Knowledge Organization:
From Term to Concept, From Concept to Domain

Aline Ellis Arboit
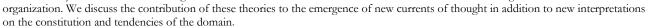
Court of Auditors of State of Paraná, Praça Nossa Senhora da Salete, S/N ,
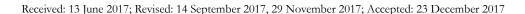
Curitiba, Paraná 80530910, Brazil, <aarboit@yahoo.com.br>

Aline Elis Arboit holds a PhD in information science from São Paulo State University-UNESP and is a librarian at the Court of Auditors of the State of Paraná (Curitiba–Brazil). Her research interests are epistemology of knowledge organization, knowledge organization ethics, and research methods.

Abstract: The study draws a diachronic trajectory (related to the study or understanding of a fact or set of facts in its evolution over time) as to the use of the term "knowledge organization," aiming to identify the various narratives that have constituted the area. We seek to understand the concept of the term, in addition to its establishment as a knowledge domain. Classification theorists and the "theory of concept" are referred to in order to verify how the relation among these theories determined the foundation of the domain of knowledge organization. We discuss the contribution of these theories to the emergence of new currents of thought in addition to new interpretations on the constitution and tendencies of the domain.

1.0 Introduction

Even though considered a meeting point between information science (IS) and philosophy, knowledge organization (KO) in general has been involved in solving both theoretical and practical problems in information environments. However, authors in the area have still discussed which area of KO would be most closely linked to, or whether its central object would be knowledge or information, or whether only knowledge is recorded or communicated or both, in addition to the nature of knowledge itself, which might be cognitive, social or sociocognitive (Hjørland 2002b; Dahlberg 1993 and 2006; Barité 2001; Couzinet 2012).

In order to contribute to the discussion of these questions, we seek to diachronically analyze the constitutional process of KO—the process of social and cognitive institutionalization (Whitley 1974)—based on the use of the term (or concept) "knowledge organization" and on the worldviews instilled in it over time. This is noticeable in the narratives of the several authors mentioned throughout the article, using their texts as empirical objects for the analysis of the terms, concepts, and domains. The empirical research in general is based on data considered relevant, obtained through the experience of the researcher.

In order to understand the differences among terms, Hjørland (2012) analyzed the relationship among the expressions "information organization," "organization of information," "information architecture" and "knowledge organization." The terms "information" and "knowledge" are still widely used as synonyms, due to the proximity of the concepts and semantic relations that are concomitantly the object of study of IS and KO, and the fact that they share the same theoretical bases.

Assuming that terms are fruits of socially negotiated conceptions, Hjørland (2012, 12) argues that "information" is more related to theoretical currents directed to information theory, whereas "knowledge" turns to the social focus of "semiotics and documentation and its role in human activities."

Concepts are seen as abstract representations made by subjects from collective contact with the world. They are dynamically and collectively negotiated to represent the world according to interests and theories (Hjørland 2009). Terms, in this sense, are signs that represent concepts, and both can vary in meaning according to the context of use, which is always temporally, geographically and socially located. Hence, both terms and concepts are constantly permeated by worldviews.

126

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

A knowledge domain is understood, in this study, as the formation of social groups and their various inter-individual discourses rather than a product of a cognitive and abstract institutionalization process (Whitley 1974). Such groups at the same time construct and disrupt a domain using the possibility of dialogue that includes agreements and contrapositions, although they are formed with the same objective: to seek a better understanding for the area to which they dedicate themselves (Hjørland and Albrechtsen 1995; Hjørland 2002a and 2008; Smiraglia 2012).

In this article we seek to understand the term, concept and domain of knowledge organization as interrelated elements. We argue that these three elements represent the expression of several social groups at certain periods. Identifying the different narratives that have populated the KO domain over time is relevant as it allows visualizing distinct and at the same time complementary chains of thought. In addition, the study of the evolution of narratives enables the projection of future research trends.

In order to understand the current KO, we move from the analysis of notions and general approaches of the narratives of the first and main theorists of bibliographic classification (late nineteenth and early twentieth century), through Ranganathan and Dahlberg, considered the founding theoretician for the institutionalization of the KO domain, to more contemporary theorists such as Hjørland, Barité, Gnoli and García Gutiérrez.

2.0 Narratives about conceptual and bibliographic classifications

Although the task of organizing knowledge has been an object of study since Plato, the concepts underlying the term and the future domain "knowledge organization" were established around 1900, by Cutter, Richardson and Sayers. These authors used the terms "order of things," "order of ideas," "classification of ideas" and "classification of knowledge" to designate schemes developed by philosophers and scientists (Hjørland 2008). The book *The Organization of Knowledge and the System of the Sciences* by Bliss (1929), is considered by Hjørland and Dahlberg as the first intellectual frame of KO. Bliss was the first one to insist on the philosophical bases of bibliographic classification, to reclaim it as an area in its own right to use the term "organization of knowledge" (Broughton 2008).

Bibliographic classifications, however, are understood by Cutter, Richardson, Sayers and Bliss as a kind of representation created with the practical purpose of systematically grouping books in libraries from the universe of knowledge already systematized by science. Thus, even if the bibliographic system seeks to strictly follow the order, complexity, logical linkage and evolution of scientific concepts, according to these authors, bibliographic systems must be manipulated according to pragmatic criteria related to environmental circumstances and different conditions of libraries, books and users.

Every classification is both systematic and conceptual, since every class is a term/sign that represents a concept. In this sense, a close relationship between classifications and conceptual systems is observed, as, although they fulfill different functions, the concept is inseparable from class and vice versa, despite the fact that most discourses treat these two elements separately in the literature (Hjørland 2009). Conceptual systems are responsible for organizing philosophical thinking and scientific discoveries (Hjørland 2008). Bibliographical classification, a type of conceptual system, on the other hand, is constructed with the specific purpose of organizing and managing physical items that compose the collection of a library and, in an indirect and secondary way, the information about the "ideas" contained in it. Even with a philosophical/scientific orientation, classification of books is different because, even though constructed from abstract concepts, it seeks a pragmatic application, not intending to understand human knowledge. Philosophical classifications are considered broader and more abstract, while classifications of books are restricted to better suit the needs of use.

