DOMAIN ANALYSIS, DISCOURSE COMMUNITY AND LITERARY AND SEMANTIC WARRANTS: a study of the Brazilian rural landscape

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Abstract

The current study deals with the theoretical and methodological feasibility of the use of domain analysis and discourse community, by means of literary and semantic warrants, aiming at the identification of the rural landscape in its ontological dimension, having Knowledge Organization Systems (KOS) as a purpose. The rural landscape and its network of concepts within the field of Library and Information Science (LIS) are analyzed in relation to geographic knowledge representation and organization. The methodological procedures, subdivided into bibliographical research and documentary research, included the examination of the 1970 and 2006 editions of the Brazilian Census of Agriculture, under the responsibility of the Brazilian Institute of Geography and Statistics, and of representation of the rural landscapes in bibliographic classification systems, thesauri, and ontologies. Results show conceptual and standardized landscape terminology by means of the conceptualization of the categories that represent it, resulting from the geography domain and aggregated to information taken from the 1970 and 2006 Brazilian censuses of agriculture.

Keywords: Rural landscape; Censuses of Agriculture; Knowledge Organization Systems (KOS); Knowledge organization (Geography); Discourse community (Geography); Domain analysis (Geography).

1 Introduction

This article is part of a doctoral dissertation in Geographic Knowledge Representation and Organization, written between the years of 2016 and 2020, within the scope of Knowledge Organization Systems (KOS), which approaches the ontological dimension of the rural landscape. Considering that knowledge domains are not similar, the research aimed at

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identifying a group of common features that represent the communication pattern of geographers, a discourse community that sees landscape as an object of study.

It is worth pointing out that among the different areas of knowledge based on which one could analyze the rural landscape, we have chosen the theoretical-methodological approach from the perspective of Geography.

It is our intention in this article to highlight the methodological perspective of the study of the rural landscape in terms of domain analysis and discourse communities based on data from the 1970 and 2006[(1)] Brazilian censuses of agriculture conducted by the Brazilian Institute of Geography and Statistics (IBGE), a valuable collection for different analyses of the activities taking place in the rural area by means of knowledge on land use; agricultural practices; water resources; use of agricultural machinery, instruments and vehicles; agricultural establishments (farms, vegetable gardens, kitchen gardens), among others. The following characteristics were selected for our research: settlement and use of land, from the 1970 census of agriculture; and agricultural establishment, agricultural practices, land use; water resources; irrigated land and irrigation methods, from the 2006 edition.

From the perspective of the 1970 and 2006 Brazilian censuses of agriculture and considering the complexity of this study on landscape, we addressed the following research problem: how to turn theoretical subjects related to landscape into a unified and systematic conception that can offer an organization pattern in terms of concepts, categories, and meanings.

Knowledge consists of an organized body of information. Our hypothesis, then, was that mapping of the Geography field by means of its theoretical corpus presents an instant view of the field and provides coherent foundations based on academic consensus that enable the systematization of all knowledge produced by the discourse community of geographers that configures the organization pattern as for the landscape.

In the context of knowledge organization and within the scope of Library and Information Science (LIS), we adopted the domain analysis definition postulated by Hjorland and Albrechtsen (1995) and Hjorland (2002; 2017) as an analytical paradigm to develop the current research, since a domain – Geography, in this case – as pointed out by Guimarães (2014), derives from the application of fundamentals concerned with knowledge organization, that is, the categorization that makes it possible to bring similar objects together and separate

the different ones, and this way understand the limits, foundations and relationships that guide the communication chain in the sphere of geographic information concerning landscape. Domain analysis in this sphere emphasizes the validity and the importance of mapping a domain – Geography – becomes a protagonist by providing an integrated perspective of the area of knowledge and finds its several conceptions, facilitating the exploration of theoretical foundations as it functions as a guiding and legitimizing tool in relation to the analyzed domain (Zins et al. 2007).

The concept of discourse community was formulated by John Swales, in 1990, and it extends to the relevance of the communicative purpose of a grouping and their discourse operating according to conventions defined by the community, either in the academic or in the professional field. According to Guimarães (2014), Hjorland and Albrechtsen (1995) appropriate the expression discourse community with a novel approach by proposing that Information Science study knowledge domains as discourse categories, based on a dialectical relationship between a community and its members, by sharing knowledge and questioning about a specific discipline that focuses more on the sociological context than on the individual.

Considering our choice and conditions consensually accepted by LIS, we also included in this study literary and semantic warrants since they promote the concentration of core ideas in the geographic domain and in Brazilian censuses of agriculture, regarding the rural landscape, and, thus, are sources for extraction and validation of the terminology to be integrated into a classification system[(2)] or any other knowledge organization system that comes from domain analysis.

Therefore, we chose the second one from the group of eleven approaches proposed by Hjorland (2002; 2017) for the study of a specific domain, among which are the construction of specific terminology, gateways, classification schemes, taxonomies, and ontologies as possible applications of Knowledge Organization Systems (KOS), departing from the knowledge generated by the discourse community in the field of Geography. The organization of information and knowledge into KOS is justified by the necessity of conceptualizing and specifying a lexical universe so that it can formally represent a group of objects related to a knowledge domain in a harmonic and standardized structure, in order to meet the needs for information quality and relevance from the perspective of users, once the importance of a KOS is measured by the degree of organization that is attributed to it (Gnoli 2015).

The topics information and its implications, information retrieval, KOS, domain analysis and literary and semantic warrants are the guiding elements that support the theoretical framework for the development of this study. They have been posited in schools of thought represented by seminal authors (Capurro and Hjörland 2007; Bawden and Robinson 2013; Bates 2005, 2006; Buckland 1991; Raper 2009), in a dialogue with the aforementioned authors.

2 Understanding the concept of landscape

The conceptual framework of landscape is formed by different theoretical approaches and one's understanding of it is mediated by the synergy that comes from the comprehension of natural and anthropic systems, which, when grouped, reveal the dimensions of its characteristics and, as a consequence, the categories that will compose its classification within the context of knowledge organization and of the Geography domain.

Within the scope of Geography, the study of the landscape concept is supported by other academic texts: Tesser Obregon (2000), Cosgrove (1998), Solana (2016), Giannella (2008), Gomes (2013), Luchiari (2001), Santos (2014), Bertrand (2004), Saquet (2015), Gambi (1961), Turri (1974; 2002), Corrêa and Rosendahl (1998), Sauer (1998), Lema (1997), Veronezzi and Fajardo (2015), Lepczyk et al. (2008), Konkoly-Gyuró (2018) and Cavaco (2005).

In the 1960's and 1970's, landscape turned into a key concept in Geography as the discipline encompassed subjective aspects in its studies and gave prominence to their meanings, with man taking a determining role in the causal relationships that will reveal the fragmentation of landscape and, consequently, its diversity as morphological, vegetal, urban and rural landscapes, causing the notion of integrating landscape to emerge, according to Santos (2014 p. 78): "Landscape is materiality, formed by material and non-material objects. Life is a synonym for social relations, and these are not possible without materiality, which fixates social relationships, which take place by means of the objects". Bertrand (2004) also refers to the landscape as a system of systems:

> Landscape is not the mere addition of unconnected geographic elements. It is, at a given part of the space, the result of a dynamic, therefore unstable, combination of physical, biological and anthropic elements which, by reacting dialogically to one another, make landscape a single and indissociable setting, in constant evolution (Bertrand 2004 p. 141).

