during peak purchase periods and are dissatisfied with the current password recovery system. The company can innovate a better solution and see a significant increase in customer satisfaction.

**Real-time optimization** – It is very challenging for companies, especially large ones, to respond to changing conditions in real time. This can cause significant losses or disruptions to business activity. Data Science can help businesses anticipate changes and react optimally to different circumstances. For example, a trucking company uses Data Science to reduce downtime when trucks break down. They identify the routes and change patterns that lead to faster breakdowns and adjust truck schedules. They also set up an inventory of common spare parts that need to be replaced frequently so that trucks can be repaired faster.

A business problem typically starts the data science process. A data scientist will work with stakeholders in organizations to understand what the needs are. Once the problem is defined, the data scientist can solve it using the OSEMN Data Science process:

**O: Get Data** – Data can be pre-existing, newly acquired, or a data repository that can be downloaded from the Internet. Data scientists can pull data from internal or external databases, the organization's CRM software, web server logs, social media, or purchase it from trusted third-party sources.

**S: Suppress data** - Data suppression, or data cleansing, is the process of standardizing data according to a predetermined format. It includes, dealing with missing data, correcting data errors, and removing any atypical data. Some examples of data suppression are: -

- Change all date values to a common standard format. .
- Correct spelling errors or additional spaces. .
- Correct mathematical inaccuracies or remove commas from large numbers.

**E: Explore data** – Data exploration is a preliminary data analysis that is used to plan other data modeling stratagems. Data scientists gain an initial understanding of data using descriptive statistics and data visualization tools. They then explore the data to identify interesting patterns that can be studied or acted upon.

**M: Model data** – Software and machine learning algorithms are used to gain deeper insights, predict outcomes, and prescribe the best plan of action. Machine learning techniques such as association, classification, and clustering are applied to the training dataset. The model can be tested against predetermined test data to assess the accuracy of the results. The data model can be adjusted multiple times to improve results.

**N: Interpret results** – Data scientists work together with analysts and organizations to convert data insights into action. They make diagrams, graphs, and charts to represent trends and forecasts. Data summarization helps stakeholders understand and implement the results effectively.

Data Science professionals use computer systems to keep track of the Data Science process. The main techniques used by data scientists are:

**Sorting** - Sorting is the sorting of data into specific groups or categories. Computers are trained to identify and classify data. Known datasets are used to create decision algorithms on a computer that quickly processes and categorizes the data. For example: -

- Classify products as popular or not popular.
- Classifying insurance applications as high risk or low risk.
- Classify social media comments as positive, negative, or neutral.

Data Science professionals use computer systems to keep track of the Data Science process.

**Regression** – Regression is the method of finding a relationship between two seemingly unrelated data points. The connection is usually modeled around a mathematical formula and represented as a graph or curves. When the value of one data point is known, regression is used to predict the other data point. For example: -

- The rate of spread of airborne diseases. .
- The relationship between customer satisfaction and the number of employees. .
- The ratio between the number of fire stations and the number of people injured as a result of a fire in a given location.

**Clustering** – *Clustering* is the method of grouping closely related data together to look for patterns and anomalies. Clustering is different from classification because data cannot be accurately classified into fixed categories. Therefore, the data is grouped into most likely relationships. New patterns and relationships can be discovered with *clustering*. For instance:

- Group customers with similar buying behavior to improve customer service.
- Group network traffic to identify patterns of daily usage and identify a network attack faster.
- Group articles into several different news categories and use that information to find fake news content.

#### Basic principles of Data Science techniques

While the details vary, the underlying principles behind these techniques are:

- Teach a machine to classify data based on a known data set. For example, sample keywords are provided to the computer with their respective ranking values. "Happy" is positive, while "Hate" is negative.
- Provide unknown data to the machine and allow the device to classify the dataset independently.
- Allow inaccuracies of results and deal with the probability factor of the outcome.

Data Science professionals work with complex technologies, such as:

- Artificial intelligence: Machine *learning models* and related software are used for predictive and prescriptive analytics.
- Cloud computing: Cloud technologies have given data scientists the flexibility and processing power needed for advanced data analytics.
- Internet of Things: IoT refers to various devices that can automatically connect to the internet. These devices collect data for Data Science initiatives. They generate large amounts of data that can be used for data mining and data extraction.
- Quantum computing: Quantum computers can do complex calculations at high speed. Skilled data scientists use them to create complex quantitative algorithms.

Data Science is an umbrella term for other data-related functions and fields. Let's look at some of them here:

- **Difference Between Data Science and Data Analytics** – While the terms can be used interchangeably, data analytics is a subset of Data Science. Data Science is an umbrella term for all aspects of data processing, from collection to modeling and insights. On the other hand, data analysis mainly involves statistics, mathematics, and statistical analysis. It focuses solely on data analysis, while Data Science is related to the big picture around organizational data. In most workplaces, data scientists and data analysts work together to achieve common organizational goals. A data analyst can spend more time on routine analysis by providing regular reports. A data scientist can design the way data is stored, manipulated, and analyzed. Simply put, a data analyst makes sense of existing data, while a data scientist creates new methods and tools for processing data to be used by analysts.
- **Difference Between Data Science and Business Analytics** - While there is an overlap between Data Science and business analytics, the main difference is the use of technology in each area. Data scientists work more closely with data technology than business analysts. Business analysts reconcile business and IT. They define business cases, gather input from stakeholders, or validate solutions. Data scientists, on the other hand, use technology to work with business data. They can write programs, apply *machine learning* techniques to create models, and develop new algorithms. Data scientists not only understand the problem, but they can also create a tool that provides solutions to the problem. It's not uncommon to find business analysts and data scientists working on the same team. Business analysts take the output of data scientists and use it to tell a story that the organization as a whole can understand.
- **Difference Between Data Science and Data Engineering** – Data engineers build and maintain the systems that allow data scientists to access and interpret data. They work more closely with the underlying technology than a data scientist. The role typically involves building data models,



building data pipelines, and overseeing extract, transform, and load (ETL). Depending on the layout and size of the organization, the data engineer may also manage related infrastructure, such as **big data** storage, streaming, and processing platforms, such as Amazon S3. Data scientists use the data that data engineers have processed to create and train predictive models. Data scientists can then hand over the results to analysts for later decision-making.

- **Difference Between Data Science and Machine Learning** – *Machine learning* is the science of training machines to analyze and learn from data in the same way that humans do. It is one of the methods used in Data Science projects to obtain automated data insights. *Machine learning* engineers specialize in computation, algorithms, and coding skills specific to *machine learning* methods. Data scientists can use *machine learning* methods as a tool or work closely with other *machine learning* engineers to process data.
- **Difference Between Data Science and Statistics** - Statistics is a mathematical base area that seeks to collect and interpret quantitative data. On the other hand, Data Science is a multidisciplinary scope that uses scientific methods, processes, and systems to extract knowledge from data in various ways. Data scientists use methods from many disciplines, including statistics. However, the scopes differ in their processes and in the problems they study.

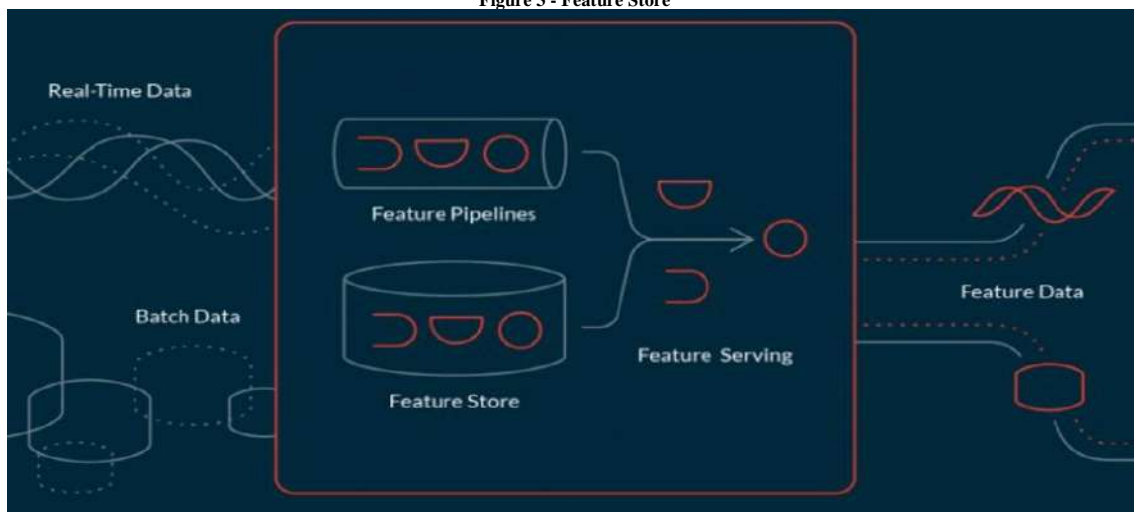
AWS has a number of tools to support data scientists around the world:

- **Physical data warehousing** - For *data warehousing*, [Amazon Redshift](#) can run complex queries on structured or unstructured data. Analysts and data scientists can use [AWS Glue](#) to manage and search data. AWS Glue automatically creates a unified catalog of all data in the Data Lake, with Meta data attached to make it discoverable.
- **Machine learning** - [Amazon SageMaker](#) is a fully managed machine learning service running on Amazon Elastic Compute Cloud (EC2). It enables users to organize data, build, train, and deploy machine learning models, and scale operations.

**Analysis:**

- [Amazon Athena](#) is an interactive query service that makes it easy to analyze data in [Amazon S3](#) or [Glacier](#). It's fast, serverless, and works using standard SQL queries.
- [Amazon Elastic MapReduce \(EMR\)](#) processes big data using servers such as Spark and Hadoop.
- [Amazon Kinesis](#) enables real-time aggregation and processing of streaming data. It uses website clickstreams, application logs, and telemetry data from IoT devices.
- [Amazon OpenSearch](#) enables searching, analyzing, and visualizing Petabytes of data.

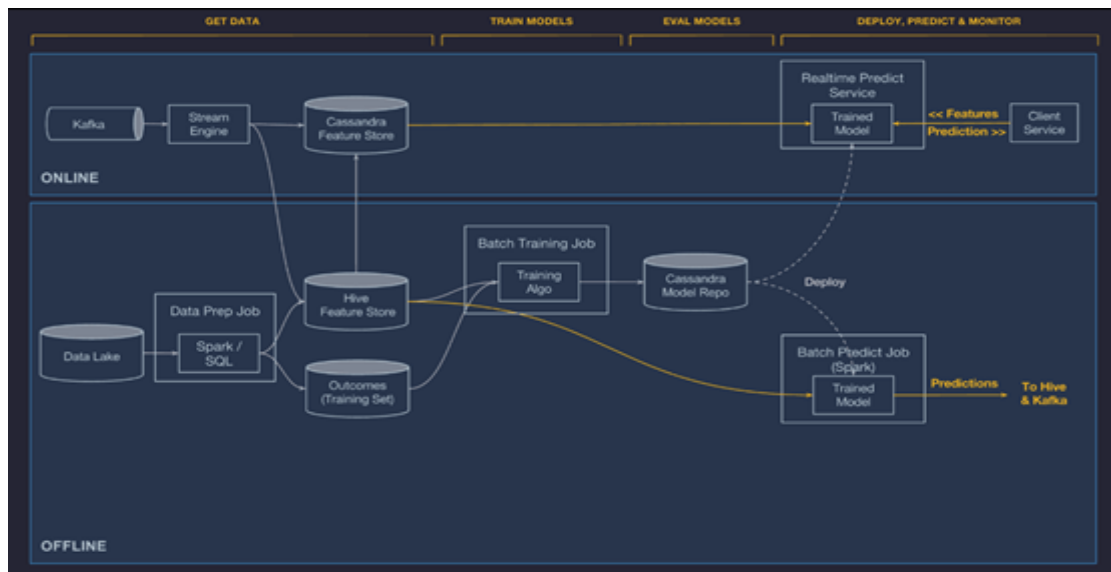
Figure 3 - Feature Store



Source: Microsoft Industry Blogs

**The data can be stored in memory or in a very fast key-value database.** The process itself can be carried out on multiple cloud services or on one platform. Here's an example of an online and offline pipeline using data store (Feature Store). It was designed by Uber, as part of its Michelangelo platform:

Figure 4 - Michelangelo Platform of the Uber Project



Source: Microsoft Industry Blogs

#### Challenges for Data Scientists

A data scientist can use a number of distinct techniques, tools, and technologies as part of the Data Science process. Based on the problem, it chooses the best combinations to get faster and more accurate results. The role and day-to-day work of a data scientist varies depending on the size and requirements of the organization. While they typically follow the Data Science process, the details may vary. In larger data science teams, a data scientist may work with other analysts, engineers, *machine learning* specialists, and statisticians to ensure that the data science process is followed end-to-end and that business goals are met. However, in smaller teams, a data scientist may have more than one role. Based on experience, skills, and academic background, he may perform multiple roles or have overlapping roles. In that case, your day-to-day responsibilities may include engineering, analytics, and *machine learning*, along with key data science methodologies.

**Data sources** - Different types of applications and tools generate data in various formats. Data scientists need to clean and prepare data to make it consistent. This can be tedious and time-consuming.

**Understand the problem of organizations** - Data scientists need to work with various stakeholders and managers of organizations to define the problem to be solved. This can be challenging, especially in large organizations with multiple teams with varying requirements.

**Eliminate drift** - *machine learning tools* are not entirely accurate, and as a result, there may be uncertainties or deviations. Deviations are disparities in the model's test data or prediction behavior across different groups, such as age or income bracket. For example, if the tool is trained primarily on data from middle-aged people, it may be less accurate when making predictions involving both younger and older people. The field of *machine learning* offers an opportunity to address deviations by detecting and measuring them in the data and model.

Online and offline data have different characteristics. Behind the scenes, offline data is mostly built on frameworks such as Spark or SQL, where the actual data is stored in a database or as files. While online data may require data access using APIs for streaming engines such as Kafka, Kinesis, or in-memory key-value databases such as Redis or Cassandra.

Working with a data store abstracts this layer, so that when a Data Scientist is looking for data, instead of writing engineering code, they can use a simple API to retrieve the data they need.

One of the main challenges in implementing machine (computer) learning in production arises from the fact that the data being used to test a model in the software development environment (programs) is not the same as the data in the production service layer. Therefore, enabling a consistent feature set (machine and software) between the test and service layer allows for a smoother deployment process, ensuring that the tested model truly reflects the way, how things will work in production.

In addition to the actual data, the data store maintains **additional meta data** for each feature. For example, a metric that shows the impact of the resource on the model it's associated with. This information can help Data Scientists tremendously select the features for a new model, allowing them to focus on those that have achieved better impact on similar existing models.

The reality today is that almost all businesses are based on *Machine Learning*, so the number of projects and resources is growing exponentially. This reduces our ability to have a good comprehensive overview of the resources available, since there are so many. Instead of developing in silos, data warehousing allows us to share our resources with our colleagues' Meta data. It's becoming a common problem in large organizations that different teams end up developing similar solutions, simply because they're not aware of each other's tasks. Data stores bridge this gap and allow everyone to share their work and avoid duplication.

To meet guidelines and regulations, especially in cases where the generated Artificial Intelligence (AI) models serve industries such as healthcare, financial services, and security, it is important to track the lineage of the algorithms under development. Achieving this requires visibility into the end-to-end data flow to better understand how the model is generating its results. As the data is being generated, as part of the process, it is necessary to track the flow of the data generation process. In the data store, you can maintain the lineage of data and a resource. This provides the necessary tracking information, how the data was generated, and provides the insight and reporting needed for regulatory compliance.

MLOps is an extension of DevOps where the idea is to apply DevOps principles in machine learning pipelines. Developing a machine learning (computer) pipeline is different from developing software (programs), mainly because of the look and feel of the data. Model quality is not based solely on code quality. It is also based on the quality of the data and resources that are used to run the model. According to Airbnb, about 60%-80% of Data Scientists' time is spent creating, training, and testing.

Data stores allow Data Scientists to reuse resources instead of rebuilding them over and over again for different models, saving valuable time and effort. Data stores automate this process, and resources can be triggered by code changes that are pushed to Git or by the arrival of new data. This automated feature engineering is an important part of the MLOps concept.

Some of the largest information and communication technology companies that deal extensively with AI have created their own Feature Stores (Uber, Twitter, Google, Netflix, Facebook, Airbnb, etc.). This is a good indication to the rest of the industry of how important it is to use data warehousing as part of an effective machine learning pipeline. Given the growing number of AI projects and the complexities associated with putting these projects into production, the industry needs a way to standardize and automate the core of feature engineering. Therefore, it is fair to assume that data warehousing is positioned to be a basic component of any machine learning pipeline (computer and software).

#### IV. ELEMENTS FOR REFLECTION: Human Truth versus Digital Truth (from Theory to Practice)

##### 4.1 Human Intelligence

Second, Haimovitz, Kyla; Dweck, Carol S. (2016). **human intelligence** is the intellectual capacity of human beings, in terms of complex, cognitive feats and high levels of motivation and self-awareness. Through intelligence, human beings possess the cognitive abilities to learn, form concepts, understand, apply logic and reason, including the ability to recognize patterns, plan, innovate, solve problems, make decisions, retain information (memorize), and use language to communicate.

There is no consensus on how intelligence is measured, from the idea that intelligence is fixed at birth, to that it is malleable and can change depending on the individual's mentality and efforts. In psychometrics, human intelligence is assessed by intelligence quotient (IQ) tests, although the validity of these tests is disputed.

Second, *Salovey, Peter; Mayer, John D. (March 1990), Walker, Ronald E.; Foley, Jeanne M. (December 1973), Tirri, Nokelainen (2011)*, there are several subcategories of intelligence, such as emotional intelligence and social intelligence. There is significant debate about whether they represent distinct forms of intelligence, according to *Brown, M.I.; Wai, J. (2021)*, higher intelligence is associated with better life outcomes. Second, *Triglia, A.; Regader, B.; & García-Allen, J.; (2018)*, intelligence is considered one of the most useful concepts in psychology, because it relates to many relevant variables, for example, the probability of having an accident, salary, etc.

According to *Ritchie, Stuart J.; Tucker-Drob, Elliot M. (2018)*, The effects of education on intelligence, education appears to be the "most consistent, robust, and enduring method" for increasing intelligence. Second, *Czepita, D.; Lodygowska, E.; Czepita, M. (2008), Rosenfield, Mark; Gilmarin, Bernard (1998)*, several studies have demonstrated a correlation between IQ and myopia. Some suggest that the reason for the correlation is environmental, as people with higher IQs are more likely to impair their vision with prolonged reading, or the other way around, as people who read more are more likely to achieve a higher IQ, while others claim that there is a genetic link.

Second, *Denise C. Park; Gérard N. Bischof, (2017)*, aging causes a decline in cognitive functions, as several cognitive functions suffer a decline of about 0.8% at the age between 20 and 50 years of age; cognitive functions include processing speed, memory, working and long-term memory. For *Duckworth, A. L.; Quinn, P. D.; Lyman, D. R.; Loeber, R.; Stouthamer-Loeber, M. (2011)*, motivation is a factor that influences IQ test results. People with higher motivation tend to get higher IQ scores.

#### Relevance of Intelligence Quotient (IQ) tests

Alfred Binet, (1859-1911), developed the first test to measure people's intellectual capacity. Initially, the test was applied in schools to identify children with learning difficulties. Psychologist William Stern (1871-1938) created the expression Intelligence Quotient (IQ), introducing the terms "MI (mental age) and CI (chronological age) to relate a person's intellectual capacity and their age.

Lewis Madison Terman, (1877-1956), proposed intelligence scales, through the formula  $IQ = 100 \times \frac{MI}{CI}$  and classified a result higher than 140 as genius and values lower than 70 as slow reasoning. David Wechsler, (1896-1981), created the intelligence scale for adults, according to the following scale:

- Equal to or greater than 130 – Giftedness
- 120 – 129 – Higher Intelligence.
- 110 – 119 – Above average intelligence.
- 90 – 109 – Average intelligence.
- 80 – 89 – Weak normal.
- 70 – 79 – Disability limit.
- Equal to or less than 69 – mentally disabled.

According to *Shipstead, Zach; Redick, Thomas S.; Engle, Randall W. (2010), Simons, Daniel J.; Boot, Walter R.; Charness, Neil; Gathercole, Susan E.; Chabris, Christopher F.; Hambrick, David Z.; Stine-Morrow, Elizabeth A. L. (2016), Jaeggi, S. M., Buschkuhl, M., Jonides, J., Perrig, W. J. (2008)*, attempts to increase IQ with human brain training have led to increases in task-related aspects of training - e.g., working memory - but it remains unclear whether these increases generalize to increased intelligence itself.

According to Alexis Madrigal, *Wired*, (2008) and *Moody, D. E. (2009)*, a research paper that uses the practice of a double *n-back* task, can increase fluid intelligence (Gf), as measured in several different standard tests. This finding received some attention from popular media, including an article in *Wired*. However, a later criticism of the paper's methodology questioned the validity of the experiment and raised issues with the lack of uniformity in the tests used to evaluate the control and test groups. They were allowed 10 minutes to complete a normally 45-minute test.

Second, *Borsboom, D.; Mellenbergh, G. J.; van Heerden, J. (2004), Macintosh, Nicholas (2011), Weiten W (2016)*, npsychology, human intelligence is assessed by IQ scores determined by IQ tests. However, IQ test scores show a high degree of reliability. Although IQ tests are generally considered to be a measure of some forms of intelligence, they may not serve as an accurate measure of broader definitions of human intelligence, including creativity and social intelligence.

According to psychologist Wayne Weiten, (2016), "IQ tests are valid measures of the kind of intelligence needed to do well in academic work. But if the goal is to assess intelligence in a broader sense, the validity of IQ tests is questionable."

#### Theory of Multiple Intelligences

Howard Gardner's Theory of Multiple Intelligences (1983) is based on studies not only of normal children and adults, but also of gifted individuals (including so-called "savants"), people who have suffered brain damage, experts and virtuosos, and individuals from diverse cultures. Gardner, (1983, 1995), divides intelligence into at least one number of different and distinct components of intelligence:

1. **Logical-mathematical** – refers to the aptitude to deal with mathematical operations and logical approaches. It implies good inductive and deductive approaches that involve sequential reasoning capable of perceiving relationships and connections between elements (e.g., mathematicians, researchers, and scientists). They first acquire knowledge, and then apply it in practical matters.
2. **Linguistics** – the ability to use words and language effectively, that is, it involves the articulation of arguments and discourses in a clear and direct way, in the transmission of messages to achieve objectives (e.g., writers, poets, journalists, speakers, politicians and other speakers).
3. **Visual-spatial** – aptitude to understand the world in three dimensions. Ability to imagine things in three dimensions. That is, the ability to imagine something and think about the object from one or more points of view, artistic skills (e.g., painting, sculpture, designers, pilots, etc.).
4. **Musical** – ability to understand and identify sounds, timbres, rhythms and everything related to sound. (e.g. musicians, composers, singers, conductors, DJs, etc.).
5. **Bodily-kinesthetics** – it is related to the efficient use of the body, in the form of motor coordination, coordination of the manual and pedal glasses and coordination between the mind and the body. (e.g., athletes, artisans, dancers, acrobats, and surgeons).
6. **Interpersonal** – the ability to understand and interact with other people effectively. It involves attention and sensitivity to other people's moods, feelings, temperament, and understanding. (e.g., teachers, politicians, actors, salespeople, social workers, etc.).
7. **Intrapersonal** – the ability to know oneself, respecting one's own feelings, desires, limitations, motivations and respect for the human condition. He has great willpower and independence. (e.g., psychologists, politicians, spiritual leaders, and philosophers).
8. **Naturalist** – ease of understanding nature and its living or non-living elements. (e.g., animals, plants, rain, sea, land – botanists, biologists, farmers, hunters, etc.).
9. **Existential** – the ability to understand deep issues related to existence (life and spiritual themes). (e.g., spiritual leaders, theologians, and philosophers)

#### Triarchic Theory of Intelligence

*Robert Sternberg*, (1978, 1985, 2003), proposed the Triarchic Theory of Intelligence to provide a more comprehensive description of intellectual competence than traditional differential or cognitive theories of human ability, which describes three fundamental aspects of intelligence:

- **Analytical intelligence** – comprises the mental processes through which intelligence is expressed.
- **Creative intelligence** – is required when an individual is confronted with a challenge that is almost, but not entirely new or when, an individual is involved in automating the execution of a task.
- **Practical intelligence** – is linked to a sociocultural environment and involves adapting, selecting and shaping the environment, and to maximise fit in context.

Triarchic Theory posits that general intelligence is part of analytical intelligence, and only by considering all three aspects of intelligence can one fully understand the full range of intellectual functioning. Intelligence is defined, as a person's assessment of success in life, accordingly. with their own standards, within their socio-cultural context. Success is achieved through the use of combinations of analytical, creative, and practical intelligence. The three aspects of intelligence are called processing abilities. Processing skills are applied to the pursuit of success through the three elements of practical intelligence: adaptation, modeling, and selection of the environment. The mechanisms that employ processing skills to achieve success include utilizing strengths and compensating for or correcting weaknesses.

#### Emotional Intelligence

According to Daniel Golema, (2010), emotional intelligence is a concept related to the so-called "social intelligence", present in psychology, that is, an emotional person can identify their emotions more easily. One of the advantages is that the person has the ability to self-motivate and move forward in the face

of frustrations and disappointments. The person is able to control impulses, channel emotions into appropriate situations, practice gratitude, and motivate and encourage others. According to the same author, emotional intelligence can be subdivided into five skills:

1. Emotional self-knowledge
2. Emotional control
3. Self-motivation
4. Empathy
5. Develop interpersonal relationships.

A person can concentrate on work and complete all tasks and obligations/responsibilities, even if they feel sad, anxious, or bored.

#### **PASS Theory of Intelligence**

According to [Alexander Luria](#), (1966), the modularization of brain function is supported by decades of [neuroimaging research](#). It proposes that cognition be organized into three systems and four processes. The first process is "planning", which involves executive functions responsible for controlling and organizing behavior, selecting, constructing, and controlling performance. The second is the "attention" process, which is responsible for maintaining levels of arousal, alertness, and ensuring focus on relevant stimuli. The following two are called "concurrent" and "successive" processing and involve the encoding, transformation, and retention of information.

"Simultaneous" processing is triggered when the relationship between the items and their integration into entire units of information is required. Examples, figure recognition, triangle within a circle versus a circle within a triangle, or the difference between "he had a shower before breakfast" and "he had breakfast before a shower." "Successive" processing is necessary to arrange separate items in a sequence, such as remembering a sequence of words or actions in exactly the order in which they were just presented.

These four processes are functions of four areas of the brain. The "planning" is located in the front part of the brain, the frontal lobe. "Attention" and arousal are combined functions of the [frontal lobe](#) and the lower parts of the cortex, although the parietal lobes are also involved in attention. "Simultaneous" and "successive" processing occur in the posterior or back region of the [brain](#). "Simultaneous" processing is largely associated with [the occipital](#) and parietal lobes, while "successive" processing is largely associated with the frontotemporal lobes.

#### **Piaget's theory**

According to Piaget, (1953, 2001), in the theory of cognitive development the focus is not on mental abilities, but on the mental models of the child's world. As the child develops, more and more accurate models of the world are developed, which allows him to interact better with the world. The child develops a model in which objects continue to exist, even when they cannot be seen, heard, or touched. Piaget's theory described four main stages and many sub-stages in development. These four main stages are

- Sensorimotor stage (birth - 2 years);
- Pre-operational internship (2 to 7 years);
- Concrete operational internship (7 years-11 years); and
- Formal operations internship (11 years-16 years).

The degree of progress through these stages is correlated with, but is not identical to, psychometric IQ. Piaget considers intelligence, as an activity, more than a capacity. Piaget focused on the discrimination skills of children between two and a half and four and a half years of age. He began the study by taking children of different ages and placing two rows of candy, one with the candies in a row farther apart and the other with the same number of candies in a row closer together. He found that "children aged 2 years and 6 months and 3 years and 2 months correctly discriminate the relative number of objects in two rows; between 3 years and 2 months and 4 years and 6 months, they indicate that a longer row with fewer objects has "more"; after 4 years and 6 months, they discriminate correctly again."

Initially, younger children were not studied, because if at the age of four a child could not conserve the amount, then a younger child probably could not either. However, the results show that children under three years and two months retain quantity, but as they age, they lose this quality and do not regain it until they are four and a half years old.

First, younger children have a capacity for discrimination that shows that the logical capacity for cognitive operations exists earlier than recognized. This study also reveals that young children can be equipped with certain qualities for cognitive operations, depending on how logical the structure of the task is. Piaget's theory has been criticized for the fact that the age of appearance of a new model of the world, such as the permanence of the object, depends on how the test is done. More generally, the theory can be very difficult to test empirically, due to the difficulty of proving or disproving that a mental model is the explanation for the test results.

#### **4.2 Artificial intelligence**

##### **Evolution of the Concept of Artificial Intelligence**

What is AI? What is AI, in Justice? What is the Democracy of the Future? These questions generated many reflections and debates. As the term "artificial intelligence" suggests, this scientific subject aims to give robots the ability to perform tasks such as logic, reasoning, planning, learning, and perception. It is an interdisciplinary discipline that replicates human capabilities and intellectual behavior through the use of AI. Stimulating human consciousness and thought through the retrieval and extraction of relevant material, as well as providing direct and reasonable answers to our questions, is the goal of the work of this technology Marwick, (2001). Computers that can learn, plan, problem-solve, reason, interact socially, be creative, and self-correcting are at the heart of AI Haleem et al., (2019).

In contrast to human intelligence, AI is just a demonstration of machine intellect. Robotics, machines, and programs with the ability to learn and understand on their own can be referred to as AI, according to certain definitions Van Wynsberghe, (2021). Robotics, natural language processing, expert systems, and automated reasoning are just a few of the most recent AI technologies Murphy, (2019).

Marvin Lee Minsky, one of the founding fathers of AI, describes it as the study of making robots perform tasks that would require intelligence if they were done by man Sidner et al., (2005). High-level mental functions such as perception, memory, and critical thinking are all necessary for success. Machine learning is a broad term that includes many subfields of computer science that allow computers to perform functions traditionally performed by humans, such as problem-solving and decision-making Shinde & Shah, (2018). The term AI refers to a computer system that is able to learn from its environment and adapt its behavior to achieve its goals Sarker, (2022). In the end, its goal is to transform seemingly diverse problems into a group of generally similar problem types, after which the problem can be approached using various algorithms and eventually generalize the method to examples in addition to those in the Frey & Osborne training set, (2017).

According to Hobbes, (2020), the concept of Artificial Intelligence was influenced by mechanical materialism that began with the work "Discourse on Method" by René Descartes in 1637. René Descartes suggested that the animal is a kind of complex mechanism, thus formulating a mechanistic theory.

It is important to understand that mechanistic materialism differs from ancient materialism, whose views are captured in the works of Aristotle, and Hegel's subsequent dialectic, dialectical and historical materialism (Feuerbach, Karl Marx, Friedrich Engels, V. I. Lenin). The truth is that mechanistic materialism is directed toward the mechanistic origin of organisms, while ancient materialism is directed toward the mechanistic origin of nature, and dialectical and historical materialism refers to the manifestations of mechanism in society.

Schickard, (1623), built the first mechanical digital computing machine, followed by the machines of Blaise Pascal (1643) and Leibniz (1671). Leibniz was also the first to describe the modern [binary system of numbers](#), although many great scientists periodically became interested in this system (Leibniz, 1671).

Korsakov, (1832), presented the principle of the development of scientific methods and devices to improve the capacities of the mind and proposed a series of "intelligent machines", in the design of which, for the first time in the history of Computer Science, used punched cards. In the nineteenth century, Charles Babbage and Ada Lovelace worked on a Hammerman programmable mechanical computer, (2016).

Bertrand Russell and A. N. Whitehead, (1910-1913), published the article "Principles of Mathematics", which revolutionized formal logic. Konrad Zuse, (1941), built the first software-controlled computer. Warren McCulloch and Walter Pitts, (1943), published "A Logical Calculus of the Ideas Immanent in Nervous Activity", which laid the foundation for neural networks.

McCulloch and Pitts, (1943), in their article "The Logical Calculation of Ideas Related to Nervous Activity", proposed the concept of an artificial neural network. In particular, they proposed a model of an artificial neuron. Hebb, (1949), in his work "Organization of Behavior", described the basic principles of neuron learning. These ideas were developed several years later by the American neurophysiologist Frank Rosenblatt who proposed a diagram of a device that simulates the process of human perception, and called it "perceptron".

##### **Philosophical premises**

Although research into artificial intelligence began in 1956, its philosophical roots go back to the past. The question of whether a machine can think it has a long history. It is closely related to the differences between dualistic and materialistic views. From the point of view of dualism, thought is not material (or at least

has no material properties), so the mind cannot be explained with the help of physical concepts alone. On the other hand, materialism says that the mind can be explained physically, thus leaving the possibility of the existence of artificially created minds.

The philosopher, Alfred Iyer, (1936), addressed a common philosophical question about other minds: How do we know that other people have the same conscious experience as we do? In his book *Language, Truth and Logic*, he proposed an algorithm to recognize a conscious person and an unconscious machine: which cannot pass one of the empirical tests, according to which the presence or absence of consciousness is determined Swiechowski, (2020). This statement is very similar to the Turing test, but it is not known for sure whether Iyer's popular philosophical classics were known to Turing.

Although more than 50 years have passed, the Turing test has not lost its meaning. But these days, artificial intelligence researchers are practically not committed to solving the problem of passing the Turing test, believing that it is far more important to study the fundamental principles of intelligence than to duplicate one of the carriers of natural intelligence. In particular, the problem of "artificial flight" was only successfully solved after the Wright brothers and other researchers stopped imitating birds and began studying aerodynamics. In scientific and technical works on aeronautics, the objective of this area of knowledge is not defined as "the creation of machines that, in their flight, resemble pigeons so much that they can even deceive real birds".

#### Role of Artificial Intelligence (AI)

According to Buitlin, (2022), artificial intelligence is owned by intelligent systems to perform creative functions that are traditionally considered a person's prerogative (not to be confused with artificial consciousness, IP); science and technology of creating intelligent machines, especially intelligent computer programs.

AI is related to the similar goal of using computers to understand human intelligence, but it is not necessarily limited to biologically plausible methods. Existing intelligent systems today have very narrow areas of application. For example, programs that can beat a person at chess cannot answer questions, etc.

According to Dartmouth, (1956), the definition of artificial intelligence is not directly related to understanding intelligence in humans. AI researchers are free to use methods that are not observed in humans if necessary to solve specific problems. He points out that the problem is that we cannot determine which computational procedures we want to call intelligent. We understand some of the mechanisms of intelligence and do not understand others. Therefore, within the scope of this science, intelligence is understood only as the computational component of the ability to achieve goals in the world. At the same time, there is a point of view according to which intelligence can only be a biological phenomenon.

In English, the term artificial intelligence does not have an anthropomorphic connotation: the word intelligence in the context used rather means "the ability to reason" rather than "intelligence" (for which there is an analog of intellect. The following definitions of artificial intelligence are given:

- **Scientific direction** - within which the hardware or software modeling problems of those types of human activity traditionally considered intellectual are defined and solved.
  - **The ownership of intelligent systems to perform (creative) functions** – which are traditionally considered to be the prerogative of a person. At the same time, an intelligent system is a technical or software system capable of solving problems traditionally considered creative, belonging to a specific area, knowledge about which is stored in the memory of such a system.
  - The structure of an intelligent system includes three main building blocks – **a knowledge base, a solver, and an intelligent interface** that allows it to communicate with a computer without special programs for data entry.
- **Directing information technologies** – is the task to recreate intelligent reasoning and actions using computer systems and other artificial devices.
  - The ability of the IT system to correctly interpret external data – learning from that data and using the knowledge gained to achieve specific goals and objectives through flexible adaptation.

One of the particular definitions of intelligence, common to humans and "machines", can be formulated as follows: "Intelligence is the ability of a system to create, in the course of self-learning, programs (mainly heuristic) to solve problems of a certain class of complexity and to solve these problems" (Horizontes de Negócios, 2019).

According to Anglin, (1995), the history of artificial intelligence, as a doctrine of the development of modern science and technology for the creation of intelligent machines, has its roots in early philosophical studies of human nature and in the process of knowing the world, later expanded by neurophysiologists and psychologists in the form of a series of theories about the work of the human brain and thought. The modern phase in the development of artificial intelligence science is the development of the mathematical theory of computation—the theory of algorithms—and the creation of computers.

As an applied science, "Artificial Intelligence" has both theoretical and experimental parts. In practice, the problem with the creation of "Artificial Intelligence" lies in the intersection of information technologies (software) with computer technology (hardware) and with neurophysiology, cognitive and behavioral psychology. The Philosophy of Artificial Intelligence serves as a theoretical basis, but only with the appearance of significant results did the theory acquire an independent meaning. So far, the theory and practice of "Artificial Intelligence" is distinguished from the mathematical, algorithmic, robotic, physiological and other theoretical and experimental techniques that have an independent meaning.

The largest number of young innovative companies developing AI are located in the US, Europe, China, Israel, Great Britain and Canada. Among the companies that have filed the highest number of patents in the field of AI are IBM, Microsoft, Toshiba, Samsung, NEC, Fujitsu, Hitachi, Panasonic, Canon Deutsche Welle, (2019).

#### Turing test

The Turing test is an empirical test, which was proposed by Alan Turing in the article "Computing Machines and the Mind", (1950), in the philosophical journal *Mind*. Turing set out to determine whether a machine can think (The Alan Turing Internet Scrapbook, 1950).

