THE CONCEPTS OF DOMAIN, DISCOURSE COMMUNITY AND EPISTEMIC COMMUNITY:
affinities and specificities

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Abstract

The characteristics or properties that underlie the concept of community are present in several social groups which have some similarity in their distinctive features and they act as a core to the construction of the concepts of Domain, Discourse Community and Epistemic Community, which are fundamental to the research in several fields of knowledge. Considering the conceptual triangle – Domain, Discourse Community, and Epistemic Community - this study aims to examine theoretical and methodological aspects related to them by investigating their characterizing features and, consequently, their main distinctions and similarities, especially regarding the universe of Information Science. Thus, the aim of this essay is to contribute to the deepening of the theoretical understanding of the concepts covered, reflecting on their compatibilities, as well as the characteristics that distinguish and specify them. For this, the methodological choice was centered into retrieving and analyzing the seminal authors of the three considered dimensions – domain, discourse community, and epistemic community – according to their recurrent citing presence in the scientific literature. It was therefore possible to see that these concepts have similarities to each other, such as their contexts arising from the need to understand sociological aspects of science; the mutual understanding among its members about the specialized languages and theoretical bases used; the analysis based on tacit documents, duly expressed and recorded. These aspects of similarities demonstrate that these concepts can be understood as belonging to the same set, and inserted in the overarching area of Sociology of Science. Even so, these concepts have their features, which distinguish their analysis objectives and also their peculiar scientific biases.

Keywords: Information Science; Domain; Discourse Community; Epistemic Community.

1 Introduction

The notion of community, as a set of individuals whose members are characterized by a sense of belonging and engagement, resulting from the sharing of rules and modes of behavior and thought - whether due to similar interests, tasks, or professions - regardless of their location in geographical neighborhoods or "virtually" connected (Pogner 2005), is present in different contexts of society.

The characteristics or properties that underlie the concept of community are present in several social groups which have some similarity in their distinctive features and they act as a core to the construction of the concepts of Domain, Discourse Community and Epistemic Community, which are fundamental to the research in several fields of knowledge.

In Information Science, the concept of Domain was introduced by Hjørland and Albretchsen in 1995, establishing it in a social and epistemological paradigm and relating it to the notion of discourse community.

On the other hand, the concept of Discourse Community was proposed in 1982 by Martin Nystrand (Swales 2017), treated in the works of Patricia Bizzell (1982a; 1982b), and refined and consolidated through the studies of John Swales, in 1990. In this sense, Discourse Community can be conceived as a group of individuals who are committed to common goals, communication mechanisms between members, specific communicative genre, and lexicon, mainly used to share and discuss information.

Completing the triangle, the concept of Epistemic Community was proposed in Sociology at the end of the 70s and, besides not much discussed in the field of Information Science, it gained strength in the beginning of the 90s, with an issue of the journal International Organization. In this context, Peter Haas (1992) interprets an epistemic community as a network of experts with respected expertise in a field of knowledge, whose continued contribution to scientific production influences other researchers in their field. Such concept also supported bibliometric studies by Roth and Bourgine (2006), Hennemann et al. (2012) and Ahlgren et al. (2013), and gained theoretical investigative consistency in the article by Guimarães et al. (2015), which characterizes the epistemic community in Knowledge Organization, based on the journal Knowledge

Organization. Subsequently, Evangelista (2021) deepened the understanding of the concept of epistemic community in the field of Information Science, by supporting the analysis of the theme Ethics in Knowledge Organization in a theoretical framework based on this concept.

The choice of these three terms for research in detriment of others that are also similar to domain studies, is due to the fact that the searched terms analyze science and knowledge from their individuals, and under s social perspective, distinguishing in which they will be the analysis tools - discourse, produced knowledge or shared values - but approaching them with regard to their research objects: members who share research interests in an area of knowledge.

Considering the mentioned conceptual triangle – Domain, Discourse Community, and Epistemic Community - this study aims to examine theoretical and methodological aspects related to them by investigating their characterizing features and, consequently, their main distinctions and similarities, especially regarding the universe of Information Science. Thus, the aim of this essay is to contribute to the deepening of the theoretical understanding of the concepts covered, reflecting on their compatibilities, as well as the characteristics that distinguish and specify them.

The main justification for the development of this research is given by the need to delve into the origin of basic concepts in methodologies that are commonly used for application in research without due reflection of their context of emergence and epistemological positions. In addition, we sought to determine how these concepts can approach and contribute jointly to the development of research, but also to expose their distinctive traits and what characterizes them as different.