Landscape is, therefore, a sequence of natural and artificial forces which, together, perform different productive actions, according to Santos (2014). This concept of landscape acknowledges social relations as aspects that are inherent to landscape analysis, going beyond mere descriptions, also with a highlight to concepts of territory and geographical space, seen from the perspective of history and materiality, centered on the perception of subjects. This approach comprehends landscape as representation by means of symbols of everyday life, as put by Saquet (2015).

By the end of the 1990's, Corrêa and Rosendahl (1998) included in their work *Landscape, time and culture*, the translation of the text *Morphology of landscape*, by Carl Ortwin Sauer (1889-1975), written in 1925. For this American geographer, landscape corresponds to an integrated system that associates physical and cultural forms:

> The content of landscape is found, therefore, in the physical qualities of the area that are important for man and in the forms of use of the area, in physical facts and facts of human culture. […] The division of forms into natural and cultural is the necessary basis to determine the importance of area and the character of human activity. [...] geography becomes, then, that part of the last human chapter in the history of the Earth, which has to do with the differentiation of landscape by man (Sauer 1998 p. 29, 43).

Departing from the indications by Sauer (1998), we see the introduction of landscape classification into two components, natural and cultural. When speaking of natural landscapes, Sauer (1998) explains that the criteria that express these forms are, primarily, the material from the Earth's crust, which encompass topography, soil, drainage (rivers, swamps, watercourses, flooded areas), vegetation and mineral distribution. The second determining factor is the climate.

As for cultural landscape, Sauer (1998) explains that his study implies natural landscape being transformed by the hands of men by means of their cultures when making use of natural forms:

> Cultural landscape is the geographic area in its ultimate meaning (chore). Its forms are all works of men that characterize landscape. [...] landmarks of man in the landscape. Housing includes the types of structure that man builds and its grouping, scattered like in many rural districts of clusters in villages and cities with their variable plans (*Städtebild*). Forms of production are types of land use aiming at primary products, farms, forests, mines [...]. (Sauer 1998 p. 57-58).

In the reconstruction of the concept of landscape, we realize there is a dynamic between natural and cultural landscape with the objective of organizing the space between land use,

handling, occupation and environmental impacts. In relation to that, Lema (1997) highlights that the duality between natural and cultural landscape leads to the emergence of spatial representations, an important contribution to the study of landscape, which can designate material and immaterial realities.

The noticeable elements of landscape originated from economic activities, as it is the case of agricultural practices; areas occupied with agricultural establishments, such as stables, farms, warehouses, paths, among others; land use, including crops, pastures, woods and forests; and water resources, originate and encompass the rural landscape. Such a landscape comes to our minds due to Brazilian censuses of agriculture, because it takes the position of iconic information for evoking images from the rural landscape and has significant visual implications; it corresponds to the variables investigated by the Brazilian censuses of agriculture, with their concept strongly related to anthropic actions, on the one hand (Bertrand 2004; Santos 2014), that is, it must be analyzed according to the different forms of land use as an economic resource, and by natural resources, on the other hand, being affected by human action.

The rural landscape combines production factors due to agriculture and diversity of climates that influence planting and harvesting, crop rotation, techniques, production structures and systems, which range between simple ones like bushfires and alternation of the soil and more sophisticated techniques in relation to economic contexts (Cavaco 2005).

By way of illustration, from a sociological perspective, the study of the landscape concept can be related to the concept of document, when there are no written or oral records. In these cases, landscape itself can be seen as a document or proof, as related in superior courts in Norway and Canada (Grenersen et al. 2016).

This scope has provided the necessary basis for guiding the study of landscape within the field of Geography, indicating blanks to be identified and workable solutions that can later help other professionals who dedicate themselves to the representation of this topic, as in the organization of information by means of the adoption of proper tools to enable their effective recovery.

3 Methodology

The methodological procedures adopted in this research, considering the analysis made in this article, were divided into bibliographical research, systematized into two axes: within LIS and in the Geography field; and documentary research.

The research was subdivided into four steps. In the first one, bibliographical research was structured with a qualitative approach and a corpus was formed with primary sources, composed of journal articles and dissertations; and secondary sources, among which were books, dictionaries, thesauri, ontologies and taxonomies, both national and international.

Within the context of LIS, in the field of information representation and knowledge organization, bibliographical research was systematized from the 1970's up to December 2020 having as theoretical support data obtained from the Scientific Electronic Library Online (SciELO), Library, Information Science & Technology Abstracts (LISTA), the website of the International Society for Knowledge Organization (ISKO), the Institutional Repository of the Federal Fluminense University and the Brazilian Digital Library of Theses and Dissertations (BDTD), of the Brazilian Institute of Information on Science and Technology (Ibict), the Reference Database for Journal Articles on Information Science (Brapci) and free web research, with a highlight to the following topics: domain analysis, terminology, knowledge organization, information representation, knowledge organization systems, language theory, concept theory, genre analysis, discourse community, literary and semantic warrants and concepts of information and documents.

Considering the field of Geography, our bibliographical research covered from the 1960's up to December 2020 and was directed to the study of landscape. It included articles from the ScienceDirect platform; SciELO, LISTA and Web of Science databases, accessed by means of the Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES). Research for secondary sources was done at the Sirius Network, of the State University of Rio de Janeiro (UERJ), the Institutional Repository of UFF, the IBGE Library Network and free web research covering topics in Geography: landscape, rural landscape, geographic thought, geographic theory, area, territory, region, spatial configuration, geographic categories, and ontology combined with the term landscape. The following research terms were included in this group: modernity, post modernity and culture.

The second step was characterized by documentary research, the scope of which was the examination of how landscape is organized and represented in the Universal Decimal Classification (CDU) and Dewey Decimal Classification (CDD) systems, as well as in ontologies and thesauri. Among the latter, stand out: Agrovoc Multilingual Thesaurus; Geoethno Thesaurus; United Nations Thesaurus; Everglades Online Thesaurus; and Agricultural Thesaurus. As for the search for landscape ontologies, only two works were found at the ScienceDirect platform: Lepczyk et al. (2008), *An ontology for landscapes*, and Konkoly-Gyuró (2018), *Conceptualisation and perception of the landscape and its changes in a transboundary area: a case study of the southern german-french borderland*.

In the third step, we saw the background of Brazilian agricultural censuses. We selected from the 1970 and 2006 editions the characteristics surveyed that function as iconic information because they bring to mind an image of the rural landscape. The fourth step consisted of the collection and creation of the terminological corpus based on a consensus about landscape identified in the mapping of the Geography domain; the establishment of the conceptual framework for landscape and its classification structure (classes, subclasses, subordinate subclasses and subgroups that individualize the landscape).

The establishment of domain analysis for landscape, given its discourse community, was guaranteed by the conduction of bibliographical and documentary research, which evidenced semantic and literary warrants.

4 Domain Analysis And Discourse Community

Within the scope of LIS and in the field of information organization and knowledge representation, information records must be identified, described, organized, and disseminated to serve specific purposes, given the different mechanisms that define concepts, meanings and structure discourse communities, their forms of communication and information needs. For this reason, knowledge domains cannot be seen as similar, and it is necessary to recognize the thematic content that supports theoretical discussions, in order to establish a common core that characterizes the vocabulary of that discourse community in its conceptual and denominative dimension.

