Book Reviews

Edited by Melodie J. Fox

Book Review Editor

Wissensorganisation: Entwicklung, Aufgabe, Anwendung, Zukunft by Ingetraut Dahlberg. Würzburg: Ergon Verlag, 2014, 175p. ISBN 978-3-95650-065-7, €28.

The Elements of Knowledge Organization by Richard Smiraglia. Cham: Springer, 2014, 101p. ISBN 978-3-319-09356-7, US$109.

1.0 Introduction

Whenever eminent scholars of a scientific community simultaneously present their book-length introductions to the field, the time has come for self-reflection and for asking a seminal question: What is it all about?

In the fall of 2014, two monographs on the foundations of knowledge organization as a field of study were published, namely, *Wissensorganisation–Entwicklung, Aufgabe, Anwendung, Zukunft* (*Knowledge Organization–Development, Task, Application, Future*) by Ingetraut Dahlberg, the founder of the International Society of Knowledge Organization (ISKO), as well as *The Elements of Knowledge Organization* by Richard Smiraglia, the editor-in-chief of the journal *Knowledge Organization.*

In his introduction, Smiraglia emphasizes the importance of perspective by presenting some photos of an ancient ruin-like palace taken from different angles and with different levels of detail. Each perspective is necessarily limited to a particular stance within a plethora of possible viewpoints. That is as true for tourists as it is for scientists or philosophers. According to Smiraglia, this challenge of multiple perspectives illustrates the work in knowledge organization, a discipline characterized not only as a bridge across different fields of research but as itself the province of different philosophical points of view.

The critical role of viewpoint also becomes evident if one compares the two approaches presented in the new books by Smiraglia (2014) and Dahlberg (2014b). At first glance, both of them treat some very similar topics, including the history of knowledge organization (KO), the typology of knowledge organization systems (KOS), or the crucial role of concept theory and semiotics as a theoretical foundation for any conceptual ordering system. Nevertheless, both approaches differ significantly in their philosophical point of view. This paired book review will focus on the authors' particular understandings of knowledge organization and the implications for the direction of future research questions.

2.0 What is Knowledge Organization?

The *terminus technicus* "knowledge organization" originates from a small German research group around Dahlberg in the 1970s, which in turn refers to Henry E. Bliss's (1929; 1933) use of the phrase "organization of knowledge" in two titles of his books and the fact that *avant la lettre,* the activity of organizing human knowledge in a systematic way, dates back to ancient times.

Dahlberg's understanding of knowledge organization and its basic elements is already laid out in her dissertation *Grundlagen universaler Wissensordnung* (*Foundations of Universal Organization of Knowledge*) in which the German term "Wissensordnung" (knowledge order) is used to describe the conceptual ordering of human knowledge, even though for the English translation the less ambiguous term "knowledge organization" is preferred as it is established internationally today (Dahlberg 1974; 2006; 2014a). For Dahlberg, "knowledge" simply means that which is known and "organization" means the activity of constructing something according to a plan. The best way to understand the organization of knowledge, according to Dahlberg, is to analyze its core units and elements, that is, concepts and their characteristics. Her concept-theoretical methodology is intended to provide a basis for any kind of KOS, but the main field of interest of her life-long research and the explicit focus of her recent book is the universal classification. As an initial orientation, Dahlberg (2014b, 57) offers a useful disambiguation of at least six meanings of the term "classification":

1. The final system
2. The process of class-building
3. The result of class-building
4. The process of allocating entities to classes
5. The result of allocating entities to classes
6. The study of classification

Occasionally, Dahlberg equates the study of classification with knowledge organization, although in other works

she emphasizes the broader meaning of the latter, including not only the methods of classifying and classing, but also virtually all ways in which knowledge can be understood, described, represented, or organized (Dahlberg 2006; 2014a).

In opposition to the tendency of library and information science (LIS) to subsume knowledge organization, often labeled as information organization, as a subdiscipline beside information retrieval, information management, or information behaviour (Broughton et al., 2005; Rowley and Hartley, 2008; Taylor and Joudrey, 2008; Pattuelli 2010; Bawden and Robinson, 2012; Stock and Stock, 2013), Dahlberg considers KO as a multi-, inter-, and transdisciplinary field originating from the science of science, but not yet fully established as a discipline on its own right (Dahlberg 2011; for a similarly broad but far from identical approach see Glushko 2013).

