The Methodological Influence of Peirce's Pragmatism on Knowledge Organization

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ABSTRACT: Information and knowledge organization in Brazil has been historically influenced by theoretical linguistics. However, some aspects related to language theory and its interface with philosophy need to be further investigated, particularly the semiotic interpretation of information and knowledge organization processes. In order to advance a dialogue with the philosophy and semiotics of Charles Peirce (1839-1914), a theoretical and bibliographical study was carried out so as to understand and evaluate the contributions of the Peircean thought to information organization. It was found that several aspects of Peirce's work, viewed as a whole and not just semiotic concepts, suggest fundamental points to explain issues in information and knowledge organization. Basing on the analysis of Thellefsen's studies, this research presents some arguments aimed at reframing Peirce's pragmatism, which should no longer be mistakenly considered as a doctrine of practical results, but as a useful methodological approach for professionals dealing with knowledge organization in the field of Information Science.

Indeed, out of a contribute fallibilism, combined with a high faith in the reality of knowledge, and an intense desire to find things out, all my philosophy has always seemed to me to grow—Peirce 1998, xi, CP 1.14

1.0 Introduction

Studies on methods to organize information and knowledge sometimes disregard the theoretical interfaces between information science and other disciplines. The reason is that theoretical disciplines do not always provide practical rules or methodological procedures for information content analysis. Strategies of formal and thematic description of documents are used to organize information. Moreover, when classification systems of recorded knowledge are proposed, objective mechanisms for concept identification are employed. In both cases, we rely on linguistic theories. Such interdisciplinary bond may not be so visible when we discuss conceptual and methodological bases deriving from philosophy. This field of knowledge is full of theoretical possibilities, but, methodologically, we have noticed it is not easy to incorporate its concepts and procedures.

Information and knowledge organization in Brazil has been historically influenced by theoretical linguistics. The connection between the Brazilian scientific community with the line of studies and practices for the treatment of information content (e.g., the French

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document analysis proposed by the pioneer Jean-Claude Gardin) demonstrates the relevance of language research to experts, especially those in the 1980's (Cunha 1989; Smit 1989). During that period, many investigations were carried out in the field of document analysis, which resulted in applications of language theories to text and discourse analysis. We suppose that the aim of such studies was to provide conceptual and methodological elements for document analysis and indexing procedures. Many advances in document analysis theory have been achieved in the past decades, particularly with regard to the phases of document analysis, from reading to representation in documentary languages.

However, aspects of language theory in its interface with philosophy still needed further study. Indeed, a body of research was done in the 1990's, but it was based on a panoramic reading of the language theory literature. The result was an approach that valued the compatibility between various language theories although they dealt with the same object; an example of this was the integrated reading of sign theories of opposing schools. Consequently, an in-depth reading of each one of the philosophical approaches to language was a secondary concern. It is the case, for example, of the interpretation of information and knowledge organization processes in semiotics (science of human and non-human signs).

Sign theory is not easily accepted in the theoretical circles of the area probably because of the difficulty in understanding the potential of its application. We believe that investigations in other fields of knowledge should not be guided by the practical necessity based on the premise of an immediate application of knowledge. Every concept application should result from theoretical maturity, which is not acquired so fast. In this manner, semiotic theories might be much more accepted and applied in information and knowledge organization.

The purpose of the present bibliographical and theoretical study was to advance a dialogue with the philosophy and semiotics of Charles Peirce (1839-1914), an American logician and philosopher, and, especially, to learn and evaluate his contributions to information organization. The main thesis of this investigation was that various aspects of Peirce's work, viewed as a whole and not just isolated semiotic concepts, are relevant to explain problems in the field of information and knowledge organization.

Considering Peirce's pragmatism as a method for clarifying and discerning obscure ideas in information and knowledge organization, this survey of the specialized literature was carried out in order to identify some arguments that would validate the importance of this approach. The studies done in this particular area have contributed to an understanding of the Peircean thought on pragmatism and its relevant application to knowledge organization.

Unlike other studies on the subject, we did not assume that Peirce's contribution stems exclusively from semiotics. Perhaps it was due to this standpoint that we came to recognize semiotics as a formal sign science that can be a tool for the pragmatic method. Semiotics, particularly its branch called Speculative Grammar, adopts a series of concepts that are used to understand the indexing process; in other words, it describes a process that enables indexers to identify and extract the subject, thus revealing his/her tendency to produce a type of sign. This perspective was advocated in the studies by Mai (1997a, 1997b, 2000, 2001). However, it was still necessary to recognize how these types of signs operated semiotically and to relate them to Peirce's pragmatic ideal in which Semiotics was separated from Pragmatism.

Along the same line, Brazilian specialists, such as Pinto (1996), Moreira (2006), Monteiro (2006), and Moura (2006) considered semiotics as one of the contemporary approaches to information science without examining the impact of this discipline on the concept of information or on any processes in this area, such as processes of analysis and organization of knowledge and information.

Some other initiatives to establishing a dialogue with Peirce's work were irrelevant to knowledge and information organization due to the strategies used: the consideration of Semiotics only from the perspective of speculative grammar; the association of Peirce's interpreter with a human subject (that is, recognizing him as a Cartesian subject); the recovery of Peirce's thought without considering the philosophy commentators (in particular, theorists who revise the ideas of classical pragmatism); and the comparison of information with a sign as an exclusive possibility of establishing an interdisciplinary dialogue between information science and semiotics.