At first, the concept of domain analysis was employed in the field of computer science directed to engineering and reuse of software, according to Albrechtsen (2015) based on the

work of Prieto-Diaz (1990), which deals with the development of faceted classification schemes for software components, with the faceted classification proposed by Ranganathan as a theoretical framework. In this work, Prieto-Diaz (1990) introduces the term domain analysis directed to projects that serve specific domains, that is, other fields that can benefit from the tools provided by artificial intelligence and techniques for knowledge acquisition and representation.

Prieto-Diaz (1990) defines domain analysis as a process whereby information used in the development of software systems is identified, captured, and organized with the purpose of becoming reusable in the creation of other systems, since, during the creation process, information of many different kinds is produced.

The term domain analysis was brought into LIS by Hjorland and Albrechtsen, in 1995, being seen as an analytical paradigm and a way to understand the information produced in knowledge domains by discourse communities, from a sociological perspective, with context as a relevant factor due to the influence of factors external to individual perceptions of members of those discourse communities identified as scientific, academic or professional, considering knowledge a social and collective phenomenon that is built thanks to the interaction between thought and language, which gives community members an identity in a certain context shared by their histories, social relations and cumulative experiences (Nascimento and Marteleto 2008). Understanding and representing a domain implies knowledge and organization of its group of terms and concepts, with the adoption of a logical purpose whose analysis reflects the object of study of this community and its role in society, since information acquires the status of knowledge when it is shared, described, and disseminated.

Hjorland and Albrechtsen (1995) approach domain analysis from the perspective of a paradigm directed to the identification description, organization, and communication of information sources in order to serve specific objectives, thus contributing to the study of a field of knowledge consolidated by means of specialized information produced by its members, acknowledged as discourse communities:

> The domain-analytic paradigm in information Science (IS) states that the best way to understand information in IS is to study the knowledge-domains as thought or discourse communities, which are parts of society's division of labor. Knowledge organization, structure, cooperation patterns, language and communication forms, information systems, and relevance criteria are

> reflections of the objects of work of these communities and of their role in Society. (Hjorland and Albrechtsen 1995 p. 400).

For these two authors, the domain analysis paradigm has three dimensions: firstly, the social character considering the social perspective of Information Science: secondly, a functionalist approach attempting to comprehend the implicit and explicit functions of information; and, finally, the realistic-philosophical nature that attempts to find bases for IS, whose factors external to subjective individual perspectives oppose to the cognitive and behavioral paradigm, that is, the individual factor (Hjorland and Albrechtsen 1995).

The third dimension approached by the authors, based on Wilson (1972), is that a specialty should be seen in its entirety and not individually: "It is not how some individual is affected but how the specialty as a whole is affected that is the question." (Hjorland and Albrechtsen 1995 p. 401).

Domain analysis in LIS can be defined as a metatheory, given its capacity to explore and analyze definitions, scope and reach, and the degree of specialization of a subject or community of interest, according to Tennis (2012 p. 3-8), based on Hjorland and Hartel (2003).

Bawden and Robinson (2013) resort to Hjorland (2010) as they recall the basic definition attributed to domain analysis as metatheory, considering that knowledge domains are the object of study of both Library Science and Information Science, and a practical way for subject specialists to understand specific information subjects and specific groups.

Nevertheless, authors call attention to the fact that many times the expression domain analysis was used to refer to bibliometric analysis or classification, for it was associated to the socio-cognitive paradigm. This approach, authors argue, was due to the fact this paradigm focused on the individual, on their knowledge, behavior, preferences, and relevant personal opinions. For the sake of an example, Bawden and Robinson (2013) based on Hjorland and Albrechtsen (1995) remark that:

> As understood by these authors, domain analysis is a realist approach in philosophical terms; it seeks a basis for information science in factors external to the individual, which are objective rather than subjective, and which may be located in the expertise and practices of subject specialist. If we wish to design an information system for Scandinavian geography, Hjorland and Albrechtsen say, the obvious approach is to design it according to how Scandinavia actually is, not according to the way some particular users think it is; we would probably want to use geographers as the relevant domain experts to advise us. (Bawden and Robinson 2013 p. 92).

The task of organizing knowledge presupposes an analysis of the elements that constitute a field of knowledge, how to systematize it, in an attempt to comprehend logically the structure of categories and concepts and the way they relate semantically aiming at a specific objective: to meet information needs of several communities of users, by means of a dialogue that needs to be established between these communities and information units (Hjorland 2010).

The definition of domain is of relevance to LIS in terms of the study of knowledge organization, and seeing it as a reference is a premise. By studying the domain, it is possible to systematize its group of theories, its ontological basis and the hypotheses formulated methodologically around a consensus, mediated by language. Smiraglia presents the following definition for a domain:

> A domain is best understood as a unit of analysis for the construction of a KOS. That is, a domain is a group with an ontological base that reveals an underlying teleology, a set of common hypotheses, epistemological consensus on methodological approaches, and social semantics. If, after conduct of systematic analysis, no consensus on these points emerges, then neither intension nor extension can be defined, and the group thus does not constitute a domain. (Smiraglia 2015 p. 114).

In view of this concept, it is noticed that the closer the concordance of the discourse community in relation to the domain, the higher the degree of concordance: the more scattered the theoretical basis, the less probable we will be looking at a true domain, as put by Smiraglia (2012).

Bawden and Robinson (2013) based on a work by Robinson (2009), see LIS as an application of the domain analysis paradigm to the communication chain, once domain analysis has a considerable value for information scientists and other professionals that deal with information in general. Nevertheless, to apply this method it is necessary to understand what a domain means in the first place. The authors, in a very objective way, define it as follows:

> In straightforward pragmatic terms, an information domain is the set of information systems, resources, services and processes associated with a group of users with common concerns and a common viewpoint, and sharing a common terminology. This will typically be an academic subject area, e. g. theoretical physics or philosophy; a professional or trade, e. g. accountancy or clock-making; or an ‘everyday’ hobby or concern, e. g. cookery or job-seeking. […] Domains may be defined generally or specifically, with this in mind. (Bawden and Robinson 2013 p. 93).

For López-Huertas (2006), domain relates to disciplinary models that are composed of terminological and structural sources that delimit the specialized domain by means of well-defined borders and limits: “Disciplines tend to autonomy by means of the delimitation of their borders, of the languages they generate, the theories and techniques they develop and use” (López-Huertas 2006 p. 211). The author lists the characteristics that evidence disciplinary models: consensual and stable terminology; well defined conceptual limits; defined epistemological boundaries; existence of taxonomy; and organization of standardized knowledge (López-Huertas 2006 p. 211).

Swales (1990) states that discourse is a means to keep and expand Knowledge of the group and initiate new members by sharing specific lexis with a relevant level of expertise and discourse. The definition of discourse community is based, therefore, on the activity developed by its members and requires a communication network and common objectives, even if there is a geographic distance separating the participants.