As Smiraglia points out, Dahlberg must be considered as the leading figure with respect to the establishment of KO as the domain known today, since she has not only founded an international society and a periodical, the journal *Knowledge Organization*, formerly known as *International Classification*, but she has also established a publishing house, Indeks Verlag, now taken over by Ergon, as well as a bibliographic classification and a theoretical foundation for the field. Indeed, the strength of Dahlberg's new publication is to describe the history and institutionalization of knowledge organization as a field of study from an inside perspective with revealing autobiographical parentheses. In many respects, Dahlberg's book can be read as a retrospection on her dissertation project and the impact of its core ideas within the last four decades, in particular, the development of her own Information Coding Classification (ICC), published as a first version in 1982 and further developed up to the last decade (Dahlberg 2008).

At the same time, Dahlberg seems to take her own approach to KO for granted as uncontested. Unfortunately, there is not much discussion of alternative approaches or perspectives, a fact also indicated by the reference list in which one-third refers to her own writings. For example, Dahlberg claims that in the history of KO the periods of word lists, encyclopedias, and teaching systems are followed by the period of universal library classifications in which we still live, ignoring the fact that in KO discourse a shift has taken place from universal classifications based on modernist assumptions to domain-specific KOS's based on postmodernist assumptions (Hjørland 1997; Olson 2002; Mai 2011).

In contrast, Smiraglia's understanding of knowledge organization is well aware of the plurality of theoretical perspectives and seeks to embrace all of them rather than to privilege a particular point of view. Therefore, Smiraglia (2014, 4) begins by asking three foundational questions which seem to be important for any approach: first, "How Do I Know?" related to the study of knowing or epistemology; second, "What Is?" related to the study of being or ontology; and finally, "How Is It Ordered?" related to the heart of knowledge organization. According to Smiraglia, we cannot answer the latter question before we have elaborated on the former ones.

Smiraglia reviews four influential texts on KO theory including Dahlberg (2006) and the concept-theoretical approach, Wilson (1968) and the distinction between descriptive and exploitative approaches to recorded knowledge, Svenonius (2000) and the analysis of different sets of documents and bibliographic languages, and Hjørland (1997) and the widening of KO's scope to the influence of and the impact on the social dimension of knowledge. Although Smiraglia concedes that there is not yet a fully developed theory of KO, he highlights some milestones in the progress of theory-building. The specific elements of KO, according to Smiraglia, are knowledge organization systems (e.g., typologies, taxonomies, classifications, thesauri, or formal ontologies), metadata for document description, and the methodology of domain analysis, whereas the core elements of KO are epistemology and ontology, which is why the importance of philosophy is emphasized.

3.0 Philosophical Underpinnings

On one hand, ontology is the branch of philosophy that is concerned with the distinction of existence and non-existence, or the inherent properties of entities. Therefore, Smiraglia considers ontological questions closely related to class-building in terms of inclusion and exclusion based on likeness. On the other hand, epistemology is the branch of philosophy that is concerned with the influences and constraints of human knowledge. As in a recently edited book (Smiraglia and Lee 2012, reviewed in *KO* 42.2), Smiraglia emphasizes the cultural frames of knowledge and refers to, among others, Michel Foucault's archaeology of knowledge, to Edmund Husserl's transcendental phenomenology, to Wittgenstein's philosophy of language, or to Charles S. Peirce's and Ferdinand de Saussure's semiotic theories. All of these thinkers demonstrate in different ways that the epistemological dimension is crucial for human understanding of being, and, therefore, for the organization of phenomena as human knowledge. In general, Smiraglia (2014, 28) follows the turn from universal solutions to "post-modern approaches to classification" as domain-specific, socially relevant KOS's. Therefore, domain analysis is considered as the core methodology for KO using both quantitative (e.g., citation analysis, co-word analysis, network analysis) and qualitative (e.g., cognitive work analysis) techniques. In the face of the ambiguous

use of the term "domain" as a discourse community, discipline, invisible college, or work ecology, Smiraglia (2014, 85) offers the following definition:

> A domain is a group that shares an ontology, undertakes common research or work, and also engages in discourse or communication, formally or informally.

