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Between theory and method: the conceptual scope of Domain Analysis

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Abstract

This study investigates the conceptual scope of domain analysis within Information Science (IS) and Knowledge Organization (KO), starting from the premise that the concept has evolved from a social paradigm into a multifaceted methodological tool. The primary objective is to decompose, compare, and synthesize various definitions found in specialized literature using the grid method developed by Barité (2011). The analysis is grounded in seminal and contemporary texts by authors such as Hjørland and Albrechtsen (1995), Guimarães (2014), Smiraglia (2015), Hjørland (2017), Barité and Rauch (2022), and Barros (2023). The results reveal a transition from philosophical and paradigmatic definitions toward more instrumental approaches, converging on an understanding of domain analysis as a theoretical-methodological model aimed at describing and interpreting the discursive construction, circulation, and stabilization of knowledge within specific communities. It concludes that the use of the analytical grid allows for the harmonization of the term's polysemy, integrating epistemological, semantic, and empirical dimensions that strengthen the maturation of research in KO.

Keywords: Domain analysis. Information Science. Knowledge Organization.

1.0 Introduction

Information Science (IS) and Knowledge Organization (KO) have undergone major theoretical and methodological transformations throughout their development. One of the most significant shifts has been the transition from a model focused primarily on individual mental and cognitive processes to one concerned with the social, cultural, and discursive contexts in which information is produced, organized, and appropriated (Hjørland 2016, 2018). Within this broader movement, domain analysis emerged as a central proposal for grounding Information Science, information representation, and the construction of knowledge organization systems

(KOS) (Hjørland and Albrechtsen 1995; Hjørland 2017). Nevertheless, despite its wide adoption and relevance, the very concept of domain analysis has been formulated and interpreted in different ways by different scholars over time.

The present paper is conceived as a study proposal, intended to be presented to the scholarly community for discussion and further development in future research. Its main objective is to investigate the conceptual scope of domain analysis, using the grid method developed by Barité (2011) as an analytical tool to decompose, compare, and synthesize definitions expressed in the field's literature. The selection of texts followed a criterion of conceptual and definitional relevance rather than bibliographic exhaustiveness: priority was given to works that explicitly define domain analysis, synthesize its theoretical-methodological status, or mark key stages in the development of the concept in Information Science and Knowledge Organization. For this reason, the analytical core of the discussion is based on Hjørland and Albrechtsen (1995), Guimarães (2014), Smiraglia (2015), Hjørland (2017), and Barité and Rauch (2022), while texts by Barros (2023) were incorporated as contemporary contributions that expand the debate toward empirical mapping, archival knowledge organization, and discourse-oriented analysis.

2.0 Conceptual foundations and theoretical developments of Domain Analysis in Knowledge Organization

To understand the complexity of the concept, it is necessary to revisit the foundational bases and historical development of domain analysis. In a seminal article, Hjørland and Albrechtsen (1995) proposed domain analysis as a new horizon for Information Science, defining it essentially as a social paradigm. This view conceives IS as a social science and promotes a psychosocial and sociolinguistic perspective rooted in the sociology of knowledge and the sociology of science. The authors also characterized it as a functionalist approach, aimed at understanding the implicit and explicit functions of information and communication, and as a philosophical-realist approach, seeking the basis of information systems in factors external to users' subjective and individualistic perceptions. This initial formulation established domain analysis as an alternative theoretical position, one that displaced the axis of investigation from the individual to the discursive community.

As discussions in KO matured, other authors expanded and refined the concept by adding epistemological and methodological layers. For Smiraglia (2015), domain analysis consists of defining the conceptual knowledge base of a community. He positions it as a methodological paradigm within KO, whose purpose is to reveal the contours of held knowledge, whether in the form of live discourse or recorded documentation. In this sense, the emphasis falls on analyzing the elements of specific communities that share a common ontology or structured knowledge base. This pragmatic, ontology-oriented view reinforces the role of domain analysis as a practical tool for concept extraction and for modeling information retrieval systems.