Hjorland and Albrechtsen (1995) appropriated the term discourse community and gave it a new approach, by proposing that LIS study knowledge domains as discourse categories, founded on a dialectic relationship between a community and its members that shares knowledge and questions about specific disciplines. Seven years later, in 2002, Hjorland suggested eleven approaches by means of which LIS can study a given domain, thoroughly analyze the theories that support its main chain, examine hypotheses, interests and implications around the domain, thus showing that there is a dialectic relationship between domains and that a domain does not exist in itself, but is created and transformed, according to Hjorland (2017) based on Dam Christensen (2007).

It is worth mentioning that Hjorland (2017), when revisiting concepts in the field of knowledge organization, refers to Smiraglia (2015), who proposes a slightly revised taxonomy of the eleven approaches presented by Hjorland (2002). Smiraglia (2015), based on a group of empirical principles from a sociological and epistemological perspective, shows an update of the eleven approaches, which, when combined, highlight the importance of knowing how a domain works. This new proposal leaves out the third and the tenth approaches: indexing and retrieving specialities; and studies of structures and institutions in scientific communication. In this reformulation, Smiraglia (2015) includes semantic data and discourse analysis.

Another perspective pointed out by Hjorland (2017) would be the application to the eleven items of the principle of provenance as an approach of domain analysis in knowledge organization into files, as proposed by Guimarães and Tognoli (2015).

These steps will lead to the smallest fraction of the field of knowledge being analyzed: production of literary guides: special classifications and thesauri; user studies; bibliometric studies; historical studies; epistemological and critical studies: terminological studies; scientific communication; scientific cognition and artificial intelligence (Hjorland 2002).

The elaboration of information and knowledge organization systems, that is, the construction of specialized terminology, gateways, classification schemes, taxonomies and ontologies as possible applications of these systems, departing from the knowledge generated by the discourse community in the Geography field are of our special interest, for they relate to the second approach suggested by Hjorland (2002) and reflect the organization of logical structures of categories, concepts and the semantic relationships that define the communication pattern of the discourse community, formed by geographers, and represent the several theoretical trends that discuss the landscape and reinforce the collective aspect of knowledge. Terminological studies were another contribution in this respect, for domain analysis as an analysis paradigm delineates the status of knowledge of a field and casts light on its terminology by establishing its thematic set and giving visibility to the domain corpus; it favors, as a result, the supply of specific demands of users in that domain. For example, in cases related to the fulfillment of specific demands, according to Guimarães: "[...] information indexing and retrieval of information take into consideration the specific demands of each domain and enable faster and more direct access as well as more visibility to the content of a domain". (Guimarães 2014 p. 17).

López-Huertas (2015) also conducts her research, within the scope of domain analysis, addressed to terminology studies. The author posits the relevance of indexing as one of the best techniques to be applied to domain analysis, considering that terminology collection consists of one of the most significant sources to delimit a field of knowledge and, thus, find out its structure, dynamics, and communication pattern.

The task of organizing knowledge presupposes an analysis of elements that constitute the domain and indicates how to systematize, in a logical way, a structure of categories and concepts; it shows how these relate semantically aiming at a specific objective: to meet

information needs of several communities of users, by means of a dialogue that must be established among these information units (Hjorland 2010).

4.1 Literary and Semantic Warrants from the Perspective of Domain Analysis: Their Relevance in the Elaboration of KOS

Hjorland and Albrechtsen (1995) attribute to domain analysis the development of collective information and knowledge structures resulting from the identification, description, and communication of information sources with the purpose of obtaining sign elements from a domain. That adds a contribution to the study of a field of knowledge consolidated by means of specialized information produced by members that form discourse communities and by means of which the discipline and the environment are the constituting elements and foundations of these communities.

Among the conditions consensually accepted by LIS that qualify domain analysis are literary and semantic warrants because they concentrate the core ideas of the domain and are sources for extraction and validation of terminology of a field of knowledge to be integrated into a classification or any other organization system, supported by specialized scientific documentation obtained from domain analysis.

Beghtol (1986) e Barité et al. (2010), evaluate that the determination of language for a domain is preceded by the issue of literary and semantic warrants as privileged forms of terminology justification and evaluation, which grants qualification, applicability and legitimacy to its semantic field. These warrants validate the representation of a domain by means of consensus, characterized as an intellectual criterion.

The term literary warrant was formulated in 1911, by British author Edward Wyndham Hulme (1859-1951), as a theoretical-methodological principle for the validation of terminology in scientific classifications:

> [...] the original concept of literary warrant is based on the core idea that the literature of a domain must be a source for extraction and validation of terminology to be incorporated into a classification system, or any other type of knowledge system. From this perspective, documentation acts as a catalyst of the process by means of which there is a change from the state-of-the art of a discipline or thematic field to its reconfiguration as a conceptual structure directed to the classification and indexing of documents and information resources of any kind, aiming at retrieval in the face of concrete demands of users with different levels of schooling, varied interests and information needs. (Barité et al. 2010 p. 124).

In this respect, documentation acts as a stable agent to synthetize scientific and specialized knowledge evidenced in the look of classificationists with the status of a methodology previously agreed upon by means of patterns, thus allowing representation of knowledge in KOS of several kinds, among which are: classification systems, thesauri, subject heading lists, taxonomies, thematic ontologies, and so on (Barité et al. 2010).

Having been left aside for a while, the principle of literary warrant eventually achieved recognition and the status of terminological support to KOS after almost 40 years of its original conception, in 1911, when Edward Wyndham Hulme's *Principles of book classification* was released. The certification of this principle was extended even to more recent hierarchically arranged concepts such as ontologies and Internet search tools directories, according to Barité et al. (2010).

In the study of Barité et al. (2010) about the importance of literary warrant with respect to domain analysis, knowledge organization and definition of KOS, authors identify the deficiency of three issues that are little explored in LIS literature: a) lack of regular studies on the recognition of this principle in literature of this field; b) superficial references to the KOS delimitation methodology, in whose context literary warrant can be found; and c) absence of analyses on the applications and possibilities of literary warrant. In relation to these issues, based on the work of Hulme (1911), Barité et al. (2010) see literary warrant as a guiding tool and technique for construction classification systems, description patterns and systematization of specialized vocabulary as it plays a privileged role in terminology justification, evaluation and support.

Barité et al. (2010) after Beghtol (1986) acknowledge that literary warrant concentrates the subjects that establish the literature of a field and creates the necessary conditions for the representation of its conceptual structure. The authors see it as a source of legitimacy provided for by documentation:

> Therefore, the principle of literary warrant does not depart from aprioristic knowledge organization, nor is it based on formal aspects in classification theory. Neither does it advocate a knowledge theory for Library Science and Documentation, once it is documentation itself that works to validate the terms to be included into a knowledge organization system, since whatever is classified and indexed comes from documents (Barité et al. 2010 p. 125).

The merit of the literary warrant principle is coherent because it is based on interpretations and objectives presented in documents and on what is really documented

through the correlation of ideas, proposals, concepts and definitions indicating the subjects studied by the discourse community, which are ruled by scientific documentation:

> Documentation expresses subjects whose studies do not reduce in relevance over time and those that are no longer of interest for research because uncertainties have been resolved, and also those that are given immense, however ephemeral attention, due to real situations or concrete necessities. That is not only true for the so-called sciences, in the broad sense, but also for in any other field of knowledge or of human action – ranging from religion to sports – which, due to their level of development or specialization, generate a significant quantity of documents (thematic, regular, interpretative, of dissemination, etc.) (Barité et al. 2010 p. 126).

