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Influence of metatheoretical research in Knowledge Organization

Abstract
Metatheory, in general, is the analysis of theory and there are at least four types of metatheory: Metatheorizing in order to better understand the theory (Mu); metatheory as a prelude to the production of a new theory (Mp); metatheorizing to produce a perspective that overarches some part or all the theory (Mo) and; metatheorizing to evaluate a theory (Ma). This paper proposes the analysis of the influence of metatheoretical investigations, published in the journal Knowledge Organization, on the KO domain. The theoretical discourse of KO regarded to metatheory is shaped it seeks to support the understanding of its different approaches in the KO domain. The citations to metatheoretical investigations are collected from the databases: Web of Science, Scopus and Google Scholar. The intellectual influence from metatheoretical investigation to the citing papers is analyzed considering the possible errors regarded to citation analysis.

1. Introduction
Metatheory is a common research method in Information Science (Metcalfe 1957; Zhao 1991; Svenonius 1992; Vakkari and Kuokkanem 1997; Cronin 1998; Hjørland 1998; Vickery 1998; Olson and Schlegl 2001; Tennis 2005, 2008; Dousa 2010; Tennis 2015; Tognoli 2015; Araújo, Guimarães, and Tennis 2017). According to Tennis (2008) this research has in common the intention to provide a narrative about theory.

A significant part of Knowledge Organization (KO) research is regarded to the epistemological, methodological and theoretical issues. Hence, we consider metatheory, while not always explicitly acknowledged as a method, it is fundamental to understand the foundations, the development of research, and the influence from other domains on KO.

Araújo et al. (2017) present an analysis of five metatheoretical studies (Tennis (2008); Dousa (2010); Samuelsson (2010); Castanha e Grácio (2014) and, Tennis (2015)) through Ritzer’s metatheory perspective. As a next step, we seek to analyze the influence of metatheoretical investigations published in the journal Knowledge Organization on the KO domain, in this paper. This way, we seek to shape the theoretical discourse of KO regarded to metatheory and to support the understanding of its different approaches in the KO domain.

2. Metatheory
"Metatheory, in general, is the analysis of theory", (Tennis 2015, 214). Metatheory comes from sociology and it is meta-analytic work. We agree with Hjørland that “philosophical knowledge has been neglected in IS and the epistemological and metatheoretical views have seldom been formulated or analyzed”. That is why, metatheory should be applied more often to knowledge organization (KO) research, “to
raise its theoretical and philosophical level, the better to understand the limitations and possibilities of different approaches” (1998, 620).

“Metatheory should be specified into unit theories by placing them in concrete social settings. One can say that a concept in a metatheory consists of a range of variation of meanings fixed by the definition of the concept,” (Vakkari and Kuokkanem 1997, 453). Furthermore, we can state that metatheory is “the set of assumptions presupposed by any more or less formalized body of assertions” (Bullock 1988).

Metatheory “presents all the situations or states of affairs that can be expressed within the logical possibilities of the conceptual apparatus of a theory” (Vickery 1998, 453). Following this thought, Vickery points out that to achieve success through metatheoretical work, it is important to make connections between the presuppositions that already exist in the domain, to show the weaknesses, and to propose alternatives (1998, 458).

In this research, we employ Ritzer’s metatheory (1990, 1991a, 1991b, 1992, 2001). Ritzer (1990, 3) “believes that much metatheoretical work has been done under a wide range of other headings – sociology of sociology, sociology o science, sociology of knowledge, history of sociology, and most notably, as an integral part of sociological theory”.

Zhao (1991) examines recent developments in meta-study in sociology which involves metatheory, meta-method, and meta-data-analysis. The author states that metatheory is the study of extant theory and it is probably the most fully developed branch of meta-study in sociology.

Ritzer (1991a) presents three types of metatheoretical work: - Metatheorizing in order to better understand the theory (Mu). "Mu is concerned more specifically, with the study of theories, theorists, communities of theorists, as well as the larger intellectual and social contexts of theories and theorists". It also offers systematic methods of understanding, evaluating, criticizing and, improving extant theory. - Metatheory as a prelude to the production of a new theory (Mp). It entails the study of extant theory in order to produce new theory. - Metatheorizing to produce a perspective that overarches some part or all the theory (Mo). The study of theory is oriented to the goal of producing a perspective, one could say a metatheory, that overarches some part or all the sociological theory. Mo involves a systematic study of the theory, it derived from theory.