Cutter, Richardson, Sayers and Bliss had in common the initiative of a theoretical movement on book classification activities and their relations with philosophical and scientific knowledge. At the turn of the twentieth century, even with Dewey's scheme already being deployed in many libraries, there was a need to establish concepts and techniques related to the construction and application of classification systems. Rather than taking as their basis a philosophical model coupled with practical aspects of library management, the four theoreticians argued that a book classification should be a derivative of scientific classifications. Cutter, Richardson, Sayers and Bliss argued, according to Hjørland (2008), that bibliographic classifications should be a derivation of the classification of scientific knowledge. For this reason, the four authors make a number of criticisms of the Dewey system, according to them, drawn from the private worldview of its creator, inspired by the inverted Baconian model of W. T. Harris and adaptations of a pragmatic nature (Dousa 2009; Rafferty 2001).

In addition, Broughton (2008, 47) points out that Bliss also severely criticized Dewey's followers, especially in relation to indexing as a complement to classification, that is, he believed that indexing could not overcome the flaws of a classification scheme. For this reason, Broughton believes that Bliss's ideas were not so well received in the United States, where there was high adherence to Dewey's scheme by librarians. In Europe, although Otlet and La Fontaine referred to the *DDC* to design the UDC, Bliss's ideas are recognized as visionary and thus, until today, KO

theorists value and praise the theoretical development of the domain to the author.

Although with differentiated emphases, the efforts made by the first theoreticians of book classification are recognized as originating from a social need at that time, which was that establishing technical criteria to better organize the items of a library was essential in order to serve anyone looking for knowledge. This point of view is shared by Shera (1980), whose ideas highlight that the creation of libraries and librarianship was a way of better serving the desires of a public no longer constituted only by scholars but, at least potentially, constituted by the population in general. However, according to Shera, while the field sought to operationalize its activities in order to serve the citizen, it also sought to conform to the precepts of modern science based on the positivist model.

Positivist ideas related to evolution, progress and faith in scientific development espoused by thinkers such as Darwin, Spencer and Comte influenced the views of the first classification theorists. The order of things or the order of knowledge, especially the principle of the evolutionary order present in classifications, has until now been the subject of discussion in the theoretical domain of KO. According to Dousa (2009), Cutter, Richardson and later Bliss were pioneers in the theoretical approach on questions concerning the evolutionary order of ideas. Even considering the impact of the intellectual context of their time, it can be said that these scholars have laid the foundations of a theory of classification based on the principle of evolutionary order that has been the subject of study of researchers in the domain.

In addition to being a theorist, Cutter is also known for designing the unfinished system "Expansive Classification." Cutter desired, in the first place, to elaborate his classification of books, although he considered it a non-scientific product (Dousa 2009, 80). He believed, however, that this classification would have "permanent value" if projected from the general classification of science, influencing authors such as Bliss, for example. In addition, the expression "permanent value" evidences Cutter's belief in the stability and evolutionary progress of scientific knowledge.

Richardson (1901) understands classification as an activity of grouping things according to similarity, utility or taste. The classification of ideas, he says, refers to knowledge systematized by science whose construction respects the "natural order of things." What is not identified with this logical and natural world connected to science is treated by the author as art, that is, art is related to new ideas linked to human creations. Although the classification of ideas is considered the "backbone" of book classification, for Richardson, it must be treated differently as it addressed concrete objects—books—which are essentially different from ideas. The classification of things is re-

garded by the author as perfect, logical, and natural, whereas the classification of books is regarded as a man's creation, a kind of art with a tendency to "imperfection," which must be modifiable to meet the circumstances, such as environmental variables, nature and typology of books, modes and intentions of use (Richardson 1901, 69-70).

In line with Richardson, Sayers (1915) also distinguishes the classification of knowledge from bibliographical classification. For him, the classification of knowledge is considered a scientific ideal to be followed in the most meticulous way possible by the classification of books. However, when designing a bibliographic classification, Sayers suggests considering the volume and type of items without compromising the logical relationship between the parts and the whole. To meet the library's functionality, the classification of knowledge undergoes variable adaptations according to each specific context in order to serve the target audience, even if these adjustments match the logical-scientific rigor. Sayers (1915) considers books and ideas as complementary elements, that is, for him books are the expressions of ideas in the concrete form, not always in accordance with the natural sequence of knowledge and, therefore, this ideal order validated by science must be changed to meet the conditions imposed by its use. For this reason, Sayers argues that the nature and origin of knowledge should not be the subject of librarians' concerns, and it is up to them to follow the system whose structure logically reveals a clear order based on the evolution of scientific knowledge and make the necessary adaptations to ensure its efficiency, assuming that knowledge is given by science and therefore its production process is not taken into account.

So far, a deeper reflection on the order of things and the organization of scientific knowledge is considered as something far from the librarian's doing. In addition, these activities were considered unnecessary to library work at that time, which was a practice seen as activities of a predominantly pragmatic nature, and thus a public service whose effectiveness should be guaranteed. We observe that Cutter, Richardson and Sayers incorporate in their discourses the precepts of positivism, the dominant world view at the time, which elevates science to the condition of perfection obtained by a natural and therefore unquestionable process. While they do not deny the social need of the library for knowledge transmission, such concern is not as highlighted as the concern about book management.

A vanguard approach is observed in Bliss (1929 and 1933), as he highlights the relation of the constitution and global organization of knowledge with the social sphere. For the author, knowledge must be organized to meet primarily the need for education and societal progress. The "order of things" can only be considered a useful system for knowledge transmission from a consensus among scientists. Bibliographical and scientific classifications, al-

128

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

though designed to meet different demands, are considered, not only systematization instruments, but also instruments that promote education. The librarian, therefore, formerly considered primarily a library administrator, also assumes the role of educator.

His work in 1929 addresses an "encyclopedic analysis" of KO in a broad sense, institutions and mechanisms by which knowledge is discovered, validated and disseminated, principles and systems of scientific and philosophical classifications, and a thorough investigation into knowledge production and communication and the social actors that are part of the process, while his work in 1935 is dedicated more specifically to bibliographic classification, the organization of thematic catalogs representative of library collections and a description of the main characteristics of the current classification of books (Broughton 2008, 46). A classification of books in its structural aspect is defined by Bliss (1933, 37) as a kind of knowledge organization, being intrinsically intertwined with the broad concept of KO advocated in 1929. A well-constructed classificatory scheme for him is the one that meets both functional, scientific and educational criteria, becoming an effective instrument, since the logical-scientific linkage of knowledge organization is adapted to the various characteristics of the library environment, respecting its educational value. As Rafferty (2001, 185) points out, Bliss understood that the establishment of relations across the different branches of knowledge in classifications could provide the individual with a global view of the world of ideas.