This paper has the following structure: the next section was sought to better describe the origins and use in Information Science of the concept of domain analysis; the origin of the studies in discourse community and their context of studies was given in third section; the same information was wrote about Epistemic Community in fourth section. After presenting the concepts, a fifth section sought to analyze and describe the affinities and distinctions between the concepts. Finally, a final consideration ends the paper.

2 Domain Analysis

Although the concept of domain is present in several fields of knowledge, such as Mathematics and Cognitive Science, as well as the term "domain analysis" is also present in areas such as Software Engineering and related fields, in Information Science, it was introduced in 1995 by Birger Hjørland and Hanne Albrechtsen (Hjørland and Albrechtsen, 1995; Hjørland 2017). In that article, the authors proposed an epistemological social paradigm for Information Science, in which they emphasized the context and the social, ecological and content-oriented nature of knowledge. Focusing especially on the field of Knowledge Organization, they presented the concept of domain, associating it with the discourse community and highlighting that, in this community, individuals actively participate in the sharing of work.

Thus, in Information Science, a domain can be defined as a group of individuals (community) with an ontological basis that reveals the sharing of an underlying permanent purpose, a set of common hypotheses, and an epistemological consensus on methodological and semantic social approaches. The interaction of the ontological, epistemological, and sociological dimensions defines a domain, with theoretical assumptions, discourse and intersubjective agreement being highly correlated in it (Smiraglia 2012).

Hjørland and Hartel (2003) present three dimensions that interact with each other to build a domain, namely: a) an ontological dimension, comprising theories and concepts about the objects of human action; b) an epistemological dimension, involving theories related to how knowledge is acquired; and c) a sociological dimension, covering the semantics of the concepts shared by the group related to the object of study.

According to Hjørland (2017), the relationship among these dimensions is not explicitly defined and should not be considered relatively easy. The author also points out that these dimensions can be better understood when considering their philosophical concepts, based on a social epistemology or a constructivist sociology, which brings the concept of domain closer to others such as a scientific field or an epistemic community.

Amorim and Café (2016) observed that the term domain in Hjørland's articles had the following properties: group of individuals; body of knowledge; knowledge limits; malleable

borders; interference in the production of knowledge; exchange of information with other domains; it has internal communicational dynamics; standardizes actions; represents and corroborates an authority; presents power struggles; conditions the semantics of concepts; it is institutionally and epistemologically organized; suffers outside influence; it resembles groups of people, organizations and disciplines.

In this context, the characteristic of the domain is highlighted as a: specialization in the division of cognitive work; dynamic; always in developing and evolving work; dependent on period and space; a coherent and socially institutionalized theory, based on the advancement of its characterizing aspects, as researchers, users and mediations (Hjørland, 2017). Thus, it focuses on activities, collaboration and shared common goals of a group of individuals, from the perspective of work level and formal structures, providing a strong concept for the analysis of human-information interactions (Mai 2005).

From this perspective, Hjørland (2017) understands the domain as a two-way street: while it is given – the knowledge involved in the domain is available for analysis – it is also built from the investigations that take place on the research objects which are the focus of the domain. This double vision is also shared based on the interpretation: on the one hand, of the intellectual organization of knowledge and, on the other, the social organization of this knowledge. These factors also determine the continuous character of science: even if one of the two elements – the institution or the content – changes during the studies, the other aspect remains stable. Thus, even though constant evolution is expected from the domains, for the analysis to be consistent, a certain level of stability in their structures has to be expected.

In this scenario, a domain can be characterized by the language, structure and patterns of work cooperation, the forms of communication and knowledge organization, its information systems and relevance criteria, given that these attributes are reflections of their work objects (Hjørland and Albrechtsen 1995). It is materialized in the body of knowledge generated by it, resulting from the organization of its social and cognitive structure, based on the activity linked to the objectives, fundamental concepts and epistemological framework, which make it different from other domains (Thellefsen and Thellefsen 2004; Guimarães 2014; Hjørland 2017).

Furthermore, by allowing the improvement of knowledge production, the domain presents itself as a coherent way of delimiting knowledge in a scientific field, with forms of legitimation in formal expressions and models (Bufrem and Freitas 2015). Also, by being strongly based on a social dimension, information and knowledge have a socially constructed meaning, according to the understanding shared by the members that make up the community (Oliveira and Grácio 2013).

In this view, disciplines and organizational structures are often formally based and may therefore not reflect the activities that actually take place within them. On the other hand, an area of specialization, a set of literature or a group of people working together can be a domain (Mai 2005). Thus, a domain can be, but not necessarily, a discipline, and it can be also distributed in several disciplines or specialties (Zhou et al. 2009). On the other hand, a domain cannot be considered unambiguous and, instead of a closed and stable system, it must be understood by its procedurality, fragmentation and indeterminality (Hjørland 2017).