Barité et al. (2010) observe that this view casts light on the difference between the theory of knowledge directed to the systematization and transmission of information and that centered on the retrieval of information, considering that the focus is on documentation itself, as it relates to the search and extraction of terminology departing from the analysis of documentation and, this way, evidences its empirical status in knowledge representation. So, literary warrant covers all knowledge organization by revealing semantic aspects strictly related to classification and indexing regarding descriptors, subject headings and classification notations, having its value acknowledged as a methodological tool by editors of the Library of Congress Classification Outline and the Library of Congress Subject Headings, as well as for the collection, selection, construction and management of controlled monolingual vocabulary by the National Information Standards Organization (2005), within the North American standard Z39.19, which, together with literary warrant, represent two other justifications: user warrant and organizational warrant, thus defined:

> Literary guarantee
>
> Justification for the representation of a concept in an indexing language or for the selection of a preferred term because of its frequent occurrence in the literature. See also organizational warrant and user warrant.
>
> Organizational guarantee
>
> Justification for the representation of a concept in an indexing language or for the selection of a preferred term due to characteristics and context of the organization. See also literary warrant and user warrant.
>
> User warranty
>
> Justification for the representation of a concept in an indexing language or for the selection of a preferred term because of frequent requests for information on the concept or free-text searches on the term by users of an information

> storage and retrieval system. See also literary warrant and organizational warrant. (National Information Standards Organization 2005 p. 6-7, 10)

It is observed that literary warrant serves different purposes, besides that one idealized by Hulme, in 1911, of helping in the selection of reference terms for classification and indexing as a consequence of the frequent occurrence of a term. From this point of view, Barité et al. (2010) see that as an advance in comparison with KOS, as the importance of two significant agents in the term selection process for the construction of a terminology – documentation and users – is acknowledged:

> For many reasons, the North American standard of 2005 for monolingual controlled vocabulary is expected to cause a divide in the methodologies of creation and development of conceptual structures. One of them refers to the systematic inclusion of the three types of warrant (literary, user, organizational) as legitimizing modalities for terminology, for beyond formal rules of term composition (singular/plural, compound forms etc.). Therefore, it offers perspectives for the research and exploration of interfaces between the warrants and the effective use in digital environments (Barité et al. 2010 p. 129).

Barité et al. (2010) agree that the potential of literary warrant should justify the development of the conceptual structure of a domain by guaranteeing representativeness resulting from documentation in terms of exhaustiveness and specificity, which are necessary for the thematic retrieval of information. From this perspective, Barité et al. (2010) following Barité (2009), identify at least three traditional applications relative to literary warrant as methodological guidance: a) justification test for terminology validation in the development of knowledge organization systems; b) support to terminological works, by reinforcing the association between literary warrant and terminology; and c) justification test and occasional terminology validation serving the local revision of a classification system in an information unit, for example.

As indicated by Barité et al. (2010), literary warrant, due to its methodological potential, can also be a key tool in the analysis or mapping of domains once it enables the identification of core and peripheral terms in a domain. Barité et al. (2010) call attention to the fact that peripheral terms cannot be excluded from the mapping of a domain because that would affect its indicator of quality.

The concepts of warrants applied to bibliographical classification systems are approached by Beghtol (1986) by means of the sematic axis. For the author, semantic warrant not only governs classes that should form a classification system, but also validates

relationships between the concepts that are incorporated into the classificatory structure considering the function they have in this system. What is the meaning of a class in the classification context? That question should be asked by the classifications' as they attribute to a document a certain classification, as put by Beghtol (1986):

> What function does this class (formed either by enumeration or by a classifier's manipulation of the possibilities of synthesizing renovated concepts) perform in this classification system? Is ultimately the same question as What does this class mean in the context of the classification system as a whole? This question, which a classifier must answer in order to assign a document to an appropriate class, rests on the more general questions from what elements of precedent and usage do the logical and conceptual relationships expressed by this classification system acquire meaning? and what evidence can be adduced for supposing that these particular elements will bear consistently helpful meaning to the classifier and to the user of the documents classified by the system? (Beghtol 1986 p. 111).

In the same way as Barité et al. (2010), Beghtol (1986), based on the work by Hulme (1911) argue that a subject heading should be subordinate to the warrant that it is part of in books or other items that approach that subject, which, consequently, reflects and relates to that field of knowledge, thus validating it as a result of frequent occurrence. Nevertheless, Beghtol (1986) supported by the study of Wilson (1972), calls attention to other specialist in the subject, including the Classification Research Group (CRG), which adopted facet analysis and focused on classification theories and conceptual systems. They considered Hulme's proposition (1911) more aimed at the classification of books and less encompassing for the classification of more specific subjects, such as journal articles and interdisciplinary works.

According to Beghtol (1986) following Wilson (1972), the CRG argued for facet analysis, and focused on classification theories and conceptual systems, the proposal of which is to group concepts into categories expressed by a single notation, regardless of the context of a given concept in a document. Based on this premise, Beghtol (1986) considers that the CRG expanded Hulme's theory (1911) by proposing terminological warrant instead of literary warrant. Therefore, the system should refer to the terminology of the analyzed field of knowledge and isolate the facets of this same field and identify the descriptive terms that name these concepts. As noted by Beghtol (1986), this view of terminological warrant reveals that the CRG had gone past the idea of a universal knowledge system towards a universal conceptual system as a solid basis for the validation of a classification system.

Following this line of thought, Beghtol (1986) finds support in the work of Vickery (1960) and observes that the organization of a field of knowledge takes into consideration the

detailed examination of the literature in this field to find the terms that identify its conceptual structure and reveal the categories that encompass the domain.

In national literature within the scope of LIS about the principle of semantic warrant as the criterion or validation and evaluation method of a language in the context of knowledge organization, Guedes and Moura (2016) based on Beghtol (1986) remark that knowledge expresses itself by means of language, which takes the position of knowledge administration, for it is thanks to knowledge representation, mediated by a system of signs, that is, language, that its organization for the sake of retrieval, future uses and reutilization becomes possible.

5 Results

Considering the methodological action of domain analysis associated with the discourse community of geographers that have the concept of landscape as their scope of research, the results obtained are aligned with our objective and make it possible to understand and identify the ontological dimension of rural landscape in the knowledge domain of Geography by means of its discourse communities.

On the Web of Science database, for example, research of the term landscape led to the following results: linguistic studies (97); biodiversity (532); ecology (2.1); regional planning (725); architecture (621); urban studies (772); geosciences (962); environmental sciences (2); and physical geography (972).

A total of 15 articles were obtained from journals on the SciELO database, two on the LISTA database, one on the Institutional Repository of UFF, five on the free research on the Web and two on the Science Direct platform. From these, we selected eleven articles that met our research objectives.

This step of the research proved to be a defining landmark, since it indicated the preference by part of the geographers for the term cultural landscape, a broad term, (Bertrand 2004; Cosgrove 1998; Gambi 1961; Lema 1997; Santos 2014; Sauer 1998; Turri 1974, 2002), for it encompasses both field and city configurations. It seems, therefore, that the expression rural landscape is more associated to common sense. In face of this result, we observed a break between common sense and the epistemological and conceptual approach as we focused on the analysis of the specialty area.