The standard interpretation of this test is as follows: "A person interacts with a computer and a person. Based on the answers to the questions, he must determine who he is talking to: a person or a computer program. The task of a computer program is to induce a person to make the wrong choice" (Swiechowski, 2020).

All test takers cannot see each other. If the judge cannot say for sure which of the interlocutors is a human being, then the machine is considered to have passed the test. To test the machine's intelligence, rather than its ability to recognize speech, the conversation is conducted in a "text-only" mode, for example, using a keyboard and a screen (intermediate computer). Correspondence must be carried out at controlled intervals, so that the judge cannot draw conclusions based on the speed of the answers. In Turing's time, computers responded more slowly than humans. Now this rule is also necessary, because they react much faster than humans.

Turing has been particularly concerned with the problem of machine intelligence since at least 1941. One of the first mentions of "computer intelligence" was made in 1947. In his "Intelligent Machines" speech, Turing explored the question of whether a machine could detect intelligent behaviors, and in that study he suggested what could be considered the precursor to his future research: "It is not difficult to design a machine that plays chess well. Now we are going to take three people-subjects of the experiment. A, B and C. Let A and C not play chess well, and B the machine operator. Two rooms are used, as well as some mechanism for transmitting messages about movements. Competitor C plays with A or a machine. Participant C may have difficulty answering who he is playing with (Turing, 1950)".

Turing began his article with the statement: "I propose to consider the question 'Can machines think?'" He stresses that the traditional approach to this question is first to define the concepts of "machine" and "intelligence". Turing, however, took a different path; instead, it replaced the original question with another, "which is closely related to the original and is formulated relatively unambiguously." Essentially, it proposes to replace the question "Do machines think?" with the question "Can machines do what we (as thinking creatures) can do?" The advantage of the new question, according to Turing, is that it draws "a clear line between a person's physical and intellectual capacities" (Turing, 1950).

In the same report, Turing later proposes an alternative "equivalent" formulation, involving a judge who only talks to a computer and a person. Although none of these formulations exactly match the version of the Turing test that is best known today, in 1952 the scientist proposed a third. In this version of the test, which Turing discussed on BBC Radio, the jury asks for a computer, and the computer's role is to make a significant part of the jury believe that it is actually human.

According to Güzeldere, (2008), there are four major turning points in the history of the Turing test:

- The publication of *Computing Machines and the Mind* in 1950,
- The report on the creation of Eliza by Joseph Weizenbaum in 1966,
- Kenneth Colby's creation of Parry (1972);
- Turing Colloquium in 1990.

Eliza's role is to examine user-entered comments for the presence of keywords. If a **keyword** is found, the rule is applied, whereby the user's comment is converted and a **result phrase is returned**. If the keyword is not found, Eliza returns a general response to the user or repeats one of the previous comments. In addition, Weizenbaum programmed Eliza to mimic the behavior of a client-centered therapist. This allows Eliza to "pretend to know almost nothing about the real world." By using these methods, Weizenbaum's program could have misled some people who thought they were talking to a real person, and some found it "very difficult to convince Eliza [...] that they were not human. On this basis, some argue that Eliza is one of the programs (possibly the first) that were able to pass the Turing test. However, this claim is highly controversial, since the people who "ask the questions" were instructed to think that a real psychotherapist would talk to them, and were unaware that they could talk to a computer.

Parry has been described as "Eliza with Opinions": the program attempted to model the behavior of a paranoid schizophrenic using a similar (if not more advanced) approach. To test the program, Parry was tested in the early 1970s using a modification of the Turing test. A team of experienced psychiatrists analyzed a group of real patients and computers controlled by Parry using a TTY. Later, the transcripts of the interviews were shown to 33 psychiatrists. Next, both teams were asked to determine which of the "patients" is a human and which is a computer program. Psychiatrists were only able to make the right decision in 48% of cases. This value is consistent with the probability of random selection. These experiments were not Turing tests in the full sense, since in order to make a decision, this test requires that questions can be asked interactively, rather than reading the transcript of the past conversation (Güzeldere, 2008).

#### AI approaches

The symbolic approach was the first in the era of digital machines, since it was after the creation of Lisp, (the first language for symbolic computing), that it allowed to start implementing these means of intelligence in practice. The symbolic approach allowed him to operate with formalized representations and their meanings.

The success and effectiveness of solving new problems depended on the ability to highlight only the essential information, which required flexibility in the methods of abstraction. While a common program establishes one of its ways of interpreting data, it seems biased and purely mechanical. An intellectual problem in this case is only solved by a person, an analyst or a programmer, without knowing how to entrust it to a machine. As a result, a single abstraction model, a system of entities, and constructive algorithms is created.

According to Haugeland, (1985), computational algebra (as opposed to numerical methods) develops and implements analytical methods to solve mathematical problems on a computer and assumes that the initial data, as well as the results of the solution, are formulated in an analytic (symbolic) way. When analyzing a mathematical model, the result can be general and particular analytical solutions of the mathematical problem formulated and its interpretation.

The logical approach to creating artificial intelligence systems is based on modelling reasoning. The theoretical basis is logic, which can be illustrated using Prolog's logic and language programming system for these purposes. Programs written in the Prolog language represent sets of facts and inference rules without rigidly specifying an algorithm as a sequence of actions that lead to the desired result.

In the early 1990s, the agent-based approach emerged, or the approach based on the use of intelligent (rational) agents. According to this approach, intelligence is the computational (roughly speaking, planning) part of the ability to achieve the goals set for an intelligent machine. Such a machine itself will be an intelligent agent that perceives the world around it with the help of sensors and is able to influence objects in the environment with the help of executive mechanisms. This approach focuses on the methods and algorithms that will help an intelligent agent survive in the environment while performing its task. An agent is all that can be considered as perceiving its environment with the **help of sensors** and acting in this environment with the help of executive mechanisms, Shoham, (1990).

Rassel, (1990), defines the concept of an agent, as opposed to a simple object, is endowed with several mental constructs, such as faith, responsibilities and abilities. Therefore, several mental categories will appear in the programming language, and the semantics of programming will be associated with the semantics of mental constructs.

#### Related Concepts

- **An object** - A programmatic entity of a given structure and mechanisms concretized to interact with other objects through the transmission of messages. Messages are formed and sent in response to incoming messages. Messages are generated by data-driven procedures.
- **Actor** - The essence of the software of a given structure and mechanisms of interaction. Contains data and procedures. It has encapsulation, relationships, inheritance, and can generate messages.
- **Agent** - A programmatic entity to perform assigned tasks. It has behavior, namely: it interacts with a complex and dynamically developing external environment, capable of being modified or modified by other agents depending on specific conditions. Interaction means: perception of the dynamics of the environment; actions that change the environment; reasoning to interpret observed phenomena, solve problems, draw conclusions, and determine actions.

Depending on the degree of freedom of the environment, implying the presence of the corresponding type of agent in it, the environments are subdivided into:

- **Closed** - A finite deterministic or probabilistic description of the entire environment, which is known to the agent a priori or through research.
- **Open** - A finite, deterministic, or probabilistic description of the local area of the environment in which the agent is located and in which it knows a priori or has recourse to investigation.
- **Transformable** - Dynamically developing environments, the developing structure of which is the agent.

The hybrid approach assumes that only a synergistic combination of neural and symbolic models reaches the full range of cognitive and computational capabilities. For example, expert inference rules can be generated by neural networks, and generative rules are obtained through statistical learning. Proponents of this approach believe that hybrid systems (software) will be significantly more powerful than the sum of different concepts separately.

**Intelligent hybrid system (HIS)** is generally understood as a system in which more than one method of mimicking human intellectual activity is used to solve a problem. Thus, HIS is a combination of: analytical models, expert systems, artificial neural networks, terry systems, genetic algorithms, statistical simulation models.

According to Wermter, (2000), the interdisciplinarity of "intelligent hybrid systems" brings together scientists and specialists who study the applicability of not one, but several methods, usually of different classes, to solve control and design problems.

According to Castillo, (2006), the term "intelligent hybrid systems" appeared in 1992. The authors placed in it the meaning of hybrids of intelligent methods, such as specialized systems, neural networks, and genetic algorithms. The specialized systems represented symbolic and artificial neural networks and genetic algorithms – adaptive methods of artificial intelligence. However, the term referred to a rather narrow area of integration – expert systems and neural networks.

The following are several interpretations of this area of integration according to other authors:

- The "hybrid approach" assumes that only a synergistic combination of neural and symbolic models reaches the full range of cognitive and computational capabilities.
- The term "hybrid" is understood as a system composed of two or more integrated subsystems (software), each of which may have different presentation languages and output methods. The subsystems are combined semantically and in effect with each other.
- Scientists at the Centre for Artificial Intelligence at Cranfield University (England) define a "hybrid integrated system" as a system that uses more than one information technology. In addition, the technologies cover areas such as knowledge-based systems, connection models and databases. The integration of technologies allows you to use the individual power of technology to solve specific parts of the problem. The choice of technologies (software) implemented in a hybrid system depends on the specifics of the problem being solved.
- Experts from the University of Sunderland (England), members of the HIS (Hybrid Intelligent Systems) group, define "hybrid intelligent systems" as large, complex systems that seamlessly integrate traditional knowledge and processing. They can provide the ability to store, search, and manipulate traditional data, knowledge, and technologies. Intelligent hybrid systems (software) will be significantly more powerful than extrapolating concepts from existing systems (Negnevitsky, 2005).

HIS's research objectives include the creation of methods to increase the efficiency, expressive power and inference power of intelligent, predominantly more complete systems, developed with less development effort than applications (software) using autonomous methods. From a fundamental perspective, HIS can help to understand cognitive mechanisms and patterns.

#### Methods used in AI

Without intending to be exhaustive in its description, some of the main methods used in Artificial Intelligence are presented:

- **Symbolic modeling of thought processes** - Analyzing the history of AI, one can highlight an area as extensive as modeling reasoning. For many years, the development of this science has been going this way, and it is now one of the most developed areas in modern AI. Modelling reasoning entails the creation of symbolic systems, at the entrance of which a particular task is defined, and at the exit, its solution is required. As a rule, the proposed problem is already formalized, that is, translated into a mathematical form, but either it does not have a solution algorithm, or it is very complicated, time-consuming, etc. This area includes theorem proofing, decision making and game theory, planning and scheduling, forecasting (Diakonov, 2009).
- **Working with natural languages** - An important area is natural language processing, which looks at the possibilities of understanding, processing, and generating texts in "human" language. Within the scope of this direction, the objective of such natural language processing is established, which could acquire knowledge on its own, through the reading of the existing text available on the Internet (Young, 2018). Some direct applications of natural language processing include information retrieval (including deep text analysis) and machine translation.
- **Representation and use of knowledge** - The direction of knowledge engineering combines the tasks of obtaining knowledge from simple information, its systematization and use. This direction is historically associated with the creation of expert systems – programs that use specialized knowledge bases to draw reliable conclusions about any problem (Gorban, 2015).

The production of knowledge from data is one of the basic problems of data extraction. There are several approaches to solving this problem, including those based on neural network technology, using procedures to verbalize neural networks.

- **Machine learning** - The problem of machine learning concerns the process of independent acquisition of knowledge by an intelligent system in the operating process. This direction has been central since the beginning of the development of AI. In 1956, at the Dortmund Summer Conference, Ray Solomonoff wrote a paper on the unsupervised probabilistic machine, calling it the "Inductive Inference Machine."
- **Unsupervised learning** – This allows you to recognize patterns in the input flow. Supervised learning also includes classification and regression analysis. Classification is used to determine which category an image belongs to. Regression analysis is used to find a continuous function in a series of numerical input/output patterns from which output can be predicted. In training, the agent is rewarded for good answers and punished for bad ones. They can be analysed from a decision theory perspective using concepts such as utility. The mathematical analysis of machine learning algorithms is a branch of theoretical computer science known as Computational Learning Theory (Witten, 2006). A large class of image recognition problems belong to the field of machine learning. For example, this is character recognition, handwriting, speech, text analysis. Many problems are successfully solved using biological modeling. Computer vision is especially a reference, which is also associated with robotics.
- **Artificial Intelligence Biological Simulation** - It differs from the understanding of artificial intelligence according to John McCarthy when it proceeds from the premise that artificial systems are not required to repeat in their structure and function the structure and processes that occur in it inherent to biological systems. Proponents of this approach believe that the phenomena of human behavior, its ability to learn and adapt is a consequence of biological structure and the characteristics of its functioning (Russell, 2003). This includes several areas. Neural networks are used to solve complex and fuzzy problems, such as recognizing geometric shapes or grouping objects. The genetic approach is based on the idea that an algorithm can become more efficient if it contracts better traits from other algorithms ("parents") (Conrad, 2005). A relatively new approach, where the task is to create a stand-alone program - an agent that interacts with the external environment, is called an agent-based approach.
- **Robotics** - The fields of robotics and artificial intelligence are closely related to each other. The integration of these two sciences, the creation of intelligent robots, is another direction of AI. Intelligence is needed for robots to manipulate objects, navigate with localization problems (locate, study nearby areas), and plan movement (such as getting to a target). Examples of intelligent robotics include Pleo robot toys, AIBO, QRIO.
- **Machine Creativity** - The nature of human creativity is even less studied than the nature of intelligence. However, this area exists, and here the problems of computer writing, literary works (often - poems or fairy tales), artistic creations are posed. Creating realistic images is widely used in the film and gaming industry.

Separately, the study of the problems of technical creativity of artificial intelligence systems is highlighted. The theory of inventive problem-solving, proposed in 1946 by G. S. Altshuller, laid the foundation for such an investigation.

Adding this capability to any intelligent system allows you to clearly demonstrate what exactly the system perceives and how it understands it. Adding noise instead of lack of information or filtering out noise with the knowledge available in the system produces concrete images of abstract knowledge that are easily perceived by a person, this is especially useful for intuitive and low-value knowledge, verifying that it is a formal form requires significant mental effort.

There are two directions for AI development:

- Problem solving related to the approach of specialized AI systems to human capabilities, and their integration, which is implemented by human nature (improvement of Intellect);
- Creation of artificial intelligence, representing the integration of AI systems already created into a single system capable of solving humanity's problems (strong and weak artificial intelligence).

But at the moment, in the field of artificial intelligence, there is an involvement of many thematic areas that are more of a practical relationship with AI, rather than fundamental. Many approaches have been tried, but no research group has yet addressed the emergence of artificial intelligence. Below are just a few of the most famous developments in the field of AI.

#### Notable AI Systems

Some of the most famous AI systems are:

- **Deep Blue** - developed by IBM, defeated the world chess champion. Kasparov's game against the supercomputer brought no satisfaction to either computer scientists or chess players, and the system was not recognized by Kasparov. The IBM line of supercomputers then emerged in BluGene brute force (molecular modeling) and pyramidal cell system modeling projects at Blue Brain, Switzerland (Morphy, 2011).
- **AlphaGo** – developed by Google DeepMind, won a game against the Korean 9 dan pro-Lee Sedol.
- **Watson** is a promising development from IBM, capable of perceiving human speech and performing probabilistic research using a large number of algorithms. To demonstrate the work, Watson participated in the American game "Jeopardy!"
- **MYCIN** is one of the first specialized systems that could diagnose a small set of diseases, often as accurately as doctors.
- **20Q** - a project based on the ideas of AI, based on the classic game "20 Questions". It became very popular after appearing on the Internet in 20q.net.
- **Voice recognition.** Systems like ViaVoice are able to serve consumers.
- The robots in the annual RoboCup compete in a simplified form of football.

Banks use artificial intelligence (AI) systems in insurance (actuarial mathematics), stock exchange trading, and property management. Pattern recognition methods (including the more complex and specialized ones, as well as neural networks) are widely used in optical and acoustic recognition (including text and speech), medical diagnostics, spam filters, in air defense systems (target determination), as well as to ensure various other national security tasks.

Computer game developers use AI to varying degrees of sophistication. This forms the concept of "Game Artificial Intelligence". The standard tasks of AI in games are to find a way in two-dimensional or three-dimensional space, mimicking the behavior of a combat unit, calculating the correct economic strategy, and so on.

#### Research centers

The largest scientific and research centers in the field of artificial intelligence:

- **United States of America** - the Massachusetts Institute of Technology; the Automatic Intelligence Research Institute
- **Germany** - the German Research Center for Artificial Intelligence
- **Japan** – the National Institute of Contemporary Industrial Science and Technology (AIST)
- **Russia** - Scientific Council on the Methodology of Artificial Intelligence of the Russian Academy of Sciences
- **India** - the Indian Institute of Technology in Madras.

#### Programming languages.

The first logical programming language was the Planner language, in which the possibility of automatic output of the result from data was established and gave rules for enumerating options (the combination of which was called plan). The planner was used to reduce computational requirements (using backtracking) and provide the ability to display facts without actively using the stack. Then the Prolog language was developed, which did not require an iteration plan and was, in this sense, a simplification of the Planner language (McCarthy, 1958).

The Planner language also gave rise to the logical programming languages QA-4, Popler, Conniver, and QLISP. The programming languages Mercury, Prolog visual, Oz, and Fril are descended from the Prolog language. Based on the Planner language, several alternative logical programming languages have been developed that are not based on the backtracking method.

#### Agent-based approach

According to Yoav Shoham, (1990), an approach based on intelligent (rational) agents was developed. With this approach, intelligence is the computational part of the ability to achieve the goals set for an intelligent machine (computer), that is, a computer that perceives the world around it with the help of sensors, being able to influence objects in the outside environment with the help of executive mechanisms.

This agent-based approach (hereinafter AOP) to programming is a kind of presentation program or programming paradigm, in which the fundamental concepts are the concepts of an agent and his mental behavior, depending on the environment in which he is located. This approach focuses on the methods and algorithms that will help an intelligent agent survive in the environment, while performing its task, based on the algorithms to find a path and make decisions.

This new rational programming paradigm from object-oriented programming changed the paradigm from writing procedures to the creation of objects, rational programming changed the paradigm from the creation of information objects to the creation of motivated agents (Shoham, 1990). An agent is everything that can be considered as perceiving its environment with the help of sensors and acting in this environment with the help of executive mechanisms.

For Shoham understands an agent as a software agent. It is based on the theory of artificial intelligence, the concept of which already existed but was vague, and he sets out to turn it into a more formal application in programming, offering a special framework for AOP. The concept of agent is now endowed with several mental constructions, such as faith, responsibilities and skills, appearing several mental categories in the programming language and the semantics of programming will be associated with the semantics of mental constructions.

#### Robotics and AI

The fields of robotics and artificial intelligence are closely related to each other. The integration of these two sciences, the creation of intelligent robots, is another direction of AI. Intelligence is needed for robots to manipulate objects, navigate with localization problems (locate, study nearby areas), and plan movement (such as getting to a target). Examples of intelligent robotics include Pleo robot toys, AIBO, QRIO.

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#### 4.3 Digital Society

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

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

The digital society is a complex society of technological innovation and communication, in which new environments are created and changes are made in people's organizational dynamics, in the way people understand reality, modifying the way, how they relate to the environment, to other people and how they conceive themselves in the face of their own reality. Both meanings can be understood, as they result from the informational revolution, promoted, mainly, from the attempts to understand human intelligence, via computational bases

The works developed by Turing (1950) had a great influence on studies in the second half of the twentieth century, including Philosophy, mainly due to his algorithmic approach to the nature of thought, in which he proposes the thesis according to which, "to think is to calculate" (Turing, 1950, p. 436). This is that since digital computers operate from calculations and manipulate rules for the organization of symbols, if we consider that thinking consists of 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 build mechanical models of the structure and dynamics of this type of thinking. This understanding enabled the development of mechanical models of the mind, which initially generated two strands in Cognitive Science Teixeira, (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 tool, limited to intelligent mental activity.

The common point of such notions 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 employed, as a fundamental tool. As for the social sphere, the development of information theory studies has promoted the social changes that we are currently experiencing and that have generated new types of problems, especially those related to the relationship between action and technology and 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 ICTs; and the emergence of new ways of experiencing the world, based on such technologies. These events illustrate the influence of ICTs in various spheres of society (sociological, economic, scientific and cultural), providing elements for its characterization as an information and knowledge society. According to Floridi (2002, p. 127): "Post-industrial societies live fed by information".

ICTs play a central role in the characterization of the digital society, insofar as 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.). It constitutes a relationship of dependence between the person and ICTs. This relationship is strengthened, according to Floridi, from the following factors:

- Increase in the power of ICTs, while reducing their production and marketing costs;
- Improvement of ICTs in their interaction potential (machine-machine and man-machine);
- Emergence of the Age of "zettabytes" (dated 2010).

The factors indicated are responsible for the approximation between people and ICTs, generating a deep relationship of dependence for the performance of routine actions in today's world. Such dependence is based on the digital presence, as a mediator of common actions, such as financial transactions (home banking), the acquisition of products and services (virtual stores, e-commerce), personal and professional interrelationships (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 calls (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 artifacts connected to the **Internet**, by people, but which require technological mediation by the service to be requested, such as: credit card payment for face-to-face purchases, biometric systems for the withdrawal of books in libraries, among others, can also be highlighted.

In order to understand the influence of ICTs on the constitution and alteration of people's self, the three types of self highlighted by Floridi (2014, p. 60) are made explicit:

- **Personal Identity** - refers to "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, which is a good example of how ICTs are affecting and shaping people's personal identity.
- **Self-conception** - consists of "who we think we are".
- **Social self** - refers to what we are from other people's thoughts.

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

The Web enhances the narcissistic culture, typical of our time, by expanding the forms of self-celebration and self-promotion. Dating 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 oneself generated by third parties fosters 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 intensively.

The greatest of all changes is the transformation of the information and knowledge society into the digital society. The focus of work has shifted to "remote work - telework". In the societies of developed countries, access to good jobs and a professional career will increasingly depend on a university degree with remote 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, we moved on to intellectual work and teleworking at home or elsewhere, outside the large urban centers. This last stage 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 means for someone to progress in life and have become one of the various opportunities available.
- Knowledge has become the capital of developed economies and knowledge workers, who determine the values and norms of society.

The great challenge for developed countries is to maintain their commitment to the economic performance necessary for organizations and countries to remain 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 must be coordinated, that is to say, both must work together. No existing organization can survive without innovation and at the same time without being managed.

#### 4.4 Computer Systems

##### Evolution of the computer system

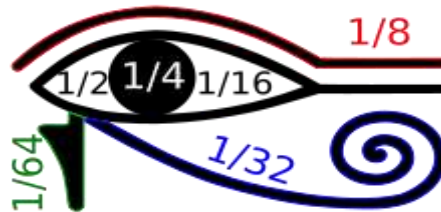
The development of computer technologies results from the interdisciplinarity of several areas of human knowledge, including: mathematics, electronics, especially digital, programming logic, among others. The ability of human beings to calculate quantities in the most varied ways was one of the determining factors in the development of mathematics and logic. In the early days of mathematics and algebra, the fingers of the hands were used to perform calculations. The oldest known tool (2,400 B.C.), for computer use, was invented in Babylon and was called abacus and was used to draw lines in the sand with rocks and used to do calculations. The Roman abacus consisted of marble balls that slid on a bronze plate full of grooves. Some mathematical terms emerged, in Latin "calx" meant marble, so "calculations" was a small ball of the abacus, and doing mathematical calculations was "calulare"

In the fifth century B.C., in ancient India, Pānini formulated the Sanskrit grammar using 3959 rules known as Ashtadhyāyī, in a very systematic and technical way. Pānini used meta-rules, transformations, and recursion with such sophistication that his grammar possessed the theoretical computational power equal to Turing's machine.

Between the years 200 BC and 400, the Indians invented the logarithm, and from the thirteenth century onwards logarithmic tables were produced by Islamic mathematicians. John Napier (1550-1617) discovered logarithms for computational use in the sixteenth century, followed by a period of considerable progress in the construction of calculation tools, such as multiplication tables engraved on sticks and which avoided memorization of the multiplication table. The first real machine was built by Wilhelm Schickard (1592-1635), being able to add, subtract, multiply and divide. This machine was lost during the war of the thirties. For many years nothing was known about this machine, so Blaise Pascal (1623-1662) was credited with building the first calculating machine, which only made additions and subtractions. Pascal at the age of 18 worked with his father in a tax collection office in the city of Rouen. As such, he developed the machine to assist him in his accounting work. The calculator used gears that made it work in a similar way to an odometer. (an instrument for measuring distances traveled). Pascal received a patent from the King of France for the commercialization of his machine. The commercialization of his calculators was not satisfactory due to their unreliable operation, although Pascal built about 50 versions. Pascal's design was greatly improved by the German mathematician Gottfried Wilhelm Leibniz (1646-1726), who also invented calculus, who dreamed that, one day in the future, all reasoning could be replaced by the turning of a simple lever.

The German philosopher and mathematician from Leipzig, (1671), introduced the concept of performing multiplications and divisions through successive additions and subtractions, but by 1694, the machine had many errors and was difficult to manipulate. Charles Xavier Thomas, (1820), designed and built a machine capable of performing the 4 basic arithmetic operations: the Arithmomet. This was the first calculator actually successfully marketed. She did multiplications on the same principle as Leibniz's calculator and made the divisions. However, all these machines were far from being considered a computer, since they were not programmable. That is to say, the entry was made only of numbers, but not of instructions as to what to do with the numbers.

Computer systems have evolved over time and appeared in various cultures, such as ancient Egypt, China, and India. According to Chrisomalis, Stephen (2010), ancient Egyptian scribes used two different systems for fractions, (unrelated to the binary numeral system) and the fractions of the Eye of Horus (so named because many historians of mathematics believe that the symbols used for this system could be arranged to form the eye of Horus, although this has been disputed). The fractions of the Eye of Horus are a binary numeral system for the fractional quantities of grains, liquids, or other measures, in which a fraction of hekat is expressed, as a sum of the binary fractions  $1/2$ ,  $1/4$ ,  $1/8$ ,  $1/16$ ,  $1/32$ , and  $1/64$ .



Arithmetic values believed to have been represented by parts of the Eye of Horus

Second, Kohn, Livia; Hacker, Edward; Moore, Steve; Patsco, Lorraine, (2000), the earliest forms of this system can be found in documents from the Fifth Dynasty of Egypt, approximately 2400 BC, and its fully developed hieroglyphic form dates from the Nineteenth Dynasty of Egypt, approximately 1200 BC. In the classical text of the [I Ching](#), a complete series of [8 trigrams](#) and [64 hexagrams](#) (analogous to 3 bits) and 6-bit binary numbers.



Second, Li, Wenzhao; Poser, Hans, (2000), the Chinese scholar and philosopher [Shao Yong](#) in the eleventh century developed an ordered binary arrangement of the [hexagrams](#) of the I Ching, representing the decimal sequence from 0 to 63, and a method for generating it.

##### Binary system

The **binary** or **base-2 system** is a [positional numbering system](#) in which all quantities are represented based on [two numbers](#), i.e., [zero and one](#) (0 and 1), Gonick, Larry, (1984), Bianchi, (1983), Bezerra, (1983).

According to Murdocca, (2000), Heuring, (2000), [digital computers](#) work internally with two levels of [voltage](#), so their natural numbering system is the binary system. In fact, in a simple system like this it is possible to simplify the calculation, with the help of [Boolean logic](#). In computing, a binary digit (0 or 1) is called bit, which comes from the English *Binary Digit*. The 8-bit set is called a byte, (*Binary Term*) or octet.

The computer's processor is made up of thousands of complex logic blocks, formed by basic logic gates, and the operation of these is supported by a fundamental postulate of digital electronics that determines that a circuit operates only with two well-defined voltage levels. In a [TTL digital circuit](#) (Transistor Transistor Logic or simply TTL is a class of digital circuits constructed of [bipolar junction transistors](#) (BJT), and [resistors](#)), the two standardized voltage levels are 0V (zero volts) and 5V (five volts). When designing a digital system, instead of working with voltage levels, one works with logic levels, so, in the case of the TTL circuit, 0V will be represented by "0" and 5V will be represented by "1", and the voltage levels between them will be ignored, that is, a range will be adopted up to which a zero logic level will be considered, and from there, logical level 1.

According to Davis, Martin, (2000), the binary system is the basis of [Boolean Algebra](#) (by [George Boole](#)), which allows logical and arithmetic operations to be performed using only two digits or two states (yes or no, true or false, all or nothing, on or off, 1 or 0). All [digital electronics](#) and [computing](#) are based on this binary system and [Boole's logic](#), which allows the representation of numbers, characters, logical and arithmetic operations by digital electronic circuits (logic gates). Computer programs are encoded in binary form and stored on media (memories, disks, etc.) in this format. Thus, for data stored in the computer's RAM memory, the format will be higher voltage (1) or lower voltage (0). In [magnetic disks](#), the binary will be given by difference in [polarity](#), positive or negative.

##### Hex System

According to Floyd, Thomas L., (2007), the hexadecimal system is a positional numbering system that represents the numbers in base 16, that is, it uses 16 symbols and that is related to the storage of characters in the computer, as the basic unit of memory (byte or octet) and that a byte represents  $2^8 = 256$  possible

alores, that is,  $28 = 24 \times 24 = 16 \times 16 = 1$ , which according to the general positional numbering theorem is equivalent to the number in base 16 10016, two hexadecimal digits correspond to exactly one byte.

It is very useful for representing binary numbers in a compact way, as it is easy to convert binaries to hexadecimal and vice versa. Since the decimal system is only used to represent ten symbols (0, 1, 2, 3, ..., 9), one must include six additional letters to complete the system (A, B, C, D, E, F), in which A (10), B (11), C (12), D (13), E (14), F (15). For example, with 2 digits, in decimal it is possible to make 100 different combinations, while in the hexadecimal system this number rises to 256.

#### ASCII System

According to the American Standard Code for Information Interchange (ASCII), of June 16, 1963, it is a code for representing letters, numerals, punctuation and control marks, through a coded signal in the form of binary code (strings of bits formed by several 0s and 1s), developed from 1960 onwards, which represents a set of 128 signs: 95 graphic signs (letters of the Latin alphabet, Arabic numerals, punctuation marks and mathematical signs) and 33 control signs, using 7 bits to represent all symbols.

ASCII encoding is used to represent text on computers, communication equipment, among other devices that work with text. This code is very often used in converting Binary Code to uppercase or lowercase letters of the alphabet.

Decimal	Binário	Decimal	Binário
0	0	7	111
1	1	8	1000
2	10	9	1001
3	11	10	1010
4	100	11	1011
5	101	12	1100
6	110	13	1101

$1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 8 + 0 + 2 + 1 = 11$   
1011 B = 11 D

#### 4.5 Software

##### Concept

Second, web.archive.org, (2023), software is a sequence of instructions executed by the computer (program), or similar technology, that is, a product developed by software engineering that includes not only the computer program, but also manuals and technical specifications. Any software is usually composed of several functions, libraries and modules that generate an executable program at the end of the development process and when executed, it receives some kind of "input", processes it according to a series of algorithms or sequences of logical instructions and returns an output as a result of this processing.

Most software is written in high-level languages such as Python, JavaScript, Visual Basic, Delphi, Perl, PHP, ECMAScript, Ruby, C#, and Java. They are easy because they are closer to natural languages than to machine languages. High-level languages are translated into machine language using a compiler, an interpreter, or a combination of the two.

Second, web.archive.org, (2013), software can also be written in a low-level assembly language, such as C, C++, Assembly, and Fortran. Assembly languages have a strong correspondence with computer machine instructions and are translated into machine language using an assembler.

The Software goes through several stages such as: economic analysis, requirements analysis, specifications, coding, testing, documentation, training, maintenance and implementation. From that moment on, the software is ready to use.

##### Types of Software

- **System software** – is a set of instructions processed by the internal system of a technological device that allows interaction between the user and the hardware (computer or other technology). It is also responsible for managing the performance efficiency of the equipment. There are also other types of operating software (system), such as driver software, firmware, utilities, and programming language translators. Examples: Windows, MAC, OS X, IOS, Android.
- **Programming Software** – a set of "tools" that allow you to create and edit other software, using high- and low-level programming languages.
- **Application / use software** – are the programs used in technological devices that allow the user to perform a series of tasks in the most diverse areas of activity. Examples: Chrome, Calculator, Windows, Media Player, Word, Auto CAD, Adobe, Photoshop,
- **Communication Software** – are the programs that establish direct and real-time communication between the users of the technologies. Examples: WhatsApp, Gmail, Zomm,
- **Game software** – these are programs used for recreational purposes, but also for educational purposes. Some of this software is used for electronic competitions (sports), such as international tournaments and millionaire prizes. Examples: Counter Strike, League of Legends, Candy Crush, etc.
- **Web Software or Web App** – are software installed on online servers and that can be accessed through Internet browsers, such as: Microsoft Edge, Mozilla, Firefox, Google Chrome, etc.
- **Artificial Intelligence Software** – are programs that simulate human behavior, especially cognitive capabilities (reasoning, interpretation, understanding, etc. Through the combination of data and algorithms, these software can perform very complex tasks, creating solutions to problems with countless variables, a skill previously exclusive to human intelligence. Examples: virtual assistants, autonomous car programs, chat bots (robots used in customer service and online group management).
- **Free / open software** – is software that allows the user to freely study, modify and share with other people. To do so, the user must have access to the source code to change it according to their needs. Examples: OpenSolaris, Eclipse, NetBeans, OpenOffice, Linux, Firefox.

#### V. DISCUSSION, CONCLUSION and CLUES for NEW INVESTIGATIONS

##### 5.1 Discussion

##### General Considerations

According to Olds (1992), in contemporary society there are many terms for the complexity of world society, forming an important part of the vocabulary of the global social system. There is, first, a term that means the symmetrical relations of codependence between the different social units. World society is, then, a historical expansion of any social unit, which is or can be interrelated with any other. At the same time, the interrelations between social units are always selective, and through this selectivity, interests and structures arise. It is possible to understand this interest in interrelation, as a turn, towards a relational understanding of the world, a turn for which the emergence of numerous network theories is an indicator, probably the most prominent, **Barabási, (2003)**.

According to **Subrahmanyam, (2005)**; Van Dijk, (2013), the most relevant term, is connectivity ("connection"), whose interpretation is, as the asymmetry in the relationships between units. A second social unit connects to something that was previously produced by a first social unit. This means that there is a temporal sequence embedded in the relations of social units. These relations of connectivity establish social processes in time. And connectivity seems to mean that remote events can be connected to each other.

According to **Buchanan, (2002)**, there is a third term that has to be added to the vocabulary, which is ubiquity. This concept does not refer to relationships, but to repetitions. Some social units are ubiquitous in world society. This understanding is primarily about spatial universality. The respective social units are the events attached to them and can occur anywhere, repeatedly. This implies a spatial understanding of being possible, anywhere, but adds the temporal implication, of what happens each time.

The most important way to understand social complexity in global society is functional differentiation. Function systems combine a functional specification of meaning with the global extension of their communicative horizons. On some occasions, the differentiation of functional perspectives is identical to the

historical process of globalization. The decomposition of the world that is chosen by focusing on the problems of religious belief or scientific truth, legal justice, economic profitability, etc. If one really assumes one of these perspectives, one tolerates regional spatial constraints, and in this co-evolution of functional differentiation and world society, lies the revolutionary relevance of functional specification and concentration, of the genesis of world society.

**The Globalization of Digital Information**

The globalization of digital information is a reality. It is causing relevant changes in economic, political, and social terms, since there are no longer any borders, in the flow of information and in the expansion of the universal participation of all (people, public and private organizations). The growth of data collection (Big Data) and all information, through digital platforms, is causing major cultural, social, economic and political changes.

In the process of digitizing information, through information and communication technologies, it allows the participation of people and organizations somewhere in the globalized world. Global data flows consist mainly of information (transformed into data in technology and then transformed into information for people), searches, communications, business transactions, videos, intra-organizational traffic (public and private).

Digital information is having a profound effect on global flows in scientific research, trade, investment, transformation of industries and sectors around the world. Digital information (Big Data) is a new resource and in some way it can be called "the new oil"

The more data and digital information are collected, the more opportunities they give to solutions based on Artificial Intelligence (AI), that is, automated solutions based on learning, as they allow best practices based on digital truth (data inputs and outputs, ideas, technologies, talents, opportunities), in various areas of knowledge.

The transformation of human truth into digital truth is driven by the expectations of everyone (people and organizations). People and organizations are increasingly using global digital platforms to learn, find work, showcase talent, and network, if human truth is guaranteed to match digital truth.

**Artificial Intelligence and Digital Truth**

The implementation of AI in the Digital Society causes a cultural revolution in people, technological infrastructures, research methods and methodology, technologies, (faster) decision-making, attitudes and behaviors. In the implementation of artificial intelligence, there are many obstacles, among others, there is an increase in the level of resistance to change and the speed of implementation. This is a result of the lack of sufficient evidence or measurements to reveal the true impact of Artificial Intelligence on the Digital Society.

According to Ghosh, (2021), the main problem is that AI will take occupations away from human resources. While AI seems to transform the role of the workforce, it certainly doesn't mean job losses. IBM's latest reports revealed that 90% of senior management in multinational companies, where AI is used, are aware that AI generates high-value jobs. This indicates that we will no longer live in a world controlled by robots or artificial intelligence.

According to Daugherty and Purdy, (2017), AI has become appealing due to the evolution of learning, through high-speed data processing computers (Big Data). According to Barnard, Coombs, Hislop, and Taneva, (2020), artificial intelligence can help drive increased productivity, reduced deadlines, and costs. The redesign or creation of intelligent automation work tasks should be able to consider two points of view; the tasks that automation will perform and what tasks humans will perform.