In other words, Smiraglia seems to adopt the metatheoretical view, commonly referred to as social epistemology, which according to Hjørland's influential typology of theories of knowledge is related to historicism or pragmatism rather than empiricism and rationalism. Smiraglia's use of terminology, however, differs in some important ways. For example, Smiraglia (2014, 21) states that "pragmatism is exactly what it sounds like, derived from assumptions about the best means to an end" and considers classificationists like Antonio Panizzi, Charles Ammi Cutter, or Melvil Dewey as pragmatists due to the fact that they provide pragmatic tools for knowledge organization (Smiraglia 2002). Accordingly, the progress of KO theory follows the path from pragmatism to empiricism as applied, for example, in quantitative domain analysis. But this seems to be an upside-down view of Hjørland's (2008; 2013) original typology in which pragmatism does not simply mean to be pragmatic but refers to a genuine theory of knowledge emphasizing that human knowledge is always situated in a socio-cultural context or practice and discourse community related to specific activities based on explicit or implicit goals and values. Following this view, knowledge cannot be neutral and objective as often assumed by the historically preceding empiricism or rationalism but is context-dependent and theory-laden, a fact hardly acknowledged by Panizzi, Cutter, or Dewey. Therefore, pure quantitative or informetric techniques of domain analysis, as favored by Smiraglia, seem not sufficient to reflect the social epistemological stance that is at least implicit in Smiraglia's approach (Hjørland 2008). Even though one might argue with Hjørland against Smiraglia that the progress of KO theory follows the path from empiricism/rationalism to pragmatism/historicism, Smiraglia is certainly right in his emphasis to consider all of these metatheories as useful and, to some extent, complementary contributions to theory-building in KO.

In contrast to Smiraglia's reflection on different epistemological stances, Dahlberg adopts an explicit ontological approach and refers particularly to the philosophies of James Feibleman and Nicolai Hartmann. Dahlberg considers the mostly monohierarchical and inflexible discipline-based universal classifications (e.g., *Dewey Decimal Classification*, Universal Decimal Classification, Library of Congress *Classification*, Bliss Classification, Colon Classification, or the Russian Library-Bibliographical Classification) as an outdated approach from the nineteenth century and proposes the Information Coding Classification as an alternative universal system based on a comprehensive, faceted classification of knowledge fields that are constituted by the combination of nine main classes with nine facets. The main classes are derived from ontic structures in terms of levels of being (Dahlberg 2008, 167):

1. Form and structure area
2. Energy and matter area
3. Cosmo and geo area
4. Bio area
5. Human area
6. Socio area
7. Economic and technology area
8. Science and information area
9. Culture area

According to Dahlberg, these main classes present integrative levels, that is, a hierarchy in which the higher levels transcend but include the lower levels; whereas, the following nine facets indicate constitutive aspects (1-3), characteristic manifestations (4-6), and environments (7-9) of particular knowledge fields (Dahlberg 2008, 167):

1. Theories, principles
2. Object, component
3. Activity, process
4. Property attribute
5. Persons or continued
6. Institutions or continued
7. Technology and production
8. Application and determination
9. Distribution and synthesis

Leaving aside the possibly overemphasized postmodern critique of universal solutions, the basic idea to create a non-arbitrary and comprehensive schema in order to cover all possible knowledge fields seems quite promising for the advancement of universal classifications. One might question, however, whether the main classes and the facets are sufficiently coherent organizing principles as demanded by such an ambitious project.

On one hand, the main classes appear not to present consistent integrative levels, a concept that, against Dahlberg's claim, even Hartmann explicitly rejects and certainly does not apply to the human-related domains (Dahlberg's levels 5-9). Therefore, the ICC's basic schema does by no means solves the problems once left open by the Classification Research Group in the 1960s (Kleineberg 2013). On the other hand, the facets are used in a rather vague and

underdetermined way, as even Dahlberg has to admit. The first three facets, for example, are derived from the philosophy of science, which states that scientific disciplines are constituted by genuine theories, objects, and methods, but Dahlberg's (2014b, 80-100) use of terminology tends to blur the boundaries of these concepts. It remains unclear, for instance, in which way documentology (second facet) can be considered as an object, or information technology (third facet) as a method of information science, as the recourse to the philosophy of science suggests.