A fourth type of metatheory was presented by Colomy (1991, 269), the idea of metatheorizing to evaluate a theory (Ma). "Ma refers to metatheorizing oriented toward devising and applying explicit, universalistic criteria to adjudicate the competing claims issued by rival social scientific traditions".

There are some critiques to metatheoretical studies. For Ritzer (1991a) scholars conduct metatheory unconsciously, but it would be more productive if metatheorizing occurred in a more self-conscious way. Vickery (1998) and Hjørland (1998) agree that
many metatheorizing works remain at too general level.

We could confirm those critiques in our study on the types of metatheoretical studies in the KO domain. (Araújo, Guimarães, and Tennis 2017). And, because we aim to explore the use of metatheory in KO, we propose this research. We present an overview of the influence of metatheoretical research on the KO domain.

3. Influence of metatheory in Knowledge Organization

There are many reasons authors cite (Brooks 1986). The authors may or may not agree with the argument from the citation they are using. But, by citing a work, authors acknowledge it and give it credit. Points of view, statements and, perceptions are connected and the author adds his own thoughts and ideas through citation. By doing so, the researcher creates connections between different researches and authors.

We acknowledge that there are some limitations in the analysis of the intellectual influence of citations in a domain. We agree with Zucherman (1987, 330) that "citations can be used as approximate indicators of influence for aggregates of authors and papers [...]". Self-citation, incompleteness, bias in favor of elite scientists, under-citation and over-citation of fundamental scientific work are some examples of errors that underestimate and misrepresent the intellectual influence of citations in a scientific work.

We collected the papers’ citations to the metatheoretical investigations published in the journal Knowledge Organization to analyze the influence of metatheoretical investigations on the KO domain. (Figure 1).

![Figure 1: Citations to metatheoretical investigation in databases](image-url)

We analyze citations indexed in Web of Science, Scopus and, Google Scholar where we identify some kind of metatheoretical influence. Self-citations are also considered. Even though self-citation is not conventional in this kind of study (because the author cannot influence himself), we include self-citation here to analyze how authors are using their own work on the same subject (Figure 1).

The citing/cited network of Web of Science is presented in the Figure 2 and, it is followed by the discussion regarded to the network.
Castanha and Grácio (2014) have one citation in Web of Science from Hilário, Tognoli, and Grácio (2016). The authors apply a metatheoretical investigation to the theme scientific collaboration. We identify a self-citation here, since Grácio is a coauthor in the citing and cited research. The authors cite the concept of metatheory presented by Castanha and Grácio (2014) to support their argument on the importance of metatheoretical investigations in information science.

Tennis (2008) receives eleven citations in Web of Science and we find different approaches in citations to his study. Tognoli (2015) cites Tennis (2008) as one of the authors that studies metatheor in KO.

Observing the limitations of intellectual influence through metatheory, we can see some kind of influence from Castanha e Grácio (2014) to Hilário, Tognoli, and Grácio (2016) and from Tennis (2015) to Tognoli (2015).

The citing/cited network of Scopus is presented in the Figure 3 and, it is followed by the discussion regarded to the network.
Castanha and Grácio (2014) have two citation in Scopus and, one of them is the same indicated in WoS (Hilário, Tognoli, and Grácio 2016). Lian et al. (2016) cite Castanha and Grácio (2014) when they describe domain analysis, since the authors establish a relation between bibliometric studies, metatheory and domain analysis.

Tennis (2008) has sixteen citations in Scopus and ten of them are the same from Wos. While addressing future research, Melgar Estrada (2011) cites Tennis’ (2008) work.

The author explains that Tennis (2008) presented a classification of KO research to the KO community which was situated in a metatheoretical framework. Melgar Estrada (2011) not only considers that the framework proposed by Tennis (2008) would be suitable to provide directions for future research on that subject. She also uses the framework to suggest some possible research themes on Topic Maps and KO. We can see the influence of Tennis’s metatheoretical research on Melgar Estrada’s work (2011), since she based part of her work on the classification created by Tennis (2008) using metatheory.