In general, many theoreticians, including Marcondes (2001) and Azevedo Netto (2002, 2008), begin this interface by emphasizing information as a sign, and resort to Peirce's work to find a concept that may be useful to Information Science. Consequently, a Peircean approach to the problems of information and knowledge organization was suppressed by a semiotic treatment of the general phenomenon of information.

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Throughout this paper, however, we observe that pragmatism was not well understood by the scientific community. The pragmatic models advocated by Peirce and William James were equally criticized, although the latter popularized the concept of practical results. This study is an attempt to understand the main features of Peirce's philosophy and then to elaborate on the hypothesis that his pragmatism, combined with semiotics, has a theoretical potential to suggest ways of understanding the process of concept signification.

In several studies, Peirce emphasized how concepts, capital examples of symbolic signs, can be identified through pragmatic analysis, which offers practical results that are essential to a good definition. In fact, life for Peirce (2000, 39, CP .220) is life immersed in symbols in the sense that it must have not only an appropriate language, but language itself is the very essence of thought. Language here is not meant as structure, as conceived by linguistic theories, but it is a way of relating the world and the objects. Language can be understood, primarily, as a process of sign action (semiosis) that transcends the barriers of verbal language convention.

Moreover, in the beginning of this research, we noticed that there was a distance between the classical and the contemporary terminological thought (general theory of terminology, socio-terminological theory and communicative theory of terminology), as well as Peirce's efforts to establish an ethics of terminology in scientific communities. The initial problem of pragmatism was to determine the criteria for fixing beliefs that could be understood as concepts, theories, or terms. Peirce sought to settle the disputes of philosophers who did not come to a solution, for the same terms were adopted with different meanings, which also poses difficulties in information and knowledge organization. Peirce also considered the problem of polysemy in the scientific and speculative thought, and we can say that the pragmatist proposition is taken into account in the contemporary discussions on terminology and concept theory.

Amidst these theoretical obstacles and owing to the difficulty to articulate the themes in Peirce's work, we propose here an initial dialogue without disregarding the possible relationships between pragmatism and semiotics, as well as the connection that semiotics may have with other themes in Peirce's philosophy. Considering the profusion and depth of the Peircean concepts, we should say that revising them is eventually a limited task, since they permeate various areas, such as mathematics, geodesy, chemistry and linguistics.

In addition, the examination of studies on information and knowledge organization leads to the simple conclusion that Peirce's semiotic concepts have been interpreted by linguistic approaches and other language theories. We believe that these integrating approaches to language issues have tried to unify or uniformize theories of the signification process. However, the Peircean approach has been sometimes revised without the philosophical and pragmatical referentials recommended by the thinker himself. Probably for this reason, the connection between Peirce's pragmatism and semiotics has taken a long time to emerge in the field.

Given the course of this study as described above, the results found suggest the need for further research focusing on the Peircean concepts that reveal language and thought phenomena and how they can determine a model for a professional organization of knowledge and information. This paper also poses a reflection aiming to reframe Peirce's pragmatism not as a doctrine of practical results, but as a useful intellectual method for organizing information and knowledge.

2.0 The pragmatist method and knowledge organization

Peirce's pragmatism resulted from a long discussion over the methods of fixing beliefs (knowledge, concepts, accepted terms). His studies that marked the birth of pragmatism were, suggestively, "The fixation of belief" (1877) and "How to make our ideas clear" (1878). Both aimed to recover methodological ways to define specialized terms. The nature of the terminological problems present in Peirce's writings makes pragmatism a useful approach in the field of knowledge organization.

Commentators of Peirce's work, including Santaella (2004, 26) argue that pragmatism can be divided into two main periods: the first one refers to the pragmatic maxim, and the second one attempts to lay the foundations for a method to determine intellectual concepts based on abduction (creation of hypotheses) and selection of hypotheses. In the latter, pragmatism suggests disregarding "make-believe philosophies" and concentrating intellectual efforts on real problems.

The early pragmatism, expressed in the 1878 maxim, aimed to verify the meanings of thoughts and the conceivable and practical effects resulting from reasoning. Peirce (1998, 258, CP 5.402) writes:

Consider what effects, that might conceivably have practical bearing, we conceive the object of our conception to have. Then, our conception of

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these effects is the whole of our conception of the object.

This rule guides the thought in order to find out how to make ideas clear and distinguish them from the obscure ones.

Pragmatism is a method that involves the application of rules of action to ensure the clarification of ideas. The test proposed by this method allows the establishment of the meaning of concepts from the sense effects of their concrete use that enable the validation of the effectiveness of an idea. At that time, Peirce engaged in a dialogue with classical philosophers, particularly Descartes. Peirce (1998, 249, CP 5.391) writes:

> But since, evidently, not all ideas are true, he was led to note, as the first condition of infallibility, that they must be clear. The distinction between an idea seeming clear and really being so, never occurred to him.

The fact is that for Descartes some ideas appeared clear and there was no need to distinguish them. A process of constant analysis would lead to minimal states of ideas. However, Peirce argued that this was not a safe method, because it did not confront the idea with reality.

According to the method proposed by Descartes (2003), an inquiry begins with doubt, but it is a theoretical, not a real, doubt. According to Peirce, the Cartesian doubt is a false one, because the mere will to doubt stimulates doubt. For Peirce, doubt is something that irritates the subject psychologically, it is a state of discomfort that only ends with the fixation of a belief.