The obvious difference between Smiraglia's multiperspectival epistemology and emphasis on domain analysis and Dahlberg's mono-perspectival ontology and endeavor for a universal solution reflects also different understandings of the basic units of a KOS, that is, the notion of concept.

4.0 Concept Theory and Semiotics

Both authors agree that since knowledge organization is concerned with conceptual ordering systems, theories of language or signs are of utmost importance. While Dahlberg presents her own concept theory, Smiraglia refers particularly to Saussure's semiology and Peirce's semiotics. According to Dahlberg, only a well-defined concept should be considered as a knowledge unit for KOS's. Her so-called referent-oriented analytical approach claims that a concept is always an effigy of something, that is, a referent in a broad sense including, for example, a concrete object, an abstract idea, or a proposition. Furthermore, a concept is considered as constituted by three elements: the referent, the designation (i.e., a word, name, or verbal expression), and the essential characteristics which can be derived analytically by determining correct and true predicates about the referent in terms of a definition.

As Smiraglia rightly suggests, Dahlberg's concept theory is closely related to semiotics as the study of signs, since even concepts might be considered as signs. Indeed, her concept triangle appears to be quite similar to the semiotic triangle commonly used in information science (Stock and Stock, 2013). But while Dahlberg would agree with Saussure that the relation between the "signifier" (Dahlberg's designation) and the "signified" (Dahlberg's referent with essential characteristics) is an arbitrary one, she would probably disagree with Peirce's dynamism and mutability of the "object" (Dahlberg's referent) itself which, as described by Smiraglia, might be differently perceived within the process of an unlimited semiosis depending on the particular context. Although Dahlberg concedes that a concept might be defined differently, her requirement of "correct" and "true" predicates for a referent seems to imply that the essential characteristics are inherent properties of the referent and that, in principle, conceptual ordering systems due to their intrinsic relations are more or less self-organizing and, therefore, independent of particular interpretations.

This semantic theory of meaning is challenged, however, by pragmatic theories of meaning as proposed by Peirce or the later Wittgenstein (Andersen and Christensen 2001; Friedman and Thellefsen 2011). According to these views, also stressed by Smiraglia, the meaning of a word depends on its use in language. Surprisingly, even Dahlberg claims to rely on Wittgenstein's use theory, ignoring the fact that his notion of language game explicitly rejects a mere definition (Dahlberg's essential characteristics) as the meaning of a linguistic expression. Wittgenstein's concept of family resemblance refers to a net of similarities in which not a single feature is considered to be essential.

The decisive point is that Dahlberg's concept theory, which is one of at least five major approaches, as summarized by Stock and Stock (2013), seems not well equipped to deal with different points of view. As a consequence, the fields of knowledge in her universal ICC represent only one particular perspective and tend to marginalize or exclude alternative views. For example, not everyone might agree that KO as a field of knowledge is related to the science of science instead of information science, and even less that Christian religion is privileged over other forms of religion.

In contrast, the strength of Smiraglia's book is to create awareness for the crucial role of context-dependent interpretation of signs or concepts and even works (see also Smiraglia 2001; Smiraglia and Van den Heuvel 2013). At the same time, Smiraglia's embrace of multiple perspectives, as welcome as it is, tends to underestimate the often cited postmodern condition of a plurality of divergent epistemological stances. For example, how could Foucault's rejection of the epistemic subject be integrated with Husserl's dimension of perception originating from the ego? Likewise, how could Dahlberg's notion of concept based on a definition of essential characteristics be integrated with Hjørland's notion of concept as a language game based on family resemblance? Maybe the metaphor of multiple facets of a diamond misses the point and might be better illustrated by a diamond smashed into fragments. In this case, one might doubt that Smiraglia's hint to the concept of "boundary object," as useful as it might be as a shared reference point, is already sufficient to glue the fragments of the diamond into a mosaic gem.

5.0 Conclusion

Since both authors differ in their theoretical, metatheoretical, and methodological approaches, one might expect that their proposals for the direction of future research questions in the field of knowledge organization differ as well.