Having determined the speciality discourse in the field of Geography, it was our intention to examine the representation of the term landscape in ontologies and thesauruses, as listed in the methodology. In the search for landscape ontologies, we have found only two works on the subject at the ScienceDirect platform: Lepczyk, Lortie and Anderson (2008), *An ontology for landscapes*, e Konkoly-Gyuró (2018), *Conceptualization and perception of the landscape and its changes in a transboundary area: a case study of the southern german-french borderland*. Lepczyk et al. (2008) conceptualize landscape in the field of ecology with the objective of reducing linguistic uncertainty since the term is employed with different meanings by researchers in this domain. The study of Konkoly-Gyuró (2018), in turn, has the objective of systematizing the perception of professionals in the frontier area in the south of Germany and France so as to avoid the degradation of the landscape.

Regardless of the quality of these two works that refer, partially, to knowledge representation considering that both have the objective of organizing and describing the information detected, they do not consider the cultural landscape within the context of agricultural areas and do not reflect the organization of logical structures of categories, concepts and semantic relations related to the Geography field. So, these works do not fit the scope of LIS in terms of knowledge and information representation as a justification to consider needs of access and retrieval of good-quality and relevant information, where each term is conceptualized and associated with others connected by means of a language that constitutes a set of relative terms to a give field of knowledge and reflects is conceptual body, according to Gnoli (2015) and Golub (2015).

This compilation, which is part of the documental research, indicated that landscape appears, most often, in the fields of agricultural information, environmental conservation, landscape architecture, environmental engineering and anthropology. Although they are instruments created with a set of contextualization rules and principles, they do not represent landscape in the Geography domain specifically and, therefore, do not act in its effective representation as an informational resource aimed at the analysis and summary of information records with an emphasis on cultural landscape in the context of agricultural areas.

The basic theoretical framework of LIS has proven to be relevant as a starter for the knowledge transformation process, supported by contributions by Buckland (1991), Capurro and Hjörland (2007), Bates (2005; 2006), Bawden and Robinson (2013), and Rapper (2009), being aligned with the research question of how to turn theoretical subjects related to the

landscape within the scope of LIS into a unified and systematic conception that can provide an organization pattern as for the structuring of concepts, categories and meanings, as a condition to make these elements intelligible and available for use and the supply of information needs of several communities of users.

The answer to our questioning was based on literature in the field of knowledge representation and organization. Our objective was reached by means of the investigation of domain analysis, as proposed by Hjorland and Albrechtsen (1995), Hjorland (2002), López-Huertas (2006; 2015), and of discourse community, approached by Swales (1990), and whose theoretical reference enabled systematization of theories in the Geography field and of the ontological basis relative to landscape, adding significantly to the understanding of language as an element that aggregates cultural and interactional patterns to the community of geographers, from the perspective of praxis.

The mapping of the Geography field, by means of the selected theoretical corpus, was of fundamental importance due to its function as a guiding tool that presents an instant view and an integrated perspective of the field. That allowed us to identify the key concepts attributed to the landscape, considering the prerogatives of literary warrant – such as terminology justification and validation, which personalizes the communication pattern of the discourse community of geographers.

At first, we expected to see only theorists in the Geography field as a discourse community due to the communicative events performed by this community in complete, structured and referenced texts, for example the academic text genre, as proposed by Swales (1990). Nonetheless, from the evaluation of Brazilian censuses of agriculture, we found ourselves before another discourse community composed of geographers, statisticians and economists sharing knowledge and questions in a consensual way, signaling to an identity around a specific subject, also based on a group of linguistic, semantic, and pragmatic elements observable in the set of variables investigated by the censuses, which grants this other community a character of communication completeness.

This discourse network that comes from both the Brazilian censuses of agriculture and the community of geographers by means of researched literature was translated into the landscape classification structure composed of four categories, divided into class, subclass subordinate subclass and subgroup. Classes are structured into natural landscape and cultural landscape. The subclass is divided into land coverage; urbanized areas; and agricultural areas.

The subordinate subclass encompasses waters; mining waters; vegetation; cities, villages and industrial plants; agricultural establishment; agricultural practices; water resources; irrigated lands; and land use. The subgroups are divided into flooded areas, watercourses, swamps and rivers; fields, woods, forests; farms and vegetable gardens; contour farming, fallow period, protection and/or conservation of slopes, bushfires, crop rotation, crops for reforming and/or renovation and/or recovery of pastures and terraces; artesian wells; common wells and cisterns; drip, flood, central pivot and furrow irrigation; constructions, betterments and paths; forests planted with forest essences, forage mowers, permanent crop, temporary crop, woods and natural forests, natural pastures, planted pastures, degraded lands and unusable lands (Capone 2020).

The definition of a landscape classification structure proves the importance of standardized terminology to the systematization of information and knowledge produced by discourse communities, which, in turn, are preceded by literary and semantic warrants, preconized, among others, by Barité et al. (2010) and Beghtol (1986). As justification devices, these warrants are confirmed as qualification and applicability principles for the representation of landscape, with regard to the terminological corpus that defines it, identified throughout this research.

Once they enable the detection of specialized terminology in the Geography domain, domain analysis and literary warrant are confirmed as activities proper to the field of knowledge representation and organization within the scope of LIS, as they helped us analyze and get acquainted with what is studied in this field of knowledge by means of its theoretical basis. This analytical view evidenced the specificity of landscape as an object of study in Geography, its concepts, attributes, and characteristics, that is, its essence, having placed it beyond common sense.

The characterization of Brazilian censuses of agriculture as a source of information was corroborated by the evaluation and analysis of characteristics investigated in these census surveys. This path confirmed the unique condition of this source of information as a provider of terms that integrate the classificatory structure of landscape. It would not be enough to know landscape classification, for the terms that result from surveys are the ones that evoke a mental image of the landscape in the rural world and suggest the context of agricultural areas.

This step of the research showed the direct relationship between the contributions that came from the analysis of the Geography domain and from the evaluation of characteristics

surveyed by agricultural censuses in Brazil and the issue of interdisciplinarity. That enriches LIS studies in the field of knowledge representation and organization as we ratify the importance of these two significant agents as subsidies in the term selection process with the purpose of building a standardized terminology aimed at later retrieval by different segments of users, which reinforces the collective aspect of knowledge.

6 Conclusion

The mapping of discourse constructions in the geographer community proved its importance to the process of knowledge representation and organization that specify the terminological universe defining its organization pattern in terms of the conceptualization of landscape and, as a consequence, of its classification. However, in the course of our research we observed we were not only dealing with a community of geographers, but also with another discourse community, of equal relevance, formed by the technical body of the IBGE, including geographers, statisticians and economists responsible for the listing of variables investigated by the census of agriculture.

Knowing how the Geography domain is conceptually structured before its object of study enabled an evaluative view of the landscape, having shown us that, when studying it, we get away from a contemplative position and approach its essence, that is, what defines it, thus establishing a frontier between common sense and its unique meaning. The conceptualization of this domain is a prerogative of the knowledge representation process and meets the information needs of users of several segments interested in this topic.

The analysis of the Geography field, by means of the selected bibliography, has posed the challenge of detecting its network of terms endorsed by the literary warrant. The identified and conceptualized terminology provided us with materials that support the classificatory structure of the landscape and is consolidated in the ontology of landscape within the scope of KOS. Nevertheless, the construction of KOS, from the simplest to the most elaborated, should follow theoretical and methodological criteria based on the useful standardized definition and terminology aiming at retrieval of information of this kind. In the light of these considerations, departing from this representation tool for landscape we hope to contribute with other professionals in the LIS field by sharing these pieces of information, once there are still few initiatives in this sphere dealing with landscape.