In his early pragmatism, Peirce introduced a methodological tool to ensure the distinction between ideas by testing them against the object to which they refer. Peirce exemplified this maxim by using the concept of "hardness." To define a thing as "hard," one should conceive the effects of the object by comparing it to other things considered "soft." A mental test that opposes hard things to soft ones characterizes a pragmatic approach. This intellectual activity will enable the establishment of the overall concept of the object from the effects imagined. Any concept can only be distinguished from another when its practical or experiential effects can be imagined. This rule can clarify ideas, thus leading to the adoption of clear notions and the elimination of the obscure ones. Peirce (1998, 248, CP 5.389) writes:

A clear idea is defined as one which is so apprehended that it will be recognized wherever it is met with, and so that no other will be mistaken for it. If it fails of this clearness, it is said to be obscure.

A confusion often arises when it comes to understanding the expression "practical effects." Peirce never validated the "action for action" premise; on the contrary, the thinker points out that the "practical effects" concept ensures a first step towards experimentation. The nature of the problem that Peirce's pragmatism seeks to answer is terminological and methodological, that is, how to properly define a concept and how to reasonably act in order to know the objects that stimulate inquiry. Pragmatism considers that the use and meaning of words have been mistakenly considered in philosophical discussions, and that only the pragmatic method can determine the true and correct meaning of words and theories.

The ultimate ends of an idea are not in action; on the contrary, action is a means the ends of which is the conceptualization of an object. Peirce opposes the notion put forward by William James, who maintains that an action is the ultimate end of man and that every concept is valuable only if it can be converted into action or practice. In other words, a useful concept is one that has been proven effective to serve a greater number of users. Later, Peirce coined a more appropriate term to be a tool for philosophy: "pragmaticism," considered an ugly word, but one that warranted the ideal of his pragmatism.

The purpose of Peirce's pragmatism is to clarify reasoning about what is illusory and damages the pursuit of truth. It is evident that, to some extent, knowledge is related to human action. However, action alone does not make a concept adequate, since its purpose depends on the conception created beforehand and one that gives meaning and reference to action, not otherwise. As a method, Pragmatism aims at "ascertaining the real meaning of any concept, doctrine, proposition, word, or other sign" (Peirce 1998, 4, CP 5.6).

The pragmatic maxim of 1878 was revised by Peirce himself around 1905 in a letter to Mario Calderoni, an Italian pragmatist, in which he recognized that was an ultra-pragmatist position (Silveira 1985, 6). At that time, in his lectures on pragmatism, Peirce reconsidered various issues in his work that were apparently scattered and disconnected. One of them was certainly the concept of belief pointed out in the 1870s.

An idea must take the form of belief in order to be accepted. Belief means the process by which the mind

fixes a habit, control, or rules of action. Belief can be broken or undone when the mind is irritated by a real inquiry that may at some point be the threshold of a new habit. A real doubt is defined as a legitimate problem that people have everyday and that bothers them deeply. It is worth noting the improvement of the concept of doubt that, as advocated by Descartes (2003), was a methodical doubt, as if a subject all of a sudden would begin to doubt, until he realized there were no more doubts about the clearness of an idea. As a result from a successive segmentation process, the idea would be considered clear and distinct, ready to be accepted as true knowledge. Peirce argues that doubt is characterized by a constant psychological discomfort that motivates the individual to seek a situation of belief, or a predictable state, to replace the concrete doubt.

In the first place, belief must be "something that we are aware of; second, it appeases the irritation of doubt; and, third, it involves the establishment in our nature of a rule of action, or, say for short, a *habit*" (Peirce 1998, 255, CP 5397). On the other hand, when belief stops the sensations caused by doubt, the subject enters a stage of harmonization with the belief obtained, expecting a future moment in which he may be bothered by the inquiry needs caused by doubt. In the specific case of scientific knowledge, he starts an updating process when he has another unpleasant feeling of doubt. For Peirce, truth stems from this novelty that, after calming down, triggers the process of mental belief in order to transform it into a new habit.

The development of the habit theory allowed the generation of the concepts "interpretative habit" and "interpretants." The concept of habit is essential to understanding various concepts related to the Peircean thought. The author developed this concept with different nuances, depending on the field he worked on. For example, in the early pragmatism, the concept emerges from an application to the human context; in other writings on cosmology, for instance, the concept of habit covers organic and inorganic contexts. Habits would be coordinated mechanisms of the mind to anticipate an event and to understand the phenomena.

It should be emphasized that meaning in pragmatism is not a concept defined and consolidated in the past, but it is one that will be conceived in the future. Meaning implies being open to future signification. Things are not conceived as phenomena that occurred in the past, but their meaning is supported by the belief that they will occur in the same proportions in the future. Only by knowing the meaning of things it is possible to act upon them. In other words, to assign meaning is to believe in predicting phenomena behaviors.

In one of his lectures on pragmatism, Peirce (1980, 58, CP 5206) stated that it has two basic functions: "Namely, it ought, in the first place, to give us an expeditious riddance of all ideas essentially unclear. In the second place, it ought to lend support, and help to render distinct, ideas essentially clear, but more or less difficult of apprehension; and, in particular, it ought to take a satisfactory attitude toward the element of thirdness." This means that Peirce's pragmatism does not, under any circumstances, place an excessive emphasis on human action as the ultimate purpose of an adequate behavior. Pragmatic concepts have been often confused, but nevertheless Peirce can be regarded as one of the first theorists of scientific terminology, since he deepened himself into methodological issues to find terms that are distinct and precise according to the scientists' experiential reality. Moreover, Peirce's theory of signs is a relevant contribution to the definition of concepts, how they originate and how ideas are associated with each other.