According to Mueter, Ostrom, Roudtree and Bitner, (2000), previous studies have shown that, after employing an analytical approach, self-service artificial intelligence technologies have good experiences in various sectors of human activity. Good experiences range from the self-service ability of artificial intelligence to solve complex problems, offer superior services compared to human service employees, and save costs and time.

**DISCUSSION, CONCLUSIONS and DIRECTIONS FOR FUTURE**

**Contributions of Artificial Intelligence to ensure that human truth corresponds to digital truth**

According to the encyclopedia of meanings (consulted on 2024-08-10), truth is related to what is sincere, true and in which there is the absence of lies. What is certain and what is reality, that is, which can in many situations be proven by facts and which is of great importance in judging human actions.

Truth is the property of being in accordance with the real fact or reality, (everything that exists). Truth is the opposite of falsehood. Truth is the conformity between a statement or belief and reality. A proposition is considered true when it corresponds to the facts or when it can be proven in a coherent and consistent way

**Figure 5 – Differences between Human Truth and Digital Truth**

Myth	Human Truth	Digital Truth
Absolute truth exists	Truth is relative and depends on individual context and perspectives	Truth is relative and depends on individual context and perspectives
Science is the only path to truth	Science is a way of seeking truth, but there are other philosophical and epistemological approaches	Science is a way of seeking truth, but there are other philosophical and epistemological approaches
The truth is objective and can be proven definitively	Truth can be subjective and is subject to constant interpretation and revision	Truth can be subjective and is subject to constant interpretation and revision
Truth is static and unchanging	Truth can be dynamic and evolve over time as new information and perspectives emerge	Truth can be dynamic and evolve over time as new information and perspectives emerge

Source: prepared by the author

**Figure 6 – Characteristics of Human Truth and Digital Truth**

	Human Truth	Digital Truth	Note
Meaning of information	Information is a source of energy that propels the "engines" of the Digital Society, but to be used it needs to be converted into Knowledge. But when refined (the real one) to transform it into knowledge, quality weighs more than quantity, since humans add value to it.	Data (true and untrue) is the source of energy that drives the "engines" of the Digital Society, but to be used they need to be converted into information. No distinction between true and untrue data.	Object of study of Information Science
Information properties	Distinction between truth and non-truth	There is no distinction between true and untrue information	Truth and non-truth circulate in digital technologies. Ex: rubber ducks are types of ducks
Natural laws	They encompass the physical and the biological (human)	They encompass the physical	
Knowledge	Cognitive about the world and about the truth. Constituted between the cognitive "agent" and the world	Digital World	The digital world is different from the global world
Method	Capacity for synthesis - synthetic method of analysis". Capacity for "levels of abstraction".	The study of the mind is appropriate when carried out through the use of mechanical functions that can be manipulated by digital computers.	It will be possible to build mechanical models of the structure and dynamics of intelligent thinking. The understanding that underlies this conception is that <b>the ability to manipulate information, in a mechanical way, constitutes thinking.</b>
Sensory system	Human sensors	Channels for the circulation of data / information	
Properties of knowledge	Based on information	Based on the data flowing through technology	If someone 'knows that p' it is because he is told 'that p'
Reality	Constituted in the human mind from natural and biological laws	Built on digital technology	Object of the information

Mechanical Models of the Mind	Simulate/emulate mental activities, but explain human activities	Artificial Intelligence is only a limited explanatory tool of intelligent mental activity.	Mechanical models are necessary but not sufficient for mental models that are physical and biological and based on the facts of truth
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Source: prepared by the author

In fact, scientific truth starts from the philosophical concept and whose scientific realism, of all sciences, whose objective is to discover the truth about the world. Realists, philosophers and scientists, defend and use the Scientific Method with the aim of reaching the truth. In this sense, there are strong reasons to resort to the use of scientific methods as conduits of reaching the truth. Scientific progress is measured by progress in the search for truth.

When we talk about the truth, we are talking about the truth sought by all human beings, who want to position themselves in the world, whether they are scientists or not. It is a truth in which the human mind knows reality, or that the reality of the external world, corresponds to the language about it.

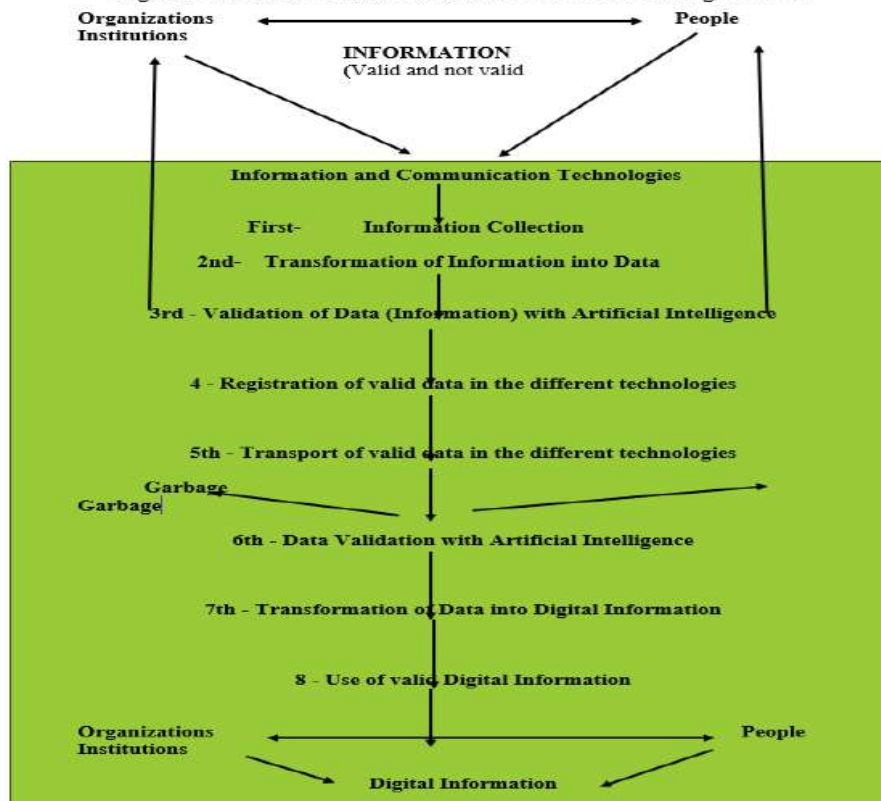
There is a factual (objective truth of reality) that can be scientifically proven by facts, and a subjective reality constructed in the minds of human persons. These truths can be theorized and about which one can know, always using the approximation of the total and universal truth. Interdisciplinary truth is a conception that regulates the relationship between scientific theories that formulate through language, and the reality of the world external to the human mind, that is, a statement is true when the argument about something is proven by the fact(s).

The information and knowledge society is in the transition phase to the Digital Society, which is not only a technological change, but also a socio-cultural one, so it is necessary to manage this change, communicate and guarantee the digital truth, since the processes of acquisition and use of technological tools, automation and data analysis, such as process automation technologies, Internet of Things (IoT) connectivity, Artificial Intelligence and Big Data become a major challenge for people and organizations.

The issue of the veracity of digital information, the importance of cybersecurity, the protection of data (information transformed into data and these transformed into information), as well as the guarantee of privacy, become critical components of digital transformation. This socio-cultural change requires the permanent search for truth (credible and accessible information), it forces scientific research and human beings to promote innovation, the sharing of true information and the mental change of prioritizing the digital.

**Proposal of the Model to ensure that Human Truth equals Digital Truth**

**Figure 7 – Model of Transformation of Human Truth into Digital Truth**



**Model to "ensure" that Human Truth equals Digital Truth:**

People individually and in public and private organizations/institutions when using the different technologies to access the Digital Society, the technology must comply with the following requirements:

**1st Collection of information – text(s), image(s), video(s), etc.**

**2nd - Transformation of information into data**

- **Ensure that** transformation uses the numeric digital codes for Roman numerals, (0,1,2,3,4,5,6,7,8,9) and that it uses the ASCII code for texts (Roman alphabet – a, b, c, ..... Z, and special characters). Ensure the faithful copy of images (images, videos, etc). Teach the technology to classify data into a known data set. Example: through the keywords provided to the technology and with their ranking values.

**3rd - Validation of Data (Information) with Artificial Intelligence -**

- Teach the technology to classify data into a known data set. Example: through the keywords provided to the technology and with their ranking values, "happy" is positive, while "hate" is negative.
- The unknown data allow the technology to independently classify this data with inaccuracy of the results.
- Validation consists of ensuring that the data and images collected do not infringe the rules and standards, **stored in the following** databases:
  - UN Universal Declaration of Human Rights (UDHR);
  - European Union Declaration of Human Rights;
  - Universal Declaration on Bioethics and Human Rights.
  - Universal Encyclopedia of Meanings
  - Encyclopedia of the Humanities
  - ....

- Valid data allows you to continue
- Incorrect/invalid data will not be accepted and will not be allowed to continue.

#### 4 - Registration of valid data in the different technologies

- **Consultation** – allow consultation requested by people and organizations/institutions (public or private).
- **Create registration** – register the requested (texts, images, videos, etc).
- **Unregister** – allow the request to be cancelled.

#### 5th - Transport of valid data in the different technologies

- Transfer the valid data between the different technologies until the request of the people and organizations/institutions (public and private) is satisfied, taking into account the requirements of the different technologies.

#### 6th - Data Validation with Artificial Intelligence

- Validation consists of ensuring that the data and images that circulate and that will be made available to people and organizations / institutions (public and private) do not infringe the rules and norms, **stored in the following databases**:
  - UN Universal Declaration of Human Rights (UDHR);
  - European Union Declaration of Human Rights;
  - Universal Declaration on Bioethics and Human Rights.
  - Universal Encyclopedia of Meanings
  - Encyclopedia of the Humanities
  - ....
- Valid data allows you to continue
- Incorrect/invalid data will not be accepted and will not be allowed to continue.

#### 7th - Transformation of Data into Digital Information

- Ensure that the transformation uses the numeric digital codes for the Roman numerals, (0,1,2,3,4,5,6,7,8,9) and that it uses the ASCII code for the texts (Roman alphabet – a, b, c, ..... Z, and special characters). Ensure the faithful copy of images (images, videos, etc).

#### 8 - Use of valid Digital Information

- Use of Digital Truth identical to Human Truth, with rigor, seriousness, responsibility and ethically correct.

##### 5.2 Conclusions

The above discussion describes, in a summarized way, the main "guarantees" that Human Truth corresponds to Digital Truth, supported by Artificial Intelligence. It plays a vital role in people's lives, and represents a huge challenge for people, organizations/institutions (public and private) and for society in general, in the Digital Society.

Human Intelligence emphasizes the importance of human values, having contributed to the development of science, art, culture, literature and society in general. Human intelligence can be seen in the search for knowledge and in the exploration of human potential. Overall, human intelligence has left a profound impact on shaping the course of history, emphasizing the importance of human dignity, critical thinking, and the pursuit of a well-rounded ethical life.

Artificial Intelligence is the technology that describes the future and that will affect the lives of people, organizations and society in general, in which technology will be able to reproduce skills similar (not the same) to human ones, such as reasoning, learning, planning and creativity. The technology receives the data (already prepared or collected through its own sensors, e.g. the use of a camera), processes it and responds to different situations, based on the amount of data stored and the algorithms.

Artificial intelligence technology needs to be regulated regarding:

- Software, virtual assistants, image analysis software, search engines, facial and voice recognition systems.
- Built-in hardware technology: robots, self-driving cars, drones, or Internet of Things applications.

Some examples of applications that are powered by Artificial Intelligence:

- **Online shopping and advertising** – important in the commercial area for product optimization, logistics, stock planning, etc.
- **Web searches** – search engines learn from the vast input/collection of data, providing researchers with relevant results.
- **Personal digital assistants** – providing a product that is as relevant and personalized as possible. Virtual assistants answer questions, provide recommendations, and help organize daily routines and have become ubiquitous.
- **Machine translations** – language translation software, based on written or spoken texts, relies on artificial intelligence to offer the best translation. Ditto automatic subtitling.
- **Smart homes, cities and infrastructure** – smart thermostats learn from human behaviour to save energy, control and improve traffic in cities, improve connectivity and reduce traffic jams.
- **Cars** – autonomous vehicles are a reality, in terms of road safety, powered by automated sensors that detect potential dangerous situations and accidents.
- **Cybersecurity** – helps recognize and combat cyberattacks and other threats based on continuous data collection, pattern recognition, and attack rollback.
- **Health** – help to recognise the infection through computerised x-rays, as well as in locating health problems. Find patterns that can lead to new discoveries in medicine and other ways to improve individual diagnosis (e.g., answering emergency calls that allow a cardiac arrest to be recognized and quickly dispatching the medical team).
- **Combating disinformation** – detecting fake news and disinformation, by controlling information on social media, searching for sensationalist or alarming words and identifying reliable sources.
- **Transport** – improving the safety, speed and efficiency of road and rail traffic by minimising wheel friction, maximising speed and enabling autonomous driving.
- **Manufacturing** – helping companies become more efficient through the use of robots in manufacturing, optimizing sales routes, weather forecasting, maintenance, and smart factory failures.
- **Food and agriculture** – Creating a sustainable food system that ensures healthy food, minimizing the use of fertilizers, pesticides and irrigation, increasing productivity and reducing environmental impact. Robots can remove weeds or decrease herbicide use
- **Public administration and services** – by using stored data and pattern recognition, it allows you to warn in advance of natural disasters, prepare for and mitigate the consequences.

##### 5.3 Clues for Future Investigations

Reflection on the transformation of Human Truth into Digital Truth, with artificial intelligence as technological support (from Theory to Practice), can contribute to enlighten World Leaders/Leaders and individuals about the consequences and the need to define new rules and norms in changing paradigms, in economic, political and social terms.

The following questions are already posed:

1. What are the norms and rules for digital truth to correspond to human truth in the Digital Society?
2. Will artificial intelligence be enough to distinguish Digital Truth from non-Truth?

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The author declares that he has no financial interests or personal relationships that could have influenced the work related to this article.

#### REFERENCES

- [1]. **element.** Lakatos, Imre, (1998), Science and Pseudoscience. In: CURD, M.; COVER, J. A. (Ed.). Philosophy of science: the central issues. New York: Norton.
- [2]. \Quéré, Louis, \_(1999), La sociologie à l'épreuve de l'herméneutique. Essais d'épistémologie des sciences sociales. Quebec, L'Harmattan.

- [3]. ["Ostrom is quoted in Kommers N and Mackie P 2005 Journalist guide to world resources 2005 World Resources Institute 1-30" \(PDF\). Pdf.wri.org.» \(PDF\). Retrieved September 22, 2020.](#)
- [4]. ["Resilient landscapes and communities managing natural resources in New South Wales" \(PDF\). Nrc.nsw.gov.au. Archived." \(PDF\). Retrieved September 22, 2020.](#)
- [5]. ["UNDP.UNEP. The World Bank and World Resources Institute – The Wealth of the Poor: Managing Ecosystems to Fight Poverty Institute 2005 Chapter 3 The board's role in governance, World Resources 2005" \(PDF\). Sc.com.my.» \(PDF\). Retrieved September 22, 2020.](#)
- [6]. [« 10 Countries With The Most Natural Resources | Investopedia'. web.archive.org. 6 September 2016. Retrieved September 22, 2020.](#)
- [7]. [«Cambí, Eduardo. Neoconstitutionalism and Neoproceduralism; Panóptica, year 1, n. 6». Retrieved 5 Nov. 2014](#)
- [8]. [«Deforestation in the Amazon skyrockets again in 2020 – Jornal da USP». jornal.usp.br. Retrieved September 22, 2020.](#)
- [9]. ["EnviroStats: Canada's natural resource wealth at a glance". www150.statcan.gc.ca. Retrieved September 24, 2020.](#)
- [10]. [Learning to Care: Education and Compassion \(PDF\). Australian Journal of Environmental Education. 2003. Retrieved 10 September 2020 |first name1= without |last name1= in Authors list \(help\)](#)
- [11]. ["Long lasted turbulence question solved». Tech Explorer. July 25, 2019. Retrieved July 26, 2019.](#)
- [12]. ["Notice Sustainable Use of Natural Resources—A Conceptual Approach to Sustainable Management of Natural Resources in the Context of Development, being Development and Environment Reports Nr 14 1995, by the Group for Development and Environment \(GDE\), Institute of Geography, University of Berne, Hallerstrasse 12, CH-3012 Berne, Switzerland; Tel. +41 31 631 8822. Fax +41 31 631 8544. Price 12 Swiss Francs in English, French, German.»element. Environmental Conservation \(3\): 288–288. 1995. ISSN 0376-8929. doi:10.1017/s0376892900010973. Retrieved September 22, 2020.](#)
- [13]. ["Report-of-the-1993-un-Commission-on-human-rights-1-feb-to-12-mar-1993-12-pp'. Human Rights Documents online. Retrieved September 22, 2020.](#)
- [14]. [«The World's Most Resource-Rich Countries – 24/7 Wall St.» \(in English\). Retrieved September 22, 2020.](#)
- [15]. ["UN and NDP responses". dx.doi.org. March 7, 2013. Retrieved September 22, 2020.](#)
- [16]. ["UN declares 2011 the International Year of Forests". Physics Today. 2011. ISSN 1945-0699. doi:10.1063/en.5.025024. Retrieved September 22, 2020.](#)
- [17]. ["World Charter for Nature \(1982\)". sedac.ciesin.columbia.edu. Retrieved September 10, 2020.](#)
- [18]. 31st International Conference of Data Protection and Privacy Commissioners, (2009), Standards on Privacy and Personal Data. Available at: [www.ohchr.org/Documents/Publications/Factsheet32EN.pdf](http://www.ohchr.org/Documents/Publications/Factsheet32EN.pdf)
- [19]. A Brief History of Human Rights - Petition of Law (1628). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/magna-carta.html>
- [20]. A Brief History of Human Rights - The Constitution of the United States of America (1787) and the Bill of Rights (1791). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/briefhistory/declaration-of-independence.html>
- [21]. A Brief History of Human Rights - The Cyrus Cylinder (539 BC). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/>
- [22]. A Brief History of Human Rights - The Magna Carta (1215). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-humanrights/brief-history/magna-carta.html>
- [23]. A Brief History of Human Rights - The United Nations (1945). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/the-united-nations.html>
- [24]. The Magna Carta (1215). (n.d.). A Brief History of Human Rights Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-humanrights/brief-history/magna-carta.html>
- [25]. The dignity of the human person in Kant's thought. (July 2005). Retrieved from Jus.com.br: <https://jus.com.br/artigos/7069/a-dignidade-da-pessoa-humana-no-pensamento-dekant>
- [26]. Abbagnano, Nicola, (2003), Dicionário de Filosofia. 2nd edition. SP: Martins Fontes.
- [27]. Abelard, Pedro, Sic et Non. In: BONI, Luis Alberto de (ed.), (2000), Medieval Philosophy: texts.
- [28]. Abramo, P., (1979, p.19-87), Pesquisa em ciências sociais. In: HIRANO, S (ed.), Social Research: Project and Planning, São Paulo: T. A. Queiroz.
- [29]. Adams, Frederick, (2010, v. 41, n. 3, pp. 331-344), «Information and knowledge à la Floridi», Metaphilosophy, editor Patrick Allo, Porto Alegre: Edipucrs.
- [30]. Adams, Frederick; Moraes, João Antonio de, (2014), «Is There a Philosophy of Information? » Topoi (Dordrecht), pp.1-11. <<http://link.springer.com/article/10.1007%2Fs11245-014-9252-9>>.
- [31]. Adams, William C., (2015), Conducting Semi-Structured Interviews, Handbook of Practical Program Evaluation, John Wiley & Sons, Inc, pp, 492-505, ISBN 978-1-119-17138-6
- [32]. Agreement on reforming research assessment [online]. European University Association. 2022 [viewed 19 august 2022]. Available from: [https://www.eua.eu/downloads/news/2022\\_07\\_19\\_rra\\_agreement\\_final.pdf](https://www.eua.eu/downloads/news/2022_07_19_rra_agreement_final.pdf)
- [33]. Agreement on Reforming Research Assessment: now open for signature, (2022), <https://research-and-innovation.ec.europa.eu>.
- [34]. Aguilar, F.J., (1967), Scanning the business environment. MacMillan, New York.
- [35]. AnalyticSteps (2022). What is virtualization in cloud computing? Features and benefits. Accessed in <https://www.analyticsteps.com/blogs/what-virtualization-cloud-computing-characteristics-benefits> in March 2022.
- [36]. Aquinas, Thomas, (1274), Summa Theologia, The One God. The Blessed Trinity. Creation. The Angels. The Six Days. Man. The Government of Creatures.
- [37]. Araújo, P. C., Guimarães, J. A. C., and Tennis, J. T. (2017b). "Metatheory and Knowledge Organization." In Proceedings of the North American Symposium on Knowledge Organization. (Urbana-Champaign, IL). Available: <http://dx.doi.org/10.7152/nasko.v6i1.15154>
- [38]. Araújo, P. C., Tennis, J. T., and Guimarães, J. A. C. (2017a). "The Concept of Epistemology in Knowledge Organization." In Memory, Culture, and Technology in the Organization of Knowledge, , 4:71–78. Advanced Studies in Knowledge Organization. Recife: Ed. UFPE. <http://isko-brasil.org.br/wpcontent/uploads/2013/02/livro-ISKO-2017.pdf>
- [39]. The United Nations (1945). (n.d.). A Brief History of Human Rights - Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/the-united-nations.html>
- [40]. American Humanist Association. "Definition of Humanism." American Humanist Association, Feb. 23, 2023. <https://americanhumanist.org/what-is-humanism/definition-of-humanism/>.
- [41]. Auster, E.; Choo, C. W., (1994), How senior managers acquire and use information in environmental scanning. Information Processing and Management, v. 30, n. 5, p. 607-618.
- [42]. Bagatell Rendelet"-hez." (Towards the Unified European Civil Procedure? - Observations on the First Framework, the Bagatelle Regulation) (2008) 5 Eur6pai Jog 9-14.
- [43]. Ball, Terence, ed. (2017). **James Madison**. Milton Park, England: Taylor & Francis. ISBN 978-1-351-15514-4.
- [44]. WORLD BANK. World Development Report 2000-2001: Fight against poverty. 2000. Available at: <http://www.worldbank.org/poverty/portuguese/wdr/>. Accessed in: 2002.
- [45]. Bateson, G., (1972), *Steps to an Ecology of Mind*, New York, Balentine Books
- [46]. Beck, Ulrich, (1986), Risikogesellschaft, Suhrkamp, ISBN 3518113658.
- [47]. Belkin, N. J. (1978), *Information concepts for information science*. Journal of Documentation, vol. 34, no. 1, p.55-85
- [48]. Bentham, Jeremy, (1834), Deontology or, The Science of Morality, J. Bowring. London: Longman, Rees, Orme, Brown, Green and Longman.
- [49]. Berger & Luckmann, (1966), Sociology of Knowledge, Anchor Books, ISBN 978-0-385-05898-8
- [50]. Berger & Luckmann, (1985), The Social Construction of Reality, Anchor Books
- [51]. Bergeron, P. (1996), Information resources management. **Annual Review of Information Science and Technology**, White Plains, vol. 31, pp. 263-300.
- [52]. Bertilon, Alphonse, (2011), Wayback Machine, State Division of Criminal Justice Services.
- [53]. Blumer, Herbert, (1988), A Legacy of Concepts, Criticisms, and Contributions, Symbolic Interaction, 1, 11, Special Issue n Herbert Blumer's Legacy: 1-12.
- [54]. Bobbio, Norberto. Law and the State in the Thought of Emanuel Kant. 40 ed. Brasília: Ed. UNB, 1992, 168p.

- [55]. Boland, R. J. (1987). «The In-Formation of Information Systems». In: Critical Issues in Information Systems Research. Boland, R. J. & Hirschheim, R. A. (Ed.), Wiley, New York.
- [56]. Borko, H., (1968), Information science: what is it? *American documentation*, Washington, v. 19, n. 1, p. 3-5.
- [57]. Bourdieu, P. and L. P. D. Wacquant, (1992), *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.
- [58]. Bourdieu, P., (1986), "The Forms of Capital." Pp. 241–58 in *Handbook of theory and research for the sociology of education*, edited by J. G. Richardson. New York: Greenwood Press.
- [59]. Bourdieu, P., (2004), The social uses of science: for a clinical sociology of the scientific field. São Paulo: Editora UNESP.
- [60]. Bourdieu, Pierre (1983). "Sketch of a theory of practice". In: Ortiz, R. (Org.). *Pierre Bourdieu: sociology*. São Paulo: Ática, p. 46-81.
- [61]. Bourdieu, Pierre, (1984), *Distinction: A Social Critique of the Judgement of Taste*. Harvard: Routledge and Kagan Paul Ltd.
- [62]. Bourdieu, Pierre, (2001), *The Social Structures of the Economy*, Lisbon: Instituto Piaget (translation).
- [63]. Bronowski, Jacob. (1939), *The Poet's defence* (Facsimile ed.) Cambridge University Press. ISBN 978-1-107-50535-3.
- [64]. Bryant, A. (2007), Information and the CIO, in: Huizing, A. and Vries, E.J. de (2007), *Information Management: Setting the Scene*, Oxford: Elsevier, forthcoming.
- [65]. Bryman, Alan, (2000), *Research Methods and Organization Studies*, Unwin Hyman
- [66]. Bryman, Alan, (2001), *Only communicate communication IS a social construct*. Working Paper 2001-8, School of Information Management, Leeds Metropolitan University.
- [67]. Buchanan, Mark. (2002), *Ubiquity: why catastrophes happen*. New York: Crown.
- [68]. Buckland, M. (1991), *Information as Thing*, Journal of the American Society for Information Science, vol.42, no. 5
- [69]. Burckhardt, J. (1860). *The Civilization of the Renaissance in Italy*.
- [70]. Burgess, Ernest, (1925), *The Growth of the City: an Introduction to a Research Project*, University of Chicago Press, pp.47-62, ISBN 9780226148199.
- [71]. Burke, P. (1964). *The Renaissance*.
- [72]. Burke, P. (1987). *The Italian Renaissance: Culture and Society in Italy*.
- [73]. Cajazeiras, Jorge Emanuel Reis, (2006), The importance of social responsibility in management: Interview. *Revista Gerenciais*, São Paulo, v. 5, special n.
- [74]. [Callon, Penan, Courtial](#), (1995), *Cienciometria: la medición de la actividad científica: de la bibliometria a la vigilancia tecnologica*, Political Science
- [75]. Campbell, Donald T., (1970), Natural selection as an epistemological model. In: NAROLL, Raouli; COHEN, Ronald (Eds.). *A handbook of method in cultural anthropology*. pp. 51-85, Garden City (NY): Natural History Press.
- [76]. Campbell, Donald T., (1988), *Methodology and epistemology for social science*. Chicago (IL): University of Chicago Press.
- [77]. Camus, Albert, (1989), *The Myth of Sisyphus*, Rio de Janeiro, Guanabara.
- [78]. Capurro, R., Eldred, Michael; Nagel, Daniel, (2012), It and privacy from an ethical perspective digital whoness: identity, privacy and freedom in the cyberworld. In: BUCHMANN, Johannes (Ed.). *Internet Privacy: multidisciplinary analysis*. München. Available from: <[http://www.acatech.de/fileadmin/user\\_upload/aumstruktur\\_nach\\_Website/Acatech/root/de/Publicationen/Projektberichte/acatech\\_STUDIE\\_Internet\\_Privacy\\_WEB.pdf](http://www.acatech.de/fileadmin/user_upload/aumstruktur_nach_Website/Acatech/root/de/Publicationen/Projektberichte/acatech_STUDIE_Internet_Privacy_WEB.pdf)>. Accessed: 11 Oct. 2016.
- [79]. Capurro, R. Foundations of information science: review and perspectives. In: INTERNATIONAL CONFERENCE ON CONCEPTIONS OF LIBRARY AND INFORMATION SCIENCE, Finland, 1991. Proceedings... Tampere: University of Tampere, 1991. Available: . Accessed: 14 Apr. 2004.
- [80]. Capurro, R., (1978), *Information*. Munich: Saur <http://www.capurro.de/info.html>
- [81]. Capurro, R., (2009), Past, present, and future of the concept of information. *triple C* , 7, 125-141. Available at: <<http://www.capurro.de/infoconcept.pdf>>.
- [82]. Capurro, R.; (2014), *apud Arabes. Notes on the Greek, Latin, Arabic, Persian, and Hebrew Roots of the Concept of Information*. Available at: <<http://www.capurro.de/iran.html>>.
- [83]. Capurro, R.; Hjørland, B., (2003), The Concept of Information. In *Annual Review of Information Science Technology (ARIST)*, B. Cronin Ed.; Information Today: Medford, New Jersey, 2003, pp. 343-411. Available at: <<http://www.capurro.de/infoconcept.html>>.
- [84]. Capurro, R.; Fleissner, P.; Hofkirchner, W., (1999, v.2). Is a Unified Theory of Information feasible? the trilogue. In: second international conference on the foundations of information science. The quest for a Unified Theory of Information. [S.l.]: Gordon and Breach, p. 9-30, 1999. Available: . Accessed: 17 May 2004.
- [85]. Capurro, Rafael (2003): *Ethik im Netz*. Stuttgart: Franz Steiner Verlag.
- [86]. Capurro, Rafael (2003a): *Operari sequitur esse. Zur existenzial-ontologischen Begründung der Netzethik*. En: Thomas Hausmanning, Rafael Capurro (Eds.): *Netzethik. Grundlegungsfragen der Internetethik*. Schriftenreihe des ICIE, Bd.1, Munich: Fink, 61-77.
- [87]. Capurro, Rafael (2003b): *Angeletics - A Message Theory*. En: Hans H. Diebner, Lehan Ramsay (Eds.): *Hierarchies of Communication*. Karlsruhe: ZKM - Center for Art and Media, 58-71.
- [88]. Capurro, Rafael, (2006), «Towards an ontological foundation of Information Ethics», *Ethics and Information Technology*, v.8, n. 4, pp. 175-186.
- [89]. Capurro, Rafael, (2010), «Theoretical and practical challenges of Capurro, Rafael, 2010, «Theoretical and practical challenges of intercultural information ethics», E-Book of the I Brazilian Symposium on Information Ethics, João Pessoa: Idea, pp. 11-51.
- [90]. Capurro, Rafael, (2014), *Personal correspondence*, Demir, Hilmi, 2012, Luciano Floridi's philosophy of technology. New York: Springer.
- [91]. Capurro, Rafael; Hjørland, Birger (2003): [The Concept of Information](#). En: Blaise Cronin (Ed.): *Annual Review of Information Science and Technology*, Vol. 37, Medford, NJ: Information Today Inc., 343-411.
- [92]. Cardoso, Gustavo, (2007), *The Media in the Network Society: filters, showcases, news*. Rio de Janeiro: Editora FGV.
- [93]. Castelli, M. & Aoyama, Y. (1994), *Vers la société de l'information: structures de l'emploi dans les pays du G7 de 1920 à 1990*, *Revue Internationale du travail*, vol. 133, n°1
- [94]. Castells, M. (1996). *The rise of the network society, the information age: economy, society and culture*. Vol. 1, Cambridge, Blackwell Publishers.
- [95]. Castells, Manuel, (1999, v. 3). *End of millennium: the information age: economy, society and culture*. Trad. Klaus Brandini Gerhardt and Roneide Venancio Majer. São Paulo: Peace and Earth,
- [96]. Castells, Manuel, (2003), *The Internet Galaxy: reflections on the Internet, business and society*. Trad. Maria Luiza X. de A. Borges. Rio de Janeiro: Jorge Zahar Ed..
- [97]. Castells, Manuel, (2009), *Communication power*. Oxford: Oxford University Press.
- [98]. CBCNews. (2010), *Montreal man on watch list rallies supporters*. Available at:
- [99]. Certeau, Michel de, (1980), *L'invention du quotidien*, Vol. 1, Arts de faire.
- [100]. Charles R Beitz, (2001), Human rights as a common concern. *American Political Science Review*, 95(2):269–282.
- [101]. Chauí, (2006), *Invitation to Philosophy*, 13th ed. São Paulo: Ática, (reflection on Socrates (399-427)).
- [102]. Chauí, Marilena, (1995), *Invitation to philosophy*. Attica.
- [103]. Chauí, Marilena. Public, private, despotism, in GIGNOTFO, Newton and others. *Ethics*. São Paulo: Caomphnia das Letras, 1997, p. 345-356
- [104]. Choo C. W., (2008), *The knowing organization*. Oxford University Press, NY, p. 298.
- [105]. Choo, C. W. & Bontis, N. (Ed.) (2002). *The Strategic Management of Intellectual Capital and Organizational Learning*. Oxford University Press, Oxford, UK.
- [106]. Choo, C. W. (1996, October). *The Knowing Organization: How Organizations Use Information To Construct Meaning, Create Knowledge, and Make Decisions*. *International Journal of Information Management*, Vol 16(5), pp. 329-340.
- [107]. Choo, C. W. (1997), *Organizations as Information-use Systems: A process model of information management*. PrimaVera Working Paper 1997-17, University van Amsterdam.
- [108]. Choo, C. W. (1998), *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge and Make decisions*, Oxford University Press, New York
- [109]. Choo, C. W. (2002), *Environment Scanning as Information Seeking and Organizational Knowing* PrimaVera Working Paper 2002-01, University van Amsterdam.

