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FOUNDATIONS AND MOVING FORWARD: THE HORIZONS AND THE FUTURE OF RESEARCH IN KNOWLEDGE ORGANIZATION

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INTRODUCTION

In the context of the history of knowledge organization, we have attempted to intellectualize the methods and assumptions behind the meaningful, but everyday, work of classification. This has, over the years, been expanded to other traditional forms of representation and organization, like cataloguing. Further, advances in technology and the technological context have precipitated expansions in this field. These are not limited to the contemporary linked open vocabulary environment, but also include questions around data intensive discovery, reproducibility, critical algorithm studies, and the quantitative self. Today, the well-intellectualized concerns of traditional knowledge organization are reborn in this new context at the horizon of new technologies of inquiry, knowledge production, and fragmentations of storage.

What then constitutes the foundations of contemporary knowledge organization? What changes in the context of new technologies, contemporary knowledge production, and the increased fragmentation of information storage? In this paper we explore the way in which constructs and methods, developed in the past 140 years of knowledge organization work, form the foundation of our contemporary thinking in knowledge organization. We then move from that to discuss what we must do, in our discipline, to move forward with research fronts, innovation, and inquiry.

FOUNDATIONS

Elsewhere, I have commented on layers of classification theory (Tennis, 2015; Tennis 2016). In these conversations, I lay out what I see as foundational issues in the design, implementation, and evaluation of classification schemes. In these texts I identify three layers: foundational, first, and second-order classificatory processes. Foundational classification theory deals with philosophical and definitional issues of classification.

> "In foundational classification theory, the nature of the process and the products of classification are called into question. Examples of this kind of theory production are primarily conceptual papers that argue for a perspective. We might point to early examples of this work by Richardson (1901/1964) and Broadfield (1946), who were intellectualizing a practical work mode in libraries. This work is alive and well today with many arguments for particular philosophical stances toward classification (e.g., Hjørland and Pederson 2005; Lee 2011), or arguments for particular ontological understanding of concepts in the field (Furner 2009)."

Likewise, the foundations for knowledge organization lie in the philosophical work that precedes the description and representation of documents. In a Dahlberg conception: we must understand what we mean by concepts (or as she often said, knowledge units), and the way we order them (cf., Dahlberg 2014). If we follow Smiraglia (2014), we will also need to comprehend what is meant by document, work, and author or even more broadly the entities we will describe in order to access knowledge.

Examples of foundational work:

Definitional work, especially if it is contested definitional work.
E.g., what is a knowledge unit? How do we know it when we see it? (cf., Hjørland, 2009).

Taxonomic work, especially if it provides theoretical advancement.
E.g., What is the taxonomy of KOS (cf., Sousa, R. R. et. al., 2010).

Mission work, especially if it outlines the rationale for the field.
E.g., What do we mean by identity in knowledge orgnization? (cf., Furner, 2009).

Exploration based on applied or first order work, like Ranganathan's *Abstract Classification* (1967).

FIRST ORDER KNOWLEDGE ORGANIZATION WORK

The first order of knowledge organization research consists of discussions on how to build knowledge organization systems. This also contains work that I have called warrant studies, that is citation analysis, domain analysis. These are instrumental to building out systems, but in the majority of cases, these are examples of applied knowledge organization.

As I said in the context of classification theory, "Exemplar literature in this area is the work of S. R. Ranganathan (1937; 1957; 1967), the CRG, and contemporary summaries of design patterns and discussions of semantic web work (cf., Frické 2012; Hlava 2014)," (Tennis, 2015 p. 245). I currently have a student engaged in domain analysis in the context of neurodiversity and autism (Zoloymi and Tennis, 2017).

In the context of our work we are not necessarily advancing the research agenda of knowledge organization to better understand how to design and critique knowledge organization systems. We are identifying terms and how they relate to identity, caregiving, and problem solving. It would be possible to feed this work into foundational work in KO, but, in my opinion, on its own, this domain analysis does not advance KO.

SECOND ORDER KNOWLEDGE ORGANIZATION WORK

As I said above, research in second order knowledge organization asks what we do with knowledge organization systems once they are built. Here want want to know how systems change over time, how they interoperate with other systems, how modeling affects KOS, and where foundational issues conflict in the interpretation of change, interoperation and modeling. Interoperability is a well established literature in knowledge organization, at least with regard to thesauri. We have an evolving literature that is looking at KOS interoperability more broadly (Zang and Chan, 2004).

The modeling effect is one that is also emerging as a well-documented space because of semantic web requirements. For example, Panzer and Green sought clarity about the nature of hierarchical relationships when they moved to encode the Dewey Decimal System in the Web Ontology Language (OWL) (Green and Panzer, 2010).

My own work on how indexing languages change over time is a second order activity in my view.

HORIZONS OF KNOWLEDGE ORGANIZATION WORK

And it seems to me that the horizons of knowledge organization research can be pulled from the work that can be labeled second order. Even with well established fields like interoperability, we still do not have all the answers. And what is even more fruitful for those of us, like myself, that are more theoretically inclined, is to contemplate the relationship between the definitional, taxonomic, mission, and exploration work that will influence, philosophically, the work going on in the second order. That is, how does our apprehension of concepts, language, and the entities we care about in knowledge organization change if our philosophy surrounding them changes? This is an exciting horizon for knowledge organization, especially with our long history.

A final note on some of the externalities that affect knowledge organization. We do have foundational practices and our own theoretical conversations that continue within the field, but the horizons of knowledge organization must also reckon with things outside the field.

In my thinking knowledge organization must deal with metadata for data driven decisions, quantified self and classification; and the disaggregation, reconfiguration, and reinvention of description. The order of the disciplines, the order of knowledge is not stagnant, nor does it admit to a single description. Data, as we are learning more and more, is out us, not about knowledge, and yet once reified, it admits to description and ordering, not unlike documents. What will we make of this development?

CLOSING

Great thinkers have come before us, and provided us with a rich literature. We are standing on the shoulders of giants. We must take that responsibility, for their work, their contributions, to our hearts. We must do good work that extends their mission to better understand how best to design, study, and critique the processes of organizing and representing documents that societies see as worthy of preserving.

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