The pragmatist model is used to unveil certainties about unclear or pseudo-concepts that greatly hinder studies on real problems. Therefore, the articulation of Peircean theories, in particular pragmatism and types of reasoning (specially abduction and induction), with procedures for the selection of hypotheses, phenomenological categories, normative sciences, and metaphysical assumptions seems to be the perspective that defines a second approach or even a revision of early pragmatism. Pierce (1998, 121, CP 5.196) writes:

> If you carefully consider the question of pragmatism, you will see that it is nothing else than the question of the logic of abduction. That is, pragmatism proposes a certain maxim which, if sound, must render needless any further rule as to the admissibility of hypotheses to rank as hypotheses, that is to say, as explanation of phenomena held as hopeful suggestions; and, furthermore, this is all that the maxim of pragmatism really pretends to do, at least so far as it is confined to logic and is not understood as a proposition in psychology. For the maxim of pragmatism is that a conception can have no logical effect or import differing from that of a second conception except so far as, taken in connection with other conceptions and intentions, it might conceivably modify our practical conduct differently from that second conception.

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Summing up, Peirce's pragmatism is a tool or, more precisely, a method to help philosophy, among other sciences, to clarify the foundations of its arguments and to make ideas distinct and open to experimentation. It is a reflection method in the sense that it allows an analysis of the concepts selected for acceptance. According to Ibri (1992, 102), "unequivocally, Pragmatism is not a philosophical system, but merely *a method of philosophical analysis of theoretical systems*." Pragmatism consists of establishing a method to arrive at concept meaning and, according to Peirce, its main field of application is philosophy. Nevertheless, pragmatism can be applied to any forms of thinking.

In the same line, Silveira (2007, 182) points out that "Pragmatism is a method of theoretical elaboration of thought. Its formulation, in more than a moment, became a maxim guiding scientific conduct." By far, Peirce's pragmatism departs from the common understanding that relates the word "pragmatism" to actions that have an impact on any practical result. In a study on different approaches to pragmatism, De Waal (2007, 40) does not hesitate to say that "In short, for Peirce, pragmatism is a method to determine the meaning of concepts, ideas, beliefs, claims, propositions etc. . . . anything that can act as a sign. Peirce would maintain this view throughout his life."

Another observation is that pragmatism reveals a terminological tendency. In this sense, even before the emergence of theoretical currents of terminology, which we referred to in order to understand the dynamics of a specialized concept (scientific or technical), Peirce had already proposed that the improvement and evolution of intellectual thought can be attained by an adequate terminology.

In short, Peirce defined pragmatism as a method for doing philosophy, not a theory. This means that pragmatism is not a set of principles, concepts, rules, and laws used to explain a human or a nature reality, but it is one that must be accepted *a priori*, as suggested by philosophical doctrines. Pragmatism is a method, and as such, should correctly guide thinking. Peirce's pragmatism does not seek to explain or to be the answer to practical problems. Religious, philosophical and even scientific doctrines fulfill this role perfectly. Pragmatism is a strategy to remove from our minds possible concepts, beliefs, or theories that carry little information on representation objects.

In the field of knowledge organization, dedicated to developing schematic models of the real world, the pragmatic influence is recognized in the procedures to retrieve and manage the knowledge of specialized communities. We understand pragmatic influence as a theoretical tendency to accept the assumptions of the Peircean pragmatism, in order to understand, explain or propose solutions in the field of information and knowledge organization, respecting the interconnections with phenomenology (science of the phenomena present in the mind) and using the semiotic tools available.

The pragmatist approach is usually related to the sign theory of Charles Morris, that is, to the third dimension of semiosis, pragmatics, which studies sign uses and users in their social context. However, we cannot compare these perspectives without making some adjustments. Peirce's pragmatism deals with a methodological problem by accepting a radical realism that approximates the object to the interpreter, in order to adequately represent the world around us. On the other hand, according to a reading popularized by Morris, pragmatism is discussed as a discipline on the same level of syntax and semantics, that is, pragmatics.

Unfortunately, pragmatism in information and knowledge organization is not a literally Peircean extraction. References to Peirce's thought come from its connection with the emergence of pragmatism. However, the literature poses some difficulties in distinguishing Peirce's notions from the ones developed by William James. Both have completely different conceptions of pragmatism, but despite this, James's point of view about the definition of practical consequences has prevailed.

According to Gonzales de Gomez and Gracioso (2006, #), pragmatism should be considered a theoretical perspective for information science in the sense that it interprets the practical and social contexts of language use: "Regarding the theoretical perspective, we believe pragmatism is the current that offers the most convincing arguments about the implications on the use of language in the communication process (information search), and it is for this reason that we seek to understand it." However, the authors made it clear that they did not aim to describe the schools and lines of pragmatic language research. In this context, the approaches of L. Wittgenstein and J. Habermas were adopted instead of Peirce's. Gonzalez de Gomez and Gracioso (2006) concluded that the studies carried out by these two thinkers need further research in order to understand, from a "pragmatic point of view," the use of language in the communication context and meaning construction. Gonzalez de Gomez and Gracioso (2006), however, made some comments on Peirce's thought in a footnote referring to his pragmatic conception of truth. In this manner, their at-

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tempt to characterize pragmatism as a fundamental philosophical approach to issues relevant to language in information and knowledge organization does not take into consideration its original concept: a method, not a philosophical school.