In the Brazilian and Latin American context, these reflections have also acquired their own contours. Guimarães (2014) approached domain analysis as a fundamental methodological perspective in KO. In his view, it constitutes a remarkable approach for the characterization

and evaluation of science, insofar as it enables the identification of the conditions under which scientific knowledge is constructed and socialized. This understanding broadens the scope of domain analysis by connecting it strongly to metric studies, scientific communication, and the evaluation of knowledge flows in society. Later, Hjørland (2017) revisited the subject and synthesized domain analysis directly as a theory and an approach to IS and KO, one that focuses on the importance of knowledge about the subject matter itself. More recently, Barité and Rauch (2022) consolidated the term by defining it as the generic name given in KO to a set of methodologies, or methodological approaches, intended to design a map or conceptual representation of the structure of a knowledge domain.

This conceptual debate may be further enriched by considering recent contributions. In Barros and Laipelt (2021), domain analysis is operationalized as a procedure for mapping, thematically, semantically, and discursively, a corpus of KO research published in the journal Em Questão. In this case, domain analysis is not merely treated as a theoretical label, but as an empirical strategy for producing classificatory categories and organizing a corpus through thematic, epistemological, terminological, and discursive dimensions. In Barros (2023), the dialogue between Michel Pêcheux's discourse analysis and KO further broadens the conceptual reach of domain analysis, suggesting that discursive formations, ideological processes, and conditions of production may offer additional analytical depth for understanding domains. Finally, in Hjørland and Barros (2024), the comparison between domain analysis and facet analysis reinforces the need to clarify the theoretical and methodological status of domain analysis within KO, especially when it is mobilized alongside other methodological traditions.

Given this multiplicity of approaches—sometimes understood as a social paradigm, sometimes as a functionalist approach, a theory, a methodological paradigm, or a set of methodologies—a rigorous tool is needed to harmonize and systematize these definitions. At this point, the grid method proposed by Barité (2011) becomes especially relevant. As reconstructed by Barité, the method starts from the assumption that a new definition should be more comprehensive than any previous one, not because it arbitrarily replaces earlier formulations, but because it recovers both the statements shared by several definitions and those singular statements that, while absent elsewhere, remain conceptually pertinent. In this sense, the method seeks a definition that is clearer, more exhaustive, and more operational than each isolated antecedent.

3.0 Methodological approach

For the purposes of this discussion, the application of the method followed the phases described by Barité: determination of sources; identification and transcription of the selected definitions; chronological ordering of those definitions; segmentation into statements; classification of statements as essential, accidental, relational, informative, or historical; subdivision of the statements according to guiding questions such as what the object is, what qualities or properties it has, what purpose it serves, and how it is applied; construction of a reference grid; allocation of textual elements to the corresponding columns; column-by-column comparison of significant elements; qualitative analysis of convergences and

differences; and, finally, the proposal of a new definition. Because this is a discussion paper, the emphasis is placed on the analytical and comparative stages of the method, especially those that allow the conceptual scope of domain analysis to be examined through the structure of the grid itself.

The first stage in applying the grid method was to identify and transcribe the definitions in the selected texts. These include the classic formulations by Hjørland and Albrechtsen (1995), Guimarães (2014), Smiraglia (2015), Hjørland (2017), and Barité and Rauch (2022), which form the main definitional corpus for the grid. The contributions by Barros and collaborators are mobilized in the broader discussion because they demonstrate how domain analysis has been extended toward empirical corpus mapping, archival knowledge organization, and discourse-oriented interpretation. The next step consisted in segmenting the selected definitions into statements in order to elaborate the reference grid (according to Tables 1 and 2).