It is interesting that in another study that cites Tennis’ work (2008), Guimarães et al. (2014) state that domain analysis started to be studies through metatheoretical research. There is another citation to Tennis in that paper but it seems to refer to Tennis’ work published in 2003 since they cite the two axes of domain for domain analysis.

Castanha and Grácio (2014) study the bibliometric contributions to metatheoretical and domain analysis studies. They reflect on Tennis’ thoughts (2008) to show the importance of metatheory combined with domain analysis studies in the KO domain. We can observe the citation to that paper as foundational to support their argument. Hilário et al. (2016) do the same, since they also develop a metatheoretical study. They cite Tennis (2008) as one of the metatheoretical studies in KO and they also state the importance of applying metatheory and domain analysis together.
Melgar Estrada (2011), Castanha and Grácio (2014) and, Hilário, Tognoli, and Grácio (2016) were influenced by Tennis (2008) metatheoretical investigation as a foundational work on the use of metatheory.

The citing/cited network of Google Scholar is presented in the Figure 4 and, it is followed by the discussion regarded to the network.

Figure 4: Citing/Cited network (Google Scholar)

Source: Araújo; Tennis 2018.

Castanha and Grácio (2014) receives only one citation in Google Scholar, from Lian et al. (2016) as described before. Hjørland (2014) states that faced analysis should be considered a rationalist position and his argument was criticized by some authors, including Tennis (2008). Hjørland (2014) discuss Tennis’ argument that Ranganathan theory is not a strict rationalist stance, but more of a pragmatic, if not neopragmatic epistemic stance and method. And, in that study we can see the influence of metatheoretical study on the KO research.

There are two papers with self-citations from Tennis and in one of them the author only indicates Tennis (2008) study in the references. On the other hand, Tennis (2012) cite his (2008) work four times. Tennis (2012) explores two weights of language and action that bear down on KO researchers.

First, he presents the concept of KO from the (2008) study. Second, he develops his argument based on the forms of epistemology, theory, and methodology in KO and, following that, he presents an explanation on epistemology and epistemic stances.

Lastly, he discusses epistemic stance, methodological action and theoretical perspective in KO. He argues that it is possible to reflect on the weight of language and action in the context of KOS even there are competing theories of theory, what we consider in this study metatheory.
4. Conclusion

We present three citation networks created based on the citations to the metatheoretical investigation published in the journal Knowledge Organization. By analyzing those networks, we get to explicit facts like: - Tennis’ study on metatheory is the most cited, followed by Samuelsson and, Dousa; - Four papers (Dousa 2010; Castanha and Gracio 2014; Hilário, Tognoli, and Grácio 2016; Tognoli 2015) approach metatheory as a subject of the study.

Twelve of the papers analyzed in this study were published in the journal Knowledge Organization. Which demonstrates the strong influence of the journal in the domain. Most citations are related to the concept and discussion of key concepts in the KO domain. Some of them develop an argument and critique about the epistemological influence in KO research (Dousa 2010; Hjorland 2014; Szostak 2011).

Castanha, Grácio (2014) and Tennis (2008) studies were cited by other two metatheoretical studies, (Hilário, Tognoli, and Grácio 2016; Tognoli 2015). They use the citation to Castanha, Grácio (2014) and Tennis (2008) to support their argument and discussion on metatheory.

We can see the intellectual influence from Castanha, Grácio (2014) and Tennis (2008) on those new metatheoretical investigation. And, they have a specific influence on the others, probably, because they explicitly approach metatheory on the study.

The metatheoretical investigation does not influence only other metatheoretical investigation but support conceptual work like Melgar Estrada’s study (2011). The author uses the classification, created by Tennis (2008) through metatheory, to suggest some possible research themes on the subject of her research.

The self-citations analyzed in this research were basically used by the author to support the development of their research and continue the thoughts they presented in the original research.

Finally, we see some kind of intellectual influence through the citation analysis in the papers: Melgar Estrada 2011; Tennis 2012; Hjorland 2014; Castanha and Gracio 2014; Tognoli 2015; Hilário, Tognoli, and Grácio 2016; Hilário et al. 2017). We carefully consider in this research the possible errors related to intellectual influence through citation analysis.
References