- [110]. Choo, C. W. (2002), *Information Management for the Intelligent Organization: The Art of Scanning the Environment*, 3rd edition, Medford, NJ: Information Today, Inc.
- [111]. Choo, C. W. (2009) Information use and early warnings effectiveness: perspectives and prospects, *Journal of The American Society for Information Science and Technology*, 60(5), 1071-1082.
- [112]. Choo, C. W., (1994), Perception and use of information sources in environmental scanning. *Library & Information Science Research*, v. 16, n. 1, p. 23-40.
- [113]. Choo, C. W., (2003), *The organization of knowledge: how organizations use information to create meaning, build knowledge, and make decisions*. São Paulo: Senac.
- [114]. Choo, C. W., (2006), *The knowing organization: how organizations use information to construct meaning, create knowledge, and make decisions*. 2nd ed. New York: Oxford University Press.
- [115]. Choo, C. W., Ethel Auster, (1993), *Environment Scanning: Acquisition and Use of Information by Managers*, in: *Annual Review of Information Science and Technology*, edited by M. E. Williams
- [116]. Choo, C.W. (2007), Social Use of Information in Organizational Groups, in: Huizinga, A. and Vries, E.J. de (2007), *Information Management: Setting the Scene*, Oxford: Elsevier, forthcoming.
- [117]. Choo, Chun Wei., (1998), *Information management for the intelligent organization: the art of scanning the environment*. 2nd ed. Medford, New Jersey: ASIS Monograph Series.
- [118]. Cicero, (2017), *Dos Dever (de officiis)*, Edições 70.
- [119]. Cicourel, Aaro Victor, (1974), *Cognitive Sociology Language and Meaning in Social Interaction*. New York: Free Press.
- [120]. Cintra, Antonio Carlos de Araújo; Grinover Ada Pellegrini; Dinamarco, Cândido Rangel, (2008), *Teoria geral do processo*. São Paulo: Malheiros.
- [121]. Cleber Sanfelici, Cleber Sanfelici; Tena, Lucimara Plaza, (2016), Fundamentals that justify privacy rights: Human Dignity as the fundamental core of personality rights and situations in dentistry that allow flexibility (Registration and anamnesis form). In: *Electronic Journal of the Law Course of UFSM*, v. 11, n.2/ 2016, p. 481. Available from: <[https://periodicos.ufsm.br/revistadireito/article/view/19683/pdf#\\_WROKJogrLIV](https://periodicos.ufsm.br/revistadireito/article/view/19683/pdf#_WROKJogrLIV)>. Accessed: 10 May, 2017.
- [122]. Human Rights Commission of the Order of Lawyers. (2007). *Fundamental Rights - Multiculturalism and Religions*. Estoril: Príncipeia.
- [123]. [European Commission](https://ec.europa.eu). <https://ec.europa.eu>.
- [124]. Commission on Human Rights of the Order of Advocates. (2007). *Fundamental Rights - Multiculturalism and Religions*. Estoril: First.
- [125]. Comte, Auguste, (1830), *Essay on Philosophy*, ISBN 978-987-23824-3-8.
- [126]. Comte, Auguste, (1865), *A General View of Positivism*. Translated by John Henry Bridges. London: Trübner and Co., 1865.
- [127]. Comte, Auguste, (1891), *The Catechism of Positive Religion*. Translated by Richard Congreve. London: Kegan Paul, Trench, Trübner & Co., Ltd., 1891.
- [128]. Concerning Al-Qaida and the Taliban and Associated Individuals and Entities: [www.un.org/sc/committees/1267](http://www.un.org/sc/committees/1267)
- [129]. FEDERAL COUNCIL OF SOCIAL SERVICE, (1993), Code of Professional Ethics, Brasília, mar. 1993. CROCKER, David. Quality of Life and Development: the normative approach of Sen and Nussbaum. *Lua Nova*, São Paulo, n.31, p.99-133.
- [130]. *National Council of Justice. "Frequently Asked Questions". Retrieved August 27, 2017.*
- [131]. DOGMATIC CONSTITUTION DEI VERBUM: on Divine Revelation. In: [http://www.vatican.va/archive/hist\\_councils/ii\\_vatican\\_council/documents/vatii\\_const\\_19651118\\_dei-verbum\\_po.html](http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vatii_const_19651118_dei-verbum_po.html). Accessed on 30 Aug. 2019.
- [132]. Constitution of the United States of America (1787) A Brief History of Human Rights - and the Bill of Rights (1791). (n.d.). Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/briefhistory/declaration-of-independence.html>
- [133]. Constitutional Law No. 1/92 of November 25. (n.d.). Retrieved from National Election Commission: [http://www.cne.pt/sites/default/files/dl/crp\\_1992.pdf](http://www.cne.pt/sites/default/files/dl/crp_1992.pdf)
- [134]. Berne Convention for the Protection of Literary and Artistic Works, (1886), completed in Paris on 4 May 1896, revised in Berlin on 13 November 1908, completed in Berne on 20 March 1914, revised in Rome on 2 June 1928, in Brussels on 26 June 1948, in Stockholm on 14 July 1967 and in Paris on 24 July 1971.
- [135]. Universal Copyright Convention, (1971), Adopted at Geneva on 6 September 1952, as revised by the Paris Act.
- [136]. Invitation to Philosophy - Marilena Chauí
- [137]. Coulon, Alain, (1995), *Ethnomethodology*, University of Paris VIII.
- [138]. Council of Europe. (2012), Recommendation on the protection of human rights with regard to search engines, Recommendation CM/Rec (2012)3. Available at: <https://wcd.coe.int>
- [139]. Council of Europe: [www.coe.int](http://www.coe.int)
- [140]. Council of The European Union, (2016), General Data Protection Regulation. (S. l.: s. n.).
- [141]. Crawford, Richard, (1994), *In the era of human capital: talent, intelligence and knowledge as economic forces, their impact on companies and investment decisions*, São Paulo: Atlas.
- [142]. Crozier, M., and Friedberg, (1977), *L'acteur et le système*, Le Seuil, Paris
- [143]. Cunha, M. B., (2001), To learn more: sources of information in science and technology, Brasília, DF: Briquet de Lemos, p. 168.
- [144]. Cyert, J. J., Richard M., et March, J. G., (1992), *A Behavioral Theory of the Firm*, 2nd edition, Blackwell, Oxford, UK
- [145]. Cyert, J. J. et March, J. G., (1963), *A Behavioral Theory of Firm*, New York, Prentice Hall
- [146]. Cyert, J. J. et March, J. G., (1970), *Processus de Décision dans L'entreprise*, Dunod, d'alerte précoce. Colloque VSST 2001, Barcelone oct., **Actes du colloque VSST 2001**, d'Organisation, Paris.
- [147]. Dahlberg, I. (2014). Brief Communication: What is Knowledge Organization? In *Knowledge Organization*. 41(1): 85-91.
- [148]. Dahlberg, I., (1978), Fundamentals *Revista de Biblioteconomia*, Brasília, v. 6, n. 1, jan./jun, p. 9-21
- [149]. Dahlberg, I., (1978, p. 101-107) "Theory of concept". *Information Science*, Rio de Janeiro, v. 7, n. 2.
- [150]. Dahlberg, I., (2006, p. 82-85), Feature: interview with Integrant Dahlberg, December 2007. *Mr. Knowl. Organ.*, v. 35, n. 2/3.
- [151]. Dahlberg, Ingetraut. (1978) "Theory of the concept". *Ciência da Informação*, Rio de Janeiro, v. 7, n. 2, p. 101-107.
- [152]. Dance, F. E. X. (1970) The "Concept" of Communication, *Revista de Comunicação*, Volume 20, Number 2, June 1970, Pages 201-210, <https://doi.org/10.1111/j.1460-2466.1970.tb00877.x>
- [153]. Darwin, Charles, (1859), *On the Origin of Species*, [darwin-online.org.uk](http://darwin-online.org.uk)
- [154]. DataGramZero – Revista de Ciência da Informação, Belo Horizonte, v. 3, n. 6, dez. 2002.
- [155]. Davenport, E.; Cronin, B., (2000), Knowledge management: semantic drift or conceptual shift? Annual Meeting of the Association for Library and Information Science Education, San Antonio, Jan.
- [156]. Davenport, T. (2014). Big data @ work: Dispelling the myths, uncovering opportunities. Boston: Harvard Press Review.
- [157]. Davenport, T. H. & L. Prusak (1998). *Working Knowledge*. Boston: Harvard Business School Press.
- [158]. Davenport, T. H., (1992), *Can We Manage Information Behavior?* Ernst & Yong, Research Note
- [159]. Davenport, T. H., (1993), *Process Innovation*, Harvard University Press, Boston
- [160]. Davenport, T. H.; Prusak, L., (2001), *Ecology of information*. 4. ed. São Paulo: Futura.
- [161]. Davenport, T., & Prusak, L. (1998). *Working Knowledge*. Cambridge, MA: Harvard University Press. Devlin, K. (1999). *Info Sense: turning information into knowledge*. New York: W. H. Freeman and Company.
- [162]. Davenport, T.; Prusak, L. (1998 a, p.316), *Ecologia da informação: por que a tecnologia só não basta para a sucesso na idade da informação*. São Paulo: Futura,
- [163]. Davenport, T.H. and Prusak, L., (1997), "Information Ecology", *Oxford University Press*, Oxford, UK.
- [164]. Davenport, T.H.; Prusak, L., (1998), *Business knowledge: how organizations manage their intellectual capital*. Rio de Janeiro: Campus.
- [165]. Davenport, Thomas H., (1998), *Information Ecology: why technology alone is not enough for success in the information age*. 6. ed. São Paulo: Futura.
- [166]. De Mul, Jos, (2015, p. 97-118), Database Identity: Personal and Cultural Identity in the age of Global Datafication. In: DE BEEN, Wouter; ARORA, Payal; HILDEBRANDT, Mireille (ed.). *Crossroads in new media, identity and law: the shape of diversity to come*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- [167]. DeCEW, Judith W., (1997), *In pursuit of privacy. Law, Ethics, and the rise of technology*. Ithaca: Cornell University Press.



- [168]. Declaration of Independence of the United States (1776). (n.d.). Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-humanrights/brief-history/declaration-of-independence.html>
- [169]. Universal Declaration of Human Rights. (n.d.). Retrieved from United Nations Human Rights - Office of the High Commissioner: [http://www.ohchr.org/EN/UDHR/Documents/UDHR\\_Translations/por.pdf](http://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/por.pdf)
- [170]. Universal Declaration of Human Rights. (n.d.). Retrieved from Wikipedia: [https://pt.wikipedia.org/wiki/Declara%C3%A7%C3%A3o\\_Universal\\_dos\\_Direitos\\_Humanos](https://pt.wikipedia.org/wiki/Declara%C3%A7%C3%A3o_Universal_dos_Direitos_Humanos)
- [171]. Universal Declaration of Human Rights. Available at: <<http://www.dhnet.org.br/direitos/deconu/textos/integra.htm>>. Accessed on: 02 Jun. 2015.
- [172]. Declaration of Independence of the United States (1776). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-humanrights/brief-history/declaration-of-independence.html>
- [173]. Declaration on Research Assessment (DORA) recognizes the need to improve the ways in which researchers and the output of scholarly research are evaluated. <https://www.sfdora.org>.
- [174]. Degent, R. J., (1986), The strategic importance and the functioning of the business intelligence service. *Journal of Business Administration*, v. 26, n. 1, p. 77-83. Jan./Mar.
- [175]. Dehghan M, Mente A, Zhang X, et al., (2017, v. 390, n. 10107, pp. 2050-2062), Associations of fat and carbohydrate intake with cardiovascular disease and mortality in 18 countries across five continents (PURE): a prospective cohort study, *Lancet*. Elsevier. [Consulted: 25-09-2022]. Available at: doi.org/10.1016/S0140-6736(17)32252-3.
- [176]. Demo, D. H., & Hughes, M. (1989, pp. 364-374), Socialization and racial identity among Black Americans. *Social Psychology Quarterly*, 53.
- [177]. Derek J Price, (1961), *Science Since Babylon*, New Haven and London
- [178]. Derek J Price, (1964), *Automata and the origins of mechanism and mechanistic philosophy*, Wayne State University Press
- [179]. Dertouzos, Michael, (1997), *What Will Be – How the New World of Information Will Transform Our Lives*. São Paulo: Companhia das Letras.
- [180]. Deutinger, Stephanie and Lina Dornhofer, (2012), *?! ... is watching you. Menschenrechte und Überwachung*. Available at: [www.etcgaz.at/typo3/index.php?id=1064](http://www.etcgaz.at/typo3/index.php?id=1064)
- [181]. Devlin, K. (1991), *Logic and Information*. Cambridge University Press, Cambridge
- [182]. Devlin, K. (1999), *Info Sense: turning information into knowledge*. W. H. Freeman and Company, New York
- [183]. Devlin, K., (1999), *Infosense*, UK, Cambridge University Press
- [184]. Dias, Ronaldo Brêtas de Carvalho, (2005), Direito à jurisdição eficiente e garantia da razoável duração do processo na reforma do judiciário. *Revista Processo*, São Paulo, v. 128, p. 164- 174, out.
- [185]. Didier Caluwaerts § MM Reuchamps. *Inter-group deliberation Foster Inter-group Consideration? Evidence from Two Experiments in Belgium*, "Politics", 2014, Vol. 34 Issue 2, pp. 101-115 doi: 10.1111/1467-9256.12043;
- [186]. Didier Caluwaerts and Juan E.Ugarriza, (2012, Vol. 8 Issue 1, pp. 1-20), *Conditions Favorable to Epistemic Validity in Deliberative Experiences: A Methodological Evaluation*, "Journal of Public Deliberation",
- [187]. Digital Object Identifier (DOI), USA, Geological Survey. <https://www.usgs.gov>
- [188]. Dinamarco, Cândido Rangel. *The Instrumentality of the Process*. São Paulo: Malheiros, 2009, 14th ed. [S.l.: s.n.]
- [189]. Dretske, F. I. (1981), *Knowledge and the flow of information*. Cambridge, MA: MIT Press.
- [190]. Drucker, Peter (1997). *The New Realities – in government and politics, in economics and business, in society and in the worldview*. 4th edition, Pioneer Publishing House Novos Umbrais, São Paulo, Brazil.
- [191]. Drucker, Peter (1999). *About the Management Profession*. 1st edition, Editora Publicações Dom Quixote, Lda, Lisbon.
- [192]. Drucker, Peter, (1958), *Long Range Planning a Challenge to Management Science*, Management Science, April
- [193]. Drucker, Peter, (1970), *Entrepreneurship in Business Enterprise*, Journal of Business Policy, (I, 1), pp. 3-12
- [194]. Drucker, Peter, (1999), *Management Challenges for the 21 st Century*, Portuguese edition by Livraria Civilização Editora, Lisbon
- [195]. Du Mont, Rosemary Ruhig, (1991), Ethics in librarianship: a management model. *Library Trends*, v. 40, n. 2, p. 201-215.
- [196]. Durkheim, David Émile, (1895), *The Rules of Sociological Method*, French social science journal.
- [197]. Edgar, Egg, (1978, v. 1), *Metodología y práctica del desarrollo de la comunidad*, University of Texas, Editorial Humanitas.
- [198]. Edgerton, R. B., (2009, v. 77, no. 3, pp. 638-639), *Ethnology: The Individual in Cultural Adaptation: A Study of Four East African*, [American Anthropologist](http://www.jstor.org/stable/3629000)
- [199]. Edward Snowden. (n.d.). Obtained from Wikipedia: [https://pt.wikipedia.org/wiki/Edward\\_Snowden](https://pt.wikipedia.org/wiki/Edward_Snowden)
- [200]. Edwards, Fred, (2016), *Humanist Group Appeals Lawsuit Against Bladensburg Cross Monument*, on the American Humanist Association Website (accessed October 13, 2016)
- [201]. Encyclopaedia Britannica, (1771), "Society". in *Encyclopaedia Britannica*, v. 3. Edinburgh: Britannica, 1771.
- [202]. Erasmus of Rotterdam, (1516), *Greek New Testament: Novum Instrumentum omne, diligenter ab Erasmo Rotterdama Recognitum et Emendatum*.
- [203]. Erasmus Rotterdam, (1937), *Opus Epistolarum*, Ed. H. M. Allen, (Oxford University Press), Ep. 3032: 219-22; 2682:8-13.
- [204]. Erich, Fromm, (2021, October 9 Retrieved 978-0-8044-6161-0. ISBN 18 Retrieved. Millennium the at Marx." *Humanity Socialized of Standpoint The "*.) 1998 (Cyril, Smith. *Archive Internet Marxists via – 2020 October ,Harris; Tom, Bottomore In." Manuscripts Philosophical and Economic.*) 1991
- [205]. Erik miletta Martins, (2022), Multimodal metaphors in neo-Pentecostal rhetoric, *Entrepalavras*, <https://doi.org/10.22168/2237-6321-32539>
- [206]. Estevão, Carlos, V., (2013), *Democracy, justice and human rights: blind spots of humanist discourse in the age of markets*, University of Minho, *Revista Portuguesa de Educação*, pp. 179-213.
- [207]. Europe has approved net neutrality, but what does it mean anyway? (n.d.). Obtained from Sapotek: <https://tek.sapo.pt/noticias/telecomunicacoes/artigos/europa-aprovou-neutralidadeda-internet-mas-afinal-o-que-significa-isso>
- [208]. European Commission: [https://ec.europa.eu/info/index\\_en](https://ec.europa.eu/info/index_en)
- [209]. European Commission. (2012), Proposal for a Regulation of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation), COM(2012) 11 final. Available at: [http://ec.europa.eu/jus/tice/data-protection/document/review2012/com\\_2012\\_11\\_en.pdf](http://ec.europa.eu/jus/tice/data-protection/document/review2012/com_2012_11_en.pdf)
- [210]. European Commission. (2020a). Decision C(2020)6320 of 17 September 2020, Horizon 2020 Work Pro-gramme 2018-2020, [https://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-fet\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-fet_en.pdf), last accessed 14-04-2021.
- [211]. European Commission. (2020b). *Shaping Europe's digital future, policy, Destination Earth (DestinE)*, <https://ec.europa.eu/digital-single-market/en/destination-earth-destine>, last accessed 14-04-2021.
- [212]. *European Convention for the Protection Human Rights and Fundamental Freedoms*, [www.echr.coe.int](http://www.echr.coe.int)
- [213]. European Court of Human Rights: <http://echr.coe.int/echr/>
- [214]. European environment agency (2001, Report, nº 20, p. 64), *Environmental Benchmarking for Local Authorities: From concept to practice*. Copenhagen: Environmental Issue.
- [215]. European research area (ERA), Strategy 2022-2024, <https://research-and-innovation.ec.europa.eu>
- [216]. European research area (ERA) <https://research-and-innovation.ec.europa.eu>
- [217]. *European University Association (USA)*, <https://eua.eu>.
- [218]. Floridi, L. (2008). Trends in the Philosophy of Information. In P. Adriaans, & J. v. Benthem, *Handbook of Philosophy of Information* (pp. 113-132). Amsterdam: Elsevier.
- [219]. Floridi, Luciano, (2002), *What is the philosophy of information*. <<http://www.philosophyofinformation.net/publications/pdf/wipi.pdf>>.
- [220]. Floridi, Luciano, (2005), «The ontological interpretation of informational privacy», *Ethics and information technology*, v.7, pp. 185-200.
- [221]. Floridi, Luciano, (2008), *Information ethics, its nature and scope*. <<http://www.philosophyofinformation.net/publications/pdf/ieinas.pdf>>.
- [222]. Floridi, Luciano, (2009), *The information society and its philosophy: Introduction to the special issue on "the philosophy of information, its nature and future developments*. <<http://www.philosophyofinformation.net/publications/pdf/tisip.pdf>>.
- [223]. Floridi, Luciano, (2011), *The Philosophy of Information*. Oxford: Oxford University Press.
- [224]. Floridi, Luciano, (2012, v. A, nº. 370, pp. 3536-3542), «Turing's three philosophical lesson and the philosophy of information», *Philosophical Transactions*.
- [225]. Floridi, Luciano, (2013a), *The Ethics of Information*. Oxford: Oxford University Press.
- [226]. Floridi, Luciano, (2013b), «What is a philosophical question?», *Metaphilosophy*, v. 44, n. 3, pp.195–221.

- [227]. Floridi, Luciano, (2014), *The fourth revolution: how the infosphere is reshaping human reality*, Oxford: Oxford University Press.
- [228]. Fornel, F. (2010), *Free-space optics: propagation and communication*, v. 91, John Wiley & sons.
- [229]. Freire, Isa Maria, (2010, v. 1, p.123-141), The possible awareness for an information ethics in networked society. In: Gustavo Henrique de Araújo Freire. (Org.). *Information ethics: concepts, approaches, applications*. João Pessoa: Idea. Available in: <https://repositorio-aberto.up.pt/bitstream/10216/26301/2/armandomalheirosquisa000107223.pdf>.
- [230]. Freire, Isa Maria, (2013), Thematic 'social responsibility' in the literature of Information Science indexed by Brapci. In: XIV National Meeting of Research in Information Science, 14, 2013, Florianópolis. *Anais Eletrônicos...*, Florianópolis: UFSC. Available in: <http://enancib.ibict.br/index.php/enancib/xivenancib/paper/view/4004/3127>.
- [231]. Freire, Isa Maria; Silva, Julianne Teixeira, (2013, v. 1, Esp., p. 33-44), A mandala das virtudes da Arquivologia: pesquisa report. Mr. Archeion. Available in: <http://www.ies.ufpb.br/ojs2/index.php/archeon/article/view/17125/9748>.
- [232]. Frické, Mathiesen and Fallis, (2000, v. 70, n. 4, pp. 468-491), The Ethical Presuppositions behind the Library Bill of Rights, The University of Chicago Press
- [233]. Froehlich, (1997), Survey and analysis of the major ethical and legal issues facing library and information services, Unesco, FAO.
- [234]. From, Erich. *The revolution of hope, for a humanized technology*. 4<sup>th</sup> ed. São Paulo, Zahar Editora, 1981, 169p
- [235]. Fromm, Eric, (1941), *The Fear of Freedom*, retrieved 2 July 2019.
- [236]. Garfinkel, Harold, (1967), *Ethnomethodology*, The American Heritage Science Dictionary. Retrieved September 2017.
- [237]. Garin, E. (1965). *Science and Civic Life in the Italian Renaissance*.
- [238]. Geertz, Clifford, (1957), Ethos, word-view and the analysis of sacred symbols, *The Antioch Review*, 17 (4), pp. 421-437. <https://doi.org/10.2307/4609997>
- [239]. Giovanni Pico Della Mirandola (1486), *Syncretism in the West : Pico's 900 Theses: The Evolution of Traditional Religious and Philosophical Systems : With a Revised Text, English Translation, and Commentary*, October 1, 1998, ACMRS Publications.
- [240]. Giovanni Pico Della Mirandola (1996), *Oration on the Dignity of Man*, Product Identifiers, Publisher Regnery Publishing, ISBN-10, 0895267136, ISBN-13, 9780895267139, eBay Product ID (ePID), 204667
- [241]. Gomez, Gonzalez, (2000), *Ucronia. Os anos agachados de Manuel António*, 1988, Sotelo Blanco Edicions.
- [242]. González De Gomez, Maria Névida, (2009, p. 106-126), Contemporary challenges of information science: the ethical issues of information. In: National research meeting of the national association of research and graduate studies in information science, 10., 2009,
- [243]. Gonzalez, Maria Eunice Quilici, (2005, v-13, n. 3, pp. 565-582), "Information and mechanical models of intelligence: What can we learn from Cognitive Science?", *Pragmatics & Cognition*, Amsterdam: Ed. John Benjamin Publishing Company.
- [244]. Gonzalez, Maria Eunice Quilici, (2014), «Information, Determinism and Autonomy: a study of action in the paradigm of complexity», Lecture given at the XVI National Meeting of ANPOF.
- [245]. Gottfried Leibniz, (1694), *Lettere e carteggi*, Sumpt. Marci-Michaelis
- [246]. Grayling, A. C., (2009b), *Liberty in the Age of Terror: A Defense of Civil Society and Enlightenment Values*.
- [247]. Grayling, A. C., (2009c), *To Set Prometheus Free: Essays on Religion, Reason and Humanity*. ISBN 978-1-84002-962-8
- [248]. Grayling, A. C., (2009d), *Ideas That Matter: A Personal Guide for the 21st Century*. ISBN 978-0-297-85676-4
- [249]. Grayling, A. C., (2010), *Thinking of Answers: Questions in the Philosophy of Everyday Life*. ISBN 978-1-4088-0598-5
- [250]. Grayling, A. C., (2021), *The Frontiers of Knowledge*. ISBN 9780241305463
- [251]. Green R. and Panzer, M. (2010). "The ontological character of classes in the Dewey Decimal Classification." In *Proceedings of the 11th International Conference for Knowledge Organization*. (Rome, Italy). *Advances in Knowledge Organization* vol. 12. Ergon: Würzburg: 171-179.
- [252]. Griffin, Miriam; Boardman, John; Griffin, Jasper; Murray, Oswyn, *The Oxford Illustrated History of the Roman World*. [S.l.]: Oxford University Press. pp. 76-. ISBN 978-0-19-285436-0
- [253]. *Grinover, Ada Pellegrini, Dinamarco, Cândido, Cintra, Antônio Carlos de Araújo. General Theory of the Process*. São Paulo: Editora Malheiros, 2014, 30th ed. [S.l.: s.n.]
- [254]. Gross PL, Gross EM. College libraries and chemical education. *Science*. 1927; 66(1713):385-9. <https://doi.org/10.1126/science.66.1713.385>
- [255]. Gross, P. L., & Gross, E. M. (1927). *College Libraries and Chemical Education*. *Science*, 66, 385-389. <https://doi.org/10.1126/science.66.1713.385>
- [256]. Guiddens, Anthony, (1971), *Do Liberalismo à Terceira via: reflexões para o modelo de estado*, Unicamp, translation).
- [257]. Habermas, Jürgen, (1987) *The Theory of Communicative Action, Legitimation Crisis, The Structural Transformation of the Public Sphere, Knowledge and Human Interests*, Germany Print,
- [258]. Hall, Stuart, (1950), *New Left Review Ltd* (United Kingdom, ISO 4 New Left Rev, ISSN 0028-6060, LCCN 63028333.
- [259]. Hammersmith, Vygotksy, L. S., (1988), **The social formation of the mind**: the development of higher psychological processes. São Paulo: Martins Fontes, 1988.
- [260]. Handy, Charles, (1999), *The Age of Unreason*, Harvard Business Review, Boston
- [261]. Hankins, James, (1999), "Bruni, Leonardo." In *Encyclopedia of the Renaissance*. Vol. 1, *Abrabanel–Civility*. Edited by Paul F. Grendler, 301–306. New York: Scribner.
- [262]. Hankins, James, (2006), "Religion and the Modernity of Renaissance Humanism." In *Interpretations of Renaissance Humanism*, edited by Angelo Mazzocco, 137–53. Leiden: Brill.
- [263]. Hansen HB, Henriksen JH, (1997;17(4):409-18), How well does journal "impact" work in the assessment of papers on clinical physiology and nuclear medicine? *Clin Physiol*.
- [264]. Hardman, Helen, (2017), *Electoral Rights in Europe*, Routledge
- [265]. Hegel, G. W. F. , (1991), *The System of Ethical Life*, In M. Artur (Trans.). Rio de Janeiro: Edições 70.
- [266]. *High-Level Roundtable on "Cultural Diversity and Biodiversity for Sustainable Development" (2002 : Johannesburg, South Africa) (2003). Cultural diversity and biodiversity for sustainable development : a jointly convened UNESCO and UNEP high-level roundtable held on 3 September 2002 in Johannesburg, South-Africa during the World Summit on Sustainable Development*. [S.l.]: UNESCO. OCLC 122420216 <http://www.un.org/en/index.html>
- [267]. <https://aventurasnahistoria.uol.com.br/noticias/repotagem/a-vida-e-a-morte-de-leonardo-da-vinci.phtml>
- [268]. <https://goo.gl/ju9Ykp>.
- [269]. <https://goo.gl/ju9Ykp>.
- [270]. Huizinga, A. (2007a). *The Value of a Rose: Rising Above Objectivism*. In A. Huizinga, & E. J. de Vries, *Information Management: Setting the Scene* (pp. 91-110). Amsterdam: Elsevier.
- [271]. Huizinga, A. (2007b). *Objectivist by Default*. In A. Huizinga, & E. J. de Vries, *Information Management: Setting the Scene* (pp. 73-90). Amsterdam: Elsevier.
- [272]. Hume, David, (1776), *A Treatise of Human Nature Being an Attempt to introduce the experimental Method of Reasoning into Moral Subjecta*, Appendix A of Ernest Campbell Mossner, *The Life of David Hume*, University of Texas Press, p.612.
- [273]. Huyges, Cristiaan, (1638), *Discorsi e dimonstrazioni matematiche*, intorno à due nuove science,
- [274]. Iapp. (2024) *General Data Protection Law*, Access in [https://iapp.org/resources/article/brazilian-data-protection-law-lgpd-english-translation/#:~:text=Brazilian%20General%20Data%20Protection%20Law%20\(LGPD%2C%20English%20translation\)](https://iapp.org/resources/article/brazilian-data-protection-law-lgpd-english-translation/#:~:text=Brazilian%20General%20Data%20Protection%20Law%20(LGPD%2C%20English%20translation),), available in July 2024.
- [275]. Jameson, Fredric, (1989), *Postmodernism*/Jameson, *New Left Review*.
- [276]. Jamil, G. L. (2001) *Rethinking IT in the modern enterprise*. Rio de Janeiro: Editora Axel Books do Brasil, 2001.
- [277]. Jamil, G. L. and Silva, A. R. (2021) *Emerging Technologies in a Modern Competitive Landscape: Understanding the Landscape for Security and Privacy Requirements*. In Anuniação, P. F.; Pessoa, C. R. M. and Jamil, G. L. (2021) *Digital transformation and challenges for data security and privacy*. Hershey, USA: IGI Global, pp. 1-16.
- [278]. Japiassú, Hilton J crisis of reason and objective knowledge; the waves of the irrational São Paulo, *Letras & Letras*, 1996, 23 ip.
- [279]. João Pessoa, (2016), *Social responsibility of Information Science [papers presented]*. Organization of Gustavo Henrique de Araújo Freire. João Pessoa: UFPB. Available from: <http://enancib.ibict.br/index.php/enancib/xenancib/paper/viewFile/3133/2259>.
- [280]. Juan Luis Vives, (1538), *Los Tratado sobre el Alma y la Vida*
- [281]. Juan Luis Vives, (1543), *La verdadera Cristiana*.
- [282]. Kellner, Douglas, (2018), *Akal*, [www.akal.com](http://www.akal.com)
- [283]. Klein, F.: *Pro futuro: Betrachtungen über Probleme der Civilprocej3reform em 6sterreich*, (Deuticke 1891).

- [284]. Klein, H. K., Hirschleim, R. A. (1987), *Social change and the future of information systems development*, In: Boland, R. J., Hirschleim R. A. (eds), *Critical issues in information systems research*, John Wiley & Sons
- [285]. Klein, H. K., M. D. Meyers, (1999), *A Set of Principles for Conducting and Evaluation Interpretive Field Studies in Information Systems*, *Management Information Systems Quarterly*, 23 (1), pp. 67-94
- [286]. Kurkina, I. (2024) What is technology management and why is it important. Access in <https://academysmart.com/insights/what-is-technology-management-and-why-it-is-important/>, available in July 2024.
- [287]. Lacerda, B. and Jamil, G. L. Digital transformation for companies: adapt or die! Reflections on how to rethink your business in the context of digital transformation. (2021) In Anunciação, P. A., Pessoa, C. R. M. and Jamil, G. L. *Digital Transformation and Challenges for Data security and privacy*. Pp. 252-268, Hershey, USA: IGI Global Publishers.
- [288]. Lacey, Hugh, (1998, p.122), *Valores e atividade científica*. São Paulo, Discurso Editorial.
- [289]. Lakatos; marconi, (1999, p. 94), *Inovação e Aprendizagem Organizacional*, books.google.pt books.
- [290]. Lardera, Simona and Bernard Quinio, (1996), *Information et Décision Stratégique*,
- [291]. Larrousse Dictionary of Painters, Cordoba, Hamlyn.
- [292]. Law No. 43/2004 of 18 August, Law on the organisation and operation of the National Data Protection Commission. (n.d.). Obtained from National Data Protection Commission: [https://www.cnpd.pt/bin/cnpd/Lei\\_43\\_2004.pdf](https://www.cnpd.pt/bin/cnpd/Lei_43_2004.pdf)
- [293]. Law No. 67/98 - Law on the Protection of Personal Data. (n.d.). Obtained from Electronic Republic Journal: <https://dre.pt/application/file/a/239889>
- [294]. Lazarsfeld, Paul, ( ), *The Founder of Modern Empirical Sociology: A Research Biografie*. *International Journal of Public Opinion Research* 13:229-244 (2001).
- [295]. Lazzeri, Corrado. "Leonardo Bruni Aretno nel V centenario della morte 1444–1494." *Atti e Memorie dell'Accademia Petrarca di Arezzo* 33 (1945–1946): 69–94.
- [296]. Le Bon, Gustave, (1914), *The Life of Truths*, Nature, p.573.
- [297]. Le Coadic (1994), *La Science de l'Information*, Presses Universitaires de France, Paris
- [298]. Le Coadic, Yves F., (1998), *Le besoin d'information*. Paris: ADBS Editions, 191 p.
- [299]. Le Coadic, Yves-François., (1996), *The science of information*. 5. ed. Braslia: Briquet de Lemos, 119 p.
- [300]. Le Coadic, Yvez-François (1997), *La science de l'information*. 2 current ed. Paris : Universitaires de France.
- [301]. Leal, Rosemiro Pereira (coordination), *Res judicata: from Chiovenda to Fazzalari*, Del Rey, 2007.
- [302]. Lee, S. J. (1982). *Aspects of European History 1494-1789*.
- [303]. Constitutional Law No. 1/92 of 25 NOVEMBER . (n.d.). Retrieved from National Election Commission: [http://www.cne.pt/sites/default/files/dl/crp\\_1992.pdf](http://www.cne.pt/sites/default/files/dl/crp_1992.pdf)
- [304]. Personal Data Protection Law. (n.d.). Retrieved from the National Data Protection Commission: [https://www.cnpd.pt/bin/legis/nacional/lei\\_6798.htm](https://www.cnpd.pt/bin/legis/nacional/lei_6798.htm)
- [305]. Lejay, Paul, (1913), "Juan Luis Vives", in: Herbermann, Charles (ed.), *Catholic Encyclopedia*, New York, Robert Appleton Company.
- [306]. Levi-Strauss, (2005), *Myth and Meaning*, Routledge & Kegan Paul, Ltd, UK.
- [307]. LGPD (2024). *General Data Protection Law, Brazilian Legal Code, Law 13709*. Access in [https://www.planalto.gov.br/ccivil\\_03/\\_ato2015-2018/2018/lei/113709.htm](https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/lei/113709.htm), available in July 2024.
- [308]. lias, (1994) *The Civilizing Process*, Blackwell Publishing
- [309]. [Leo Tolstoy, \(1865–1869\), War and Peace \(Russian: Война и мир\)](#) is a [historical novel](#) written by Russian author [Leo Tolstoy](#) and published between 1865 and 1869 in *the Russkii Vestnik*, a [periodical](#) of the time
- [310]. Lima Vaz, Henrique Cláudio, (2001), *Humanism today: tradition and mission*. *Revista Síntese*, 28, (92), p. 157-168 (2001). Available at: <http://www.faje.edu.br/periodicos/index.php/Sintese/article/view/553/976>. Accessed on 04 Oct. 2019.
- [311]. Locke, John, (1830), *Liberty, Equality, Fraternity – France in the United States / Embassy of France in Washington, DC*.
- [312]. Locke, John, (2013), *Second treaty on civil government*. São Paulo: Edipro.
- [313]. Lojkine, Jean, (1995), *The Informational Revolution*. São Paulo: Cortez Editora.
- [314]. Luhmann, Niklas, (1975), *Einfache Sozialsysteme*. In: LUHMANN, Niklas (Ed.). *Soziologische Aufklärung 2*, p. 21-38. Opladen: Westdeutscher Verlag, 1975.
- [315]. Maffesoli, Michel, (1981), *La Dynamique social. La société conflictuelle*. Thèse d'État, Lille, Service des Publications des thèses.
- [316]. Malinowski, Bronislaw, (1922), *Argonauts of the Western Pacific*. London, <Routledge & Kegan Paul, Ltd.
- [317]. Marconi, Lakatos, (2017), *Fundamentals of Scientific Methodology*, 2nd Edition, Atlas.
- [318]. Marconi, Lakatos, (2018), *Fundamentals of Scientific Methodology*, 8th Edition, Atlas.
- [319]. Marconi, M. & Lakatos, E.M. (2011) *Scientific methodology*. São Paulo, Atlas, 6th edition.
- [320]. Mastermann, Margaret (1970): *The nature of a paradigm*. In: Lakatos, Imre, Musgrave, A. (Eds.): *Criticisms and the growth of knowledge*. Cambridge University Press, 59-91.
- [321]. Mattelart, (2002), *History of the Information Society*, ed: Byzantium.
- [322]. McAfee, A., and Brynjolfsson, E. (2012). *Big data: The management revolution*. *Harvard Business Review*, 90(10), 60–68. PMID:23074865
- [323]. Mead, Herbert, (1851), Fieser, James; Dowden, Bradley, *The Internet Encyclopedia of Philosophy*. (2005). <http://data.bnf.fr/ark:/12148/cb12284412h>.
- [324]. Montesquieu, Pangle, Thomas, (1989 rpt; 1973), *Philosophy of Liberalism*, Chicago.
- [325]. Moraes, C. R. B. De; Fadel, B. (2008). *Methodological triangulation for the study of information and knowledge management in organizations*. In: *Information and knowledge management*. São Paulo: Polis: Cultura Acadêmica.
- [326]. Moraes, C. R. B. De; Fadel, B. (2010). *The interface between organizational and informational behavior*. In Valentim, Marta (Org.) *Environments and information flows*. São Paulo: Cultura Acadêmica.
- [327]. Moraes, J. A., (2015a), *Philosophy of Information: a Philosophy for the present day?* In: Santos, L. R., Marques, U. R. A., Afonso, F. (eds.). *Lisbon International Philosophical Days. Philosophy & Current Affairs*. Lisbon: eCFULeditions.
- [328]. Moraes, J. A., (2014), *Ethical implications of the "informational turn in Philosophy"*. Uberlândia: EDUFU.
- [329]. Moraes, J. P. et al., (2018, v. 7, n. 1, p. 39-51), *information ecology, management information systems and knowledge management with a view to creating competitive advantages: literature review*. *Visão Magazine: Organizational Management*.
- [330]. Moraes, J.A.; Andrade, E. B., (2015b, v. 23, n. 11, p. 4-19), *Who are the citizens of the digital citizenship?* *International Review of Information Ethics*.
- [331]. Moraes, J.A.; Gonzalez, M. E. Q., (2013, v. 25, n. 36, p. 305-322), *Dretske and the problem of qualia*. In: *Rev. Filos., Aurora*, Curitiba.
- [332]. Moraes, J.A.; Rodrigues, F. A., (2017), *Lecture: Privacy, Public Transparency and Complexity*. In: *VIII International Meeting on Information, Knowledge and Action and VII International Colloquium on Philosophy of Mind*, Marília.
- [333]. Moraes, João Antonio de, (2014), *Ethical implications of the "informational turn in Philosophy"*, Uberlândia: EDUFU.
- [334]. Morais, Régis de. *Philosophy of science and technology*. 6<sup>o</sup> ed. Campinas, Papirus, 1997, 180p.
- [335]. Morgner, Christian, (2014, v. 39, n. 3, pp. 318-336), *The evolution of the art fair*. *Historical Social Research/Historische Sozialforschung*.
- [336]. Murteira, Mário, (2000), *Hong-Kong and Macau at a time of Transition*, Macau Foundation, Macau
- [337]. Murteira, Mário, (2001), *The Transition to the Knowledge Economy in Portugal*, *Global Economy and Management*, AEDGISCTE, N° 1
- [338]. Murteira, Mário, Nicolau, I, Mendes, V. E Martins, A. (2001), *Serviços Informacionais e transição para a economia do conhecimento em Portugal*, IDEG/ISCTE, study carried out for the GEPE of the Ministry of Economy.
- [339]. Nonaka and Takeuchi, (1995, 1997), *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*, New York, Oxford University Press
- [340]. Nonaka, I., Takeuchi, H. (1997) "Knowledge creation in the enterprise: how Japanese companies generate the dynamics of innovation". 4. ed. Rio de Janeiro: Campus.
- [341]. Nonaka, I.; Konno, N., (1998), *The concept of "ba": building a foundation for knowledge creation*. *California Management Review*, Berkeley, v. 40, n. 3, p. 40-54.
- [342]. Nunes, Benedito. *A crise do pensamento*. Belém, Ed. Universidade UFPA, 1994, 206p.
- [343]. O'Brien, J. and Marakas, G. (2008). *Management Information Systems*. Irwin: Mc Graw Hill.