For Bliss, the relationship across rational, empirical, and bibliographic knowledge is not necessarily conflictual (Broughton 2008, 47). Even believing that there was a natural order of things, it manifested itself from knowledge validated in society, a collective agreement that Bliss names a scientific and educational consensus. Any classification, in turn, must follow what is considered functional by the group reconciled with its logical rigor. Knowledge must be organized in libraries according to the scientific and educational consensus, which for Bliss (1933, 42) is relatively stable, because as it is theoretically accepted knowledge tends to become more and more consolidated. According to Rafferty (2001, 186), this view reflects a highly positivistic and optimistic attitude towards science, since Bliss believes in the permanent evolution of universal knowledge oriented towards the education of people and social welfare. The books, their references, their writers and their readers, in turn, are for Bliss (1933) constituent elements of an intellectual community that suffer reciprocal influences.

Unlike the authors discussed so far although belonging to the same period, in 1911 Hulme conceived that the main source for the elaboration of bibliographic classification systems should be documentation itself, and not classifications with pre-defined philosophical or scientific orienta-

tions. Through access to the knowledge recorded in books, it is possible to verify the current state of knowledge, the most used terms, those that have fallen into disuse and also to identify the emergence of new specialties or the association of others. Thus, according to Hulme (quoted in Barité 2011), the insertion, maintenance and reconfiguration of classes that constitute a bibliographic classification system are constantly validated by the empirical verification of the quantitative occurrence of terms and, in fact, the predominance of the conceptual structures recorded in documents. In this way, book classification would be able to keep pace with the dynamics of knowledge and to fulfill its purpose of representing knowledge in as trustworthy a manner as possible so people are informed as to how it has been developed. That is, Hulme assumes that knowledge tends to change from time to time and documentation is responsible for maintaining the objective record of this course, being the most reliable resource to follow the knowledge movement.

According to Barité (2011), Hulme states that having defined the thematic ("aboutness") of the document, its grouping in a class duly coordinated with the other classes of a classification system and the translation of the result into a notation, the activity classification would be reduced to a quasi-mechanical operation and the classifier, therefore, to a mere recorder of knowledge (Hulme 1911, 447 quoted in Barité 2011, 40). Thus, Hulme proposes a new approach centered on documentation and not on science or philosophy, noting that philosophical or scientific classifications generally tend to reinforce an ideological stance, which he believed did not occur with classification based on documentation, once it is based on quantitative indexes related to the terms materially recorded in the documents.

The literature guarantees materially as "true" and temporarily authorizes the use of the terms for establishing and reformulating classes in book classification schemes. Thus, the validity of topics is not lost over time, or the maintenance of the news on the development or specialization of areas of knowledge. In creating the principle of literary warrant, Hulme was considered the first to effectively promote a distinction between the theory of knowledge oriented to systematization and transmission and an empiricist conception aimed at retrieving information from knowledge recorded in documents (Barité 2011, 43).

In the 1930s, knowledge was treated as a multidimensional and dynamic universe of subjects by Ranganathan. Diverging from Cutter, Richardson, Sayers and Bliss, Ranganathan did not conceive of scientific knowledge as a tendency toward stability. Rather, in his discourse, he emphasized the polierarchical, revisional and dynamic nature of knowledge. The classification system he proposed, the *Colon Classification*, reflects his theoretical stance, since he resumes in a more systematic way—in comparison to

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

129

Bliss—the Aristotelian ontological model of classification of beings in a scheme that allowed the combination of various concepts and entities in a nonhierarchical way through facet analysis (Broughton 2008, 55).

Another aspect of rupture promoted by Ranganathan (1967, 550-53) is the fact that he considered classifying books a science, constructed according to pre-established methods, laws and principles. His work is mostly devoted to the elaboration of methods, laws and principles that underpin the construction and application of KO systems in libraries (Ranganathan 1931; 1967; 1973), a fact that reinforced his belief in the scientific character of bibliographic classification. He argued for the consolidation of a general theory of bibliographic classification that contemplates specific normative principles, such as Ranganathan's "dynamic theory of library classification," allied to aspects of the "static" theories of bibliographic classification, such as those of Bliss, Richardson and Sayers. The divergence of thought among Ranganathan and the other book classification theorists is clear, except for Hulme, in relation to the dynamicity of knowledge. The classification models of knowledge elaborated by philosophers and scientists served more to their own mental satisfaction than to meet a collective purpose of knowledge transmission (Bhattacharryya and Ranganathan 1974, 125). Even with all agreement between the relation and order of ideas, Bhattacharryya and Ranganathan would be too broad to aid in the construction of bibliographic systems, not contributing to the high degree of detail needed in a library.

Regarding the social orientation of knowledge, already observed in Bliss's discourse, Ranganathan also presented a distinguishing position. Although he also highlighted the social importance of libraries and documentation as an area of knowledge, Ranganathan (1967, 80-82) took a cognitivist approach to knowledge. The Indian theorist, in addition to discussing pragmatic aspects of book classification, sought a terminological unit for the domain, defining terms such as memory, concept, idea, knowledge, information and subject, using the explanation of the mechanism functioning and human mental processes.

By postulating his notational metaphysics, Ranganathan indicated he believed in intuitive knowledge and classification and the notion that the idea in its purest state is unrelated to language, and in some cases, the idea could be experienced only through individual consciousness (Rafferty 2001). For Ranganathan, the existence of the idea and, indeed, of information and knowledge, precedes the linguistic sign. He believed, therefore, that some inexpressible ideas in natural language could only be expressed through notational language and thus externalized. For this reason, Rafferty (190) identifies in Ranganathan a philosophical orientation focused on subjective individualism that aimed at "reification of notation."