Likewise and consequently, other theses developed by Peirce were not related to pragmatism in some disciplines, such as semiotics and metaphysics. Moreover, due to a naïve association of the thinker to his philosophy of practical results, his great contribution to a realistic, and also fallibilist, perspective of language was delayed. Peirce's pragmatism does not reject the action of social practices in constructing meaning; he just avoids an extreme relativism in language, for example "everything can be a representation." As Peirce argued, reality (the sign object, for instance) reveals the best way to understand it and what signs should be produced to approach it, always considering the *continuum*.

Another study on the issue was developed by Hjørland (2000). The author identified some philosophical positions applied to information science, and observed that the studies done by Blair and Hjørland were applications directly related to the philosophical pragmatist approach. It is correct to accept that philosophical positions influence practices, methods, approaches, models, theories and disciplines that compose the interdisciplinary framework in the field. However, Peirce's pragmatism is not an approach in the same sense of constructivism, empiricism or Kuhn's paradigm theory. The fact is that Hjørland (2000) includes hypotheses, biological theories, sociological currents, and philosophical systems in the group of philosophical approaches. This leads to a reading of pragmatism not in Peircean terms, but as a possibly closed philosophical system.

Differently from the previous study (2000), Hjørland (2003) took a standpoint on the perspectives of pragmatism. On one hand, the author observed that Rorty's conception of pragmatism asserts that pragmatism and realism are two points of view that cannot be combined (Hjørland 2003, 94). On the other hand, according to Dewey and other philosophers, pragmatism must be based on realism. Hjørland (2003, 94) accepts the second perspective and calls it "pragmatic realism" in the sense that scientific fields tend to represent reality in the most functional way possible according to human purposes. This notion recovers one of the main theses of Peirce's pragmatism. On reading Hjørland, we can presuppose that realism is manifested in the following statement: there is a body of knowledge and ways of organizing

it and they are related to the reality of a scientific field or occupational area. It should be noted that in this study, Hjørland does not mention Peirce's pragmatism, but, by refusing Rorty's relativism, the author embraces the Peircean interpretation of knowledge reality.

Hjørland (2003) also points out two ways in which pragmatism (not strictly Peirce's) guides epistemological assumptions that can have some influence on knowledge organization. First, in the notion of concept from the point of view of pragmatism in philosophy, concept-meaning consists of accepting that "Knowledge and concepts are formed by the practical activities of people in relation to the objects of that activity" (Hjørland 2003, 101). According to the author, there is an evident need for a revision of philosophical and scientific guidelines that determine concept notions, which is the object of work in knowledge organization. Second, pragmatism can be a foundation for designing methods aimed to organize knowledge, as bibliographical classification, for example. The approach that Hjørland (2003, 106-107) is sure to contribute to organizing knowledge differs even more from the common relativism, and, therefore, it is opposed to Rorty's distinction between realism and pragmatism. Thus, Hjørland (2003, 106) argues that pragmatic epistemology or pragmatic knowledge organization does not mean that people alone can do things in their personal interests: "If this is done, if research just produces 'social constructions' then reality will make those constructions incoherent. They will be opposed by empirical and theoretical arguments. The production of incoherent 'knowledge' is not valuable and cannot be a serious goal." This is congenial to pragmatism as a method of knowing reality basing on a comparison with experience to achieve a more accurate knowledge about the object of representation.

Hjørland (2003, 106) also states that, in pragmatism, truth conditions are connected with human purposes, and, though uncomfortable, issues related to truth and reality criteria must be considered. However, the mention of the object as a *sine qua non* condition of the representational approach to truth was not discussed. As for bibliographical classification, a method required in knowledge organization, the author shows that, from the pragmatic perspective, it is understood as a system based on cultural warrant. Hjørland's term "critical classification," e.g., classifications of feminist or Marxist collections, is based on values, political purposes, and objectives in a given epistemology (e.g., feminist epistemology).

Indeed, Hjørland's (2003) interpretation of pragmatism, regardless of being directly based on Peirce's thought, is useful because it indicates, in a clear manner, the influence of pragmatist assumptions on composing the concepts and methods used in knowledge organization. Nevertheless, a comprehensive analysis of the impact of the Peircean pragmatism on such conceptions is still distant. References to pragmatism elements are found in the literature, and an example is the acceptance of realism as a regulating parameter of the representations of the world.

Saldanha (2008) examined the influence of essentialism and pragmatism on information science epistemology. Essentialism would be the belief in a world structured by essences or indivisible substances, while pragmatism has two main characteristics: anti-dogmatism and a multi-methodological approach. Essentialism acknowledges that reality is stable, a unidimensional representation; that is, an object has only one function. Sciences that consider essentialism as a safe principle are the exact sciences, positivist rationalism, logical positivism, physicalist and cognitive approaches, and all kinds of scientificism (Saldanha 2008). According to the comparison made by Saldanha (2008), essentialism emerged in information science from indexing policies that emphasize the document subject, not the user's acceptance; an essentialist principle stresses the accuracy of representation, bibliometrics, classification systems, thesauri, and documentary languages that seek to correctly represent issues in an field. In the context of essentialism, information is a measurable datum that may have an objective representation.