Table 1 Statement grid

Term	**Domain analysis**	
Reference	*HJORLAND, B; ALBRECHTSEN, H. Toward a new horizon in information science: Domain-analysis. Journal of the American Society for Information Science, v. 46, n. 6, p. 400-425, 1995.*	
Context	Information science	
Definition	Essential statements	*social paradigm / conceiving of Information Science as one of the social sciences, promoting a social psychological, a sociolinguistic, a sociology of knowledge, and a sociology of science perspectives on Information Science (Hjørland and Albrechtsen 1995, 400)*
	Accidental statements	-
	Informative statements	-
	Synonyms and equivalences	-
	Essential statements	*functionalist approach / attempting to understand the implicit and explicit functions of information and communication and to trace the mechanisms underlying informational behavior from this insight (Hjørland and Albrechtsen 1995, 400)*
	Accidental statements	-
	Informative statements	-
	Synonyms and equivalences	-
	Essential statements	*philosophical-realistic approach /trying to find the basis for Information Science in factors that are external to the individualistic subjective perceptions of the users (Hjørland and Albrechtsen 1995, 400)*
	Accidental statements	-

Term	Domain analysis	
	Informative statements	*as opposed to for example the behavioral and cognitive paradigms*
	Synonyms and equivalences	-
	Essential statements	*represents an alternative theory to the cognitive phenomena (Hjørland and Albrechtsen 1995, 413)*
	Accidental statements	-
	Informative statements	*domain-analysis and cognitivism are not two supplementary points of view, but two mutually exclusive theoretical viewpoints (Hjørland and Albrechtsen 1995, 413)*
	Synonyms and equivalences	-
Reference	*GUIMARÃES, José Augusto Chaves. Domain analysis as a methodological perspective in information organization. Ciência da Informação, v. 41, n. 1, p. 13-21, jan./abr. 2014*	
Context	Knowledge organization	
Definition	Essential statements	*an approach for the characterization and evaluation of science [...] allows identifying the conditions under which scientific knowledge is constructed and socialized (Guimarães 2014, 15)*
	Accidental statements	-
	Informative statements	-
	Synonyms and equivalences	-

Table 1 Statement grid (cont)

Reference	*SMIRAGLIA, Richard P. Domain analysis for Knowledge organization. Tools for ontology extraction. Waltham, MA (USA); Kidlington (UK), Chandos Publishing (Elsevier), 2015.*	
Context	Knowledge organization	
Definition	Essential statements	*methodological paradigm [...] the purpose is to reveal the contours of held knowledge [...] analyzing the elements of specific communities who share a common ontology, or knowledge base (Smiraglia 2015, 19)*
	Accidental statements	-
	Informative statements	-
	Synonyms and equivalences	-
Reference	*HJORLAND, Birger. Domain analysis. Knowledge Organization, v. 44, n. 6, p. 436-464, 2017.*	
Context	Information science	
Definition	Essential statements	*a theory about and an approach to LIS and KO [...] focuses on the importance of subject knowledge (Hjørland 2017, 437)*
	Accidental statements	-
	Informative statements	-

	Synonyms and equivalences	-
Reference	*BARITÉ, Mario; RAUCH, Mirtha. Terminological studies as domain analysis: a critical exploration. Brazilian Journal of Information Science: Research trends, vol. 16, Dossier Domain Analysis, 2022, e02140.*	
Context	Knowledge organization	
Definition	Essential statements	*a set of methodologies or methodological approaches aimed at designing a map or a conceptual representation of a knowledge domain's structure (Barité and Rauch 2022, 2)*
	Accidental statements	-
	Informative statements	-
	Synonyms and equivalences	-
Personal definition		
Definition	Essential statements	*a theoretical-methodological model to describe or understand the construction, circulation, and communication of knowledge within a community*
	Essential statements	-
	Accidental statements	-
	Informative statements	-

Table 2 Question grid

Term	**Domain analysis**				
Reference	*HJORLAND, B; ALBRECHTSEN, H. Toward a new horizon in information science: Domain-analysis. Journal of the American Society for Information Science, v. 46, n. 6, p. 400-425, 1995.*				
Context	Information science				
Definition	What is it?	*paradigm*	*approach*	*approach*	*representation*
	What is it made of?	*social*	*functionalist*	*philosophical-realistic*	*theory*
	How is it described?				*alternative to the cognitive phenomena*
	Kinds of varieties:				
	Properties:				
	What is the purpose of it?	*conceiving of Information Science as one of the social sciences, promoting a social psychological, a sociolinguistic, a sociology of*	*understand the implicit and explicit functions of information and communication and to trace the mechanisms underlying informational*	*trying to find the basis for Information Science in factors that are external to the individualistic subjective perceptions of the users*	