Hjørland (1992), by categorizing the various theoretical approaches to the concept of subject, attributes to Ranganathan's theory a philosophical orientation toward idealism. Hjørland argues that, for Ranganathan, the subject is a derivation of an idea and this, therefore, is a product generated by individual reflection. The document is, for Ranganathan, an individual's set of ideas expressed on a certain subject, which needs the abstract analysis and uniform procedures to unveil its real subjects, according to the intention of the author. In fact, ideas, concepts or subjects with fixed and universal properties must be treated as single parts that make up a system. Because the thought, language and consciousness do not depend on the context in which they occur, they may have, for Ranganathan, an "absolute syntax," which can be more reliably translated by the notational language.

3.0 In search of a conceptual approach to classification: theory of concept

The development of information technologies influenced, not only information science and KO, but also all the sciences, intensifying from the 1960s, when, for example, in 1968 the American Documentation Institute changed its name to the American Society for Information Science, and the term "information" is now used in the area as a substitute for the term "documentation" in the name of various educational and professional institutions (Hjørland 2000).

A conceptual approach to classification advocated by theoreticians from Cutter to Ranganathan ends up losing ground until the 1970s when, especially Dahlberg and Soergel retake and reinforce this theoretical stance to establish the "new" KO domain, while rejecting the mathematical approach to information that became hegemonic in the extinct Society for Classification.

Ranganathan's ideals profoundly influenced the positioning of researchers in librarianship and documentation, especially Dahlberg, who assigns to Ranganathan some conceptions that underpinned her "theory of concept." Dahlberg has often been cited by the KO discursive community as the primary figure responsible for its foundation as a scientific discipline. While actively participating in the institutionalization process, Dahlberg sought to build a theoretical basis for KO from the ideas defended in her thesis on the "theory of concept."

The term "organization of knowledge" (Bliss 1929) was used as the basis of the domain (Dahlberg 1993; 1995; 2006). However, to represent this "new" domain, the term "knowledge organization" was elected in 1989. The concept of the term "organization" in its acceptance in the German language, Dahlberg justifies, has a broader meaning than just "order," that is, it refers to "planned construc-

130

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

tion," "structure" and "formation," although not applicable in other languages in which the term "organization" is used also to designate collective entities such as associations or unions. This concern with the translation of the term demonstrates that, in addition to consolidating an entirely new and wider area of knowledge, KO was hoped to have international representation. According to Barité (2001), it was the Soergel who proposed the expression "knowledge organization," in a conference held in 1971, a suggestion immediately welcomed by other researchers who shared the same line of thought, including Dahlberg and others who left the Society for Classification to found ISKO in 1989.

In addition to Bliss, Dahlberg (1995) cites Soergel's 1971 dissertation *Dokumentation und Organisation des Wissens* (*Organization of Knowledge and Documentation*) and her *Grundlagen universaler Wissensordnung* (1974) as the earliest papers devoted to KO. Soergel and Dalberg share the view that IS and classification theory must refer to conceptual structures and the process of concept formation. However, as it is possible to observe in her works that, while Dahlberg's concern was to formulate the "theory of concept" and other philosophical foundations of the new discipline, Soergel's concern was how to apply these foundations in the construction of information retrieval systems.

The meeting point between KO and the "theory of concept" lies in the conception that bibliographic classification and other knowledge organization systems are modalities of concept systems. Thus, according to Dahlberg, a classification or any other similar system must always systematize representations of concepts, which, in turn, are constituted by objects, their predicates, and a term that accurately states the relation of the elements that compose it. The concept is, for Dahlberg (1978a; 1978b), the basic unit of thought that synthesizes true and necessary characteristics for the determination of a given object and that is communicated through linguistic signs. In this point it is possible to verify that Dahlberg shares with Ranganathan the conception that the idea or concept precedes the word, a fact that evidences a stance also inclined towards cognitivism/idealism.

The concept is, for Dahlberg, formed by the set of three elements: the object itself, the inherent predicates and, finally, the term that designate it. From the distinction of the object and the disclosure of its characteristics, it is also necessary to create a label that names it in the most reliable way possible, to be communicated to others through language. Thus, Dahlberg understands as a mission of the "theory of concept" and consequently of KO systems, the construction of a bridge between specialized lexicography and a system of ordering concepts (1978a). To ground the "theory of concept," Dahlberg, like Ranganathan, shares part of an Aristotelian worldview. That is, for them a concept must be ontologically and univocally attributed to a given object, according to its set of characteristics, and it is not possible to create concepts that effectively explain more than one object. Regarding one specific object, to achieve the individualization of the concept, one must list as many characteristics as necessary (Dahlberg 1995).

The need to search in logic for contributions to analyze each knowledge element as object according to its objects of study, its characteristics, relations, purposes and activities exercised (Dahlberg 1995) is also claimed. Thus, at the moment of the construction of concepts or KO systems, the sequence of organization of the parts must obey a functional relation, respecting the logic of the statements. It is important to highlight the importance of delimiting and prior analysis of the context in which the concepts related to the object of study are found, pointing out the importance of recognizing the domain in which the classification will occur. That is, for Dahlberg, what differentiates a classificatory scheme from the other schemes is the conceptual relations existing in the domain, whether in the practical or theoretical sphere, that will be object of the classifier.

The creation of systems of concepts must, for Dahlberg, be carried out in order to obey objective parameters, consistent with their purposes, relying on clear and well-defined ordering rules of elements and categories, strictly following a predetermined formal structure. In addition, such conceptual systems should allow the understanding about the formation, understanding, knowledge of the characteristics and relationships of the concepts they systematize.

4.0 From the theory of concept to KO domain

Dahlberg (1993) defines KO as the science dedicated to the establishment of structures and systematic arrangements of knowledge units according to their particular characteristics and to the application of concepts and classes of concepts ordered in a way to represent the content of its object or subject of reference, covering all of its types. KO's concern as a field of study would be to answer questions about the way in which the units of knowledge are related and can be organized within a given context (Dahlberg 1995).