Saldanha (2008, 8) accepted Rorty's interpretation that pragmatism does not have a theory of truth, but it is a position opposed to the dogmatic method. Thus, the meaning of pragmatism does not depend on the logic of objects, but on circumstances and uses. Only the context and concept uses determine meaning. According to the author, this extreme reading of pragmatism, basing it on themes such as reality and truth, has an impact on the field of information science as follows: on the existence of a humanistic Librarianship, on the emphasis on qualitative methods (sense making), on the constructivist line of research, on the hermeneutical and social paradigms of information actions, on domain analysis, and on disciplinary approaches, such as social epistemology, information anthropology, and knowledge sociology. "All these groups turn to the studies of the individuals inserted in communities, and address, in general, to information as a social construct" (Saldanha 2008, 10).

Indeed, it is not necessary to refer back to the Peircean pragmatism to verify the negative impact of this position about the construction of knowledge organization systems. Hjørland (2003) has already suggested that accepting everything as a social construct is not a serious proposition that becomes inconsistent when confronted with reality. The influence of essentialism and pragmatism on Information Science without considering Peirce's method, in fact, turns the argument stated by Saldanha (2008) into a speech of praise to relativism. In addition, it makes it difficult to understand many nuances of pragmatism and the theories involved. This does not mean that representation is not socially constructed, but this is not the only criterion for validating meanings. This is one of the pragmatic premises based on Peirce's thought.

Although Peirce's pragmatism was not the primary purpose of the analyses done by Hjørland (2000, 2003), Gonzalez de Gomez and Gracioso (2006), and Saldanha (2008), the references to Peirce show a great concern in this direction. However, Peirce has been recognized only as the founder of pragmatism, and, sometimes, references are made to his maxim stating how intellectual concepts can be extracted by distinguishing obscure ideas from the really clear ones. A multi-methodological perspective is totally incompatible with the proposal of pragmatism as a method aimed at finding the truth. In addition, pragmatism is opposed to the Cartesian method in the sense that its approach is more consistent with the context of scientific practice.

In this reconstitution on Peirce's thought, however, it was found that the most significant contributions were the original studies carried out by Thellefsen (2002, 2003, 2004; Thellefsen and Thellefsen 2004). Besides elucidating Peirce's work in the field of information and knowledge organization, this author pointed out some Peircean themes that were unknown in information science, particularly terminology and pragmatism, which together enable the clarification of ideas, and consequently, efficient knowledge may flow without the difficulties caused by false impressions.

Thellefsen's efforts to go beyond the elementary levels of semiotics, particularly speculative grammar, should also be recognized. In other words, the author did not restrict his studies to the three branches of Peirce's semiotics, namely, speculative grammar, pure logic, and speculative rhetoric. These branches cover the whole intellectual spectrum, from the minimal mental structures (grammar) to the most complex signs that promote the advancement of scientific knowledge (rhetoric).

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Thellefsen (2002, 2003) questions the traditional methods of organizing knowledge and argues that they do not respect the dynamics of knowledge, since they arbitrarily segment reality and do not observe group or community specificities. In this sense, the strategies for organizing knowledge universally should be revised and, perhaps, be replaced by strategies closer to knowledge producers and consumers.

As foundation, Thellefsen accepts the pragmatic maxim that integrates a set of explanations provided by Peirce, whose intent is to guide the mind to validate the basic concepts for the construction of thought in a discipline. Any meanings produced within a domain of knowledge require, at least, the opposition to reality—recognition of the practical effects—to support a representation.

However, how can we do this by resorting to Peirce's pragmatism? The first step may be to accept that knowledge should be organized into domains. Thellefsen and Thellefsen (2004, 179) write:

A knowledge domain is to be understood as a demarcation of given knowledge, whether anchored in a professional or non-professional context. The knowledge domain is well defined by a kind of meaningfulness, which organizes knowledge in relation to a particular object field or a certain perspective.

This significance, or significance-effect of a sign, is shared by the policies and objectives necessary for the construction and acceptance of a common terminology. The set of terms, however, lacks a pragmatic verification and organization strategy; that is, one that takes into account the practical purposes conceived.

A second step would be to structure a method for extracting valid terms basing on the pragmaticist logic that the conception of effects represents the whole concept of the object. This methodological guide was described by Thellefsen and applied in the domain of occupational therapy in Denmark.

Thellefsen (2002) points out eight steps in his method for organizing knowledge: 1) empirical analysis aimed to create hypotheses to be validated or not by the members of the domain. At this stage, the hypotheses serve as an interpretative means of approaching the object represented, as proposed by Peirce's pragmatic method, 2) establishment of a focus group that provides information about the knowledge domain and 3) identification of the fundamental sign (placed in the center of a domain), the other related signs or peripheral concepts (symbols, according to semiotics) to the fundamental sign, arranged in a so-called radial structure (Figure 1). 4) Representants of both theoretical and practical knowledge domains provide the concepts related to the fundamental sign; their participation is necessary;
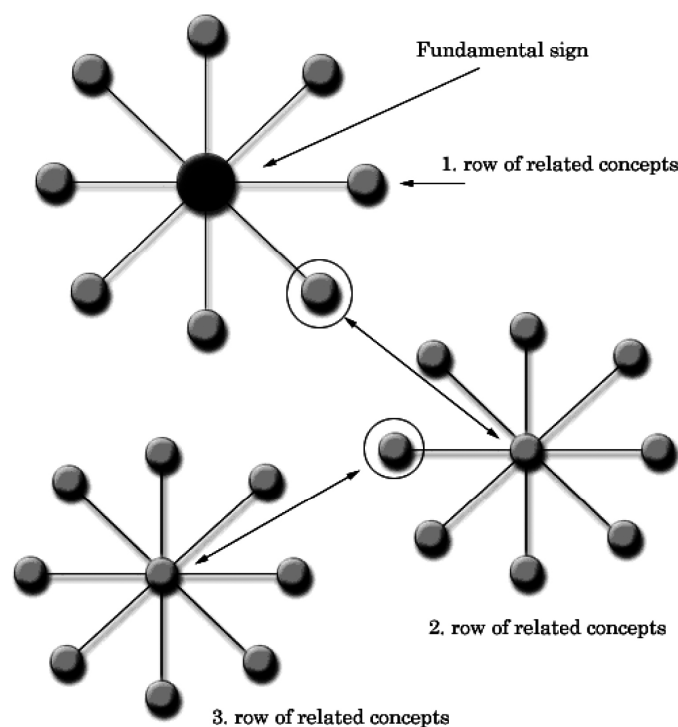