Indeed, Dahlberg's ontology-oriented "modernist" approach comes to the conclusion that universal classifications such as her Information Coding Classification need to be developed further towards a kind of meta-frame in the sense of an upper ontology or switching device that function as a stable foundation for the translation between terminologies of different KOS's. In opposition, Smiraglia's more epistemology-oriented "postmodernist" approach comes to the conclusion that KO research should develop better analytical tools for the investigation of the diachronic dimension or the semantic evolution of a domain across time, and the synchronic dimension or the interoperability between neighboring domains.

In this respect, both approaches are valuable contributions to theory-building in knowledge organization, even though, as pointed out by Gnoli (2008), the open question remains in which way ontology-oriented and epistemology-oriented approaches might be integrated in order to benefit from their possibly complementary character.

Note

This review essay should not end without some final remarks on the editing of the two books since even a distant and selective reading cannot overlook the fact that the quality of these contributions, to some extent, abandons the standard for academic publishing. To begin with, the typing errors in both works, particularly in Dahlberg's book, are significant to such a degree that the reader might doubt that the publishing houses Ergon and Springer paid enough attention to the process of copy editing. Occasionally, the unintended semantic displacements of terms are misleading, as in Dahlberg's (2014b, 44) use of "counterfactual" (*kontrafaktisch*) instead of "contradictory" (*kontradiktorisch*), and sometimes simply wrong as Smiraglia's (2014, 23) mix-up of the terms "signifier" and "signified" which are correctly described earlier at the very same page. Likewise, in Dahlberg's book, the formatting style for references or index entries, for example, is not always consistent, while Smiraglia's book has no index at all.

Furthermore, the graphical material used in both publications is often of low resolution or poor scan quality. Most notably, Smiraglia's figures do not always fulfill their purpose for several reasons. First, the font size is often hard, sometimes impossible, to read. Second, all graphics are printed in black and white, although many diagrams uses different colors for discrimination and in one particular case a figure is explicitly intended to illustrate different colors of marbles as criterion for class-building. Third, the informational value of some figures seems questionable, for example, if three roughly sketched diamonds are presented in order to illustrate the fact that diamonds have facets. This kind of redundancy is even topped by presenting the same figure of a domain-specific ontology twice in different chapters.

Another questionable decision by the publishing houses is the general label under which each work is published. On one hand, Dahlberg's book is presented as the third volume of Ergon's series *Textbooks for Knowledge Organization*—after Robert Fugmann's (1993) *Subject Analysis and Subject Indexing* and Hemalata Iyer's (1995) *Classificatory Structures*—in spite of Dahlberg's introductory statement that her work is not at all intended to be a textbook; instead, she refers to Kiel and Rost (2002) as a prime example. On the other hand, Smiraglia's book is presented under the label of computer science, as the back cover informs us, even though it neither deals with nor directly addresses this particular field.

In general, the editing of both works is not what one should expect from scholarly publications, in particular, if a small book of one hundred pages is offered for more than 100 US dollars. We should not blame the authors, maybe we should not blame the publishing houses either, since these two books might exemplarily indicate a much more systemic problem in the field of academic publishing. This is not the place to discuss this issue in any detail but it might be worth to note that if the pre-publication review process reveals some inadequacies, then the post-publication review process becomes even more important and might be forced to be more critical than initially intended.

Michael Kleineberg
Berlin School of Library and Information Science (BSLIS)
Humboldt-Universität zu Berlin, Germany
michael.kleineberg@ibi.hu-berlin.de

References

Andersen, Jack and Frank S. Christensen. 2001. "Wittgenstein and Indexing Theory." In *Proceedings of the 10th ASIS SIG/CR Classification Research Workshop*, edited by Hanne Albrechtsen and Jens-Erik Mai. Advances in classification research 10. Medford, NJ: Information Today, 1-21.

Bawden, David and Lyn Robinson. 2012. *Introduction to Information Science*. London: Facet Publishing.

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

Bliss, Henry E. 1933. *The Organization of Knowledge in Libraries*. New York: Wilson.

Broughton, Vanda, et al. 2005. Knowledge Organization. In *European Curriculum Reflections on Library and Information Science Education,* edited by Leif Kajberg and Leif Lørring. Copenhagen: Royal School of Library and Information Science, 133-48.