Dahlberg (1993; 2006) argues that KO would be a new science centered on the philosophical field, attributing the theoretical foundation of the new field to Ranganathan's theories on faceted analysis and combined concepts, and the work on Wüster's "general theory" of terminology on systems formation based on two hierarchical forms (division and partition) of conceptual systems. KO would be a new branch of knowledge, fruit of a combination between the field of "science of science" or epistemology with the field of systematics or systems sciences. Therefore, KO would be a broader discipline than IS as it addresses the

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

131

organization of concepts, not just documents. For this reason, Dahlberg (2006) sees KO as a domain more linked to philosophy than to IS, since KO's main object of study is knowledge.

Dahlberg (2006) defines knowledge as subjectively and objectively well-grounded by someone about the existence of a fact or a matter; it is not transferable in an autonomous or integral way because it can be elaborated only through individual reflection. For her, only the representation of this knowledge can be transferred through spoken and written language. Knowledge, due to its subjectivity, needs forms of representation, not only for its understanding, but for its communication among people, to be compared with reality and validated, thus becoming objective at least for a certain time. It is possible to observe that, again, Dahlberg highlights the importance of the context where or when some knowledge is represented as a determining factor in its communication and organization process. However, when it comes to the formation and constitution of knowledge, Dahlberg disregards the context, for to her, knowledge, as well as ideas and concepts, is formed in the individual mind.

Resuming the "theory of concept," Dahlberg (2006, 12) explains that knowledge is represented by: "elements of knowledge," which are the characteristics of the units of knowledge (concepts) communicated through the enunciation of properties; "units of knowledge," concepts or synthesis of their characteristics communicated through enunciations and represented by signs (words, terms, names, codes); "greater unity of knowledge," combinations of concepts in enunciations or in definitions or texts; and "knowledge systems," entities composed of units of knowledge properly arranged in a planned and cohesive structure. Therefore, KO's object of study according to Dahlberg would cover these four levels in relation to their real or abstract world references through the conceptual learning and organization of these levels according to an orderly plan, grouping, arrangement or verbal representation to allow recognition and use by individuals.

Dahlberg (2006) lists two main aspects related to the methods and activities that are proper to the discipline: 1) the practice of concept systems construction, making use of mathematical-statistical, mathematical-conceptual perspectives and the "theory of concept" and the theoretical-conceptual conception, directly linked to the "theory of concept;" and, 2) the practice of correlating or mapping the units of each concept system of objects of reality during the acts of classifying or indexing documents, by adopting pre-established systems.

Hjørland (2009) argues that the "theory of concept" is influenced by the lines of empiricist and rationalist thought. In contrast to this tendency, he defends the pragmatist and historicist approach in line with the conception that con-

cepts should be viewed as collectively negotiated meanings and that their study should not be centered on the concept itself, but on the semantic relations arising from it. The concept, therefore, must be understood as its relation of meanings and associations inserted in a certain social and historical context.

The social focus has guided Hjørland's work, especially on the theoretical foundations of domain analysis, which, in addition to opposing cognitivism and idealism, is a relevant contribution as it brings the cultural, social and historical contexts as determinant not only for the creation of information and knowledge organization systems but also for knowledge production (Hjørland 2002a; 2003). Hjørland (2008, 88-87 and 2003, 88) seeks to contribute to the clarification of aspects related to domain limitation in the set of knowledge, considering that librarianship and IS are central disciplines to KO in its "restricted" sense, with KO as a field of study that addresses the nature and quality of knowledge organization processes and systems, that is, activities related to document description, indexing, bibliographic classification, bibliographic databases, archives and other types of memory institutions. On the other hand, knowledge theory, sociology of knowledge, language studies and symbolic systems and metaphysics are central disciplines to KO in its "broad" sense, with the domain dedicated to the study of questions concerning the social division of mental work, for example, the organization of research and higher education institutions, the structures of disciplines and professions, the social organization of the media, and knowledge production and dissemination. For Hjørland, KO in a "broad" sense is concerned with solving questions about how KO in a "restricted" sense develops, including aspects related to the production of scientific knowledge. In fact, for Hjørland, even if KO has two dimensions, one does not exclude the other, on the contrary, they have a complementary relationship and, because of that, he believes that KO is a broader discipline than IS as knowledge in general is its object of study.

For Hjørland (2008, 97) philosophical orientations regarding positivism and pragmatism have been dominant and concurrent throughout the development of KO. The description of the main conceptions of the founding theorists of the domain, especially in Cutter and Richardson, demonstrates the concern of these authors to solve the conflict between the search for a scientific rigor in classificatory models (positivism) and the needs of using books (pragmatism). Even diverging from each other, these currents of thought have coexisted in KO. In addition, Hjørland highlights the predominance in KO and IS of "mentalism" in coexistence and in competition with pragmatist and realistic perspectives (Hjørland 1992; 2003; 2008; 2009).

Although Ranganathan's and Dahlberg's contributions have been valuable to the field, cognitivism, due to its in-

132

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

dividualistic and largely idealistic character fueled by the search for universal concepts, has for a long time deviated the field from its social duty, which does not occur in pragmatism, which, in turn, seeks to meet that which is considered functional, based on the collective consensus in a given temporal or cultural context (Hjørland 1992 and 2008). He therefore advocates the adoption of a pragmatic perspective for the KO domain. Hjørland (1992) cites Soergel as one of the main figures responsible for the return to pragmatism, especially in creating the concepts of "index-oriented content" and "request-oriented toward indexing" relating to a description of issues that combine aspects inherent to properties of documents and the actual and anticipated needs of users.

Barité (2001), sharing a similar understanding about the social character of KO, argues that the central purpose of KO is to establish concepts appropriate to the various social practices related to access to knowledge and, therefore, to operate as an instrument for treatment and management of the social use of information, seeking to encompass and integrate phenomena and the applications related to the structuring, availability, access and diffusion of socialized knowledge, the central object of study in KO. Barité (2001, 37-59 *passim*) proposes a set of ten basic premises for a KO domain:

1) Knowledge is a social product, a social necessity and a social dynamo;
2) Knowledge realizes from information and by socializing it, it becomes information;
3) Knowledge structure and communication form an open system;
4) Knowledge must be organized for its best individual and social use;
5) There are "n" possible ways of organizing knowledge;
6) Every organization of knowledge is artificial, provisional and deterministic;
7) Knowledge is always recorded in documents as an organized set of available data and admits indiscriminate uses;
8) Knowledge is expressed in concepts and organized through concept systems;
9) Concept systems are organized for scientific, functional or documentation purposes; and,
10) The laws governing the organization of concept systems are uniform and predictable and apply equally to any discipline.