Figure 1. Fundamental Sign and Rows of Related Concepts (Thellefsen 2002, 82)

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4) validation of the related concepts of the first row by a focus group consisting of members of the domain; 5) validation of the second row by comparing the result of the connections with the first row of concepts, 6) further validation of the concepts of the other rows by comparing them with the preceding rows and the fundamental sign; 7) identification of other fundamental signs and analysis of their occurrence in the concepts mentioned; 8) organization of the knowledge domain in a mind-map-like structure that summarizes the information of the concepts listed. In his project research with occupational therapists, the author (Thellefsen 2002) mentions the creation of a virtual dictionary and a virtual mind map structure where all related concepts have some short additional information. The fundamental sign and its related concepts are presented in a radial structure, as follows:

Thellefsen's proposition has shown that the pragmatic maxim can be applied by following a consistent method that will enable not only the definition of a set of concepts, but also their relationships (as illustrated in Figure 1) and the object represented, which will be eventually examined by producers and users of symbols. The word "symbol" in Peirce's semiotics suggests, unequivocally, the existence of a representation object that produces practical effects that should be taken into account in order to adjust representation.

Nevertheless, other similarities can be observed between the Peircean model and the current concerns of information and knowledge organization. The method shows that operations aimed to reconstitute conceivable practical effects are needed, and that these effects are not identified without the presence of signs or outside the semiosis chain. Knowledge is not organized without regarding it as a dynamic, evolving, and fallible process.

In this way, Peircean concepts of fallibilism and the *continuum* were considered here as a means for organizing knowledge. As a contribution to knowledge organization, we propose reducing polisemy and restricting meanings of the concepts found in organization systems of the world or classification systems, so that the semiosis process may continue to manifest its creative and evolving essence in the future. In this case, the task of fixing meanings is not contrary to knowledge evolution, but pivotal to its development. Nevertheless, the relations between Peirce's pragmatism and studies on concepts in the field of knowledge information organization should be emphasized.

3.0 Final considerations

We should also point out that the notion of "practical effect" in Peirce's pragmatic approach involves a discussion equivalent to the concept of predicable attribute of an object according to Dahlberg's theory of the concept (1978). However, concept attributes are formed from the information derived from individual things represented by the characteristics of the concept and obtained analytically, while practical effects refer to the real and practical impacts of the object conceived by the mind. In Pierce, an adequate mental movement would not be from the characteristics of the concept towards the object attribute, but from the object to the mental habits, a tendency to interpret, that will result in meaning in the future.

In addition, concept elements are obtained by the analytic-synthetic method in the theory of concept, since each element has a predicable attribute of the object, also called "characteristic on the conceptual level" (Dahlberg 1978, 102). In pragmatism, however, the method of concept definition begins with a hypothesis regarding the potential practical effects conceived, and then moves on to deductive and inductive analysis (test), that is, an abductive-deductive-inductive method. Thus, according to Peirce, the correct path is from object representation hypotheses to the concept tested inductively. This guarantees the expansion of meaning while doing research or testing to validate the effectiveness of the representation.

It should be also emphasized that in Thellefsen's pragmatic approach, as well as in the concept theory suggested by Dahlberg (1978, 2006), a logical one, the reference object, which determines conceptual units, is predominant, and this is consistent with Peirce's realism and pragmatism. Perhaps this would be the theoretical option to be chosen, instead of the extreme relativism that is found in most free and changing forms of knowledge organization and that makes no reference to the objects of representation. According to extreme relativism, every object can be conceived and represented in any way by anyone, depending on the viewer, because there are no limits or rules for interpretation, and there is no truth about an adequate representation of knowledge. Such presupposition does not favor the application of effective strategies aimed to organize knowledge according to logical rules, since it does not take into account the referentiality conditions of the object.

We also observed that the Peircean contribution to knowledge organization poses a fundamental issue: the nature of meaning and object. In this direction,

we emphasize that it is not enough to know the language (system of signs) analytically; it is necessary to adopt strategies in order to understand the specificities of the object of predication or, more appropriately, the dynamic and immediate objects in the semiotic theory, as well as to ensure that their effects are recognized. In this manner, the methods for organizing knowledge might be more effective because they would be more realistic and pragmatic.

References

Azevedo Netto, Carlos Xavier de. 2002. Signo, sinal, informação: as relações de construção e transferência de significados. *Informação & sociedade* 12 no. 2: 1- 13.