Besides studying domain analysis as a prerequisite for improving knowledge on the theoretical foundations of the Geography field, it was of extreme importance to analyze the 1970 and 2006 censuses of agriculture, which were confirmed as information providers par excellence not only about socioeconomic surveys in the agricultural segment.

The systematization of this grouped knowledge was the foundation for an arrangement that combines categories and concepts consensually and produces standardized terminology, supported by theories that guide the field of knowledge representation and organization. Also, systematization reinforces the multidisciplinary status of LIS by promoting and enabling the intercommunication between Geography and Statistics, with a touch of Economics, thus leading to the creation of new knowledge.

Throughout the research process, we had the opportunity of confirming that geographic information consists of a comprehensive field for studies and discussions to be investigated by LIS, since it covers a wide range of information in need of proper treatment, and that demand organization and representation. As for landscape, this topic requires a contemporary update in its analytical approach and, as a consequence, a confrontation with this issue by the professionals engaged in the field of knowledge representation and organization. The landscape has a lot to tell us as an object of study in Geography and indicates that many answers should be given to users of an information unit regarding their questions, either current or future ones.

Notes

(1) Our original research project was elaborated in 2016; for that reason, it does not include the 2017 census of agriculture, the results of which had not yet been released.

(2) In the original research, core ideas in the Geography domain and censuses of agriculture were sources for the obtention of a conceptual dashboard and a classificatory structure for landscape.

References

Albrechtsen, Hanne. “This is not domain analysis”. *Knowledge Organization*, vol. 42, no. 8, 2015, pp. 557-561, https://www.nomos-elibrary.de/10.5771/0943-7444-2015-8/ko-knowledge-organization-jahrgang-42-2015-heft-8. Acessed 13 Jul. 2019.

Barité, Mario, et al. “Garantia literária: elementos para uma revisão crítica após um século”. *Transinformação*, vol. 22, no. 2, 2010, pp. 123-138.

Capone, Vera Lucia Punzi Barcelos, and Cordeiro, Rosa Inês de Novais. Domain Analysis, Discourse Community and Literary and Semantic Warrants: a study of the Brazilian rural landscape. *Brazilian Journal of Information Science: Research trends*, vol. 16, *Dossier Domain Analysis*, 2022, e02136. DOI: 10.36311/1981-1640.2022.v16.e02136

Barité, Mario. *La garantia literaria: revision crítica y propuesta teórica-metodológica*, 2009. Universidad de Granada, Masters dissertation.

Bates, Marcia J. "Fundamental forms of information". *Journal of the American Society for Information Science and Technology*, vol. 57, no. 8, 2006, pp. 1033-1045.

Bates, Marcia J. "Information and knowledge: na evolutionary framework for information Science". *Information Research*, vol. 10, no. 4, July 2005, https://files.eric.ed.gov/fulltext/EJ1082014.pdf. Acessed 13 Jul. 2019.

Bawden, David, and Robinson, Lyn. *Introduction to information science*. Neal-Schuman, 2013.

Beghtol, Clair. "Semantic validity: concepts of warrant in bibliographic classification systems". *Library Resources & Technical Services*, 1986, pp.109-125.

Bertrand, Georges. "Paisagem e geografia física global: esboço metodológico". *Revista RáeGa*, no. 8, 2004, pp. 141-152.

Buckland, Michael. "Information as thing". *Journal of the American Society of Information Science*, vol. 42, no. 5, 1991, pp. 351-360.

Capone, Vera Lucia Punzi Barcelos. *Análise da paisagem rural e sua rede de conceitos a partir das perspectivas da comunidade discursive e análise de domínio no âmbito dos sistemas de organização do conhecimento (SOCs)*, 2020. Universidade Federal Fluminense, Doctoral Dissertation.

Capurro, Rafael, and Hjorland, Birger. "O conceito de informação". *Perspectivas em Ciência da Informação*, vol. 12, no. 1, 2007, pp. 148-207.

Cavaco, Carminda. "As paisagens rurais: do 'determinismo natural ao determinismo político'?" *Finisterra*, vol. 40, no. 79, 2005.

Censo agropecuário. IBGE, 1970, http://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?acervo=periodico&campo=titulo&opeqry=&texto=censo%20agropecuario&digital=false&fraseexata=. Acessed 24 Sep. 2016.

Censo agropecuário. Brasil, grandes regiões e unidades da federação: segunda apuração. IBGE, 2006. http://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?acervo=periodico&campo=titulo&opeqry=&texto=censo%20agropecuario&digital=false&fraseexata=. Acessed 24 Sep. 2016.

Corrêa, Roberto Lobato, and Rosendahl, Zeny. *Paisagem, tempo e cultura*. UERJ, 1998, pp. 92-123.

Cosgrove, Denis. "A geografia está em toda parte: cultura e simbolismo nas paisagens humanas". P*aisagem, tempo e cultura*. Organized by Roberto Lobato Corrêa and Zeny Rosendahl. UERJ, 1998, pp. 92-123.

Capone, Vera Lucia Punzi Barcelos, and Cordeiro, Rosa Inês de Novais. Domain Analysis, Discourse Community and Literary and Semantic Warrants: a study of the Brazilian rural landscape. *Brazilian Journal of Information Science: Research trends*, vol. 16, *Dossier Domain Analysis*, 2022, e02136. DOI: 10.36311/1981-1640.2022.v16.e02136

Dam Christensen, Hans. “Kunsten at vaelge fra: om bradfordsk materialevalg og vidensorganiseringens socialitet”. *Dansk Biblioteksforskning*, vol. 3, no. 1, 2007, pp. 31-43, https://informationsstudier.ku.dk/ansatte/?pure=da%2Fpublications%2Fkunsten-at-vaelge-fra(3fe68001-5daf-4648-9c41-b93505855e09).html. Acessed 14 Jul. 2019.

Gambi, Lucio. *Critica ai concetti geografici di paesaggio umano*. Fratelli Lega, 1961.

Gianella, Leticia. “A historicidade de um conceito: os diversos usos da paisagem ao longo do tempo na ciência geográfica”. *Geo UERJ*, vol. 2, no. 18, 2008, pp. 62-86.

Golub, Koralyka. *Subject access to information*: an interdisciplinary approach. Libraries Unlimited, 2015, pp. 1-40.

Gomes, Paulo Cesar da Costa. *O lugar do olhar:* elementos para uma geografia da visibilidade. Bertrand Brasil, 2013.

Gnoli, Claudio. “Knowledge Organization Systems (KOSs)”. *Subject access to information: an interdisciplinary approch.* Organized by Koraljka Golub. Libraries Unlimited, 2015, pp. 43-65.

Grenersen, Geir, et al. “Landscapes as documents: the relationship between traditional Sámi terminology and the concepts of document and documentation”. *Journal of Documentation*, vol. 77, no. 6, 2016, pp. 1181-1196, https://doi.org./10.1108/J D-01-2016-0010. Acessed 10 Jul. 2018.