We observe, from Barité's (2001) ideas, especially from the ten proposed premises, that he combines complementary aspects of the predominant philosophical orientations in the field of KO. It is possible to observe that in premises from one to four, social character is emphasized, five and six make direct reference to pragmatism, seven emphasizes materialism, and eight, nine and ten allude to Dahlberg's "theory of concept," thus manifesting a more rationalist and idealistic approach, even if premise nine turns concomitantly to pragmatic character.

Similarly, Gnoli (2004) proposes a dialectical relationship between the naturalistic and pragmatist approaches, which, according to him, have always been present throughout the development of the KO domain. For Gnoli, references to reality structures such as ontology-based models can act as a unified criterion for constructing general KO schemes, where each knowledge domain can be treated as a separate universe, and which can be connected by facets. That is, for Gnoli the determination of categories should not only be a result of pragmatic factors but also of the combination of logical elements related to the unitary representation of knowledge and aspects related to the context of the represented object or phenomenon, considering knowledge as something independent from the borders among scientific disciplines or fields. By retaking aspects of a naturalistic approach based on the establishment of epistemological categories and the construction of ontological models, especially from the "theory of integrative levels," Gnoli (2004; 2008; 2011) advocates a holistic view of knowledge, and, by extension, a holistic view of knowledge organization processes.

Regarding KO systems as well as the very constitution of the KO domain, Gnoli (2011) supports the interaction across ontic, epistemic and pragmatic dimensions. For him KO is both an interdisciplinary field and a field whose articulation has taken place through the ontological, epistemological and pragmatic approaches, which are, at the same time competing with each other and complementing each other, since they are concomitantly present in knowledge, documents and KO systems, although one approach is always more explicit. In fact, Gnoli argues that, while clearly assuming more of an ontological focus, the phenomena identified in nature (ontology), the perspectives in relation to these phenomena (epistemology), and modes of groupings linked to form and use (pragmatism), should interact in the representation of a document in view of the effectiveness of KO activities. Gnoli (2008) justifies his preference for the ontological model in view of the growing need for systems that increasingly allow information sharing, arguing that the only way to use systems together is to structure them from more general classes and categories. For him the existence of the semantic web makes the general models of knowledge organization increasingly more relevant, in opposition to what the pragmatic perspective of KO proclaims, which tends to judge universalism as more and more doomed to disuse.

As a counterpoint, it is necessary to cite the ideas by Beghtol (2002a; 2002b; 2005), García Gutiérrez (2002; 2007; 2011; 2014), Olson (2002), Guimarães, Milani and Pinho

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

133

(2008) and Guimarães (2017) regarding the ethical aspects of KO, representing an ideological and more contemporary research trend in KO focused on the defense of logical and sociocultural pluralism. These authors defend, each in his or her own way, the adoption of a clearly assumed ethical approach, in which during the process of knowledge organization and representation one explicitly opts for a world view that is sensitive to the interests of the user community to which that activity is intended. Such assumed positions must rely on language as the product of a social reality and, therefore, should represent the cultural context of that reality, respecting the existing consensus and dissent preventing from serving the exclusion and oppression of minorities that integrate the user community, as discussed in more detail in the previous section.

Regarding the "theory of concept," Garcia Gutiérrez (2007; 2011; 2014) advocates a review based on contextual pragmatics, presenting the following proposals: the adoption of a theory of open and unfinished concepts, the well-founded practice of declassification and the application of these conceptions in the organization processes of recorded memory, including digital. The open theory of concepts seeks to contribute in the conception related to the various senses that a concept may have as a result of the influence that diverse social, cultural, historical and local contexts exert in the formulation, use and transformation of concepts. Thus, he considers that the concept almost always is not and cannot be univocal, nor is it capable of absorbing and petrifying the dynamics of reality, since conceptualization does not go beyond the barriers of a representation constructed from a reality perceived by the human eye. However, if KO wishes its concepts and representations to come as close to reality as possible, it should not insist on unrestricted application of the principle of univocity to all concepts. In this sense, it is argued that one can no longer ignore the contradictions and polysemias present in language, in concepts, in the process of knowledge construction, because they are and must be considered as reflections of cultural pluralism and dynamism, which inexorably are part of life in society.

The porosity of concepts, says Garcia Gutiérrez (2007; 2011; 2014) is another determinant aspect for the sense and the use that is made of them. That is, since concepts are permeable, they can and are used to represent and validate a dominant regime, in the same way that they can also be readapted and revalued by a new occupying power. The rigidity of categories and hierarchies are also targets of his critique, as a concept can be both general and particular because such attributes are always determined from a reference. Concepts express nothing by themselves, but only when they occupy a position in a specific structure. The categories and their structures, in fact, cannot be absolute or permanent, otherwise they will always be oriented to

themselves and not to meet and follow the variability of social needs, even if they are necessary to think of the world and for that they should be flexible and adaptable. There is also a need for constant revision and ethical vigilance, which at the same time respects plurality and seeks consensus among diverse positions, without supplanting the past in favor of the present and vice versa, as well as any space or social group. This practice is about declassification.

To declassify is, for García Gutiérrez (2007; 2011; 2014), to deny what is already classified, and is not to passively accept a vision of the world as the last and only one. It is not a question of denying for merely denying, it is a deconstruction based on the critical analysis of the world in which one lives and observing the changes, conflicts, agreements and social pluralism leading to a process of reclassification. One does not reclassify without declassifying. Thus, new classifications, the author postulates, are open and unfinished systems, since the practice of declassification is based on the regime of provisional truths. Unlike the traditional conception, declassification must occur on the basis of democratic consciousness and critical rationality, preventing the establishment of privileges, exclusions or marginalization, even if rationally or scientifically constructed. Therefore, its orientation will not be neutral, because it turns to defend cosmopolitanism, discursive equality, emancipation, and the emancipation of a consensus that does not annihilate dissent.