Term	Domain analysis			
		knowledge, and a sociology of science perspectives on Information Science	*behavior from this insight*	
Reference	*GUIMARÃES, José Augusto Chaves. Domain analysis as a methodological perspective in information organization. Ciência da informação, v. 41, n. 1, p. 13-21, jan./abr. 2014.*			
Context	Knowledge organization			
Definition	What is it?	*Approach*		
	What is it made of?			
	How is it described?	*for the characterization and evaluation of science*		
	Kinds of varieties:			
	Properties:			
	What is the purpose of it?	*identifying the conditions under which scientific knowledge is constructed and socialized*		

Table 2 Question grid (cont.)

Reference	*SMIRAGLIA, Richard P. Domain analysis for Knowledge organization. Tools for ontology extraction. Waltham, MA (USA); Kidlington (UK), Chandos Publishing (Elsevier), 2015.*	
Context	Knowledge organization	
Definition	What is it?	*Paradigm*
	What is it made of?	*Methodological*
	How is it described?	
	Kinds of varieties:	
	Properties:	
	What is the purpose of it?	*to reveal the contours of held knowledge, whether that be in the form of live discourse or recorded documentation, by analyzing the elements of specific communities who share a common ontology, or knowledge base.*
Reference	*HJORLAND, Birger. Domain analysis. Knowledge Organization, v. 44, n. 6, p. 436-464, 2017.*	
Context	Information science	
Definition	What is it?	*a theory and an approach*
	What is it made of?	
	How is it described?	*for LIS and KO*
	Kinds of varieties:	
	Properties:	
	What is the purpose of it?	*focuses on the importance of subject knowledge*
Reference	*BARITÉ, Mario; RAUCH, Mirtha. Terminological studies as domain analysis: a*	

	critical exploration. Brazilian Journal of Information Science: Research trends, vol. 16, Dossier Domain Analysis, 2022, e02140.	
Context	Knowledge organization	
Definition	What is it?	*Set*
	What is it made of?	*methodologies/ methodological approaches*
	How is it described?	
	Kinds of varieties:	
	Properties:	
	What is the purpose of it?	*designing a map or a conceptual representation of a knowledge domain's structure*

4.0 Analysis and discussion

When analyzing Hjørland and Albrechtsen (1995), the essential statements extracted point to the nature of the concept as a social paradigm, a functionalist approach, and a philosophical-realist approach. Its stated purpose is to understand the functions of information and to trace the mechanisms underlying information behavior, positioning itself as a theoretical alternative to cognitivism. In Guimarães (2014), the essential statement classifies domain analysis as an approach to the characterization and evaluation of science. Its purpose, or informative statement of function, is to identify the conditions under which scientific knowledge is constructed and socialized.

Smiraglia's (2015) understanding provides an essential statement that frames domain analysis as a methodological paradigm. Its finalistic element—what it is for—is clearly defined as revealing the contours of held knowledge through the analysis of the elements of communities that share a common ontology. Hjørland's (2017) review yields, as essential statements, the categories of theory and approach, with a property focused on the importance of knowledge about the subject or domain. Finally, the definition proposed by Barité and Rauch (2022) presents as its essential statement the notion that domain analysis is a set of methodologies or methodological approaches. Its primary function is the projection of a map or conceptual representation of the structure of a knowledge domain.