Guedes, Roger de Miranda, and Moura, Maria Aparecida. *O princípio da garantia semântica e os estudos da linguagem*. Encontro Nacional de Pesquisa em Pós-Graduação em Ciência da Informação, 2016.

Guimarães, José Augusto Chaves. “Análise de domínio como perspectiva metodológica em organização da informação”. *Ciência da Informação*, Brasília, vol. 41, no. 1, 2014, pp. 13-21.

Guimarães, José Augusto Chaves, and Tognoli, Natália Bolfarini. “Provenance as a domain analysis approach in archival Knowledge Organization”. *Knowledge Organization*, vol. 42, no. 8, 2015. pp. 562-669.

Hjorland, Birger. “Domain analysis”. *Knowledge Organization*, vol. 44, no. 6, 2017, https://www.nomos-elibrary.de/10.5771/0943-7444-2017-6/ko-knowledge-organization-jahrgang-44-2017-heft-6. Acessed 06 Jul. 2019.

Hjorland, Birger. “Domain analysis in information science”. *Encyclopedia of library and information sciences 3th ed.* Edited by J. M. Bates and M. N. Maack. Taylor & Francis, 2010.

Hjorland, Birger. “Domain analysis in information science: eleven approaches: traditional as well as innovative”. *Journal of Documentation*, vol. 58, no. 4, 2002, pp. 422-462.

Hjörland, Birger, and Albrechtsen, Hanne. “Toward a new horizon in information science: domain analysis”. *Journal of the American Society for Information Science*, vol. 46, no.6, 1995, pp. 400-425.

Capone, Vera Lucia Punzi Barcelos, and Cordeiro, Rosa Inês de Novais. Domain Analysis, Discourse Community and Literary and Semantic Warrants: a study of the Brazilian rural landscape. *Brazilian Journal of Information Science: Research trends*, vol. 16, *Dossier Domain Analysis*, 2022, e02136. DOI: 10.36311/1981-1640.2022.v16.e02136

Hjorland, Birger, and Hartel, Jenna. “Ontological, epistemological and sociological dimensions of domains”. *Knowledge Organization*, vol. 30, no. 3-4, 2003, pp. 239-245.

Hulme, E. W. “Principle of book classification: chapter III: on the definition of class headings, and the natural limit to the extension of book classification”. *Library Association Record*, no. 13, 1911, pp. 444-449.

Konkoly-Gyuró, Éva. “Conceptualisation and perception of the landscape and its changes in a transboundary area: a case study of the southern german-french borderland”. *Land Use Policy*, vol. 79, 2018, pp. 556-574.

Lema, Paula Bordalo. “Representações espaciais em geografia: da paisagem como objetivo, às lógicas espaciais e modificações do território”. *Revista da Faculdade de Ciências Sociais e Humanas*, no. 10, 1997, pp. 97-119.

Lepczyk, Christopher A., et al. “An ontology for landscapes”. *Ecological Complexity*, vol. 5, 2008, pp. 272-279.

López-Huertas, María Jose. “Análisis del dominio interdisciplinary para la representación y organización del conocimiento”. *Políticas de memória e informação: reflexos na organização do conhecimento.* Organized by Maria Nélida González de Gómez and Evelyn Goyanes Dill Orrico. UFRN, 2006. pp. 209-235.

López-Huertas, María Jose. “Domain analysis of interdisciplinary knowledge domains”. *Knowledge Organization*, vol. 42, 2015, pp. 570-580.

Luchiari, Maria Teresa D. “A (re)significação da paisagem no período contemporâneo”. *Paisagem, imaginário e espaço.* Organized by Roberto Lobato Corrêa and Zeny Rosendahl. UERJ, 2001, p. 9-28.

Nascimento, Denise Morado, and Marteleto, Regina Maria. “Social field, domains of knowledge and informational practice”. *Journal of Documentation*, vol. 64, no. 3, 2008, pp. 397-412.

National Information Standards Organization. *Guidelines for the construction, format and management of monolingual controlled vocabularies*. NISO, 2005.

Prieto-Díaz, Rubén. “Domain analysis: an introduction”. *Software Engineering Notes*, vol. 15, no. 2, 1990, pp. 47-54.

Raper, Jonathan. “Geographic information science”**.** *Annual Review of Information Science and Technology*, vol. 43, no.1, 2009, pp. 1-117.

Robinson, Lyn. “Information science: communication chain and domain analysis”. *Journal of Documentation*, vol. 65, no. 4, 2009, pp. 578-591.

Santos, Milton. *Metamorfoses do espaço habitado*. Edusp, 2014.

Saquet, Marcos Aurelio. *Abordagens e concepções de território*. Outras Expressões, 2015.

Sauer, Carl. O. “A morfologia da paisagem”. *Paisagem, tempo e cultura*. Organized by Roberto Lobato Corrêa and Zeny Rosendahl. UERJ, 1998.

Smiraglia, Richard P. *Domain analysis for Knowledge Organization:* tools for ontology extraction. Chandos Publishing, 2015. pp. 97-102.

Smiraglia, Richard P**.** “Epistemology of domain analysis”. *Cultural frames of knowledge*. Edited by H. L. LEE and Richard P. Smiraglia. Ergon, 2012, pp. 111-124.

Solana, Miguel. *Espacios globales y lugares próximos*. Icaria, 2016, pp. 39.

Swales, John M. *Research genres:* English in academic and researching settings. Cambridge University Press, 1990.

Tennis, Joseph T. “What does a domain analysis look like in form, function, and genre?” *Brazilian Journal of Information Science*, vol. 6, no. 1, 2012, pp. 3-14.

Tesser Obregon, Claudio. “Algunas reflexiones sobre los significados del *paisaje* para la Geografía”. *Revista de Geografía Norte Grande*, vol. 27, 2000, pp. 19-26.

Turri, Eugenio. *Antroplogia del paesaggio*. Comunità, 1974.

Turri, Eugenio. *La conoscenza del territorio:* metodologia per un’analise storico-geografica. Marsilio, 2002.

Veronezzi, Fernando, and Fajardo, Sergio. “A paisagem na análise geográfica: considerações sobre uma paisagem rural em Guarapuava – PR”. *GEOgraphia*, vol. 17, no. 34, 2015.

Vickery, B. C. *Faceted classification*: a guide to construction and use of special schemes. Aslib, 1960.

Wilson, Thomas D. “The work of the British Classification Research Group”. *Subject retrieval in the seventies: new directions.* Edited by H. Wellisch and Thomas D. Wilson. Greenwood, 1972, pp. 62-71.

Zins, Chaim, et al. “Mapa do conhecimento da Ciência da Informação: implicações para o futuro da área”. *Brazilian Journal of Information Science*, vol. 1, no. 1, http://www2.marilia.unesp.br/revistas/index.php/bjis/issue/view/11. doi.org/10.36311/1981-1640.2007.v1n1.02.p3. Acessed 20 May. 2020.

Recived: 19/09/2021 Acepted: 13/02/2022

Capone, Vera Lucia Punzi Barcelos, and Cordeiro, Rosa Inês de Novais. Domain Analysis, Discourse Community and Literary and Semantic Warrants: a study of the Brazilian rural landscape. *Brazilian Journal of Information Science: Research trends*, vol. 16, *Dossier Domain Analysis*, 2022, e02136. DOI: 10.36311/1981-1640.2022.v16.e02136