With regard to the application of declassification in the practice of knowledge organization, García Gutiérrez proposes the establishment of two operators that complement each other: the complex operator, which works to equitably ensure the expression of all positions and worldviews on a theme; and the cross-cultural operator which, in turn, democratically decides and implements a transcultural synthesis based on a survey carried out by the complex operator, based on a broad, compulsory and periodically revised consensus. The transcultural operator is the antidote to relativism ofm which the complex operator could be accused. The complex operator, on the other hand, would represent the democratic and hermeneutical balance in which the cross-cultural operator seeks support.

5.0 Conclusion

This diachronic analysis contributes especially to the identification of some, perhaps the main various narratives that have sustained the theoretical development process of KO. It is possible to observe that, although the authors dialogue with each other, sharing some concepts, they also oppose each other from the appropriation of philosophical orientations that are, in fact, worldviews assumed by these theorists in relation to a broader aspect of the area

134

Knowl. Org. 45(2018)No.2
A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

of study. This reinforces the perception of a sociocognitive orientation forthe constitution of KO.

It was possible to observe that in the beginning, the interests of the cited authors were mostly permeated by technical and pragmatic perspectives of knowledge, as a result of the reception of the ideas advocated mainly by Cutter, Richardson, Sayer, Bliss and Hulme, and later by more idealistic and cognitive perspectives defended by Ranganhatan and Dahlberg. Then a change toward genealogical, cultural and ethical approaches, as well as a pragmatic view, represented mainly by authors such as Hjørland, Barité and García Gutiérrez, but not by abandoning idealism due to the defense of naturalism and the ontological focus defended by Gnoli, as explained above.

The institutionalization of any knowledge domain is a process characterized by intersubjectivity and by incompleteness. As a condition of guaranteeing their own existence, the narratives and scientific discourses are not isolated from acts performed in social life. Such acts are sociocognitive as they are performed by subjects in their collective environments, where they are influenced and influence the others obeying variations that occur temporarily. In fact, it is conceived that institutions and domains are groups of people who communicate, dialogue, debate, negotiate, enter into agreements, clash, dispute, defend points of view and argue.

Knowledge and language (terms and concepts) are constructed and reconstructed from the dialogical readings that subjects make of the signs representative of incessant changes at the same time that they promote other changes. During this dialogical process, the subjects making choices are guided by the ideological guidelines disseminated by the collectivity and thus attribute form and value to the signs and, by extension, to the concepts, theories, practices and other elements that constitute knowledge. Therefore, we believed that in order to study the trajectory of a domain, we had to resort to the observation of the movement of the ideologies like worldviews that support the researchers' discourses according to a certain historical context.

References

Barité, Mario. 2001. "Organización del conocimiento." In *Educação, universidade e pesquisa: textos completos do III Simpósio em Filosofia e Ciência: Paradigmas do conhecimento no final do milênio*, ed. Kester Carrara. Marília: Unesp Marília Publicações, 35-60.

Barité, Mario. 2011. "La garantía literaria como herramienta de revisión de sistemas de organización del conocimiento." PhD diss., Universidad de Granada.

Beghtol, Clare. 2002a. "A Proposed Ethical Warrant for Global Knowledge Representation and Organization Systems." *Journal of Documentation* 58: 507-32.

Beghtol, Clare. 2002b. "Universal Concepts, Cultural Warrant, and Cultural Hospitality. "In *Challenges in Knowledge Representation and Organization for the 21st Century: Integration of Knowledge across Boundaries; Proceedings of the Seventh International ISKO Conference, 10-13 July 2002 Granada, Spain*, ed. Maria José López Huertas and Francisco J. Munoz-Férnandez. Advances in Knowledge Organization 8. Würzburg: Ergon, 45-9.

Beghtol, Clare. 2005. "Ethical Decision-Making for Knowledge Representation and Organization Systems for Global Use.*" Journal of the American Society for Information Science and Technology* 56: 903-12.

Bhattacharyya, G., and Ranganathan, S. R. 1974. "From Knowledge Classification to Library Classification." In *Conceptual Basis of the Classification of Knowledge: proceedings of the Ottawa Conference on the Conceptual Basis of the Classification of Knowledge, Oct. 1-5, 1971*, ed. Jerzy A. Wojciechowski. Munich: Verlag Dokumentation, 119-43.

Bliss, Henry Evelyn. 1929. *The Organization of Knowledge and the System of the Sciences*. New York: H. Holt and Company.

Bliss, Henry Evelyn. 1933. *The Organization of Knowledge in Libraries and the Subject Approach to Books*. New York: The H. W. Wilson Company.

Broughton, Vanda. 2008. "Henry Evelin Bliss: The Other Immortal, or a Prophet without Honour?" *Journal of Librarianship and Information Science* 40: 45-58.

Couzinet, Viviane. 2012. "L'organisation des connaissances au regard des sciences de l'information et de la communication, une exception française?" In *L'organisation des connaissances: dynamisme et stabilité*, ed. Widad Mustafa El Hadi. Paris: Hermès science publications; Lavosier, 35-50.

Dahlberg, Ingetraut. 1974. *Grundlagen universaler Wissenordnung: Probleme und Möglichkeiten enes universalen Klassifikationssystems des Wissens*. DGD Schriftenriehe 3. München: Verlag Dokumentation.

Dahlberg, Ingetraut. 1978a. "Fundamentos teóricos-conceituais da classificação." *Revista de Biblioteconomia de Brasília* 6: 9-21.

Dahlberg, Ingetraut. 1978b. "Teoria do conceito." *Ciência da Informação* 7: 101-7.

Dahlberg, Ingetraut. 1993. "Knowledge Organization: Its Scope and Possibilities." *Knowledge Organization* 20: 211-22.

Dahlberg, Ingetraut. 1995. "Current Trends in Knowledge Organization." In *Organización del conocimiento en sistemas de información y documentación : actas del II Encuentro de ISKO-España, Getafe, 16 y 17 de noviembre de 1995,* ed. Francisco J. Garcia Marco. Zaragoza: Universidad de Zaragoza, 7-26.

Dahlberg, Ingetraut. 2006. "Knowledge Organization: A New Science?" *Knowledge Organization* 33: 11-19.

Knowl. Org. 45(2018)No.2

135

A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

Dousa, Thomas. 2009. "Evolutionary Order in the Classification Theories of C. A. Cutter & E. C. Richardson: Its Nature and Limits." In *Proceedings from North American Symposium on Knowledge Organization* 2: 76-90.