- [344]. The Cyrus Cylinder (539 BC). (n.d.). A Brief History of Human Rights - Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/brief-history/> What is net neutrality? (n.d.). Retrieved from Observer: <http://observador.pt/explicadores/com-o-fim-da-neutralidade-da-rede-nos-eua-a-internet-esta-em-risco/>
- [345]. O'Brien, J. A. & Morgan J. N., (1991), *A Multi-Dimensional Model of Information Resource Management*, Information Resource Management Journal Vol 2 No. 2 pp. 2-12
- [346]. O'Brien, James A. (2004). Information Systems and managerial decisions in the Internet era. Original Title: Introduction to information systems, 11th edition. Translated by Célio Knipel Moreira and Cid Knipel Moreira. 2nd ed. São Paulo: Saraiva.
- [347]. OAS, (2012), Press release - Freedom of expression rapporteurs issue joint declaration concerning the internet. Available at: [www.oas.org/en/iachr/expression/showarticle.asp?artID=848&IID=1](http://www.oas.org/en/iachr/expression/showarticle.asp?artID=848&IID=1)
- [348]. Obstfeld, M.; Rogoff, K. Perspectives on OECD economic integration: implications for U.S. current account adjustment (e "Commentary" de I. Visco). In: Global economic integration: opportunities and challenges. Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 2000. Available at: <http://www.kc.frb.org/publicat/sympos/2000/sym00prg.htm>
- [349]. OECD: [www.oecd.org/](http://www.oecd.org/)
- [350]. Ogien, Ruwen, (1993), *Théories ordinaires de la pauvreté*, PUF
- [351]. Ohata, M. and Kumar, A. (2012). Big Data: a boom for Business Intelligence. Financial Executive, September 2012.
- [352]. Olds, Linda E., (1992), *Metaphors of interrelatedness: towards a systems theory of psychology*. New York: State University of New York Press.
- [353]. Orts, Cortina, (2018), *Ética y Filosofía Política*, Ref Red española de Filosofía.
- [354]. Park, Robert, (1925), *The City: Suggestions for the Study of Human Nature in the Urban Environment*, E. W. eds, Chicago, Il:University of Chicago Press.
- [355]. Parker, M. M, Trainor H. E. & Benson R. J., (1989), *Information Strategy and Economics*, Prentice Hall
- [356]. Parson, Talcott, and Edward Shils and Kaspar D. Naegele and Jesse R. Pita (1961), *Theories of Society*,
- [357]. Parsons, Talcott; Platt, Gerald M., (1974), *The American University*. Cambridge (MA): Harvard University Press.
- [358]. Pascal, Blaise, (1654), *Les Provinciales*, Cologne, Chez Pierre de la Vallee, M. D. C. LVIL.
- [359]. Peirce, C. S. (1974). *Collected papers of Charles Sanders Peirce (Vol. 2)*. Harvard University Press.
- [360]. Peencer, Herbert, (1851), *The Study of Sociology*. Mr. Martineau on Evolution, Social Statics.
- [361]. Pinheiro, Lena Vânia R., (1982), *User – Information: the context of science and technology*. Rio de Janeiro: LTC-Livros Técnicos e Científicos, 66 p.
- [362]. Plato, (2014), *The Republic*. The Thinkers Collection. São Paulo: Ed. Abril.
- [363]. Plato, (2014), *The Republic*. The Thinkers Collection. São Paulo: Ed. Abril, 1983. QUINTANA, Fernando (2009). *Ethics and politics*. São Paulo: Atlas.
- [364]. Pollach, I., (2007), Privacy statements as a means of uncertainty reduction in www interaction. In: Clarke, S. *End User Computing Challenges and Technologies: emerging tools and applications*. [S.l]: IGI Global.
- [365]. Quételet, Adolphe, (1829), *Recheres sttistiques sur le royaume des Pays -Bas*, Mark Buchanan´s.
- [366]. Radeli-Braun, (1922), *The Andaman Islanders: a study in social anthropology*, Journal of the Anthropological Institute
- [367]. Rascão, J. P., Jamil, G. L., Marques, M. B. (2021). Debate on the Inter-Transdisciplinarity of Information Science: from theory to practice. ISBN 978-620-3-92852-5, Chisinau: Lambert.
- [368]. Ronaldo Rosa, Lucia. "Bruni (Leonardo) (1370–1444)." In *Centuriae latinae: Cent une figures humanistes de la Renaissance aux Lumières*. Vol. 1, *Offertes à Jacques Chomarat*. Edited by Colette Nativel, 191–199. Travaux d'Humanisme et Renaissance 314. Geneva, Switzerland: Droz, 1997.
- [369]. Rousseau, Jean-Jacques, (1750), *Discours sur les sciences et les Arts*, A Geneve, Ches Barlot & fils.
- [370]. Santini, Emilio. *Leonardo Bruni Aretino ei suoi* Historiarum florentini populi libri xii: *Contribuição allo studio della storiografia umanistica fiorentina*. Pisa, Italy: Nistri, 1910.
- [371]. Saracevic, T. (1996). Information science: origin, evolution, relationships. *Perspectives in information science*, Belo Horizonte, v. 1, n. 1, p. 41-62, jan./jun.1996.
- [372]. Sartre, Jean Paul, (1945), *Les Chemins de la Liberté*, ed. Gal
- [373]. Schaff, Adam ,4 computer society. São Paulo, UNESP, Ed. Brasiliense, AS, 1996, 157p.
- [374]. Schegloff, Emanuel, (1996), *Interaction and Grammar*, Cambridge University Press. SBN 0-521-55828-X.
- [375]. Scott Lash, (2013), *Sociology of Postmodernism*. London, Routledge.
- [376]. Sgreccia, Elio. *Bioethics Manual* . São Paulo, ed. Loyola, 1996, 685p.
- [377]. Shannon C. E., Weaver W., (1948), *The Mathematical Theory of Communication*, University of Illinois Press, Chicago
- [378]. Shannon C. E., Weaver W., (1972), *The Mathematical Theory of Communication*, University of Illinois Press, Urbana
- [379]. Shannon, Claude; Weaver, Warren, (1998), *A mathematical theory of communication*, Urbana: University of Illinois Press, (first edition: 1949).
- [380]. Sighele, Scipio, (2018), *The Criminal Crowd and other Writings on Mass Society*, University of Toronto Press, ISBN 978-1-4875-1735-9.
- [381]. Simmel, Georg, (1890), (1892), *Introduction to the Science of Ethics*, Berlin: Hertz.
- [382]. Smith et al., (2008), *Brief Resilience Scale*, APA PsycNet.
- [383]. Smith et al., (2018), *Understanding rapid adjustments to Brief Resilience Scale*, APA PsycNet.
- [384]. Spinoza, Baruch, (1677), *Ethics, Ordine Geometrico Demonfrata*,
- [385]. Stonier, Tom, (1997), *Information and meaning: an evolutionary perspective*, London: Springer-Verlag.
- [386]. Sudnow, David, (2001), *Ways of the Hand*, MIT Press.
- [387]. Taborda, Maren Guimarães, (1998 p.245), **The principle of equality in historical perspective: content, scope and directions**. *Journal of administrative law*. Rio de Janeiro.
- [388]. Taylor, R. S. (1962). "The Process of Asking Questions," *American Documentation*, 13 (4): 391–396, doi:10.1002/asi.5090130405
- [389]. Taylor, R. S. (1966). Professional aspects of Information Science and Technology. In *Annual Journal of Information Science and Technology*, 1, 1966.
- [390]. Thomas More (1947), *The Correspondence of Sir Thomas More*, Princeton: Elizabet F. Rogers Edit.,
- [391]. Thomas More (1969), *Prayer Book*, Louis L. Martz & Richard S. Sylvester, New Haven, Connecticut.
- [392]. Thomas More, (1557), *The Agony of Christ*,
- [393]. Thomas More, (1565), *Reply to Martin Luther*
- [394]. Thomas, D. O. (1963-1964), *Obedience to Conscience*, *Proceedings of the Aristotelian Society*, New Series, vol. 64, pp-243-258.
- [395]. Tugendhat, Ernst. *Lessons on ethics*. Petrópolis, Ed. Vozes, 1997, 430p.
- [396]. Turban, E., Mc Lean, E. and Wetherbee, J. (2002). *Information Technology for Management: Transforming Business in the Digital Economy*, 3rd ed. Hoboken, USA: John Wiley and Sons.
- [397]. Turban, E., Rainer Jr., R. K., Potter, R. E. (2007). *Introduction to information systems*. Hoboken, USA: John Wiley and Sons.
- [398]. Turing, (1936), *On Computable Numbers, with an Application to the Entscheidungsproblem*, *Proceedings of the London Mathematical Society journal* in two parts, the first on 30 November and the second on 23 December.
- [399]. Turing, (1990), *The experiment that shaped artificial intelligence*, New York, Business Hugh Loebner.
- [400]. Turing, Alan, (1950), «Computing machinery and intelligence Turing, Alan, 1950, «Computing machinery and intelligence», *Mind*, n. 59, pp.433-460.
- [401]. Turing, Alan, (1950), «Computing machinery and intelligence», *Mind*, n. 59, pp.433-460.
- [402]. Turing, Alan, (1950), *Computing Machine and Intelligence*, *Mind*, Oxford University Press on behalf of the Mind Association.
- [403]. A Brief History of Human Rights - The Constitution of the United States of America (1787) and the Bill of Rights (1791). (n.d.). Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/briefhistory/declaration-of-independence.html>
- [404]. A Brief History of Human Rights - The United Nations (1945). (n.d.). Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/brief-history/the-united-nations.html>
- [405]. A Brief History of Human Rights - The Cyrus Cylinder (539 BC). (n.d.). Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/brief-history/>

- [406]. A Brief History of Human Rights - Petition of Right (1628). (n.d.). Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/magna-carta.html>
- [407]. UN - United Nations in Brazil. (n.d.). Obtained from universal declaration of human rights: <http://www.onu.org.br/img/2014/09/DUDH.pdf>
- [408]. UN - United Nations in Brazil. (n.d.). Obtained from universal declaration of human rights: <http://www.onu.org.br/img/2014/09/DUDH.pdf>
- [409]. UN Committee on the Rights of the Child: [www.ohchr.org/english/bodies/crc](http://www.ohchr.org/english/bodies/crc)
- [410]. UN Human Rights Committee: [www2.ohchr.org/english/bodies/hrc/index.htm](http://www2.ohchr.org/english/bodies/hrc/index.htm)
- [411]. UN Security Council Committee established pursuant to resolution 1267 (1999)
- [412]. UN Security Council Counter Terrorism Committee: [www.un.org/en/sc/ctc/rights.html](http://www.un.org/en/sc/ctc/rights.html)
- [413]. UNESCO, (2006), Universal Declaration on Bioethics and Human Rights. Accessed on 20-01-2020
- [414]. Unesco, Venice and its Lagoon, access 17 April 2012.
- [415]. Vasquez, Adolfo S. Ethics. Rio de Janeiro, civilização Brasileira, 1982, 286p.
- [416]. Weber, Max, (1922), Studies in Methodology,
- [417]. Weber, Max, (1926), The Protestant Ethic and the Spirit of Capitalism,
- [418]. Wiener, N. Cybernetics, (1961), Cambridge, MA: MIT Press; 1948. Enlarged ed.. New York: Wiley.
- [419]. Wiener, N., (1948), *Cybernetics or Control and Communication in the Animal and the Machine*, MIT, Press
- [420]. Wiener, N., (1970), O homem e a máquina. In: The concept of information in contemporary science. Rio de Janeiro: Paz e Terra.
- [421]. Wiener, N., (1970), The man and the machine. In: The concept of information in contemporary science. Rio de Janeiro: Peace and Earth.
- [422]. Wiener, Norbert, (1948), *Cybernetics or control and communication in the animal and the machine*. Cambridge, MIT Press, 1985. Original 1948. Yudkowsky, Eliezer, (1996), Staring at the singularity. <<http://yudkowsky.net/obsolete/singularity.html>>.
- [423]. Wiener, Norbert, (1965), *Cybernetics*, 2nd ed., Cambridge, MA: MIT Press, (first edition: 1948).
- [424]. Wiener, Norbert, (1968), *The human use of human beings: cybernetics and society*, London: Sphere Books LTD, (first edition: 1954).
- [425]. Wiener, Norbert., (1946), *Cybernetics*. Cambridge: MIT Press.
- [426]. Williams, Bernard, (1985), *Ethics and the Limits of Philosophy*, Cambridge, MA: Harvard University Press.
- [427]. Williams, J. (1998). *Focus on form in classroom second language acquisition*. New York: Cambridge University Press.
- [428]. Williams, R. V., Whitmire, L. & Bradley, C. (1997). Bibliography of the History of Information Science in North America, 1900-1995. *Journal of the American Society for Information Science*, 48, 373-379.
- [429]. Williams, R. V.; Lamotte, V., (1900-2000, 2000), *Bibliography of the history of Information Science in North America*. Available: . Access: 28 June 2004.
- [430]. Wilson, T. D. Human information behavior. *Information Science Research*, v. 3, n. 2, p.49-55, 2000
- [431]. Wilson, T. D., (2000, v. 3, n. 2, p. 49-55), Human information behaviour. *Informing science*. Available at: . Accessed on: June 22, 2013.
- [432]. Wolfflin, Heinrich, (2000), *Renaissance and Baroque*, São Paulo, Perspectiva.
- [433]. Wood, Neal (1991). *Cicero's Social and Political Thought*. [S.l.]: University of California Press. ISBN 978-0-520-07427-9
- [434]. World Intellectual Property Indicators, (2022), Author(s): World Intellectual Property Organization | Publication year: 2022
- [435]. World Wide Web (WWW), information network, [The Editors of Encyclopaedia Britannica](http://The Editors of Encyclopaedia Britannica)
- [436]. Wright Mills, <http://www.cwrightmills.org>
- [437]. [www.cbc.ca/montreal-abdelrazik-march.html](http://www.cbc.ca/montreal-abdelrazik-march.html) [coe.int/ViewDoc.jsp?Ref=CM/Rec\(2012\)3&Language=lanEnglish&Ver=original&BackColorIntra=net=EDB021&BackColor=F5D383](http://coe.int/ViewDoc.jsp?Ref=CM/Rec(2012)3&Language=lanEnglish&Ver=original&BackColorIntra=net=EDB021&BackColor=F5D383)
- [438]. [www.aurorawdc.com/whatisisci.htm](http://www.aurorawdc.com/whatisisci.htm) accessed on 30 Jun 2015
- [439]. [www.fgv.br/dg/diti/bib/geral/hum/hpbb15.htm](http://www.fgv.br/dg/diti/bib/geral/hum/hpbb15.htm) accessed on 30 Jun 2015
- [440]. [www.ohchr.org/Documents/Publications/Factsheet32EN.pdf](http://www.ohchr.org/Documents/Publications/Factsheet32EN.pdf)
- [441]. [www.privacyconference2009.org/dpas\\_space/Resolucion/index-iden-idphp.php](http://www.privacyconference2009.org/dpas_space/Resolucion/index-iden-idphp.php)
- [442]. Zachman, J. A., (1987), A framework for information systems architecture, *IBM Systems Journal*, vol. 26, no. 3, p. 276-292.
- [443]. Zachman, J.A., (1992), *The framework for enterprise architecture*: background, description and utility. 1992. Available from: <http://members.ozemail.com.au/~visible/paper/zachman3.htm>. Cited: 23 Aug. 2004.
- [444]. Zachman, J.A., Sowa, J. F., (1987), *Extending and formalizing the framework for Information Systems* John Wiley & Sons, Ltd.
- [445]. Zald, M. N., Berger, (1978), *Social Movements in Organizations: Coup d'Etat, Insurgency and Mass Movements*, *American Journal of Sociology* (83, 4), January, pp. 823-861
- [446]. Zaman, G. and Goschin, Z. (2010). Multidisciplinary, Interdisciplinary and Transdisciplinary: Theoretical Approaches and Implications for the Strategy of Post-Crisis Sustainable Development. *Theoretical and Applied Economics*, Asociatia Generala a Economistilor din Romania - AGER, vol. 0(12(553)), pages 5-20.
- [447]. Zarifian, Philippe, (2003, p.192), The model of competence: historical trajectory, current challenges and proposals. *Trans. Eric R. R. Heneault*. São Paulo: Senac.
- [448]. Zeman, J., (1970), Philosophical meaning of the notion of information. In: *The concept of information in contemporary science*. Rio de Janeiro: Peace and Earth.
- [449]. Zieliński, Tadeusz. *Cicero Im Wandel Der Jahrhunderte*. [S.l.]: Nabu Press
- [450]. Zikmund, W. G., (2000), *Business Research Methods* (6th ed.). Dryden Press
- [451]. Zikmund, William G., (2000), "Business" *Research Methods sixth Edition*, Dryden Press Harcourt College Publishers.
- [452]. Ziman, J. M., (1976), *The force of knowledge*. Great Britain: Cambridge University.
- [453]. Zins, C., (2007, v. 58, n. 3, p. 335-350), Conceptions of information science. *Journal of the american society for information science and technology*.
- [454]. Zins, C., (2011, v. 21, n. 3, p. 155-167), Redefining information science: from "information science" to "knowledge science". *Information and society: studies*, João Pessoa, set./dez. Available at: Accessed on: 17 out. 2013.
- [455]. Zorrinho, C. Preface. In: Serrano, A. F. C. (ed.), (2005), *Knowledge management: the new paradigm of organizations*. 3. ed. Lisbon: FCA Editora de Informática.
- [456]. Zorrinho, C., (1995), *Gestão da informação: estado para vencer*. Lisbon: IAPMEI.
- [457]. Zorrinho, C., A. Serrano, P. Lacerda, (2003), *Managing in Complexity*, Edições Sílabo.
- [458]. **Additional References**
- [459]. Ahlers, Anna L.; stichweh, Rudolf., (2017), The bipolarity of democracy and authoritarianism. Value patterns, inclusion roles, and forms of internal differentiation of political systems. Bonn: FIW Working Paper 09, .. Available at: <<https://www.fiw.uni-bonn.de/publikationen/FIWWorkingPaper>>.
- > <https://www.fiw.uni-bonn.de/publikationen/FIWWorkingPaper>
- [460]. Alighieri, Dante, *Encyclopaedia Britannica*, retrieved 10 January 2016.
- [461]. Allen, Gay Wilson. William James, (1970). Minneapolis: University of Minnesota Press.
- [462]. All-Union\_Institute\_of\_Scientific\_and\_Technical\_Information, <https://openlibrary.org/publishers/>
- [463]. Allyson Carlyle Committee: Clare Beghtol, Jens-Erik Mai, and Stuart Sutton Tennis, J. T. (2008). "Epistemology, Theory, and Methodology in Knowledge Organization: Toward a Classification, Metatheory, and Research Framework." (2008). In *Knowledge Organization*. 35(2/3): 102-112.
- [464]. Almeida, João Carlos (1987). *Theology of Solidarity (e-book). an approach to the work of Gustavo Gutiérrez*. São Paulo, SP: Loyola. 335 pages. ISBN 85-15-03030-6. Retrieved May 6, 2015.
- [465]. Amartya Sen, (2017), Elements of a theory of human rights. In *Justice and the capabilities approach*. Routledge.
- [466]. Antoine Garapon, Julie Allard, (2005), *Les juges dans la mondialisation, la nouvelle révolution du droit*, edi. Du Seuil.
- [467]. Arendt, Hannah, (2002), *The Life of the Spirit (the Thinking, the Wanting, the Judging)*, Rio de Janeiro, Relume Dumará.
- [468]. Argan, G. C. and Faciolo, Maurizio, (1992), *Guia de História da Arte*, Lisboa, Estampa.
- [469]. Aristotle, (1837), *Nicomachaea Ethics*, Bekker,
- [470]. Aristotle, (1999), *A política. The thinkers*. São Paulo: Nova Cultural.
- [471]. Arnet, E. (2022). The Ethics of Quiet Quitting. Available at: <https://www.pwrintelstitute.org/2022/09/the-ethics-of-quiet-quieting/>
- [472]. Arns, M., (2014), [P300 development across the lifespan: a systematic review and meta-analysis](https://www.p300development.com), RPC Kessels - PloS one.

- [473]. Arsenault and S. Turner, Internet X.509 Public Key Infrastructure: Roadmap, Internet Design, PKIX Working Group, IETF 2002. [Online]. Available: <http://ietf.org/internet-drafts/drafts-ietf-pkix-roadmap-08.txt>
- [474]. Banning, Lance (2000) [1999]. "Madison, James". *American National Biography*. Oxford, England: Oxford University Press. doi:10.1093/anb/9780198606697.article.0300303. ISBN 978-0-19-860669-7. Retrieved May 14, 2022.
- [475]. Barabási, Albert-László. Linked, (2003), How everything is connected to everything else and what it means for business, science and everyday life. New York: Plume..
- [476]. Barbosa, R. R., (2011), Business intelligence: an evaluation of sources of information about the external organizational environment.
- [477]. Barbosa, Rui, (1932, p. 40), *Oração aos moços*, Rio de Janeiro.
- [478]. Barney, J. B. (1986). «Strategic Factor Markets: Expectations, Luck and Business Strategy». *Management Science*, 32(10), pp. 1231-1241.
- [479]. Barney, J. B. (1991). «Firm Resources and Sustained Competitive Advantage». *Journal of Management*, 17(1), pp. 99-120.
- [480]. Barney, J. B. (1999). «How a Firm's Capabilities Affect Boundary Decisions». *Sloan Management Review* (40:3), pp. 137-145.
- [481]. Barney, J. B., & Arikian, A. M. (2001). The resource-based view: Origins and implications. In: M. A. Hitt, R. F. Freeman & J. S. Harrison (Eds.), *Handbook of strategic management* (pp. 124-188). Oxford: Blackwell.
- [482]. Baron, H., (1988), In search of Florentine Civic Humanism, Princeton: Princeton University Press, V. 1, ch. 6 pp. 134-157, 144, 138-141.
- [483]. Barzun, Jacques, (1983), *A Walk with William James*. New York: Harper & Row.
- [484]. Bastos, Celso Ribeiro, (1992, p 169), *Curso de Direito Constitucional*. 14th Ed. São Paulo: Saraiva.
- [485]. Bauman, Z., (1999), *Globalization, The Human Consequences*, Rio de Janeiro, Zahar.
- [486]. BBC, (2008), Facebook 'violates privacy laws'. Available at: <http://news.bbc.co.uk/2/hi/7428833.stm>
- [487]. Bbc. (2011), France fi nes Google over Street View data blunder. Available at: [www.bbc.co.uk/news/technology-12809076](http://www.bbc.co.uk/news/technology-12809076)
- [488]. Beal, A., (2004, p.137), *Strategic information management: how to transform information and information technology into factors of growth and self-performance in organizations*. 4. ed. São Paulo: Atlas.
- [489]. Beal, A., (2007), *Strategic information management*. São Paulo: Atlas.
- [490]. Beauvoir, Simone, (1949), *The Second Sex*, Rio de Janeiro: Nova Fronteira, 2014.
- [491]. Beck, Franz, (1912), *Studien zu Leonardo Bruni*. Abhandlungen zur Mittleren und Neueren Geschichte 36. Berlin and Leipzig: W. Rothschild.
- [492]. Beckett, P.H. (1974). Interaction between knowledge and an aesthetic appreciation. *landscape investigation news*, 1(8), p.5.
- [493]. Beijer, P. (2005). *Architecture Blueprint in Strategic Alignment*. Retrieved 2008, from Primavera: Program for Research in Information Management: <http://primavera.fee.uva.nl/PDFdocs/2005-12.pdf>
- [494]. Beijer, P., & Meer van der, A. (2008). Constituency involvement through parliamentary back-office integration – Enterprise Content Management in particular. 6th Eastern European eGov days. Prague.
- [495]. BellonE, Enrico, (1980), *A world on paper*. Studies on the second scientific revolution. Cambridge (MA): The MIT Press,
- [496]. Bensman SJ., (1998;42(3):147-242), Scientific and technical serials holdings optimization in an inefficient market: a LSU serials redesign project exercise. *Libr Resour Tech Serv* 11.4
- [497]. Beskow, Eduardo; Mattei, Lauro (December 1, 2012). "Notes on the trajectory of the environmental issue and main topics under debate at the Rio+20 conference". *NECAT Journal - Journal of the Center for Economic Studies of Santa Catarina* (2): 4–12. ISSN 2317-8523. Retrieved September 10, 2020.
- [498]. Besson, Bernard et Jean-Claude Possin, (1996), *Du Renseignement à l'intelligence économique*. Dunod
- [499]. Bigotto, Newton, (1991), *Machivel Republicano*. São Paulo, Loyola.
- [500]. BIS Working Papers, n.140, September 2003 (with "Discussion" by I. Visco and S. Whadwani). Available at: <http://www.bis.org/publ/work140.pdf?noframes=1>.
- [501]. Blanck, M., & Janissek-Muniz, R. (2014) Collective anticipative strategic intelligence and crowdfunding: application of the L.E.SCAnning method in peer-to-peer (P2P) economy social enterprise, *RAUSP*, 49(1), 1-17.
- [502]. Blanco, S., (1998), *Gestion de l'information et intelligence stratégique: cas de la selection des signes d'alerte précoce*, Thèse de doctorat en Sciences de Gestion, Univ. de Grenoble 2, 308 p.
- [503]. Blute, Marion, (2010), *Darwinian sociocultural evolution: solutions to dilemmas in cultural and social theory*. Cambridge (UK): Cambridge University Press.
- [504]. Bobbio, N.; Mateucci, N.; Pasquino, (1994), *G. Dicionário de Política*. Brasília: UNB
- [505]. Bobbio, Norberto, (1996, p. 7), *Equality and freedom*. Ediouro, Rio de Janeiro,
- [506]. Boccaccio, Giovanni, (2001), *On Famous Women*, edited and translated by Virginia Brown. Cambridge, MA: Harvard University Press, ISBN 0-674-00347-0.
- [507]. Bodstein, Regina Célia, (1998), *Cidadania e Modernidade: emergência da questão social na agenda pública*. Cadernos de Saúde Pública, Rio de Janeiro, v.13, n.2, p.185- 204.
- [508]. Bochner, Philotheus; Gilson, Etienne, (1970), *History of Christian Philosophy*. Petrópolis: Vozes.
- [509]. Bolman, L. G., and T. Deal, (1997), *Reframing Organizations: Artistry, Choice and Leadership*, 2nd edition, Jossey-Bass Publishers, San Francisco
- [510]. Boni, Luís Alberto, (1995), *Lógica e Linguagem na Idade Média*. Porto Alegre: Edipucrs.
- [511]. Borba, Andrea, (1998), *The dictatorship of countries*, University Ed., UFPE.
- [512]. Borio, C.; Lowe, P. Asset prices, financial and monetary stability: exploring the nexus. BIS Working Papers, n.114, July 2002. Available at:
- [513]. Boston Consulting Group, (1974), *Perspectives sur la Stratégie d'entreprise*. Hommes et Techniques, Paris
- [514]. Boston Consulting Group, (1980), *Les Mécanismes fondamentaux de la compétitivité*. Hommes et Techniques, Paris
- [515]. Boyd, B., Janet Fulk, (1996), *Executive Scanning and Perceived Uncertainty: a Multidimensional Model*, *Journal of Management*, 22(1), pp. 1-22
- [516]. Boyd, Robert; richerson, Peter J., (1985), *Culture and the evolutionary process*. Chicago (IL): University of Chicago Press.
- [517]. Brandão, André Martins, (2013), *Legal interpretation and the Right to Privacy in the Information Age: A philosophical hermeneutic approach*. *Revista Paradigma*, Ribeirão Preto, A. XVIII, n. 22, p. 232-257, jan./dez.
- [518]. Braybrooke, D., and Lindblom, C. E., (1963), *A Strategy of Decision*. Free Press, New York
- [519]. Briggs, A. Burke, (2006), *P. Social History of the Media: From Gutenberg to the Internet*. New York: Polity.
- [520]. Brodman E., (1960;32:479), Choosing physiology journals. *Med libr assoc bull*.
- [521]. Brum, M.A. C.and Barbosa, R. R., (2009), *Information-seeking behavior and use: a study with students*, Heidelberg, Springer.
- [522]. Bruni, Francesco, (1996, d), *Sulla costituzione fiorentina*. Opere Letteraire e Politiche, Torino, Utet, p. 776.
- [523]. Bruni, Francesco, (1996,b), *Laudatio Florentine Urbs*, Opere Letterarie e Politiche, Torino, Utet, p. 896, p. 596.
- [524]. Bruni, Francesco, (1996,c), *Oratio in funere Tohannis Strozze*, Opere Litterarie Politiche, Torino, Utet, p. 718.
- [525]. Bruni, Francesco, (1996a), *De Melita*, Opere Letterarie e Politiche, Torino, Utet, p. 660.
- [526]. Bruni, Francesco, (2003), *La Città Divisa*, *Le parti e Il bene comune da Dante a Guicciardini*, Bologna, pp. 19-136.
- [527]. Brush, Stephen G., (1988), *The history of modern science: a guide to the second scientific revolution, 1800-1950*. Ames (IA): Iowa State Press.
- [528]. *Bulow, Oskar von. La Teoria de las Excepciones Procesales y los Presupuestos Procesales. (trans. into Spanish). Buenos Aires, 1964 ed. [S.l.: s.n.]*
- [529]. Burt, Ronald S., (1992), *Structural holes. The social structure of competition*. Cambridge (MA): Harvard University Press, 1992.
- [530]. Buzzell, R. D., T. G. Bradley, R. G. M. Sultan, (1975), *Market Share: a Key to Profitability*, *Harvard Business Review*, January-February, pp. 97-111
- [531]. Cabral, B. F. (2010). *Freedom of speech - Considerations on freedom of expression and of the press in U.S. law*. Retrieved from Jus.com.br: <https://jus.com.br/artigos/17476/freedom-of-speech>
- [532]. Cadoni, (1999), *Giorgio, Lotte Politiche e Riforme Istituzionali a Firenze* 1494-1502, Roma: Nella sede dell'Istituto, pp. 153-157.
- [533]. Câmara, Alexandre de Freitas, (2015), *O novo processo civil brasileiro*. São Paulo: Atlas.
- [534]. Câmara, M. A., (2005), *Telecentros como instrumento de inclusão digital: Perspectiva comparada em minas gerais*. Dissertation (Master's Degree in Information Science) – Federal University of Minas Gerais, Belo Horizonte, 2005. Available at: <http://www.gemasdaterra.org.br/docs/tesemaurocamara.pdf>. Accessed on: 12 Feb. 2017.

- [535]. Carolina Luchina Giordani Nunes, (2013), The Principle of Reasonable Duration of the Process and its Definition Criteria within the Inter-American Human Rights System: A Study of the Damião Ximenes Lopes Case, CEJUR/TJCS Journal: Judicial Provision, ISSN: 2319-0876; Electronic ISSN: 2319-0884.
- [536]. Carvalho et al, (2001, XXXIII, pp. 658, pp. 567-631), *Manual de psicossociologia das organizações* [etc.]: McGraw-Hill, ISBN 972-773-105-8, <http://id.bnportugal.gov.pt/bib/bibnacional/1082298>
- [537]. Carvalho, F. A., (2011), *Criança, a alma do negócios*. 2011. 114f. Dissertation (Master's Degree in Administration) - Pedro Leopoldo Foundation, Minas Gerais.
- [538]. Carvalho, O. B. de M., (2009), Are the "digital included" "social included"? State, market and the insertion of individuals in the information society. *Liinc em Revista*, v. 5, n. 1, Available at: <<http://revista.ibict.br/liinc/index.php/liinc/article/viewFile/294/184>>. Accessed on: 12 Feb. 2017.
- [539]. CD-ROM. SEN, Amartya, (1993), Capability and Well-Being. In: NUSSBAUN, Martha; SEN, Amartya. The quality life. Oxford: Clarendon Press.
- [540]. Chan, S. Y. & Foster, J. M. (2001). 'Strategy formulation in small business'. *International Small Business Journal*, 19(3), 56-71.
- [541]. Chandler, A. D. Jr., (1962), *Strategy and Structure: Chapters in the History of the Industrial Enterprise*, M.I.T. Press, Cambridge.
- [542]. Chankova, Dobrinka, Vasilev, Valentin, (2020), South-West University, Blagoevgrad, Bulgaria
- [543]. Chapron G, Huste A. Open, fair, and free journal ranking for researchers. *Bioscience*. 2006; 56(7):558- 9. [ Links ]
- [544]. Chaves, Charley Teixeira. *Course on General Theory of Process*. 2nd ed. Belo Horizonte: Editora D'Plácido, 2016.
- [545]. [Chiovenda](#), (1900), *La Condanna nelle Spese Giudiziali*, Rome.
- [546]. [Chiovenda](#), (1930), *Istituzioni di diritto processuale civile*, Jovene.
- [547]. Christensen, C. R., (1997), *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press, Boston
- [548]. Christensen, C. R., Andrews, K. R., Bower, J. L., Hamermesh G., and Porter, M., E., (1982), *Business Policy: Text and Cases*, 5th edition, Homewood, IL: Irwin.
- [549]. Christian Morel, (2002), Les decisions absurde, sociologie des erreurs radicales et persistantes, Galimard, 'Une grille de lecture des decisions absurde', Justice, no. 187.
- [550]. Civil Law Day, (2013), Statements approved in the IV Civil Law Day. Available from: <[http://www.migalhas.com.br/arquivo\\_artigo/art20130607-02.pdf](http://www.migalhas.com.br/arquivo_artigo/art20130607-02.pdf)>. Accessed: 03 Nov. 2016. \_\_\_\_\_ Law and Democracy: between facticity and validity, vol. I/J
- [551]. Clausewitz, C. Von, (1989), *On War*, Princeton, NJ: Princeton University Press
- [552]. Clemons, E. K., Hitt L. M., (1987), *Information Systems for Sustainable Competitive Advantage*, Information & Management 11, pp. 131-136
- [553]. Clemons, E. K., Hitt L. M., (2001), *Poaching and Misappropriation of Information: An Analysis of Relationship Risks in Information-Intensive Production*, University of Pennsylvania, Wharton School
- [554]. Clodah Harris, Gemma M Carney and David Farrell, (2013, Vol. 60 Issue 3, pp. 201-209), *Governing by the people? Alternative perspectives on citizens' participation in democratic policy-making*, "Administration";
- [555]. Coggiola, Osvaldo, (2002), Military Governments in South America.
- [556]. Real Fight against Virtual Crime. (2016). Visão, 68.
- [557]. Conroy, Michael J. (2012). *Decision Making in Natural Resource Management : a Structured, Adaptive Approach*. Chicester: Wiley. [OCLC 827207638](#)
- [558]. Cooper, A. C. (1979). «Strategic management: New ventures and small business». In: D. E. Schendel & C. Hofer (Eds.), *Strategic management* (pp. 316-327). Boston: Little, Brown & Co.
- [559]. Copleston, Frederico S. J. *A History of Philosophy*. Vol. 8. New York: Image Books, 1994.
- [560]. Copyright. (n.d.). Obtained from Wikipedia: [https://pt.wikipedia.org/wiki/Direito\\_autoral](https://pt.wikipedia.org/wiki/Direito_autoral)
- [561]. Cybercrime Law. (n.d.). Obtained from the District Attorney's Office of Lisbon: [http://www.pgdlisboa.pt/leis/lei\\_mostra\\_articulado.php?nid=1137&tabela=leis](http://www.pgdlisboa.pt/leis/lei_mostra_articulado.php?nid=1137&tabela=leis)
- [562]. Daft, Richard L., J. Sormunen, Don Parks, (1988), *Chief Executive Scanning, Environment Characteristics and Company Performance: an Empirical Study*, Strategic Management Journal 9 (2), pp. 123-139
- [563]. Daft, Richard L., Juhani Sormunen, Don Parks, (1984), *Chief Executive Scanning Environmental Characteristics and Company Performance: an Empirical Study*, Strategic Management Journal, 9(2), pp. 123-139
- [564]. Daft, Richard L., Karl E. Weick, (1984), *Toward a Model of Organization as Interpretation Systems*, Academy of Management Review 9(2), pp. 284-295
- [565]. Dağ, Ahmet. "Hümanizmin radikalleşmesi olarak transhümanizm." *Felsefi Düşün-Akademik Felsefe Dergisi* 0, No 9 (2017): 46–68.
- [566]. Dallari, Dalmo de Abreu, (1994, p.256). *Elementos de Teoria Geral do Estado*. 18th Ed. São Paulo: Saraiva.
- [567]. Dallemagne, Jean-Luc, (1976), *Autogestion ou dictature du prolétariat; essai sur la gestion des états ouvriers*. [Paris] Unpublished.
- [568]. Dasgupta, Partha, (1993), *An inquiry into well-being and destitution*. Oxford: Clarendon Press.
- [569]. [David Walker \(1980\)](#). *Oxford Companion to Law*. Oxford University Press. [S.l.: s.n.] p. 1003. ISBN 0-19-866110-X. 02/02/2015
- [570]. Davies, B., (1998, p. 133-145), Psychology's subject: a commentary on the relativism/realism debate'. In: Parker, I. (ed.). *Social Constructionism, Discourse and Realism*. London: Sage.
- [571]. Davis, Gordon B and Scott Hamilton, (1993), *Concepts of Strategic Management*, 4th edition
- [572]. Day RA. *How to write and publish a scientific paper*. Philadelphia: Institute of Scientific Information Press; 1979. [[Google Scholar](#)]
- [573]. De Brandt, J. (1995), *Services aux Entreprises – Informations, Produits, Richess*, Paris, Economica
- [574]. De Lubac, Henry, (1973), *The Drama of Atheist Humanism*. Porto Publisher: Lisbon
- [575]. Copyright. (n.d.). Retrieved from Wikipedia: [https://pt.wikipedia.org/wiki/Direito\\_autoral](https://pt.wikipedia.org/wiki/Direito_autoral)
- [576]. Available at: <<http://www.kc.frb.org/publicat/sympos/2005/sym05prg.htm>>.
- [577]. increased their fortunes by \$92 billion in 2014.
- [578]. Douglas, John (September 1, 1978). *"Biologists urge US endowment for conservation"*. *Nature* (5676): 82–83. ISSN 1476-4687. doi:10.1038/275082a0. Retrieved September 10, 2020.
- [579]. Douma, S. W., H. Schreuder, (1992), *Economic approaches to organizations*, Prentice Hall International (UK) Ltd., Hertfordshire
- [580]. Duarte, E. N.; Santos, M. L. C., (2015), Knowledge in strategic administration. Perspectives in management & knowledge, João Pessoa, v. 1, n. 1, p. 15-24, 2011. Available at: <[http://periodicos.ufpb.br/ojs/index.php/pg\\_c/article/view/9798/5615](http://periodicos.ufpb.br/ojs/index.php/pg_c/article/view/9798/5615)>. Accessed on: 3 set. 2015.
- [581]. Duarte, E. N.; Silva, A. K. A.; Costa, S. Q., (2015), Information and Knowledge Management: "excellent business management" company practices extended to information units. *Informação & sociedade: estudos*, João Pessoa, v. 17, n. 1, p. 97-107, 2007. Available at: <<http://www.ies.ufpb.br/ojs/index.php/ies/article/view/503/1469>>. Accessed on: 3 set. 2015.
- [582]. Duncan, R. B., (1972), *Characteristics of Organizational environments and Perceived Environment Uncertain*, Administrative Science Quarterly, pp. 313-327
- [583]. Durant, Will, (1957), *Historia da Civilização*, São Paulo, CEN, vol. XII and XIII.
- [584]. Durkheim, Émile, (1973-1983), *De la division du travail social*. Paris: Presses Universitaires de France.
- [585]. Easley, David; kleinberg,, (2010), *Jon. Networks, crowds, and markets. reasoning about a highly connected world*. Cambridge (UK): Cambridge University Press.
- [586]. Economist Intelligence Unit (2008). The future of enterprise information governance, The Economist Intelligence Unit Limited
- [587]. Electronic Privacy Information Centre (EPIC), Investigations of Google Street View: <http://epic.org/privacy/streetview/>
- [588]. Electronic Privacy Information Centre (EPIC), Social Networking Privacy: <http://epic.org/privacy/socialnet/default.html>
- [589]. Electronic Privacy Information Centre (EPIC), Social Networking Privacy: <http://epic.org/privacy/socialnet/default.html>
- [590]. Electronic Privacy Information Centre (EPIC): <http://epic.org>
- [591]. Eless, T. Szerkezeti alaperdesek a polgari per kapcsán' (2013) 10 Magyar Jog 614-15.
- [592]. Eless, T. and Dome, A., 'Alapvetések a polgari per szerkezetéhez' (Fundamental Issues of the Litigation Structure) in Nemeth, J. - Varga, I. (eds), *Egy új polgari perrendtartás alapjai* (The Foundations of a New Civil Procedure) (HVG-ORAC 2014) 50-78.
- [593]. Elfring, T., and Volberda, H. W., (1994, 1998), *New Directions in Strategy: Beyond Fragmentation*, Sage, London