Azevedo Netto, Carlos Xavier de. 2008. Informação e patrimônio arqueológico: formação de memórias e construção de identidades. In *Anais do IX encontro nacional de pesquisa em ciência da informaçã*o. São Paulo: ANCIB, pp. 1-15.

Cunha, Isabel Maria R. Ferin coord. 1989. *Análise documentária*: considerações teóricas e experimentações. São Paulo: FEBAB.

Dahlberg, Ingetraut. 1978. Teoria do conceito. *Ciência da informação* 7: 101-7.

Dahlberg, Ingetraut. 2006. Knowledge organization: a new science? *Knowledge organization* 33: 11-19.

De Waal, Cornelis. 2007. *Sobre pragmatismo.* São Paulo: Loyola.

Descartes, René. 2000. Discurso do método: regras para a direção do espírito. São Paulo: Martin Claret.

González de Gomez, Maira Nelida, and Gracioso, Luciana de Souza. 2006. Ciência da informação, pragmatismo, virtualidade. In *Anais do VII encontro nacional de pesquisa em ciência da informaçã*o. Marília, SP: FFC/Unesp Publicações, pp. 1-20.

Guimarães, José Augusto Chaves. 2003. A análise documentária no âmbito do tratamento temático da informação: elementos históricos e conceituais. In Rodrigues, Georgette Medleg, and Lopes, Ilza Leite eds. *Organização e representação do conhecimento na perspectiva da ciência da informação*. Brasília: Thesaurus, pp. 100-17.

Hjørland, Birger. 2003. Fundamentals of knowledge organization. *Knowledge organization* 30: 87-111.

Hjørland, Birger. 2000. Library and information science: practice, theory, and philosophical basis. *Information processing and management* 36: 501-31.

Ibri, Ivo Assad. 1992. *Kósmos noetós*: a arquitetura metafísica de Charles S. Peirce. São Paulo: Perspectiva.

Mai, Jens-Erik. 1997a. The concept of subject in a semiotic light. In Schwartz, Candy, and Rorvig, Mark eds., ASIS '97, proceedings of the 60th ASIS annual meeting, Washington, DC, November 1-6, 1997: digital collections, implications for users, funders, developers, and maintainers. Medford, NJ: Information Today, pp. 54-64.

Mai, Jens-Erik. 1997b. The concept of subject: on problems in indexing. In McIlwaine, Ia C. ed., *Knowledge organization for information retrieval: proceedings of the 6th international study conference on classification research*. The Hague: FID, pp. 60-67.

Mai, Jens-Erik. 2000. The subject indexing process: an investigation of problems in knowledge representation. PhD diss., University of Texas. Austin: The University of Texas.

Mai, Jens-Erik. 2001. Semiotics and indexing: an analysis of the subject indexing process. *Journal of documentation* 57: 591-622.

Marcondes, Carlos Henrique. 2001. Representação e economia da informação. *Ciência da informação* 30n1: 61-70.

Monteiro, Silvana Drumond. 2006. Semiótica peirciana e a questão da informação e do conhecimento. *Encontros bibli* Número Especial: 43-57.

Moreira, Solange Silva. 2006. O ícone e a possibilidade de informação. *Encontros bibli* Número Especial: 30-42.

Moura, Maria Aparecida. 2006. Ciência da informação e semiótica: conexão de saberes. *Encontros bibli* Número Especial: 1-17.

Peirce, Charles S. 1972. *Semiótica e filosofia*. São Paulo: Cultrix.

Peirce, Charles S. 1974. *Escritos coligido*s. São Paulo: Abril Cultural.

Peirce, Charles S. 1998. *Collected papers of Charles Sanders Peirce.* Vols. 1-8. Bristol: Thoemmes Press.

Peirce, Charles S. 2000. *Semiótica*. São Paulo: Perspectiva.

Pinto, Júlio. 1996. Semiótica e informação. *Perspectiva em ciência da informação* 1: 87-92.

Saldanha, Gustavo Silva. 2008. Imago e vivência: uma reflexão filosófica sobre o essencialismo e o pragmatismo na ciência da informação. In *Anais do IX encontro nacional de pesquisa em ciência da informação ENANCIB, 2008, São Paulo*. São Paulo: ANCIB, pp. 1-15.

Santaella, Lucia. 2004. *O método anticartesiano de C. S. Peirce.* São Paulo: Unesp.

Silveira, Lauro Frederico B. da 1985. Cosmos evolutivo e plano da criação na filosofia peirceana. *Trans/Form/Ação* 8: 1-24.

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Silveira, Lauro Frederico B. da 2007. *Curso de semiótica geral.* São Paulo: Quartier Latin.

Smit, Johanna W. coord. 1989. *Análise documentária*: a análise da síntese. Brasília: IBICT.

Thellefsen, Torkild L. 2002. Semiotic knowledge organization: theory and method development. *Semiotica* 142: 71-90.

Thellefsen, Torkild L. 2003. Pragmaticism and the role of terminology. *Impact.* Available http://www.impact.aau.dk/articles.html.

Thellefsen, Torkild L. 2004. Knowledge profiling: the basis for knowledge organization. *Library trends* 52: 507-14.

Thellefsen, Torkild L., and Thellefsen, Martin M. 2004. Pragmatic semiotics and knowledge organization. *Knowledge organization* 31: 177-87.