García Gutiérrez, Antonio 2002. **"**Knowledge Organization from a "Culture of the Border": towards a Transcultural Ethics of Mediation." "In *Challenges in Knowledge Representation and Organization for the 21st Century: Integration of Knowledge across Boundaries; Proceedings of the Seventh International ISKO Conference, 10-13 July 2002 Granada, Spain*, ed. Maria José López Huertas and Francisco J. Munoz-Férnandez. Advances in Knowledge Organization 8. Würzburg: Ergon, 516-22.

García Gutiérrez, Antonio. 2007. *Desclasificados: pluralismo lógico y violencia de la clasificación*. Barcelona: Anthropos.

García Gutiérrez, Antonio. 2011. *Epistemología de la documentación*. Barcelona: Stonberg.

García Gutiérrez, Antonio. 2014. "Declassifying Knowledge Organization." *Knowledge Organization* 41: 393-409.

Gnoli, Claudio. 2004. "Naturalism vs. Pragmatism in Knowledge Organization." In *Knowledge Organization and the Global Information Society: Proceedings of the Eighth International ISKO Conference, 13-16 July 2004 London, UK, ed. Ia C.* McIlwaine. Advances in Knowledge Organization 9. Würzburg: Ergon, 263-68.

Gnoli, Claudio. 2008. "Ten Long-Term Questions in Knowledge Organization." *Knowledge Organization* 35:137-49.

Gnoli, Claudio. 2011. "Ontological Foundations in Knowledge Organization: The Theory of Integrative Levels Applied in Citation Order." *Scire* 17: 29-34.

Guimarães, José Augusto Chaves. 2017. "Slanted Knowledge Organization as a New Ethical Perspective." In *The Organization of Knowledge: Caught Between Global Structures and Local Meaning*, ed. Jack Andersen and Laura Skouvig. Studies in Information. Bingley: Emerald Publishing, 87-102.

Guimarães, José Augusto Chaves, Suellen Oliveira Milani and Fabio Assis Pinho. 2008. "Aspectos éticos em organização e representação do conhecimento (ORC): uma análise preliminar de valores e problemas a partir da literatura internacional da área." *Encontros Bibli: revista eletrônica de biblioteconomia e ciência da informação* 25: 124-35. doi:10.5007/1518-2924.2008v13n25p124

Hjørland, Birger. 1992. "The Concept of 'Subject' in Information Science." *Journal of Documentation* 48: 172-200.

Hjørland, Birger. 2002a. "Domain Analysis in Information Science: Eleven Approaches Traditional as well as Innovative." *Journal of Documentation* 58: 422- 62.

Hjørland, Birger. 2002b. "Epistemology and the Socio-Cognitive Perspective in Information Science." *Journal of the American Society for Information Science and Technology*, 53: 257-70.

Hjørland, Birger. 2003. "Fundamentals of Knowledge Organization." *Knowledge Organization* 30: 87-110.

Hjørland, Birger. 2008. "What is Knowledge Organization (KO)?" *Knowledge Organization* 35: 86-100.

Hjørland, Birger. 2009. "Concept Theory." *Journal of the American Society for Information Science and Technology* 60: 1519–36.

Hjørland, Birger. 2012. "Knowledge Organization = Information Organization? "In *Categories, Contexts and Relations in Knowledge Organization: Proceedings of the Twelfth International ISKO Conference 6-9 August 2012 Mysore, India*, ed. A. Neelameghan and K. S. Raghavan. Advances in Knowledge Organization 13. Würzburg: Ergon Verlag, 8-14**.**

Hjørland, Birger and Albrechtsen, Hannah. 1995. "Toward a New Horizon in Information Science: Domain Analysis." *Journal of the American Society for Information Science* 46: 400-25.

Olson, Hope. A. 2002. *The Power to Name: Locating the Limits of Subject Representation in Libraries*. Dordrecht: Kluwer.

Rafferty, Pauline. 2001. "The Representation of Knowledge in Library Classification Schemes." *Knowledge Organization* 28: 180-91.

Ranganathan, S. R. 1931. *Five Laws of Library Science*. Madras: Madras Library Association.

Ranganathan, S. R. 1973. *Documentation: Genesis and Development*. Sarada Ranganathan Endowment for Library Science Series 3. New Delhi: Vikas.

Ranganathan, S. R. 1967. *Prolegomena to Library Classification,* 3rd ed. Ranganathan Series in Library Science 20. Bombay: Asia Publishing House.

Richardson, Ernest Cushing. 1901. *Classification, Theoretical and Practical: Together with an Appendix Containing an Essay Towards a Bibliographical History of Systems of Classification*. New York: Charles Scribner's Sons.

Sayers, W.C. Berwick. 1915. *Canons of Classification: Applied to the Subject, the Expansive, the Decimal and the Library of Congress Classifications*. London: Grafton.

Shera, Jesse. H. 1980. "Sobre biblioteconomia, documentação e ciência da informação." In *Ciência da informação ou informática?*, ed. Hagar Espanha Gomes. Ciencia da Informacao.Rio de Janeiro: Calunga, 91-105.

Smiraglia, Richard P. 2012. "Universes, Dimensions, Domains, Intensions and Extensions: Knowledge Organization for the 21st century." In *Categories, Contexts and Relations in Knowledge Organization: Proceedings of the Twelfth International ISKO Conference 6-9 August 2012 Mysore, India*, ed. A. Neelameghan and K. S. Raghavan. Advances in Knowledge Organization 13. Würzburg: Ergon Verlag, 1-7.

136   Knowl. Org. 45(2018)No.2

A. E. Arboit. Knowledge Organization: From Term to Concept, From Concept to Domain

Soergel, Dagobert. 1971. *Dokumentation und Organisation des Wissens: Versuch einer methodischen und theoretischen Grundlegung am Beispiel der Sozialwissenschaften.* Ordo Politicus 13. Berlin: Duncker & Humblot.

Whitley, Richard. 1974. "Cognitive and Social Institutionalization of Scientific Specialties and Research Areas." In *Social Processes of Scientific Development*, ed. Richard Whitley. London: Routledge and Kegan Paul, 69-95.