- [594]. Evely, Anna (October 21, 2010). «Dead planet, living planet. Biodiversity and ecosystem restoration for sustainable development, a rapid response assessment. C. Nellemann, E. Corcoran (eds). 78: Birkland Trykkeri, Norway, 2010. ISBN 978-82-7701-083-0, 109pp.». *element. Land Degradation & Development* (2): 200–200. ISSN 1085-3278. doi:10.1002/LDR.1054. Retrieved September 22, 2020.
- [595]. Everitt, A. (2001, p. 34), "Cicero: The Life and Times of Rome's Greatest Politician".
- [596]. Exy, Robert, (1997), *Teoría de los Derechos Fundamentales*, Madrid, Centro de Estudios Constitucionales.
- [597]. Fabrício Wloch, (2017), *Legal Methodology of the Civil Sentence*, CEJUR/TJSC Journal: Jurisdictional Provision, v. V, n. 01, p. 11-34.
- [598]. Feltre, Vittorino, (1906) and Guarino de Verona: An Educational Study of the Fifteenth Century, Washington.
- [599]. Feltre, Vittorino, (1987), W. H. Woodward and Other Humanist Educators: Essays and Versions, Cambridge, England, repr. 1921.
- [600]. Ferguson, R. W. et al. International financial stability. *Geneva Reports on the World Economy*, Geneva, v.9, 2007.
- [601]. Ferreira Filho, Manoel Gonçalves. *Legislative process*. São Paulo: Saraiva, 2001.
- [602]. Figueiredo, Antônio de, (1976), Portugal: 50 anos de ditadura. Rio de Janeiro, Civilização Brasileira.
- [603]. Figueiredo, N., (1994), Information for business: a new challenge. In: Congresso Latino-Americano de Biblioteconomia e Documentação (Latin American Congress of Librarianship and Documentation), 2., 1994, Belo Horizonte. Annulls... Belo Horizonte: ABMG, 820 p.
- [604]. Fingerman, H., (2018), Cinceito do poder político. <https://deconceptos.com/ciencias/legal/polito-power>.
- [605]. Finkelstein, Maria Eugenia, (2011), *E-Commerce Law*. 2. Ed. Rio de Janeiro: Elsevier.
- [606]. Fiori, José Luís, (1995), In search of lost dissent. São Paulo: Insight Editorial.
- [607]. Fisher, I. The debt-deflation theory of great depressions. *Econometrica*, v.1, 4 October 1933.
- [608]. Foley, John P. (n.d.). Ethics on the Internet. Obtained from La Santa headquarters: [http://www.vatican.va/roman\\_curia/pontifical\\_councils/pccs/documents/rc\\_pc\\_pccs\\_doc\\_200202\\_28\\_ethics-internet\\_po.html](http://www.vatican.va/roman_curia/pontifical_councils/pccs/documents/rc_pc_pccs_doc_200202_28_ethics-internet_po.html)
- [609]. Forton, Rozendo Escalanate, (1978), Indicators of Social Welfare: their content and their updating. *Debates Sociais*, Rio de Janeiro, v.10, n.18, p. 4.
- [610]. Foster, M., et al. (2000) A Method for Assessing the Relative Likelihood of Failure of Embankment Dams by Piping. *Canadian Geotechnical Journal*, 37, 1025-1061. <http://dx.doi.org/10.1139/t00-029>
- [611]. Foucault, M., (1995), *Discipline and Punish: the Birth of Prison*, 1975, Alan Sheridan. New York: Vintage
- [612]. Foucault, Michel (1994): *Dits et écrits 1954-1988*. Paris: Gallimard.
- [613]. Fredrigo, Fabiana de Souza, (1998), Dictatorship and resistance in Chile, UNESP.
- [614]. Freitas, H. and Janissek-Muniz, R., (2006), A proposal for a platform for Strategic Intelligence. Text nominated for the II ABRAIC Innovation in Competitive Intelligence Award, and received an Honorable Mention. III ENA – National Meeting of ABRAIC. Annulls. Ibero-American Congress of Knowledge Management and Competitive Intelligence. 29-31 August 2006. Curitiba PR.
- [615]. Freitas, H. and Janissek-Muniz, R., (2006), *A proposal for a platform for Strategic Intelligence*. Ibero-American Congress of Knowledge Management and Competitive Intelligence. 29-31 August 2006. Curitiba PR.
- [616]. Fuld, L. M., (1993), Ten Easy Ways to Monitor Your Competitors. In: FULD, L.M. *Administrando a concorrência*. Rio de Janeiro: Record.
- [617]. Funkenstein, Amos, "The Polytheism of William James." *Journal of the History of Ideas* 55, no. 1 (1994): 99–111. <https://doi.org/10.2307/2709955>
- [618]. Furner, J. (2009). "Interrogating "Identity": A Philosophical Approach to an Enduring Issue in Knowledge Organization." In *Knowledge Organization* 36(1): 3-16.
- [619]. Galina Pisarska, (2020, vol.7, issue 1 p. 53-63), *Aianywinu ebnpocu Ha denuβepamuenama demoxpayusi and Penyβnnixa EbneapuR [Current Issues of Deliberative Democracy in the Republic of Uruguay]*, "Hpaso, Ilmarrmca, Agrvimmcrpamm" ["Law, Politics, Administration"] Newspaper,
- [620]. Genberg, H. et al. Official reserves and currency management: myth, reality and the future, *Geneva Reports on the World Economy*, Geneva, v.7, 2005.
- [621]. *Geniuses of Painting*, (1967), Leonardo da Vinci, (Mona Lisa, The Last Supper, The Virgin of the Rocks, Vitruvian Man), Vol. 1, São Paulo, Abril Cultural,
- [622]. *Geniuses of Painting*, Michelangelo, Saint Anthony Abbot, Kimbell Art Museum, (1487-1488).
- [623]. Geoff Eley, (2000), *Forging Democracy: The Left and the Struggle for Democracy in Europe, 1850-2000*, Amazons.books
- [624]. Ghirelli, Antonio, (2003), *Tyrants: | from Hitler to Pol Pot: The Men Who Bloodied the Twentieth Century* Difel.
- [625]. Gill, M. (2006) The 'h' Index—a measure of quality of scientific research.
- [626]. Gilson, Barreto and Oliveira, Marcelo G., (2004), *Arte Secreta de Michelangelo – uma aula de Anatomia na Capela Sistina*, Editora ARX.
- [627]. Gilson, Etienne, (1998), *A Filosofia na Idade Média*. São Paulo: Martins Fontes.
- [628]. *Glasgow Social and Economic Studies* No. 11. New York: Humanities Press, Inc.,
- [629]. Godet, Michel (1993). *Strategic Foresight Manual*. Dom Quixote Publications, Lisbon.
- [630]. Goffman, Erving, (1961), *Encounters: two studies in the sociology of interaction*. Indianapolis (IN): Bobbs-Merrill.
- [631]. Goffman, Erving, (1983, v. 48, n.1, pp. 1-17). The interaction order. *American Sociological Review*.
- [632]. Goldin, Claudia; KATZ, Lawrence F. *The race between education and technology*. Cambridge (MA); London: The Belknap Press of Harvard University Press, 2008.
- [633]. Gombrich, E. H., (1993), *The History of Art*, Rio de Janeiro, LTC.
- [634]. Gonçalves, Maria Eduarda, (2003), *Information law: new rights and forms of regulation in the information society*. Coimbra: Almedina.
- [635]. Gottschalk, P. (1999). «Strategic Management of IS/IT Functions: the Role of the CIO in Norwegian Organizations». *International Journal of Information Management* (19:5), pp. 389-399.
- [636]. Goulart, I. B. Piaget, (2011), *basic experiences for use by the teacher*. 27. ed. Petrópolis: Ed. Vozes.
- [637]. Grant, R. (1996). «Towards a Knowledge-based Theory of the Firms». *Strategic Management Journal*, vol. 17, Number Winter Special Issue, pp. 109-122
- [638]. Grant, R., (1991a), *The Resource-based Theory of Competitive Advantage: Implications for Strategy Formulation*, *California Management Review* (33, 3, pp. 114-135)
- [639]. Grant, R., (1991b), *Contemporary Strategy Analysis: Concepts, Techniques, Applications*, Blackwell Business
- [640]. Grant, R., (1991c), *Porter's Competitive Advantage of Nations: An Assessment*, *Strategic Management Journal*, Vol. 12, October 19912, pp. 535-548
- [641]. Grant, R., (1991d), *Contemporary Strategy Analysis: Concepts, Techniques, Applications*, Blackwell Business
- [642]. Grant, R., (1998), *A Resource-Based Approach to Strategy Analysis – A Practical Framework*, 3rd ed., Blackwell Business Grenoble 2, p. 308.
- [643]. Grayling, A. C., (2009a), Scepticism and the Possibility of Knowledge, *Continuum*
- [644]. Grzybowski A. The journal impact factor: How to interpret its true value and importance. *Med Sci Monit*. 2009; 15(2):SR1-4. [ Links ]
- [645]. Gyekiczky, T., *Beforditva - Leveltari iratok a jogpolitikáról, a bíróságotól, es a bíróságotól a Kadar" korszakban (1958-1990)* (Turning inward - Archival documents on legal politics, courts and the possibilities of adjudication during the Kadar era (1958-1990) (Patrocinium 2016).
- [646]. Gyekiczky, T., *Helyzetjelentés (Leveltari iratok polgari eljárásjogunk történetéből)* (Progress Report/ Archival documents of the history of our civil procedural law /) (Gondolat 2006).
- [647]. Gyekiczky, T., Torvény születik. Adalekok az 1952. Evi polgari perrendtartás keletkezésének történetéhez. (Egy leveltari kutatás előzetes tapasztalatai). (The birth of an act of law. Additional information on the history of the drafting of the 1952 Code of Civil Procedure. /Previous experience of a file search /)in Wopera,Zs. (ed), *50 éves a polgari perrendtartás*. (Novotni Kiadó 2003).
- [648]. Habermas, (1997), Trad. Flavio Beno Siebeneicher. Rio de Janeiro: Ed. Tempo Brasileiro. .
- [649]. Habermas, J., (2006), *Technique and Science as 'ideology'*. Lisbon: 70.
- [650]. Habermas, Jürgen, (1997), *Droit et Démotrix, Entre Faits et Normes*, Paris, Gallimard.
- [651]. Habermas, Jürgen, (2002), *Historia y crítica de la opinión pública. La transformación estructural de la vida pública*. Barcelona: Gustavo Gili.
- [652]. Habermas, Jürgen, (2007), *Structural change of the public sphere investigations on a category of bourgeois society*. Translated by Habermas, Jürgen, (2002), *Historia y crítica de la opinión pública. La transformación estructural de la vida pública*. Barcelona: Gustavo Gili.
- [653]. Hale, J. (1993). *The Civilization of Europe in the Renaissance*
- [654]. Hall, Richard A. S. "The Polytheism of William James". *The Pluralist* 4, no. 1 (2009): 18–32. <https://doi.org/10.1353/plu.0.0009>



- [655]. Hamel, G. (1996). «Strategy as Revolution». *Harvard Business Review*, 74(4), 69-82.
- [656]. Hartzler, H. Richard (1976). *Justice, Legal Systems, and Social Structure*. Port Washington, NY: Kennikat Press.
- [657]. Harvard Business Review. (2013). Big Data: the future of information and business. [S.l.]: Serasa Experian.
- [658]. Hauser, Arnold, Maneirismo, São Paulo Perspectiva.
- [659]. Hayes, R. H., (1985), *Strategic Planning – Forward in Reverse?*, Harvard Business Review, November-December
- [660]. HEC - Hautes Études Commerciales, de Jouy-en-Josas, (1994), *Strategy, Structure, Decision, Identity* - Strategor - Global Company Policy, Dom Quixote Publications, Lisbon.
- [661]. General History of Art, (1995), Painting I, Madrid, Ediciones del Prado.
- [662]. Historianet. (n.d.). Retrieved from The U.S. Declaration of Independence: <http://www.historianet.com.br/conteudo/default.aspx?codigo=214>
- [663]. History of Citation Indexing [Internet]. 2010 [cited en 2009 Nov 1] Available in: [http://thomsonreuters.com/products\\_services/science/free/essays/history\\_of\\_citation\\_indexing/](http://thomsonreuters.com/products_services/science/free/essays/history_of_citation_indexing/). [ Links ]
- [664]. Hjørland, B. (2009). "Concept theory." In JASIST 60(8): 1519-1536. Hjørland, B. (2016). Knowledge organization. Knowledge Organization 43, no. 6: 475-84
- [665]. Hjørland, Birger, (2003, v. 30, n. 2, pp. 87-110), Fundamentals of Knowledge Organization. Knowledge Organization,
- [666]. Hodgson, Geoffrey M.; thorbjorn, Knudsen, (2010), Darwin's conjecture. The search for general principles of social and economic evolution. Chicago (IL): University of Chicago Press.
- [667]. Hoefel C., (1998;53:1225), Journal impact factors [letter]. *Allergy* .
- [668]. Hogart, R. M., S. Makridakis, (1981), *Forecasting and Planning: an Evaluation*, Management Science (27, 2), February, pp. 115-138
- [669]. Holopainen, M., & Toivonen, M. (2012) Weak signals: Ansoff today, *Futures*, 44(3), 198-205.
- [670]. Hoo, C. W. (1998), *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge and Make decisions*, Oxford University Press, New York
- [671]. [http://apl.unisuam.edu.br/legis\\_augustus/pdf/ed1/Artigo\\_2.pdf](http://apl.unisuam.edu.br/legis_augustus/pdf/ed1/Artigo_2.pdf)
- [672]. [http://curia.europa.eu/juris/document/document.jsf?jsessionid=9ea7d0f130deaba4da0417794a31b057a34452aae007.e3\\_4KaxiLc3eQc40LaxqMbN40bxqOe0?text=&docid=153853&pageIndex=0&do\\_clang=en&mode=req&dir=&occ=first&part=1&cid=111237](http://curia.europa.eu/juris/document/document.jsf?jsessionid=9ea7d0f130deaba4da0417794a31b057a34452aae007.e3_4KaxiLc3eQc40LaxqMbN40bxqOe0?text=&docid=153853&pageIndex=0&do_clang=en&mode=req&dir=&occ=first&part=1&cid=111237)>. Accessed: 24 May 2015.
- [673]. Ignazio Visco is deputy director general of Banca d'Italia. He was chief economist of the Organization for Economic Cooperation and Development (OECD). @ - [bancaditalia@pec.bancaditalia.it](mailto:bancaditalia@pec.bancaditalia.it)
- [674]. *Il ruolo dell'econometria nell'ambito delle scienze economiche*. Bologna: il Mulino, 1991.] Received on 5.24.2009 and accepted on 5.26.2009.
- [675]. Ingwersen, P., (1997, v. 54, n. 2, pp. 236-243), The Calculation of Web Impact Factors. Journal of Documentation.
- [676]. Ingwersen, Peter, (1992, p. 99-135). Information and information science in context. Libri, v.42(2).
- [677]. Introduction to the History of Philosophy - Danilo Marcondes
- [678]. INTERNATIONAL COUNCIL OF SOCIAL WELFARE, (1978), Report of the XIX International Conference on Social Welfare. Jerusalem.
- [679]. International Covenant on Civil and Political Rights. (n.d.). Obtained from National Election Commission: [http://www.cne.pt/sites/default/files/dl/2\\_pacto\\_direitos\\_civis\\_politicos.pdf](http://www.cne.pt/sites/default/files/dl/2_pacto_direitos_civis_politicos.pdf)
- [680]. International Covenant on Civil and Political Rights. United Nations. Human Rights. (1966). Available at: <http://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx>. Accessed on: June 23, 2016.
- [681]. International Covenant on Economic, Social And Cultural Rights. (n.d.). Obtained from The General Directorate of Education:
- [682]. International Covenant on Economic, Social and Cultural Rights. (n.d.). Obtained from The General Directorate of Education: [http://www.dge.mec.pt/sites/default/files/ECidadania/educacao\\_para\\_a\\_Defesa\\_a\\_Seguranca\\_e\\_a\\_Paz/documents/pacto\\_internacional\\_sobre\\_direitos\\_economicos\\_sociais\\_culturais.pdf](http://www.dge.mec.pt/sites/default/files/ECidadania/educacao_para_a_Defesa_a_Seguranca_e_a_Paz/documents/pacto_internacional_sobre_direitos_economicos_sociais_culturais.pdf)
- [683]. International ISBN Agency, <https://www.isbn-international.org>.
- [684]. *International Journal of Research & Methodology in Social Science*, Vol. 2 did not. 2, p.249 (April— June 2016). ISSN 2415-0371
- [685]. *International Standard Serial Number (ISSN)*, <https://www.ft.wiki>.
- [686]. Internet World Stats. (n.d.). Retrieved from INTERNET USAGE STATISTICS - The Internet Big Picture: <http://www.internetworldstats.com/stats.htm>
- [687]. Introna, L. (1997). Management, Information and Power. Houndmills, Basingstoke, Hampshire RG21 6XS: MacMillan Press Ltd.
- [688]. Irish Data Protection Commissioner, (2009), Case Study 1: Disclosure of personal data due to inappropriate security measures. Available at: [www.dataprotection.ie/viewdoc.asp?DocID=1068#1](http://www.dataprotection.ie/viewdoc.asp?DocID=1068#1)
- [689]. Irish Data Protection Commissioner, (2011), Facebook Ireland Ltd – Report of Audit. Available at: [book\\_Ireland\\_Audit\\_Report\\_Final.pdf](http://book_Ireland_Audit_Report_Final.pdf)
- [690]. Irving H. Sher and Eugene Garfield, (1960), the *Journal Citation Report (JCR)*, of the Thomson Reuters Institute.
- [691]. ISO/IEC 29100, (2011), Information Technology, Security Techniques, Privacy Framework. International Standard.
- [692]. Itami, H., (1987), *Mobilizing Invisible Assets*. Massachusetts, Harvard University Press, Cambridge
- [693]. Jacques, Paulino, (1957, p. 30), **On equality before the law (Fundamental, concept and content)**. 2nd ed. Rio de Janeiro: Revista Forense.
- [694]. James S Fishkin, (1995), *The Voice of the People: Public Opinion and Democracy*, New Haven, CT: Yale University Press.
- [695]. Jamil, G. and Fernanda Ribeiro e Armando Malheiro, (2013), "Rethinking the Conceptual Base for New Practical Applications in Information Value and Quality", IGI Global, Hershey, USA
- [696]. Jan-Erik Lönnqvist, Inga Jasinskaja-Lahti, and Markku Verkasalo, (2011), Personal values before and after migration: A longitudinal case study on value change in ingrian-finnish migrants. *Social Psychological and Personality Science*, 2(6):584-591.
- [697]. Janissek-Muniz, R, Freitas, H., & LESCA, H. (2007) *Anticipative and Collective Strategic Intelligence as a support for the development of organizations' capacity to adapt*. Paper presented at CONTECSI, 4°, São Paulo, Brazil.
- [698]. Janissek-Muniz, R., & Blanck, M. R. M. (2014) *Management of weak signals, entrepreneurship and uncertainty: a relational theoretical essay from the perspective of intelligence*. Paper presented at CONTECSI, 11°, São Paulo, Brazil.
- [699]. Janissek-Muniz, R., Lesca, H.; Freitas, H., (2006), Inteligência Estratégica Antecipativa e Coletiva para Tomada de Decision. 3rd CONTECSI - International Conference on Information Systems and Technology Management and 11th WCA - World Continuous Auditing Conference. Annals 3rd Contesci. 05/31 to 06/02/2006 - USP São Paulo/SP.
- [700]. Japiassu, H., (1976), A Interdisciplinaridade e a patologia do saber. Rio de Janeiro: Imago.
- [701]. Japiassu, Hilton, (1977. p-13-15), The masks of science. *Ciência da Informação*, Rio de Janeiro, v.6, n.1,. Available at: <http://revista.ibict.br/index.php/ciinf/article/view/1566>
- [702]. Japiassu, Hilton, (1984. p.3-5), The epistemology of the "new scientific spirit": of scientific creation or open reason. São Paulo, Folhetim da Folha de São Paulo, July 1,
- [703]. Japiassu, Hilton. (1977, p. 202) Introduction to epistemological thought. 2nd ed. Rio de Janeiro, Francisco Alves.
- [704]. Japiassu, Hilton. Interdisciplinarity and pathology of knowledge. Rio de Janeiro: Imago, 1975. 221p. (Logoteca Series) Strauss, J. D.; Radnor, M. Roadmapping for Dynamic and Uncertain Environments. *Research Technology Management*, v. 47, n. 2, p. 51, 2004.
- [705]. Japiassu, Hilton; Marcondes, Danilo, (1991. 265 p), Dicionário básico de filosofia. 2nd ed. magazine. Rio de Janeiro: Zahar.
- [706]. Jasper, Karl, (1973), Philosophy of existence: conferences pronounced at the German Academy of Frankfurt, Rio de Janeiro, RJ: Imago.
- [707]. Jean-Michel Bessette, (1994, pp. 46-48), *The Mild Voice of Reason: Deliberative Democracy & American National Government*, Chicago, University of Chicago Press.
- [708]. Jiang, X.; Hong, J.; Landay, J., (2002), Approximate Information Flows: socially-based modeling of privacy in ubiquitous computing. In: International Conference of Ubiquitous Computing, 4., 2002, Göteborg, Sweden. Proceedings [...]. Göteborg, Sweden.
- [709]. John Finnis, (1980), Natural Law and Natural Rights. Oxford University Press.
- [710]. John S Dryzek, *Deliberative Democracy and Beyond: Liberals, Critics, Contestations*, 2000, Oxford: Oxford University Press.
- [711]. Jornada de Direito Civil, (2013), Statements approved at the IV Jornada de Direito Civil. Available at: <[http://www.migalhas.com.br/arquivo\\_artigo/art20130607-02.pdf](http://www.migalhas.com.br/arquivo_artigo/art20130607-02.pdf)>. Accessed on: 03 nov. 2016. \_\_\_\_\_. Law and Democracy: Between Facticity and Validity, vol. I/ Jürgen Habermas. Trad. Flávio Beno Siebeneicher. Rio de Janeiro: Ed. Tempo Brasileiro, 1997.
- [712]. Jovino Pizzi. (2017), Judicialized Justice: The Primacy of Positive Law, <http://dx.doi.org/10.21728/logeion.2017v4n1.p21-35>

- [713]. Judson, Pieter M. (2016), *The Habsburg Empire. A new history*. Cambridge (MA): The Belknap Press of Harvard University Press.
- [714]. Junqueira, Helena Iraci. (1973), *O bem-estar e o desenvolvimento*. Debates Sociais, Rio de Janeiro, n.16, p. 8.
- [715]. Jurgen Habermas, (1996), *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*, Cambridge, MA: MIT Press.
- [716]. *Jutro, Peter (March 22, 2019). «Understanding the Importance of Habitat Conservation». Medium. Retrieved September 10, 2020.*
- [717]. Kant, I., (1785), *Fundamento da Metafísica dos Morales*, (Grundlegung zur Metaphysik der Sitten.
- [718]. Kant, I., (1786), *What Does It Mean to Orient Oneself in Thought?*, (O\_\_\_T) (Was heibt: sich im Denken orientieren?).
- [719]. Kant. (July 2005), *The dignity of the human person in Kant's thought*.
- [720]. Kant. (July 2005), *The dignity of the human person in Kant's thinking*.
- [721]. Kanthraj Gr. Journal impact factor. *Indian J Dermatol Venereol Leprol*. 2006; 72(4):322-5. [ Links ]
- [722]. Kärkkäinen H., Piippo P., Puumalainen K., Tuominen M., (2001), *Assessment of hidden and future customer needs in Finnish business-to-business companies*, **R&D Management**, 31(4), p.391-406.
- [723]. Kate Wilson; Lucy Montgomery; Cameron Neylon; Karl Huang, (2022), *The Curtin Open Knowledge Initiative: Sharing Data on Scholarly Research Performance*, Te Herenga Waka Victoria University of Wellington, Wellington, Aotearoa, New Zealand [katie.wilson@vuw.ac.nz](mailto:katie.wilson@vuw.ac.nz), <https://orcid.org/0000-0001-8705-1027>, Curtin University,
- [724]. Kelsen, Hans, (1962, p. 190), *Teoria Pura do Direito*. Pariz, Dalloz.
- [725]. Kelsen, Hans, (2003), *Fundamentos da democracia*. p. 190 apud BARZOTTO,
- [726]. Kempin, Jr., Frederick G. (1963). *Legal History: Law and Social Change*. Englewood Cliffs, NJ: Prentice-Hall.
- [727]. Kerlinger, F. N., (1980), *Methodology of research in social sciences: a conceptual treatment*. Translated by Helena Mendes Rotundo; technical revision José Roberto Malufe. São Paulo: EPU.
- [728]. Kettemann, Matthias C., (2012), *5 punchy principles for regulating the internet*. Available at: <http://internationallawandtheinternet.blogspot.co.at/2012/07/5-punchyprinciples-for-regulating.html?pref=fb>
- [729]. Keynes, J. M. *On the economic possibilities of our grand-children. Nation and Athenium; The Saturday Evening Post*, 1930.
- [730]. Keynes, J. M. *Prospettive economiche per i nostri nipoti*. In fashion: \_\_\_\_\_, Esortazioni e profezie. Milano: Il Saggiatore, 1968.
- [731]. Kierkegaard, Soren, (1843),: in Os pensadores, translated by Maria Jose Marinho, São Paulo: Abril Cultural, 1974.
- [732]. Kirk, J. (1999), *Information in Organizations: Directions for Information Management*, Information Research, vol 4 no. 3. Available at <http://Informationr.net/ir/4-3/paper57.html>, (site visited May 2003)
- [733]. Knorr-Cetina, K. (1997). *Sociality with objects: Social relations in postsocial knowledge societies*. *Theory, Culture and Society* 14 , 1-30.
- [734]. Kobler, F., *Az állítási érdek szabályai: tekintettel a magyar polgari perrendtartás törvényjavaslatára*, (Interest in Statement of Facts With Regard to the Law of Civil Procedure ) (Franklin-Tarsulat 1901).
- [735]. Kobrin, S. J. et al., (1980), *The assessment and evaluation of noneconomic environments by American firms*. *Journal of International Business Studies*, n. 11, p. 32-47.
- [736]. Köpping, Klaus Peter, (2005), *Adolf Bastian and the psychic unity of mankind. the foundations of anthropology in nineteenth century germany*. Münster: Verlag.
- [737]. Kraus, S. (2007). «Strategic Planning in New Ventures and Young SMEs». In: C. Wankel (Ed.), *21st Century Management – A Reference Handbook* (pp. 73-81). Thousand Oaks, CA: Sage.
- [738]. Kristeller, P. O. (1979). *Renaissance Thought and Its Sources*. Columbia University Press.
- [739]. Kristeller, Paul Oskar (1982). *El pensamiento renacentista y sus fuentes*. Mexico: Fondo de Cultura Económica. ISBN 968-16-1014-8.
- [740]. Kuhn, (2003), v.74, issue 5, pp. 1245-1260), *The Development of Argument Skills*, Child Development, SRCD.,
- [741]. Kurt A. Raaflaub, Josiah Ober, Robert W. Wallace, (2007), *Origin of Democracy in Ancient Greece*, University of California Press, ISBN 0-520-24562-8, [Google Books link](#)
- [742]. *La teoria delle grandi depressioni basate sui debiti e sulla deflazione*. In: PAPI, G. U. (Org.) *Mercato monetario*. Turin: UTET, 1935. v.VIII.
- [743]. Lagarrigue, Jorge, (1987), *The Republican Dictatorship (1854-1894)*, according to Auguste Comte. Rio de Janeiro, Positivista Church of Brazil.
- [744]. Latour, B., (1984), *Power/Knowledge and the Dissolution of the Sociology of Knowledge*, volume 32, issue 1, [The Sociological Review](#).
- [745]. Laudon, Kenneth c.; Laudon, John P., (2004), *Management Information Systems*. São Paulo: Pearson.
- [746]. *Cybercrime Law*. (n.d.). Obtained from the District Attorney General's Office of Lisbon: [http://www.pgdlisboa.pt/leis/lei\\_mostra\\_articulado.php?nid=1137&tabela=leis](http://www.pgdlisboa.pt/leis/lei_mostra_articulado.php?nid=1137&tabela=leis)
- [747]. *Law No. 43/2004*, of 18 August, *Law on the organization and functioning of the National Data Protection Commission*. (n.d.). Retrieved from the National Data Protection Commission: [https://www.cnpd.pt/bin/cnpd/Lei\\_43\\_2004.pdf](https://www.cnpd.pt/bin/cnpd/Lei_43_2004.pdf)
- [748]. *Law No. 67/98 - Personal Data Protection Law*. (n.d.). Retrieved from Electronic Official Gazette: <https://dre.pt/application/file/a/239889>
- [749]. Leitch, Hermann. (1967), *Universal History of Art*, São Paulo, Melhoramentos, chap. 20 and 21.
- [750]. Leite, F.C. L. 2011. *Generic model of scientific information management for research institutions from the perspective of scholarly communication and open access*. Thesis (Doctorate in Information Science), Brasília: University of Brasília.
- [751]. Lenin, Vladimir Ilyich, (1988), *State, dictatorship of the proletariat and soviet power*. Book Workshop.
- [752]. Leonardo Bruni, (1416, p.17)
- [753]. Lesca and Blanco, (2002): in: Janissek-Muniz, R.; Lesca, H.; Freitas, H. *Development of the capacity for anticipation by the identification and capture of anticipative evidence in the context of Anticipative Strategic Intelligence*. In: 4th. IFBAE IFBAE Congress, 2007, Porto Alegre. *Annals of the 4th IFBAE - IFBAE Congress, 2007*
- [754]. Lesca, H. (1995) *The crucial problem of the strategic probe: the construction of the "puzzle"*. *CERAG, ESA, Recherche series, 95-02*, 24.
- [755]. Lesca, H., & Blanco, S. (2002) *Contribution à la capacite d'anticipation des entreprises par la sensibilisation aux signaux faibles*. Paper presented at CONGRÈS INTERNATIONAL FRANCOPHONE SUR LA PME, 6°, Montreal.
- [756]. Lesca, H., & Lesca, N. (2011) *Weak signals for strategic intelligence anticipation tool for managers*, London: ISTE; Hoboken: Wiley.
- [757]. Lesca, H., (1986), *Systèmes d'Information pour le Management Stratégique de l'Enterprise*. Paris: McGraw-Hill.
- [758]. Lesca, H., (2001), *Veille stratégique : passage de la notion de signal faible à la notion de signe d'alerte précoce*. Colloque VSST 2001, Barcelone oct., *Actes du colloque VSST*, tome 1, pp. 98-105.
- [759]. Lesca, H., (2003), *Veille stratégique: la méthode* L:E:SCAnning@, Editions EMS, Colombelles, France.
- [760]. Lesca, H., Almeida, F. C., (1994), *Strategic Information Management*. *Revista de Administração*, v. 29, n. 3, p. 66-75.
- [761]. Lesca, H.; Almeida, F. C., (2015), *Strategic information management*. *Revista de Administração*, São Paulo, v. 29, n. 3, p. 66-75, jul./set. 1994. Available at: <file:///C:/Users/pc/Downloads/2903066%20(2).pdf>. Accessed on: 3 set. 2015.
- [762]. Lester, R.; Waters, J., (1989), *Environmental scanning and business strategy*. London, UK: British Library, Research and Development Department.
- [763]. Leszczynska, D. et Lesca, H., (2004), *Veille Stratégique : utilité des « informations de terrain » pour la PME-PMI à la recherche de nouveaux débouchés produit/marché*. Etude d'un cas. *Cahier de Recherche CERAG (Grenoble) – IAE (Nice)*, CERAG UMR 5820 CNRS.
- [764]. Levy, (2001), *Business Improvement Districts and the "New" Revitalization of Downtown*, volume 15, issue 2, *Economic Development Quarterly*, Sage Journal.
- [765]. Luis Fernando, (2003), *A democracia na constituição*. Unisinos Publishing House.
- [766]. Lunardi, Soraya Gasparetto. *Process*. In *Brazilian Dictionary of Constitutional Law*. São Paulo: Saraiva, 2007, p. 302-303.
- [767]. M. & Kitzis, E. S. (2005). *The New CIO Leader. Setting the Agenda and Delivering Results*. Harvard Business School Press, Boston, Massachusetts.
- [768]. Macdonald, Catherine (November 22, 2018). *The Role of Participation in Sustainable Community Development Programmes in the Extractive Industries*. *Oxford Scholarship Online*. doi:10.1093/oso/9780198817369.003.0028. Retrieved September 24, 2020.
- [769]. Maddison, Angus, (2005), *Growth and interaction in the world economy. the roots of modernity*. Washington (DC): The AEI Press.
- [770]. Maes, R. (1999), *Reconsidering Information Management through a generic framework*, PrimaVera Working Paper 1999-15, University van Amsterdam