The incorporation of Barros's work adds further inflections to this grid. In Barros and Laipelt (2021), domain analysis appears as an empirical procedure for mapping the thematic, semantic, and discursive constitution of a research field. In Barros (2023), the concept is broadened by dialogue with discourse analysis, indicating that domain analysis may also be understood as a way of apprehending the ideological, discursive, and historical conditions under which concepts are produced and stabilized. Rather than contradicting the previous definitions, these contributions indicate the expanding analytical reach of domain analysis and its capacity to articulate epistemological, methodological, semantic, and discursive levels.

The comparison of significant elements, column by column in Barité's grid, reveals important theoretical tensions and convergences. Regarding the ontological question of proximate genus (what domain analysis is), the sources move from broader and more philosophical concepts to more instrumental definitions. In 1995, it appeared as a

"paradigm" in a sense close to the Kuhnian use of the term. As the literature evolved, it also came to be referred to as a "theory," an "approach," a "methodological perspective," and a "set of methodologies." This variation does not represent an insurmountable contradiction. Rather, it reveals the maturation of a concept that began as a philosophical rupture and gradually became an applicable methodological framework within the development of Information Science and Knowledge Organization. All definitions agree that the object of analysis is not the isolated individual, but the discursive community, the subject field, or the context in which knowledge is socialized.

With regard to distinctive characteristics and properties, the grid makes clear that the raw material of domain analysis is recorded knowledge, institutionalized discourse, and the ontologies constructed by social groups. While traditional currents focused on universal rules of classification, domain analysis, according to the authors examined here, requires attention to factors external to individual perception. The statements drawn from Guimarães (2014) and Smiraglia (2015) are particularly complementary in this respect. Whereas Smiraglia focuses on the intrinsic ontology of the community, that is, the structure of concepts used by specialists, Guimarães emphasizes the external process through which this knowledge is socialized. Together, they form a broader picture of the documentary and epistemic cycle examined through this perspective. The contributions by Barros deepen this picture by showing that such socialization also occurs through discursive formations, corpus construction, terminological stabilization, and the methodological design of archival and knowledge organization instruments.

The qualitative analysis based on the grid makes it possible to state that the literature reaches a strong consensus regarding the purpose of domain analysis. All authors, in their own terms, point to the goal of mapping, representing, characterizing, or revealing the structure of knowledge in a specific area. The ultimate objective is to ensure that Knowledge Organization faithfully and usefully reflects the practices, terminologies, needs, and sociocultural realities of the group that produces and consumes information. On this basis, and following the final stage of Barité's method, an original, harmonized, and comprehensive definition should be proposed as a theoretical consolidation for future studies.

5.0 Concluding remarks

From the synthesis of the analytical grid, it is proposed that domain analysis be defined as a theoretical-methodological model for describing and understanding the construction, circulation, organization, and communication of knowledge within a community. More specifically, it consists of an integrated set of approaches aimed at describing, characterizing, evaluating, and interpreting the construction, socialization, communication, and discursive stabilization of human knowledge in historically and socially situated domains.

This proposed definition seeks to integrate the foundational formulations of Hjørland and Albrechtsen (1995) with the more instrumental and methodological orientations of

Guimarães (2014), Smiraglia (2015), Hjørland (2017), and Barité and Rauch (2022), while also incorporating the contributions of Barros's work, which broaden the analytical possibilities of domain analysis toward empirical mapping, archival knowledge organization, and discourse analysis. It is thus argued that the use of the grid method demonstrates significant value not only for strictly terminological purposes but also as a resource for epistemological critique capable of organizing the polysemy inherent in the foundational concepts of IS and KO. As established in the objectives of this proposal, this should be understood as an analytical starting point.

The deepening of this initial study will require, in future research, the expansion of this empirical investigation, for instance, through the analysis of the thematic dossiers on domain analysis published in Knowledge Organization in 2003 and 2015, as well as through the incorporation of further empirical and theoretical studies that have tested domain analysis across distinct documentary and epistemic contexts. The conceptual clarity achieved through this methodological reflection may constitute an important step toward the continued maturation of research in Information Science and Knowledge Organization.

AI Usage Statement

The authors declare that no artificial intelligence (AI) tools were used in the conception, development, analysis, writing, or revision of this work.

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