- [771]. Mães, R. (2007). An Integrative Perspective on Information Management. In A. Huizing, & E. J. de Vries, Information Management: Setting the Scene (pp. 11-26). Amsterdam: Elsevier.
- [772]. Maes, R., & Vries de, E. J. (2008). Information Leadership: The CIO as Orchestrator and Equilibrist. Twenty Ninth International Conference on Information Systems. Paris.
- [773]. Mafra Pereira, F. C., (2000). Methodological foundations of Marketing research. 2000. 68 f. Monograph (Lato sensu specialization in Strategic Marketing Management) – Center for Graduate Studies and Research in Administration of the Federal University of Minas Gerais, Belo Horizonte.
- [774]. Mafra Pereira, F. C., (2006). Use of information sources: a study in micro and small consulting companies in Belo Horizonte. 2006. 154 f. Dissertation (Master's Degree in Information Science) - School of Information Science, UFMG, Belo Horizonte.
- [775]. Mafra Pereira, F. C., Barbosa, R. R., (2009). The strategic decision by executives of micro and small enterprises and the informational food chain as an integrative model of information sources. In: National Meeting of Research in Information Science - Enancib, 10., João Pessoa, 2009. Annals... João Pessoa: UFPB, p.1113-1131.
- [776]. Mafra Pereira, F. C.; Barbosa, R. R., (2008). Use of information sources by business consultants: a study with the consulting market of Belo Horizonte. Perspectives in Information Science, Belo Horizonte, v. 13, n.1, p. 95-111.
- [777]. Mahoney, J. and J. R. Pandian, (1992, p. 363-380), *The Resource-Based View Within The Conservation of Strategic Management*, Strategic Management Journal, Vol. 13, pp. 363-380
- [778]. Makridakis, S., (1990), *Forecasting, Planning, and Strategy for the 21st Century*, Free Press, New York
- [779]. Malanczuk, Peter, (2009), Data, Transboundary Flow, International Protection. In: Max Planck Encyclopaedia of Public International Law. Available at: [www.mpepil.com/subscriber\\_article?script=yes&id=/epil/entries/law-9780199231690-e771&recno=125&searchType=Advanced&subject=Hu man+rights](http://www.mpepil.com/subscriber_article?script=yes&id=/epil/entries/law-9780199231690-e771&recno=125&searchType=Advanced&subject=Hu man+rights)
- [780]. Malcolm Jobling, B.Sc. (Biology), M.Sc. (Marine Biology), Ph.D., Professor Emeritus at Universitetet i Tromsø - Norges Arktiske Universitet, Norway. Accepted on 30 November 2022
- [781]. Malhotra, N. K., (2001), Marketing Research: an applied orientation. 3rd ed. Porto Alegre: Bookman.
- [782]. Maluf, Sahid, (2013), General Theory of the State / 31. ed - São Paulo: Hail.
- [783]. Maluf, V. (2017 September 14). The mechanized censorship of social networks that threatens the universe of the arts. Retrieved from IG Portal: <http://gente.ig.com.br/cultura/2017-09-14/censura-redessociais.html>
- [784]. Mantua, Encyclopedia.com. [www.encyclopedia.com](http://www.encyclopedia.com), 2023-1007
- [785]. March and Simon, (1958), *Organizations*, New York, John Wiley
- [786]. March and Simon, (1993), *Organizations*, 2nd edition, Blackwell, Cambridge
- [787]. Marcia Lei and Lois Mai Chan, (2004). Trends and issues in establishing interoperability among knowledge organization systems. Journal of the American Society for Information Science and Technology (JASIS&T) 55(5): 377–395
- [788]. Marcondes, D., (2009), Basic texts of ethics: from Plato to Foucault. Rio de Janeiro: Zahar.
- [789]. Maria Anita Araruna Corrêa, (2013, v.1 • n.2 • p. 19-28), Brief analysis on the phenomenon of the judicialization of politics and its repercussion on external relations, scientific interfaces - law • Aracaju .
- [790]. Mariano, Nilson, (2003), The claws of the condor: Military dictatorships of Argentina, Chile, Uruguay, Brazil, Bolivia and Paraguay. Voices.
- [791]. Marie-Luce Cavois, Hubert Dalle, Jean-Paul Jean, (2002), La qualité de la Justice, la Documentation Française.
- [792]. Marques, Francisco Paulo Jamil (2009). "The idea of Democracy in perspective - Crisis, advances and challenges" (PDF). *Freedom and Citizenship Magazine*. Retrieved September 28, 2016.
- [793]. Martin Belov, (2010, p. 139), *Fpamcdancicomo yuacmue e nonumwtecKusi npoyec. Koncmumyquotinonpaenu ocnoue [civic participation in the political process. Constitutional legal bases]*, Sibi: Sibi,
- [794]. Martin Heidegger, consulted, 2023-10-27
- [795]. Martinet, A. Ch., (1983), *Stratégie*, Librairie Vuibert
- [796]. Martinet, A. Ch., (1984), *Management stratégique : organisation et politique*, McGraw-Hill
- [797]. Martins and Carvalho, (2012). Change Management in Health, Fundamentals and Roadmap, Edition (Brochado) in Portuguese
- [798]. Marx, Engels, Karl Marx and Frederick Engels., (1998, Vol. 31, pp. 65-68), Economic Manuscripts of 1857-1858. Central Compilation & Translation Bureau for Works of Marx, Engels, Lenin and Stalin. People's Publishing House, Beijing.
- [799]. Mattos, M. C; Goulart, I. B., (2012), On the possibility of a broad GIC: initial reflections between information science and social psychology. **Perspectives in Management & Knowledge**, João Pessoa, v. 2, n. 2, 2012.
- [800]. Max Planck Encyclopaedia of Public Inter national Law: [www.mpepil.com](http://www.mpepil.com)
- [801]. Mayer, J. H., Steinecke, N., Quick, R., & Weitzel, T. (2013) More applicable environmental scanning systems leveraging "modern" information systems, *Information Systems and e-Business Management*, 11(4), 507-540.
- [802]. Mayr, Ernst, (1999-1942). Systematics and the origin of species from the viewpoint of a zoologist. Cambridge (MA): Harvard University Press.,
- [803]. McGarty C. The citation impact factor in social psychology: a bad statistic that encourages bad science. *Curr Res Soc Psychol*. 2000; 5(1):1-16. [ Links ]
- [804]. McGee, J.; Prusak, L., (1994), Strategic information management: increase your company's competitiveness and efficiency by using information as a strategic tool. Rio de Janeiro: Elsevier.
- [805]. McGee, James and Laurence Prusak, (1993), *Managing Information Strategically*, John Wiley & Sons
- [806]. MEHL, Lucien, (1979), O Bem-Estar: conceito da ciência social e objetivo da política social. *Debates Sociais*, Rio de Janeiro, n. 29, p. 5.
- [807]. Mello, Celso Antônio Bandeira, (1998 p. 10), **The legal content of the principle of equality**. 3rd ed. São Paulo: Editores Malheiros..
- [808]. Melo, Bobespierre de, (1949), As democracias e a ditadura soviét (1891 – 1968). São Paulo.
- [809]. Meldtown, Michael, (1997), What will be – How the new World of Information will transform our lives. São Paulo: Companhia das Letras.
- [810]. Mendonça, M. A., (2015), Periódicos científicos eletrônicos nacionais de biblioteconomia e ciência da informação: estudos produzindo entre 2003 e 2013. 2015. 133 f. Dissertation (Master's Degree in Information Science) – Graduate Program in Information Science, Federal University of Paraíba, João Pessoa.
- [811]. Mendonça, S., Cardoso, G., & Caraça, J. (2012) The strategic strength of weak signal analysis, *Futures*, 44(3), 218-228.
- [812]. Menezes, Pedro, (Meanings: more than a simple encyclopedia. A simple encyclopedia., 7Degrees.
- [813]. Merleau Ponty Maurice, (1945), Phenomenology of Perception (C. Moura, trans.), São Paulo: Martins Fontes, 1994.
- [814]. Merriman, J. (1996). A History of Modern Europe: From Renaissance to the Present.
- [815]. Michaelis, (2009), *Moderno Dicionário da Língua Portuguesa*. São Paulo: Campanha Melhoramentos.
- [816]. Michelangelo, (1971), in: De Tolnay, Charles, Priceton University Press, p.7.
- [817]. Michelangelo, (2008), in: Clacment, Charles, BiblioBazaar, sd. Reprint, pp. 5-7.
- [818]. Miles, R. E., Charles C. Snow, (1978), *Organizational Strategy, Structure and Process*, MacGraw-Hill, New York
- [819]. Miller, C. C. & Ireland, R. D. (2005). «Intuition in strategic decision making: friend or foe in the fast paced 21st century?». *Academy of Management Executive*, 19(1), 19-30.
- [820]. Miller, F. J. (1977, p. 253-279), *Strategy, Making in Context: Ten Empirical Archetypes*, Journal of Management Studies
- [821]. Miller, F. J. (2002), *I = 0 Information has no intrinsic meaning*, Information Research, vol 8 n°1. Available at <http://Informationr.net/ir/8-1/paper140.html>, (site visited April 2003)
- [822]. Mintzberg & James Quinn, (1991), *The Strategy Process: Concepts, Contexts & Cases*, Prentice Hall
- [823]. Mintzberg, H. & Lampel, J. (1999). «Reflecting on the Strategy Process». *Sloan Management Review*, 40(3), 21-30.
- [824]. Mintzberg, H. & Waters, J. (1985). «Of strategies, deliberate and emergent». *Strategic Management Journal*, 6(3), 257-272.
- [825]. Mintzberg, H. (1979). The Structuring of Organizations. Prentice Hall. Mintzberg, H. (1990a). «The design school: Reconsidering the basic premises of strategic management». *Strategic Management Journal*, 11(3), 171-195.
- [826]. Mintzberg, H., (1946), *The Rise and Fall of Strategic Planning*, Free Press, New York
- [827]. Mintzberg, H., Quinn, J. B., & Ghoshal, S. (1995). *The Strategy Process*. London: Prentice Hall.
- [828]. Mintzberg, Henry (1977). «Planifier à gauche et gérer à droite». *Harvard-L'Expansion*. No. 3/1976.
- [829]. Mintzberg, Henry (1981). Organiser l'entreprise: ready-to-wear ou sur mesure? *Harvard L'Expansion*.
- [830]. Mintzberg, Henry (1982). *Structure & Dynamique des Organisations*. Les éditions d'Organisations, Paris

- [831]. Mintzberg, Henry and Ahlström B. and J. Lampel, (1998), *Strategic Safari: A Guide Tour Through the Wilds of Strategic Management*, Prentice-Hall, London
- [832]. Mintzberg, Henry and James Brian Quinn and Sumatra Ghoshal, (1999), *The Strategy Process: Concepts, Contexts and Cases, 2nd ed.*, Prentice Hall Europe
- [833]. Mintzberg, Henry, (1972), *Research on Strategy-Making*, Proceedings of the 32nd Annual Meeting of the Academy of Management, Minneapolis
- [834]. Mintzberg, Henry, (1977), *Planifier à gauche et gérer à droite*, Harvard L'Expansion n° 3/1976
- [835]. Mintzberg, Henry, (1978), *Patterns in Strategy Formation*, Management Science (24, 9, pp. 934-948)
- [836]. Mintzberg, Henry, (1978), *Strategy-making in Three Modes*, California Management Review, 16, pp. 44-53
- [837]. Mintzberg, Henry, (1979), *The Structuring of Organizations: A Synthesis of the Research*, Prentice Hall, Englewood Cliffs
- [838]. Mintzberg, Henry, (1980), *Structure in 5's: A Synthesis of the Research on Organizational Design*, Management Science, vol. 26, no. 3, March
- [839]. Mintzberg, Henry, (1981), *Organiser l'entreprise: ready-to-wear ou sur mesure?*, Harvard L'Expansion
- [840]. Mintzberg, Henry, (1982), *Structure & Dynamique des Organisations*, Les éditions d'Organisations, Paris
- [841]. Mintzberg, Henry, (1987a), *The Strategy Concept: Five Ps for Strategy*, California Management Review, (30, 1, June, pp. 11-24)
- [842]. Mintzberg, Henry, (1987b), *Crafting Strategy*, Harvard Business Review, July-August
- [843]. Mintzberg, Henry, (1988), *Generic Strategies: Toward a Comprehensive Framework*, Advances in Strategic Management, vol. 5, Greenwich, CT: Jai Press, pp. 1-67
- [844]. Mintzberg, Henry, (1989), *Mintzberg on Management: Inside Our Strange World of Organizations*, Free Press, New York
- [845]. Mintzberg, Henry, (1990), *Strategy Formation: Schools of Thought*, in Perspectives on Strategic Management, (ed.) J. Frederickson, Boston Ballinger
- [846]. Mintzberg, Henry, (1990), *The Design School: Reconsidering the Basic Premises of Strategic Management*, Strategic Management Journal, vol. 11, pp. 171-195
- [847]. Mintzberg, Henry, (1991), *Strategic Thinking as Seeing*, In J. Nasi, ed., Arenas of Strategic Thinking, Foundation for Economic Education, Helsinki, Finland
- [848]. Mintzberg, Henry, (1994), *The Rise and Fall of Strategic Planning*, Free Press, New York
- [849]. Mintzberg, Henry, Ahlström B. & J. Lampel (1998). *Strategic Safari: A Guide Tour Through the Wilds of Strategic Management*, Prentice-Hall, London.
- [850]. Mintzberg, Henry, and A. McHugh, (1985), *Strategies Formation in Adhocracy*, Administrative Science Quarterly, vol. 30, pp. 160-197
- [851]. Mintzberg, Henry, and J. A. Waters, (1982), *Tracking Strategy in an Entrepreneurial Firm*, Academy of Management Journal, vol. 25, no. 3, pp. 465-499
- [852]. Mintzberg, Henry, and J. A. Waters, (1983), *The Mind of the Strategist*, in The Executive Mind, San Francisco: (ed.), Suresh Srivastva and Associates, Jossey Bass
- [853]. Mintzberg, Henry, and J. A. Waters, (1984), *Researching the Formation of Strategies: The History of Canadian Lady 1939-1976*, in Competitive Strategy Management (ed.), R. B. Lamb, Englewood Cliffs.
- [854]. Mintzberg, Henry, and J. A. Waters, (1985b), *Strategies Formation in Adhocracy*, Administrative Science Quarterly, vol. 30, pp. 160-197
- [855]. Mintzberg, Henry, and J. A. Waters, (1985b), *Strategies Formation in Adhocracy*, Administrative Science Quarterly, vol. 30, pp. 160-197
- [856]. Mintzberg, Henry, and J. A. Waters, (1999), *Of Strategies, Deliberate and Emergent*, Strategic Management Journal, vol. 6, no. 257, pp. 252-272
- [857]. Mintzberg, Henry, and J. Lampel, (1999), *Reflection on the Strategic Process*, Sloan Management Review, vol. 40, no. 3
- [858]. Mintzberg, Henry, Duru Raisinghani, and André Théorét, (1976), *The Structure of Unstructured Decision Processes*, Administrative Science Quarterly 21 (2):246-275.
- [859]. Miranda, Jorge, (2000), *Manual de Direito Constitucional: Tomo IV Direitos Fundamentais*. 3rd ed. Coimbra.
- [860]. Mohammad Awad AlAfnan, Siti Fatimah MohdZuki, (2023), *Positive and Negative Politeness in Nonverbal Communication Contexts: An Examination into Driving Behaviors in Europe*, DOI:10.11114/smc.v1i11.5884 URL: <https://doi.org/10.11114/smc.v1i11.588488>
- [861]. Monsalve Suárez, Sofía (September 22, 2020). *"The right to land and other natural resources"* (PDF). FIAN INTERNATIONAL
- [862]. Montalli, K. M. L., (1987), *Information in the capital goods industry in Brazil*. Loughborough: Loughborough University of Technology.
- [863]. Montalli, K. M. L., (1994), *Information for business in Brazil: reflections*. In: National Seminar on Information for Industry and Foreign Trade, 1., 1993, Belo Horizonte. Annals... Belo Horizonte: UFMG/EB, p. 165-173.
- [864]. MORICONI, Luca. "Challenges of Turbulence". *Science Today*. 43 (253). 38 pages
- [865]. Morin, Edgar, (1999, v. 879, no. 1, pp.115-121), *Organization and Complexity*, [Annals of the New York Academy of Sciences](https://doi.org/10.1007/s11109-022-09844-9)
- [866]. Moutinho, Luiz Damon Santos, (1996), *Sartre: Existentialism and Freedom* (Logos collection), São Paulo: Moderna, ISN 85-16-01226-3.
- [867]. Murphy, Cornelius F. (1977). *Introduction to Law, Legal Process, and Procedure*. St. Paul, MN: West Publishing.
- [868]. Myers, I. B., (1962), *Introduction to Type: A Description of the Theory and Applications of the Myers-Briggs Type Indicator*, Consulting Psychologists Press, Palo Alto
- [869]. Nassi-Calò, L., (2019), *A look at peer review of research grant proposals* [online]. *SciELO in Perspective*, Available from: <https://blog.scielo.org/blog/2019/12/04/um-olhar-sobre-a-avaliacao-por-pares-de-propostas-de-auxilio-a-pesquisa/>
- [870]. Natalia González Delgado, (2010, v. 39, n°. 1), *El Factor de Impacto*, Revista Colombiana de Psicología, Bogotá, Jan / Mar, ISSN 0034-7450.
- [871]. Nath, Bhaskar. *"Education for Sustainable Development: The Johannesburg Summit and Beyond"*. Berlin/Heidelberg: Springer-Verlag: 275-298. ISBN 1-4020-3652-3. Retrieved September 22, 2020.
- [872]. Nathan Chan, Joyce H. Nguy, Natalie MasukoJoyce, (2022), *The Asian American Vote in 2020: Indicators of Turnout and Vote Choice*, Springer Science+Business Media, LLC, part of Springer Nature 2022 Political Behavior <https://doi.org/10.1007/s11109-022-09844-9>
- [873]. National Science Board, (2022), *The State of U. S. Science and Engineering*, January, NSB-2022-1.
- [874]. Navarro, Ana Maria Neves de Paiva, (2014), *Informational Privacy: Origin and Foundations in American Law*. Available in < <http://www.publicadireito.com.br/artigos/?cod=34f9a343f945196b>>. Access on 01.Dec.2014
- [875]. Nelson, J. A., (1973), *Dialectical Information Systems: A Methodology for Planning and Decision-Making*, Ph. D. Dissertation, University of Pittsburgh, Pittsburgh, Pa., June
- [876]. Nelson, Richard R.; winter, Sidney G., (1982), *An evolutionary theory of economic change*. Cambridge (MA): The Belknap Press of Harvard University Press.
- [877]. Neves, Castanheira, (1975, vol. VI, p.260). *Justiça e Direito*. Bulletin of the Faculty of Law of the University of Coimbra.
- [878]. Neves, Castanheira, (1979), *O instituto dos cadeiras*. P. 142/143. See also *The Unity of the Legal System*. Coimbra.
- [879]. Ney JR, Joseph, (2002), *The Paradox of American Power: Why the World's Only Power Cannot Remain Isolated*. São Paulo: Unesp.
- [880]. Neylon, C., (2022), *Stop misusing data when hiring academics* [online]. *Nature*. 2022 [viewed 19 august 2022]. <https://doi.org/10.1038/d41586-022-02038-7>. Available from: <https://www.nature.com/articles/d41586-022-02038-7>
- [881]. Nicgorski, Walter. *«Cicero and the Natural Law»*. Natural Law, Natural Rights, and American Constitutionalism
- [882]. Nicholas, I., (2000), *The growth of services in modern economies*, Global Economics and Management, vol. V. 1-2/00
- [883]. Nida-Rümelin, Julian, (2006), *Demokratie und Wahrheit*, Beck, München.
- [884]. Niemietz v (1992), *European Court of Human Rights, Germany, 72/1991/324/369*, section 29, tried on 16 December 1992.
- [885]. Nissenbaum, Helen, (2011, p.32-48), *"A contextual approach to privacy online"*. In: *Journal of the American Academy of Arts & Sciences*, Vol.140, No. 4.
- [886]. Nissenbaum, Helen, (2010), *Privacidad amenazada. Tecnología, política y la integridad de la vida social*. Mexico: Ocean.
- [887]. Nobel Foundation (2001). *Markets with Asymmetric Information*. Vol. 2001, The Official Web Site of the Nobel Foundation
- [888]. Nohara / Marrara. *Administrative process. Law n. 9.784/99 commented*. São Paulo: Atlas, 2009.
- [889]. Normann, R., (1977), *Management for Growth*, Wiley, New York Number 3, Jul-Sep/2004, pp.205-219.
- [890]. North, Douglas C.; thomas, Robert Paul, (1973), *The rise of the Western World: a new economic history*. New York: Cambridge University Press,
- [891]. Nowak, Manfred, (2005), *CCPR Commentary, Art. 17 CCPR*. Kehl: N.P. Engel Verlag.
- [892]. *Ntshane; Gambiza (October 1, 2016). «Habitat assessment for ecosystem services in South Africa». International Journal of Biodiversity Science, Ecosystem Services & Management (4): 242–254. ISSN 2151-3732. doi:10.1080/21513732.2016.1217935. Retrieved September 22, 2020.*
- [893]. [Nunes, Elpídio Donizetti. Didactic course in Civil Procedural Law](https://doi.org/10.1038/d41586-022-02038-7). 14. ed. São Paulo: Atlas, 2010.

- [894]. Nussbaun, Martha; SEN, Amartya, (1993), The quality of life. Oxford: Clarendon Press.
- [895]. Oliveira, A. C. de, Dórea, J. G., & Domene, S. M. A. (1992, 21, n.º 3). Bibliometrics in the evaluation of scientific production in the area of nutrition registered in Cibran: period 1984-1989. *Information Science*. <https://doi.org/10.18225/ci.inf.v21i3.437>
- [896]. Oliveira, Dórea and Domene, (1992), The Laws of Bibliometrics in Different Scientific Databases, Journal of Administration Sciences, DOI: 10.5007/2175-8077.2016v18n44p111
- [897]. Oliveira, et al, (2018, v. 24, n. 2), Factors associated with body image dissatisfaction of weight training practitioners, Motriz, Rio Claro, e101852
- [898]. Oliveira, R. C., (1978, 2nd ed., p. 222), **A sociologia do Brasil indígena**, Rio de Janeiro: Tempo Brasileiro; Brasília: UnB.
- [899]. UN - United Nations in Brazil. (n.d.). Retrieved from Universal Declaration of Human Rights: <http://www.onu.org.br/img/2014/09/DUDH.pdf>
- [900]. Ophhof T. . (1999;41(1):1-4), Submission, acceptance rate, rapid review system and impact factor. *Cardiovasc Res* .
- [901]. Orbis Latinus. (n.d.). Retrieved from Magna Carta Libertatum (1215) : [http://www.orbilat.com/Languages/Latin/Texts/06\\_Medieval\\_period/Legal\\_Documents/Magna\\_Carta.html](http://www.orbilat.com/Languages/Latin/Texts/06_Medieval_period/Legal_Documents/Magna_Carta.html)
- [902]. United Nations, (1968), Universal Declaration of Human Rights, Social Debates, Rio de Janeiro, v.4, n.7, p. 4.
- [903]. World Intellectual Property Organization (WIPO), (2021), United Nations Intellectual Property.
- [904]. World Health Organization., (2021), American Cancer Society Surveillance Survey.
- [905]. Orth, M. A., (2002), Theoretical experiences and practices of training and training of teachers in Education Informatics. Porto Alegre: UFRGS, 2002. Thesis (Doctorate in Education) - Graduate Program in Education, Faculty of Education, Federal University of Rio Grande do Sul, Porto Alegre.
- [906]. Oskar J. Gstrein, (2022), European AI Regulation: Brussels Effect versus Human Dignity?, at: <https://www.researchgate.net/publication/363405366>
- [907]. Otero, Cleber Sanfelici; Tena, Lucimara Plaza, (2016), Fundamentals that justify Privacy Rights: Human Dignity as a stone core of Personality Rights and situations in Dentistry that allow flexibility (Registration and anamnesis form). In: Revista Eletrônica do Curso de Direito da UFSM, v. 11, n.2/ 2016, p. 481. Available at: <<https://periodicos.ufsm.br/revistadireito/article/view/19683/pdf#WROKJogrLIV>>. Accessed on: 10 May, 2017.
- [908]. *Overland, Indra (2018). Overland, Indra, ed. «Introduction: Civil Society, Public Debate and Natural Resource Management». Cham: Springer International Publishing: 1–22. ISBN 978-3-319-60626-2. doi:10.1007/978-3-319-60627-9\_1. Retrieved September 22, 2020.*
- [909]. Pacheco, C. G., and Valentim, M. L. P., (2010), Information and knowledge as foundations for strategic business management: a focus on information flows and sources. In: Valentim, M., Management, mediation and use of information. São Paulo. Cultura Acadêmica, p. 319-341.
- [910]. Pacheco, Carlos, (1987), Narrativa de la dictadura y crítica literaria, CELARG.
- [911]. International Covenant on Economic, Social and Cultural Rights. (n.d.). Obtained from the General Directorate of Education: [http://www.dge.mec.pt/sites/default/files/ECidania/educacao\\_para\\_a\\_Defesa\\_a\\_Seguranca\\_e\\_Paz/documentos/pacto\\_internacional\\_sobre\\_direito\\_s\\_economicos\\_sociais\\_culturais.pdf](http://www.dge.mec.pt/sites/default/files/ECidania/educacao_para_a_Defesa_a_Seguranca_e_Paz/documentos/pacto_internacional_sobre_direito_s_economicos_sociais_culturais.pdf)
- [912]. International Covenant on Civil and Political Rights. (n.d.). Retrieved from National Election Commission: [http://www.cne.pt/sites/default/files/dl/2\\_pacto\\_direitos\\_civis\\_politicos.pdf](http://www.cne.pt/sites/default/files/dl/2_pacto_direitos_civis_politicos.pdf)
- [913]. Padoa Schioppa, T. The crisis in perspective: the cost to be quiet. *International Finance*, v,11, n.3, Winter 2008.
- [914]. Pdua, (2016, v. 11, n. 4), Schwerpunkt: Ethik, in der Pflegeausbildung Editors
- [915]. Paikkar, Raimon, (2016), Visión trinitaria y cosmoteándrica: Dios- Hombre-Cosmos. Obras Completa VIII. Barcelona: Herder, 2016, p. 321-341.
- [916]. Palladio, Andrea, Britannica Encyclopedia Britannica.com, Retrived 25 March 2013
- [917]. Panikkar, Raimon, (1963), Humanismo y Cruz. Ediciones Rialp S.A: Madrid.
- [918]. Panikkar, Raimon. Humanismo y Cruz. Ediciones Rialp S.A: Madrid, 1963.
- [919]. Panikkar, Raimon. Visión trinitaria y cosmoteándrica: Dios- Hombre-Cosmos. Obras Completa VIII. Barcelona: Herder, 2016, p. 321-341.
- [920]. Pariser, Eli, (2012), . **The invisible filter**: what the internet is hiding from you. Rio de Janeiro: Zahar.
- [921]. Paschkes, Maria Luisa de Almeida, (1985), A ditadura Salazarista, Brasiliense.
- [922]. Peers, Edgard Allison, (1936), The Spanish tragedy, 1930-1936; dictatorship, republic, chaos. New York, Oxford, university press.
- [923]. Penrose, E. (1959), The Theory of the Growth of the Firm. Basil Blackwell, London.
- [924]. Perdigão, Paulo, (1995), Existence and Freedom, Porto Alegre: L&PM, ISN 85-254-0502-7.
- [925]. Pereira, M. F. F. (2003), Information management: a diagnosis of the micro and small industrial company of Londrina. 2003. 154 f. Dissertation (Master's Degree in Production Engineering) – Federal University of Santa Catarina, Florianópolis.
- [926]. Pereira, Marcelo Cardoso, (2011), Direito à Intimidade na Internet. Curitiba: Juruá.
- [927]. Pereira, Potyara Amazonéida, (2000), Human Needs: subsidies to the critique of social minimums. São Paulo: Cortez.
- [928]. Personal Data Protection ACT. (n.d.). Obtained from National Data Protection Commission: [https://www.cnpd.pt/bin/legis/nacional/lei\\_6798.htm](https://www.cnpd.pt/bin/legis/nacional/lei_6798.htm)
- [929]. Personal Data Protection Act. (n.d.). Obtained from National Data Protection Commission: [https://www.cnpd.pt/bin/legis/nacional/lei\\_6798.htm](https://www.cnpd.pt/bin/legis/nacional/lei_6798.htm)
- [930]. Perspectives in Information Science, (2016), v.21, n.2, p.100-119, Apr./June 119
- [931]. Peters, T. H., and Waterman, R. H., Jr. (1982), *In Search of Excellence*, Harper & Row, New York
- [932]. Petition of Right (1628). (n.d.). A Brief History of Human Rights - Retrieved from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/magna-carta.html>
- [933]. Petition of Law (1628). (n.d.). A Brief History of Human Rights - Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/magna-carta.html>
- [934]. *Petrarca, Francesco, (1999), La Vie Solitaire, Paris: Payot & Rivage, p. 2048.*
- [935]. Petró, B., (2008), Analysis of the informational flow of tourist managers of the conservation unit Mata Atlantica Municipal Natural Park of Atalanta – SC, p. 184. Dissertation (Master's Degree in Information Science), Federal University of Santa Catarina, Florianópolis.
- [936]. Pettigrew, A. (1992). «The character and significance of strategy process research». *Strategic Management Journal*, 13(8), 5-16.
- [937]. Pettigrew, A. M., (1972), *Information Control as a Power Resource*, Sociology, pp. 188-204
- [938]. Pettigrew, A. M., (1985), *The Awakening Giant: Continuity and Change in Imperial Chemical Industries*, Basil Blackwell, Oxford
- [939]. Pevsner, Nikolaus, (1936), Pioneers of the Modern Movement, ; 2nd edition, New York: Museum of Modern Art, 1949 revised and partly rewritten, Penguin Books, 1960).
- [940]. Pfeffer, Jeffrey, Gerald R. Salancik, (1978), *The External Control of Organizations: A resource Dependence Perspective*, NY: Harper & Row, New York
- [941]. Piaget, Jean, (1986), The Possible and the Necessary: Evolution of the Necessary in the Child. Porto Alegre: Artes médicas, v. 2.
- [942]. Piatnitskn, Osip Aronovich, (1935), The Fascist Dictatorship in Germany. São Paulo, Imp. commercial.
- [943]. **Pontes de Miranda**, Francisco Cavalcanti, *Commentaries on the Code of Civil Procedure*, Vol I, Forense, 1973
- [944]. Porter, Charles Orlando, (1961), The struggle for democracy in Latin America, Macmillan.
- [945]. Portes, R. Global imbalances. In: dewatripont, X. et al. (Org.) *Macroeconomic stability and financial regulation*: key issues for the G20. Vox ebook, 2009. Available at:
- [946]. Postman, N. (1999). Building a Bridge to the 18th Century: How the Past Can Improve Our Future. USA: Knopf.
- [947]. Pozzebon, M.; Freitas, H. M. R. De; Petrini, M., (1997), For the Integration of Competitive Intelligence in Enterprise Information Systems (EIS). *Ciência da Informação*, Brasília, n. 3, v. 26, p. 243-254, set./dez.
- [948]. Prahalad, C. F. & Gary Hamel (1995). *La Conquête du Futur*. Inter Editions, Paris.
- [949]. Prahalad, C. K. & Hamel, G. (1990). «The core competence of the corporations». *Harvard Business Review*, 68(3), 79-91.
- [950]. Prahalad, C. K. and Gary Hamel, (1994), *Competing for the Future, Breakthrough Strategies for Seizing Control of Your Industry and Creating the Markets of Tomorrow* , Harvard Business School, French translation *La Conquête du Futur* , Dunod 1999
- [951]. Prahalad, C. k., and Betis, R. A., (1986), *The Dominant Logic: A New Linkage Between Diver sity and Performance*, *Strategic Management Journal* (7, pp. 485-501)
- [952]. Prahalad, C.F. and Christopher Barlett and Gary Hamel and George Stalk Jr. and Henry Mintzberg and Kenichi Ohmae and Sumantra Ghoshal and Theodore Levit, (1979-1999), *Strategy - The Pursuit of Competitive Advantage*, 6th edition, Harvard Business Review Book
- [953]. Prescott, J.E.; Miller, S.M., (2002), Competitive Intelligence in practice: case study. Rio de Janeiro Campus.
- [954]. Pressenza, International Press Agency, (2015-01-08), 400 richest

- [955]. Privacy International (PI): [www.privacyinternational.org](http://www.privacyinternational.org)
- [956]. Privacy.Org: <http://privacy.org/>
- [957]. Prusak, James Mcgee and Laurence, (1995), *Strategic Information Management*, Editora Campus, Rio de Janeiro.
- [958]. Prusak, L.; McGee, J., (1994) "Strategic Information Management". Rio de Janeiro: Campus.
- [959]. Pugh, D. S., Hickson, D. J., and Hinings, C. R., (1969, p. 115-126), *An Empirical Taxonomy of Structures of Work Organizations*, Administrative Science Quarterly.
- [960]. Pugh, D. S., Hickson, D. J., and Hinings, C. R., MacDonald, K. M., Turner, C., and Lupton, T., (1963-64, p. 289-315), *An Empirical Taxonomy of Structures of Work Organizations*, Administrative Science Quarterly.
- [961]. Pugh, D. S., Hickson, D. J., and Hinings, C. R., Turner, C., (1968), *Dimensions of Organizational Structure*, Administrative Science Quarterly, (13, June, pp. 65-105)
- [962]. Qeios ID: KICA88 · <https://doi.org/10.32388/KICA88.9/10>
- [963]. Qeios, CC-BY 4.0 · Article, July 13, 2023
- [964]. Queiroz, Mario Newman de (2019). "*Subjectivation and historical conception in War and Peace*". *Federal University of Rio de Janeiro*
- [965]. Radbruch. Cf. *Our studies fil. And hist. On Legal Epistemology*, vol. II;
- [966]. Radbruch. Cf., (vol. II, p. 100), *Our Studies phil. And hist. On Legal Epistemology*.
- [967]. Rahner, Karl. *Fundamental Course of Faith: Introduction to the concept of Christianity*. São Paulo: Paulus, 1989.
- [968]. Raimundo, João Pedro Sargaço Dias, (2012), A new front of the protection of personal data: the (im)possibility of ensuring a possible right to forgetfulness. July 2012. 70p. Dissertation. Faculty of Law University of Porto. Port.
- [969]. Rajan, R. Has financial development made the world riskier? In: The Greenspan Era: lessons for the future. Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 2005.
- [970]. Ramón Díaz Olguín, (2021), Experiencia, saber y acción ética, Open Insight
- [971]. Ranner, Karl, (1989), *Fundamental Course of Faith: Introduction to the Concept of Christianity*. São Paulo: Paulus.
- [972]. Raphael Nascimento, (2017), *What is Civil Procedural Law*, [www.projuris.com.br/direito-processual-civil](http://www.projuris.com.br/direito-processual-civil) Accessed on: 2022-01-15,
- [973]. Rau J. Fatores de impacto de la Revista Chilena de Historia Natural: 1991-1995. *Rev Chil Histor Nat.* 1997;70:453-7. [ Links ]
- [974]. Rawls, John, (1997), *A Theory of Justice*. São Paulo: Martins Fontes.
- [975]. Rawls, John, (2002 p. 33-34, 64-66), *Uma teoria da justiça*. 2nd Ed. São Paulo: Martins Fontes.
- [976]. Rawson, E.: Cicero, a portrait (1975) p.5-6; Cicero, *Ad Familias 16.26.2* (Quintus to Cicero)
- [977]. Real Combat to Virtual Crime. (2016). *Vision*, 68.
- [978]. Reale, Giovanni, (2004), *História da Filosofia Patrística e Escolástica*. 2. ed. São Paulo: Loyola.
- [979]. Reinaldo Filho, Demócrito, (2005), *Responsabilidade por publicações na Internet*. Rio de Janeiro: Forense.
- [980]. Reinaldo Filho, Demócrito Ramos, (2002), Privacy in the "information society", In: *Computer Law: controversial topics, coordinated by the same author*. Bauru: Edipro.
- [981]. Reinaldo Filho, Demócrito, (2005), *Responsibility for publications on the Internet*. Rio de Janeiro: Forensics.
- [982]. Report says internet freedom falls for the seventh consecutive year in the world. (November 14, 2017). Retrieved from *Diário de Notícias*: <http://www.dnoticias.pt/mundo/relatorio-dizque-liberdade-na-internet-cai-pelo-setimo-ano-consecutivo-no-mundo-FA2354557>
- [983]. Research Gate, (2022), Track your Impact in the Scientific community with the improve Research.
- [984]. Research Impact Metrics: Citation Analysis, <https://www.guides.lib.umich.edu>.
- [985]. Rethinking Economic Practices and Values As Assemblages of More-Than-Human Relations
- [986]. *Revista Aberta*, (2021), Knowledge Organization in Horizon 2030, Proceedings of the V ISKO Congress, Spain-Portugal.
- [987]. Rezende, D. A., (2003), Planning of information and computer systems. São Paulo: Atlas
- [988]. Rezende, D. A.; Abreu A. F., (2001, p. 311), *Information technology applied to business information systems: the strategic role of information and information systems in companies*. São Paulo: Atlas.
- [989]. Ribeiro Junior, João., (2003), *Introduction to Phenomenology*. Campinas: Edicamp, 84 p.
- [990]. Richard Van Noorden, Brendan Maher, Regina Nuzzo, (2014, v. 514, ), *Peer-reviewed journal Nature News*.
- [991]. Richerson, Peter J.; Boyd, Robert, (2005), *Not by genes alone. How culture transformed human evolution*. Chicago: University of Chicago Press, 2005.
- [992]. Riu, A.M.; Morato, J.C., (1996), *Dicionário de Filosofia*. Madrid: Herder.
- [993]. *Rivista Italiana degli Economisti*, v.2, August 2000.
- [994]. Rodrigo César Paes (org). *Limits of Democracy*. *Contemporâneos - Journal of Arts and Humanities*, v. 1, p. 1-15, 2007. (ISSN 1982-3231)
- [995]. Roma y Vaticano, Guia Ilustrado, Kodak, n.d.
- [996]. Rossel, P. (2011) Beyond the obvious: examining ways of consolidating early detection schemes, *Technological Forecasting & Social Change*, 78(3), 375-385.
- [997]. Rossel, P. (2012) Early detection, warnings, weak signals and seeds of change: a turbulent domain of futures studies, *Futures*, 44(3), 229-239.
- [998]. Rousseau, R. & Ye, F. (2012). Basic axioms of independence for the publication citation system. *Journal of Scientometric Research*, 1(1), 22-27. doi:10.5530/jscires.2012.1.6
- [999]. Rousseau, R., (1998, v. 27, n.2, pp. 149-159), *Indicadores bibliométricos e econométricos para a avaliação de instituições científicas*. Information Science, Brasília.
- [1000]. Rumelt, R. P. & Shendel, Teece (1991). *Strategic Management and Economics*. *Strategic Management Journal* (12), pp. 5-29.
- [1001]. Rösen, Jörn (1986). *Rekonstruktion der Vergangenheit*. Göttingen: Vandenhoeck & Ruprecht.
- [1002]. Rösen, Jörn (2004/1). How to Overcome Ethnocentrism: Approaches to a Culture of Recognition by History in the 21 st Century. *Taiwan Journal of East Asian Studies*, 1, 1, pp. 59-74.
- [1003]. Rösen, Jörn (2004/2). Culture: Universalism, Relativism or What Else? *Journal of Interdisciplinary Crossroads*, pp.1-8.
- [1004]. Rösen, Jörn (2009). Intercultural Humanism: How to Do the Humanities in the Age of Globalization. *Taiwan Journal of East Asian Studies*, 12, pp. 1-24.
- [1005]. Rösen, Jörn (2010/2). Vorwort (pp. 9-19). In Rösen, Jörn (Hrsg.), *Perspektiven der Humanität. Menschsein im Diskurs der Disziplinen*. Bielefeld: Transcript Verlag.
- [1006]. Rösen, Jörn (2010/3). Klassischer Humanismus. Eine historische Ortsbestimmung (pp. 273-316). In: Rösen, Jörn (Hrsg.), *Perspektiven der Humanität. Menschsein im Diskurs der Disziplinen*. Bielefeld: Transcript Verlag.
- [1007]. Rösen, Jörn (2010/4). Einleitung. Menschsein – kognitive Kohärenz in disziplinärer Fragmentierung (pp. 11-40). In Rösen, Jörn (Hrsg.), *Perspektiven der Humanität. Menschsein im Diskurs der Disziplinen*. Bielefeld: Transcript Verlag.
- [1008]. Rösen, Jörn (2012). Humanism. Anthropology – Axial Ages – Modernities (pp. 55-80). In: Kozlarek, Oliver, Rösen, Jörn & Ernst Wolff (Eds.) (2012). *Shaping a Humane World. Civilizations – Axial Times – Modernities – Humanisms*. Bielefeld: Transcript Verlag.
- [1009]. Rösen, Jörn (2013/1). Introduction: Enquiring about Humankind (pp. 9-22). In: Rösen, Jörn. *Approaching Humankind. Towards an Intercultural Humanism*. Göttingen: V&R Unipress & Taipei: National Taiwan University Press.
- [1010]. Rösen, Jörn (2013/2). Classical Humanism – A Historical Survey (pp. 161-184). In: Rösen, Jörn (ed.), *Approaching Humankind. Towards an Intercultural Humanism*. Göttingen: V&R Unipress & Taipei: National Taiwan University Press.
- [1011]. Rösen, Jörn (2013/3). *Approaching Humankind. Towards an Intercultural Humanism*. Göttingen: V&R Unipress & Taipei: National Taiwan University Press.
- [1012]. Rösen, Jörn (2020/1). *Menschsein. Grundlagen, Geschichte und Diskurse des Humanismus*. Berlin: Kulturverlag Kadmos.
- [1013]. Rösen, Jörn (2020/2). *Geschichte denken. Erläuterungen zur Historik*. Wiesbaden: Springer VS.
- [1014]. Rösen, Jörn (Hrsg.) (2010/1). *Perspektiven der Humanität. Menschsein im Diskurs der Disziplinen*. Bielefeld: Transcript Verlag.
- [1015]. Sá, António Lopes, (2007), *Professional ethics*. São Paulo: Atlas.
- [1016]. Sá, Cristóvão Ferreira de, (1959), *Democracia e ditadura*. São Paulo [Saraiva s/a].
- [1017]. Sabaté, F. Tarragó, (1989), *Fundamentals of Business Economics*, 2nd edition, Librería Hispano Americana, Barcelona
- [1018]. Saccomanni, F., (2008), *Managing international financial instability: national tigers versus global tigers*. Chatham (UK): Edward Elgar.
- [1019]. Salles, Carlos Alberto de, (2011, pgs. 13 to 27), *Arbitration in administrative contracts*. Rio de Janeiro: Forense; São Paulo: Método,

- [1020]. Salvati, Luca; Zitti, Marco (December 2008). «*Natural resource depletion and the economic performance of local districts: suggestions from a within-country analysis*». *International Journal of Sustainable Development & World Ecology* (6): 518–523. *ISSN 1350-4509*. doi:10.1080/13504500809469847. Retrieved September 22, 2020.
- [1021]. Samara, B. S., Barros, J. C. de., (2002), Marketing Research: concepts and methodology. 3. Ed. São Paulo: Prentice Hall.
- [1022]. Sampaio, José Adércio Leite, (1998), Right to intimacy and private life. Belo Horizonte: Del Rey.
- [1023]. Santos, Milton, (2013), Technique, Space and Time: Globalization and Technical-Scientific-Informational Means. 5. ed. 1. reprint. – São Paulo: University of São Paulo Press.
- [1024]. Sanz Casado, E., Martín Moreno, C., Maura, M., Rodríguez, B., García Zorita, C., & Lascrain Sánchez, M.L. (2002). Analysis of the interdisciplinarity of Puerto Rican researchers in chemical sciences, during the period 1992-1999. *Revista Española de Documentación Científica*, 25(4), 421-432
- [1025]. Sarmiento, M. J., (2003), Imaginário e culturas infantil. *Caderno de Educação*, Pelotas, v. 21, p.51-59, jul./dez. 2003.
- [1026]. Sartre, Jean Paule, (1943), O Ser e o Nada, 13th ed Petrópolis. Vozes, 2005.
- [1027]. Sartre, Jean Paule, (1945), Les Chemins de la Liberté, Gallimard.
- [1028]. Schement J. R., (1993), *Communication and information*, In: Schement J. R., Ruben B. D. (eds) Between communication and information. Transaction Publishers
- [1029]. Schilling, Markus; Chiang, Lichun (February 2011). «*The effect of natural resources on a sustainable development policy: The approach of non-sustainable externalities*». *Energy Policy* (2): 990–998. *ISSN 0301-4215*. doi:10.1016/j.enpol.2010.11.030. Retrieved September 22, 2020.
- [1030]. Schneier, Bruce, (2015), The future of privacy, in Schneier on security. Available at: <http://www.schneier.com/blog/archives/2006/03/the\_future\_of\_p.html>. Accessed on: 02 Jun. 2015. \_\_\_\_\_. On people, the death of privy, and data pollution.
- [1031]. Schoeffler, S., (1980), *Nine Basic Findings on Business Strategy*, The Strategic Planning Institute, Cambridge
- [1032]. Schoeffler, S., R. D. Buzzell, D. E. Heany, (1974), *Impact of Strategic Planning on Profit Performance*, Harvard Business Review, March-April, pp. 137-145
- [1033]. Schoemaker, P.J.H., & Day, G.S. (2009) How to make sense of weak signals, *MIT Sloan Management Review*, 50(30), 81-89.
- [1034]. Schoemakers A.; Hoorn, T. v. d.(2004). LUTI modelling in the Netherlands: Experiences with TIGRIS and a framework for a new LUTI model. Available in [http://ejtir.tudelft.nl/issues/2004\\_03/pdf/2004\\_03\\_04.pdf](http://ejtir.tudelft.nl/issues/2004_03/pdf/2004_03_04.pdf). Accessed on 03/15/2007
- [1035]. Schreiber, Anderson, (2013), Personality rights. São Paulo: Atlas.
- [1036]. Schumpeter, J. A. (1993 (1934)). The theory of economic development. New Brunswick, London: Transaction Publishers
- [1037]. Schumpeter, Joseph, (1934), *The Theory of Economic Performance*, Cambridge, Massachusetts, Harvard University Press
- [1038]. Schumpeter, Joseph, (1942), *Capitalisme, Socialisme et Démocratie*, Reprint, Payot, 1988
- [1039]. Schumpeter, Joseph, (1947), *The Creative Response in Economic History*, Journal of Economic History, November, pp. 149-159.
- [1040]. Schumpeter, Joseph, (1950), *Capitalisme, Socialisme et Démocratie*, 3rd edition, Harper & Row, New York
- [1041]. Schumpeter, Joseph, (1959), *History of Economic Analysis*, Oxford University Press, 3rd edition
- [1042]. Schumpeter, Joseph, (1963), *Teoria del desenvolvimiento económico, México*
- [1043]. Schwartz, Bernard (1974). *The Law in America*. New York: American Heritage Publishing Co.
- [1044]. SEN, Amartya, (1999), On ethics and economics. São Paulo: Companhia das Letras.
- [1045]. SEN, Amartya, (2000), Development as freedom. São Paulo: Companhia das Letras.
- [1046]. Sepulveda, Magdalena, (2009), Theo van Banning, Gudrun D. Gudmundsdottir, Christine Chamoun and Willem J.M. van Genugten, (2009), Human Rights References Handbook. Ciudad Colon: University for Peace.
- [1047]. Setián, Maria Luisa. (1993), Indicadores sociales de calidad de vida. Madrid: Siglo veintiuno.
- [1048]. Severino, A. J., (2017), Methodology of Scientific Work, Cortez Editora.
- [1049]. Shalom H Schwartz and Anat Bardí, (2001), Value hierarchies across cultures: Taking a similarities perspective. *Journal of cross-cultural Psychology*, 32(3):268–290.
- [1050]. Shalom H Schwartz et al. (1999), A theory of cultural values and some implications for work. *Applied psychology*, 48(1):23–47.
- [1051]. Shalom H Schwartz, (2012). An overview of the schwartz theory of basic values. *Online readings in Psychology and Culture*, 2(1):11.
- [1052]. Shannaon C. E., Weaver W., (1948), *The Mathematical Theory of Communication*, Bell System Technical Journal, 27, pp. 379-423, pp. 623-656
- [1053]. Sharp, Gene (2010). *From Dictatorship to Democracy. A Conceptual Framework for Liberation. 1 4th ed. United States: [n.n.] 93 pages. 666. Retrieved July 2, 2013.*
- [1054]. Shumpeter, J. A., (1934), *The Theory of Economic Development*, Harvard University Press, Cambridge, Ma.
- [1055]. Silva, Júnia Guimarães e., (1999), Ciência da informação: uma ciência do paradigma emergente. In: Pinheiro, Lena Vania R. (Org.). Information science, social sciences and interdisciplinarity. Brasília : IBICT, p. 79-117.
- [1056]. SILVA, Maria Lúcia Carvalho da, (1964), Refresher Course in Organization and Community Development. Porto Alegre: Secretaria de Estado do Trabalho e Habitação (State Secretariat of Labor and Housing).
- [1057]. Silva, T. E.; Tomaél, M. I. (2008). Institutional repositories and the Open model. In: Tomaél, M. I. (ed.). Sources of information on the internet. Londrina: EDUEL.
- [1058]. Silva, Tomaz Tadeu. (Org.), (1999), What is, after all, cultural studies? Belo Horizonte : Autentica.
- [1059]. Silva, Kalina Vanderley & Silva, Maciel Henrique, (2006), Dictionary of Historical Concepts. São Paulo: Contexto.
- [1060]. Silveira, Paulo A., (1997), Caliendo Velloso da. Data protection in Comparative Law. *AJURIS Magazine* - n. 71 - November/1997
- [1061]. Simmons, J. C., and J. G. Lynch, (1991), *Inference Effects without Inference Making? Effects of Missing Information on Discounting and Use of Presented Information*, *Journal of Consumer research*, 17 (March), pp. 74-158
- [1062]. Simon, H. A., (1947, 1957), *Administrative Behaviour*, Macmillan, New York
- [1063]. Simon, H. A., (1955), *A Behavioural Model of Rational Choice*, *Quarterly Journal of Economics* 69, pp. 99-118
- [1064]. Simon, H. *The sciences of the artificial*. Cambridge: MIT Press, 1981.
- [1065]. Simone Chambers, (2003, v. 6, pp. 307-326), *Teoria Democrática Deliberativa*, "Revista Anual da Ciência Política".
- [1066]. Siviero, S.; Terlizze, D. La preforecaste macroeconomica: alcuni luoghi comuni da sfatare.
- [1067]. Smalter, D. J., R. L. Ruggles, (1966), *Six Business Lessons from the Pentagon*, Harvard Business Review, March-April, pp. 64-75
- [1068]. Smiraglia, R. P. (2014). *The Elements of Knowledge Organization*. Springer.
- [1069]. Smith, A., (1968, no. 11, pp. 165), *The Individual in Society*, By A. L. Macfie. University of
- [1070]. Smith, A., (1976-8), *An Inquiry into the Nature and Causes of the Wealth of Nations*, Everyman's Library, London
- [1071]. Smith, Linda., (2004), Interdisciplinarity: approaches to understanding library and information Science as an interdisciplinary field. In: Vakkari, Pertti, Cronin, Blaise, eds. *Conceptions of Library and Information Science: historical, empirical and theoretical perspectives*.
- [1072]. Snodgrass, C. R., (1984), *Cultural Influences on Strategic Control System Requirements*, (Ph. D. dissertation, University of Pittsburg, Graduate School of Business
- [1073]. Solemne, P. et all., (2000), Charter of Fundamental Rights of the European Union. In: Official Journal of the European Communities, [accessed](#) on January 20, 2020.
- [1074]. Soulé, Michael (1986). «*What is Conservation Biology?*» (PDF). *BioScience*. Retrieved September 10, 2020.
- [1075]. Sousa, R. R. et al. (2010). "The KOS spectra: a tentative typology of Knowledge Organization Systems." In Proceedings of the 11th International Conference for Knowledge Organization. (Rome, Italy). *Advances in Knowledge Organization* vol 12. Ergon: Würzburg.
- [1076]. Spindel, Arnaldo, (1992), What are dictatorships, Brasiliense, BEC
- [1077]. Srikanta Pradhan, (2022), E-Database, World Leadership Academy Database, Website: <https://www.worldleadershipacademy.live/>
- [1078]. Stichweh, Rudolf, (1984), Zur Entstehung des modernen Systems wissenschaftlicher Disziplinen. Physik in Deutschland 1740-1890. Frankfurt (DE): Suhrkamp.
- [1079]. Stichweh, Rudolf, (1992, v. 5, pp. 3-15), The sociology of scientific disciplines: on the genesis and stability of the disciplinary structure of modern science. *Science in Context*.
- [1080]. Stichweh, Rudolf, (2005, pp. 174-185), Zum Gesellschaftsbegriff der Systemtheorie: Parsons und Luhmann und die Hypothese der Weltgesellschaft. In: HEINTZ, Bettina; MÜNCH, Richard; TYRELL, Hartmann (Eds.). *Weltgesellschaft. Theoretische Zugänge und empirische Problemlagen*, p. 174-185. Stuttgart (DE): Lucius & Lucius.

- [1081]. Stichweh, Rudolf, (2007a, pp. 133-149). The Eigenstructures of world society and the regional cultures of the world. In: ROSSI, Ino (Ed.). Frontiers of globalization research: theoretical and methodological approaches, p. 133-49. New York: Springer
- [1082]. Stichweh, Rudolf, (2008). Zur Soziologie des Weltereignisses. In: NACKE, Stefan; UNKELBACH, René; WELTEREIGNISSE, Tobias Werron (Eds.). Theoretische und empirische Perspektiven, p. 17-40. Wiesbaden (DE): VS Verlag für Sozialwissenschaften.
- [1083]. Stichweh, Rudolf, (2014, v. 68, n. 4, pp. 336-344.), Wissensordnungen und Wissensproduktion im 21. Jahrhundert. Merkur.
- [1084]. Stichweh, Rudolf, (2016). Inklusion und Exklusion. Studien zur Gesellschaftstheorie (2. erweiterte Auflage). Bielefeld (DE): Transcript.
- [1085]. Stichweh, Rudolf, (2007b, v. 13 pp. 528-542), Evolutionary theory and the theory of world society. Soziale Systeme.
- [1086]. Strauss, J. D.; Radnor, M., (2004). Roadmapping for Dynamic and Uncertain Environments. *Research Technology Management*, v. 47, n. 2, p. 51.
- [1087]. Stull, B. R., (1988). An introduction to Boundary Layer Meteorology, Kluwert Academic Publishers 666 pp.
- [1088]. Subrahmanyam, Sanjay, (2005), Explorations in connected history. Mughals and Franks. New Delhi: Oxford University Press.
- [1089]. Sun Tzu, (1971), *The Art of War*, Oxford University Press, New York.
- [1090]. Sun Tzu, (1978), *L'Art de la Guerre*, Paris, L'Impensé Radical; English translation: The Art of War, Europe-America Publications, col. «Economics and Management», Mem Martins, 1994.
- [1091]. Sureki, Luiz Carlos, (2023), The Controversy of Auxiliis: around the semantics of the Theoretical Sentences of Philosophical and Theological Discourse and the need for a Primordial Metaphysics, *Synthesis Journal of Philosophy* 50 (157): 337.
- [1092]. Sveiby, K. E., (1998). The new wealth of organizations. Rio de Janeiro: Campus.
- [1093]. Swenson Junior, Lauro Joppert, (2007), Criminal Amnesty: Problems of Validity of the Brazilian Amnesty Law (Law 6.683/79). Curitiba: Juruá.
- [1094]. Tarapanoff, K., (2001), Organizational and Competitive Intelligence. Brasília: UnB.
- [1095]. Targino, M. G., (2000), Scientific communication: a review of its basic elements. *Informação e Sociedade: Estudos*, João Pessoa, v. 10, n. 2, p. 37-85.
- [1096]. Targino, Maria das Graças, (2006), The profession of librarian in Brazil. In: Looks and fragments: daily library and information science. Teresina: EDUFPI.
- [1097]. Teece, Pisano and Shuen (1990). Firm Capabilities, Resources and the Concept of Strategy. *Cahier de Recherche*, University of Berkeley, 90 (9).
- [1098]. Teece, Pisano and Shuen, (1997, p. 509-533), *Dynamics Capabilities and Strategic Management*, Strategic Management Journal, vol. 18, no. 17.
- [1099]. Teixeira, João de Fernandes, (1998), *Mentes e máquinas: uma introdução a ciência cognitiva*, Porto Alegre: Artes Médicas.
- [1100]. Tennis, J. T. (2005). Conceptions of Subject Analysis: A Metatheoretical Investigation. (2005). (University of Washington: Seattle). Advisor:
- [1101]. Tennis, J. T. (2012). "Forms, Knowledge and Forms of Knowing: Correct and Useful Epistemology and Knowledge Organization." (2012). In Guimarães, J. A. C. and Dodebei, V. (eds.) Challenges and scientific perspectives for the organization of knowledge today. Advanced studies in knowledge organization; 1. (Marília: ISKO-Brazil): 22-29.
- [1102]. Tennis, J. T. (2015). "Foundational, First-Order, and Second-Order Classification Theory." In *Knowledge Organization* 42(4): 244-249.
- [1103]. Tennis, J. T. (2016). "Structure of Classification Theory: On Foundational and the Higher Layers of Classification Theory." (2016). In Guimarães, J. A. C., Milani, S. O., and Dodebei, V. eds. *Knowledge Organization for a Sustainable World: Challenges and Perspectives for Cultural, Scientific, and Technological Sharing in a Connected Society. Proceedings of the Fourteenth International ISKO Conference 27-29 September 2016*, Rio de Janeiro, Brazil. *Advances in Knowledge Organization*, Vol 15: 84-87.
- [1104]. Tennis, J. T. (2017). "Through Formal Analysis and Theories of Meaning: Extending the Trajectory of S. R. Ranganathan's Theoretical Frameworks in Classification Research." 2017 Sarada Ranganathan Endowment Lectures/Ranganathan Memorial Lectures. (Chennai, India), October 2017.
- [1105]. The Constitution of the United States of America (1787) A Brief History of Human Rights - and the Bill of Rights (1791). (n.d.). Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-are-human-rights/briefhistory/declaration-of-independence.html>
- [1106]. The Cyrus Cylinder (539 BC). (n.d.). A Brief History of Human Rights - Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/>
- [1107]. The dignity of the human person in Kant's thinking. (July 2005). Obtained from Jus.com.br: <https://jus.com.br/artigos/7069/a-dignidade-da-pessoa-humana-no-pensamento-dekant>
- [1108]. The United Nations (1945). (n.d.). A Brief History of Human Rights - Obtained from United for Human Rights: <http://www.unidosparaosdireitoshumanos.com.pt/what-arehuman-rights/brief-history/the-united-nations.html>
- [1109]. Thiollent, Michel, (1988). Fearful Criticism, Social Investigation & Worker Survey. São Paulo: Pólis.
- [1110]. Thompson, J. L. (1999). «A strategic perspective of entrepreneurship». *International Journal of Entrepreneurial Behavior & Research*, 5(6), 279-296.
- [1111]. Tiago Fachini, (2016), Public Servant: clarifying the step-by-step of a judicial process
- [1112]. Tognoli, N. B., Guimarães, J. A. C., and Tennis, J. T. (2013). "Diplomatics as a Methodological Perspective for Archival Knowledge Organization." In Proceedings of the North American Symposium on Knowledge Organization. (Milwaukee, WI). Available: [http://iskocus.org/nasko2013proceedings/tognoli\\_guimaraes\\_tennis\\_diplomaticsasamethodologicalperspective.pdf](http://iskocus.org/nasko2013proceedings/tognoli_guimaraes_tennis_diplomaticsasamethodologicalperspective.pdf) zeng,
- [1113]. *Tolstoy, graf Leo (1993). War and Peace. [S.l.]: Wordsworth Editions,*
- [1114]. Townsend, Colin R.; BEGON, Michael; Harper, John L. (2010). Fundamentals in Ecology ARTMED EDITORA S.A. [S.l.] p. 90, 105.
- [1115]. Translated by Roberta Barni. The original in Italian – "La crisi finanziaria e le previsioni degli economisti" – is available to the reader at the IEA-USP for possible consultation. Technical review by Leda Paulani.
- [1116]. Tregoe, B. B., J. W. Zimmerman, (1980), *Top Management Survey*, Simon & Schuster, New York
- [1117]. Trollope, Anthony. *The Life of Cicero* Volume 1. p. 42
- [1118]. Truijens, Omo, (2001), *Information Strategy at TravelCom: searching for InfoRent in the Dutch travel industry*, PrimaVera Working Paper 2001-12, University van Amsterdam
- [1119]. Truijens, Onno, (2001), *Aspects of Information Strategy Formulation for Customer Orientation*, Proceedings Resource Management Association International Conference, Toronto, Ontario, Canada
- [1120]. Truijens, Onno, (2002), *Twoards a Resource-based Theory of Information Strategy*, British Academy of Management Annual Conference 2002, September 9-11,
- [1121]. Trujillo, (1974), *Metodología da Ciência*, Kennedy Editora
- [1122]. Trzesniak, P., (1998, v. 27, n. 2, pp. 159-164), Indicadores quantitenses: reflexões que antes seu estabeção. *Information Science*, Brasília.
- [1123]. Turk, Ziga., (2001), henomenological foundations of conceptual product modelling in architecture, engineering and construction. *Artificial Intelligence in Engineering*, n. 15, p.83.92,
- [1124]. Turner, W. A., (1994, v. 30, n. 2-3, pp. 471-480), What's in a name: informetrics or infometrics?. *Scientometrics*..
- [1125]. Tyson, K.W.M. (1998). *The Complete Guide to Competitive Intelligence*. Chicago. Prentice Hall
- [1126]. Udvary, S., "Rules of Representation in the light of the decisions of the Constitutional Court" in Papp, Zs. (ed), *The Hungarian Civil Procedure Law in the 90s and the Harmonisation of EU Law* ( ELTE AJK 2003) 328-45.
- [1127]. *Ungurianu, Dan (2007). Plotting History: The Russian Historical Novel in the Imperial Age. Madison: The University of Wisconsin Press.*
- [1128]. European Union. Available at: [www.privacyconference2009.org/dpas\\_space/Resolucion/index-iden-idphp.php](http://www.privacyconference2009.org/dpas_space/Resolucion/index-iden-idphp.php)
- [1129]. United Nations Human Rights Committee, (1988). General Comment No. 16: The right to respect privacy, family, home and correspondence, and protection of honors and reputation (Art. 17). Available at: [www.unhcr.ch/tbs/doc.nsf/0/23378a8724595410c12563ed004aeecd?OpenDocument](http://www.unhcr.ch/tbs/doc.nsf/0/23378a8724595410c12563ed004aeecd?OpenDocument)
- [1130]. United Nations Office of the High Commissioner for Human Rights (OHCHR), (2007), Human Rights, Terrorism and Counterterrorism. Available at:
- [1131]. United Nations Office of the High Commissioner for Human Rights (OHCHR), (2007), Human Rights, Terrorism and Counterterrorism. Available at:
- [1132]. United Nations, (2009), Report of the Special Rapporteur on the promotion and protection of human rights and fundamental freedoms while countering terrorism, Martin Scheinin, No. A/HRC/13/37/2009
- [1133]. United Nations, my translation. (n.d.). Retrieved from UN Charter: <http://www.un.org/en/sections/un-charter/un-charter-full-text/index.html>
- [1134]. United Nations. (n.d.). Retrieved from UN Charter: <http://www.un.org/en/sections/un-charter/un-charter-full-text/index.html>
- [1135]. United Nations. **The Universal Declaration of Human Rights**. Paris. (1948). Available at: <http://www.un.org/en/universal-declaration-human-rights/>. Accessed on: 07 jul. 2016.



- [1136]. Universal Declaration of Human Rights. (n.d.). Obtained from United Nations Human Rights - Office of the High Commissioner: [http://www.ohchr.org/EN/UDHR/Documents/UDHR\\_Translations/por.pdf](http://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/por.pdf)
- [1137]. Universal Declaration of Human Rights. (s.d.). Obtained from United Nations Human Rights - Office of the High Commissioner: [http://www.ohchr.org/EN/UDHR/Documents/UDHR\\_Translations/por.pdf](http://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/por.pdf)
- [1138]. Universal Declaration of Human Rights. (s.d.). Obtained from Wikipedia: [https://pt.wikipedia.org/wiki/Declara%C3%A7%C3%A3o\\_Universal\\_dos\\_Direitos\\_Humanos](https://pt.wikipedia.org/wiki/Declara%C3%A7%C3%A3o_Universal_dos_Direitos_Humanos)
- [1139]. Universal Declaration of Human Rights. (s.d.). Obtained from Wikipedia: [https://pt.wikipedia.org/wiki/Declara%C3%A7%C3%A3o\\_Universal\\_dos\\_Direitos\\_Humanos](https://pt.wikipedia.org/wiki/Declara%C3%A7%C3%A3o_Universal_dos_Direitos_Humanos)
- [1140]. Universal Declaration of Human Rights. Available from: <<http://www.dhnet.org.br/direitos/deconu/textos/integra.htm>>. Accessed: 02 Jun 2015.
- [1141]. US Courts Statistics 2011: [www.uscourts.gov/uscourts/Statistics/WiretapReports/2011/Table6.pdf](http://www.uscourts.gov/uscourts/Statistics/WiretapReports/2011/Table6.pdf)
- [1142]. US Courts Statistics 2011: [www.uscourts.gov/uscourts/Statistics/WiretapReports/2011/Table6.pdf](http://www.uscourts.gov/uscourts/Statistics/WiretapReports/2011/Table6.pdf)
- [1143]. Valla, Lorenzo, (2012), Sturlese, Rita Pagnoni, : in: Treccant – L' e Enciclopedia Italiana.
- [1144]. Van Dijck, (2013), José. The culture of connectivity. a critical history of social media. Oxford (UK): Oxford University Press.
- [1145]. Van Leeuwen TN, Moed HF, Reedijk J, (1997;3:32-6). JACS still topping Angewandte Chemie: beware of erroneous impact factors. *Chem Intell* .
- [1146]. Van Lieshout, Tessa, (2006), The United Nations and the fight against terrorism. Nijmegen: Wolf Legal Publishers.
- [1147]. Vanti, (2002, v. 31, n. 2, pp. 152-162). Da bibliometria à webometria: uma exploração conceitual dos mecanismos utilizados para medir o registro da informação e a difusão do conhecimento. *Ciência da Informação*, Brasília.
- [1148]. Varga,I.(2014), 'Egyeseg es sokfeleseg a perrendi kodifikacióban - egy új polgári perrendtartás szabályozási elkérdesei' (Unidade e Diversidade na Codificação Processual - As Questões Preliminares Regulamentares de um Novo Procedimento Civil) em Nemeth, J. e Varga,I. *polgári perrendtartás alapjai* (HVG-ORAC 2014).
- [1149]. Vasoli, Cesare. "Leonardo Bruni." In *Dizionario biografico degli italiani*. Vol. 14. Edited by Alberto M. Ghisalberti, 618-633. Rome: Istituto della Enciclopedia Italiana, 1972.
- [1150]. Veblen, Thorstein, (2004), Teoría de la clase idle. Madrid: Alianza.
- [1151]. Venkatraman A. Impactfactorsdominatecitationmetrics [Internet]; 2009 sep 10 [citado 2009 nov 1]; Disponible en: <http://www.iwr.co.uk/information-world-review/analysis/2249258/journals-cherish-status-symbol> [ Links ]
- [1152]. Vianna, Tulio, (2007), Public Transparency, Private Opacity. Rio de Janeiro: Revan Publishing House.
- [1153]. Vigand, R., A. Picot, et al., (1997), *Information, Organization and Management – expanding markets and corporate boundaries*, John Wiley and Sons
- [1154]. Vincent Jacque, Christoph Niessen & Min Reuchamps, (2020, Vol. Online first, pp. 1-22), Sortition, seus defensores e seus críticos: Uma análise empírica do apoio dos cidadãos e dos deputados à seleção aleatória como uma proposta de reforma democrática, "International Political Science Review", , disponível em <http://hdl.handle.net/12078.1/235052>, acedeu pela última vez em 17.10.2020.
- [1155]. Visco, I. Análisi quantitativa e "guida all'azione" di politica economica. Studi e Informazioni, Banca Toscana, 3, 1987.
- [1156]. Vives, Juan Luis, (1911), Enciclopedia Britanica (11th ed.). Cambridge University Press.
- [1157]. Vreeken, A. (2005, Sep). The History of Information: Lessons for Information. Retrieved Dec 2008, from Primavera: Program for Research in Information Management: <http://primavera.fee.uva.nl/PDFdocs/2005-19.pdf>
- [1158]. Vreeken, A., (2002), *Notions of Information: a review of literature*, Prima Vera Working Paper 2002-13, University van Amsterdam
- [1159]. Wadia, Bettina. (1987), Botticelli, Coleção Biblioteca de Arte. Rio de Janeiro, Livro Técnico.
- [1160]. Wallerstein, I. (2000), *Globalization or the Age of Transition? – A Long Term view of the Trajectory of the World System*, Economia Global e Gestão, Vol. V, 1-2/00
- [1161]. Walter, H.R., 'Die Ideen Franz Kleins und ihre Bedeutung für die Entwicklung des Zivilprozessrechts in Europa' (2008) 25 *Ritsumeikan Law Review* 101-10
- [1162]. Warren, S. D. Brandeis, L. D., (1890, p.193–220), "The right to privacy". *Harvard Law Review*, No.4, Vol. 5., Available in:
- [1163]. Weber, M. (1968). *Economy and Society: An Outline of Interpretative Sociology* (Vol. 1). New York: Bedminster Press.
- [1164]. Weber, M., (1864-1920), Humanities, Encyclopedias almanacs transcripts and maps
- [1165]. Webster's Third New International Dictionary, Unabridged, by Philip Babcock Gove (Editor)
- [1166]. Weick, K. E., (1979), *The Social Psychology of Organizing*, 2ª Edição, Random House, Nova Iorque
- [1167]. Weick, K. E., (1990), *Cartographic Myths in Organizations*, In A. S. Huff, editions, Mapping Strategic Thought, New York
- [1168]. Weick, K. E., (1995), *Sensemaking in Organizations*, Thousand Oaks, CA: Sage Publications
- [1169]. Weick, K. E., (2000), *Making Sense of the Organizations*, Blackwell Publishers, Boston
- [1170]. Weick, K. E., Richard L., Daft, (1983), *The Effectiveness of Interpretation Systems*. In: Organizational Effectiveness: A Comparison of Multiple Models, Edited by K. S. Cameron and D. A. Whetten, Academic Press, Nova Iorque
- [1171]. Weick, Karl E., (1995, p. 385-390), What theory is not, theorizing is. *Administrative Science Quarterly*, v. 40.
- [1172]. Wenger, E. (1998). *Communities of practice: learning, meaning, and identity*, Cambridge University Press, Cambridge, UK
- [1173]. Werneck, Vera Rudge, (2006), Sobre o processo de construção do conhecimento: o papel do ensino e da pesquisa. **Ensaio: avaliação e políticas públicas de educação**, Rio de Janeiro, v. 14, n. 51, p. 173196, abr./jun.
- [1174]. Werner Jaeger, (1933-1947), Paideia, die Formung des Griechischen Menschen, 3 vols, in: Martins Fontes, 2013.
- [1175]. Wernerfelt, B. (1984). «A Resource-Based View of the Firm», *Strategic Management Journal*, Vol. 5(2), pp. 795-815.
- [1176]. Wernerfelt, B. (1989). «From Critical Resources to Corporate Strategy», *Journal of General Management Journal*, Vol. 14, nº 3, Primavera de 1989/5.
- [1177]. Wersig, G. (1992). Information Science : The study of postmodern knowledge usage. *Information Processing and Management*, v.29, n.2, p.229-239, 1992.
- [1178]. Wersig, G., (1993, v. 29, n. 2, p. 229-239) Information Science: the study of postmodern knowledge usage. *Information Processing & Management*.
- [1179]. Wersig, G.; Neveling, U., (1975, v. 9, n. 4, p. 127-140) The phenomena of interest to Information Science. *The Information Scientist*, London.
- [1180]. Wersig, Gernot, (1975), Neveling, Ulrich. The phenomena of interest to Information Science. *The Information Scientist*, v. 9, n. 4, p.127-140, Dec.
- [1181]. Wersig, Gernot, (1979), The Problematic Situation as a Basic Concept of Information Science in the Framework of Social Sciences: A Reply to N. Belkin. En: *International Federation for Documentation* (Ed.): *Theoretical Problems of Informatics*, Moscú, FID 568, 48-57.
- [1182]. Wersig, Gernot, (1991, p. 229-239),. Information science: the study of postmodern knowledge usage. *Information processing & management*, 29(2).
- [1183]. Wersig, Gernot; Windel, G., (1985), Information science needs a theory of 'Information action. *Social Science Information Studies*, v. 5, p. 11-23.
- [1184]. What is net neutrality? (s.d.). Obtained from Observer: <http://observador.pt/explicadores/com-o-fim-da-neutralidade-da-rede-nos-eua-a-internet-esta-em-risco/>
- [1185]. What is net neutrality? (s.d.). Obtained from Observer: <http://observador.pt/explicadores/com-o-fim-da-neutralidade-da-rede-nos-eua-a-internet-esta-em-risco/>
- [1186]. Wigand, R., A. Picot, R. Reichwald, (1997), *Information, Organization and Management – expanding markets and corporate boundaries*, John Wiley and Sons
- [1187]. Wilensky, Harold, (1967), *Organisational Intelligence: Knowledge and Policy in Government and Industry*. New York, Basic Books
- [1188]. Williams G. Should we ditch impact factors? *BMJ*, 2007; 334: 568. [ Links ] Conflicto de interés: la autora manifiesta que no tiene ningún conflicto de interés en este artículo.
- [1189]. Williamson, O. E. (1994). «Strategizing, Economizing and Economic Organization». In: R. P. Rumelt, de Schendel, D. J. Teece (eds.), *Fundamental Research Issues in Strategy and Economics: A Research Agenda*, pp. 361-401, Harvard Business School Press, Boston, Massachusetts.
- [1190]. Williamson, O. E. (1994). «Strategizing, Economizing and Economic Organization». In: R. P. Rumelt, de Schendel, D. J. Teece (eds.), *Fundamental Research Issues in Strategy and Economics: A Research Agenda*, pp. 361-401, Harvard Business School Press, Boston, Massachusetts.
- [1191]. Williamson, O. E. (1999). «Strategy Research: Governance and Competence Perspectives». *Strategic Management Journal*, Vol. 20, pp. 1087-1108.

- [1192]. Williamson, O. E. (1999). «Strategy Research: Governance and Competence Perspectives». Strategic Management Journal, Vol. 20, pp. 1087-1108.
- [1193]. Williamson, O. E., (1975), *Markets and Hierarquies: Analysis and antitrust implications*, The Free Press, New York
- [1194]. Williamson, O. E., (1975), *Markets and Hierarquies: Analysis and antitrust implications*, The Free Press, New York
- [1195]. Williamson, O. E., (1979), *Transaction Cost Economics: the Governance of Contractual Relations*, Journal of Law and Economics, 22, pp. 233-261
- [1196]. Williamson, O. E., (1981), *The Economics of Organizations: the Transaction Cost Approach*, American Journal of Sociology, 87 (3), pp. 548-577
- [1197]. Williamson, O. E., (1985), *The Economics Institutions of Capitalism*, Free Press
- [1198]. Williamson, O. E., (1994), *Strategizing, Economizing and Economic Organization*. In RP Rumelt, De Schendel, DJ Teece (eds.), *Fundamental Research Issues in Strategy and Economics: A Research Agenda*, pp. 361-401, Harvard Business School Press, Boston, Massachusetts
- [1199]. Williamson, O. E., (1999), *Strategy Research: Governance and Competence Perspectives*, Strategic Management Journal, Vol. 20, pp. 1087-1108
- [1200]. Yan, Y.; Zhao, R.; Lan, Y. Asymmetric retailers with different moving sequences: Group buying vs. individual purchasing. *European Journal of Operational Research*, v. 261, n. 3, p. 903-917, 2017.
- [1201]. Yao, D. A., (1988), *Beyond the Reach of the Invisible Hand: Impediments to Economic Activity, Market Failures and Profitability*, Strategic Management Journal 9 (Special Issue: Strategy Content Research), pp. 59-70
- [1202]. Yogendra Kumar Mishra, *Mads Clausen Institute (MCI), SDU NanoSyd*. <https://orcid.org/0000-0002-8786-9379>. Acesso em 30