The dual nature of a domain is also highlighted: on the one hand, an intellectual organization that takes shape in an iterative process of constant change and stability; and on the other hand, a social one, characterized by the understanding that, over time, its language tends to become more distinct from the general language and from that of other domains, due to the increase in its specialization. In this context, from the domain-analytical point of view, different theories and social interests can interpret different domains, and therefore the interests and theoretical points of view on which the construction is based must be explicit. Furthermore, is intended to know the relevant databases, search strategies, subject terminology, knowledge organization systems, bibliometric methods and epistemology of the knowledge domain (Hjørland 2017). Therefore, the analysis of a domain is not neutral, being always based on some point of view beside others (Grácio 2020).

In this set, the subjective character of the researcher who analyzes the domain must also be highlighted, a criterion that is inevitable at the time of the investigation. In this sense, Hjørland (2017) points out that the study in domain analysis adopts a spiral hermeneutic criterion: investigations on the theme start from the preconception about the domain and, during the investigation, the perceptions change, which characterizes the spiral element of these studies. This perspective is very close to what is proposed by Guimarães (2006) as the helicoidally movement

of knowledge – knowledge arises from studies in a particular specialty and, since investigations allow for resolutions to problems or construction of new knowledge, the apparent circular movement repeats itself, although not returning to the same place, forming what can be seen in the shape of a helicoid.

Thus, given these characteristics of a domain, it is only through the domain analysis that one can precisely know the composition and limits of a domain, since domain analysis focuses on the characterization of their work structure, ontology and communication patterns, that is in the circumstances in which their activities occur and the restrictions imposed by paradigms and contemporary research fronts (Mai 2005; Hjørland 2017).

Assuming that scientific domains generate products that can be used to characterize them, the core of the analytical approach investigates the activities and products of the domain in order to obtain information regarding their underlying structure and meanings (Mai 2005). In this context, the scientific literature has assumed a prominent role among the products resulting from the community that constitutes a scientific domain.

Seven years after the publication of the seminal article by Hjørland and Albrechtsen (1995), Hjørland (2002) presents 11 approaches to the analysis of a domain: production of literature guides, elaboration of special classifications and thesaurus, indexing and information retrieval, empirical studies of users, bibliometric studies, historical studies, document and genre studies, epistemological and critical studies, terminological studies, structures of scientific communication institutions, cognition, knowledge and artificial intelligence. More recently, Smiraglia (2015) proposed the exclusion of two of them (indexing and retrieval of information in specialties, and studies of structures and institutions in scientific and professional communication) and the inclusion of Discourse Analysis and Semantics in Data Bases, and Guimarães and Tognoli (2015) proposed the inclusion of provenance as an approach for domain analysis in the archival knowledge organization (Hjørland 2017).

Through the domain analysis approaches, focused on Knowledge Organization tools and processes, the perception is reinforced that the research objects are directed towards a social and theoretical aspect of the institutions, rather than the assumptions considered universal. By focusing on the importance of a given theme for the dissemination of knowledge in a domain, the

importance of domain analysis for theorists of knowledge organization, information science and library management is evidenced (Hjørland 2017).

In this context, and from the premise that Information Science studies the information infrastructures, it is possible to say that the approaches to analyzing a domain emphasize that the objects of study are social and theoretical entities (Hjørland 2002). By emphasizing different domain interests, perspectives, epistemologies and "paradigms", the approach called Domain Analysis can be qualified as "critical-hermeneutics" (Hjørland 2017).

Furthermore, in studies that analyze a domain, it is more significant to know its theoretical and epistemological foundation, identifying different "paradigms" or theoretical points of view, than the mapping of its most studied topics. Thus, knowing the disciplinary link seems to be less significant than revealing and examining the implicit or explicit theoretical assumptions of a scientific domain (Hjørland 2017). This perception comes from the fact that even though researchers who compose a domain investigate similar themes, having their own lexicon, tools and systems, this does not necessarily allow us to assume that all its members have a consensus on the themes analyzed and the search for this consensus may be detrimental to their analysis. In the same sense, Grácio (2020) points out that it is more relevant to highlight the theoretical and epistemological foundations of these specialists – highlighting their objects of study and on what theoretical basis they are supported – than simply mapping f the topics studied, without due reflection on how these points of view are constructed and solidified in the domain. From this perception, it becomes possible to identify significant elements of characterization and evaluation of science.

Thus, insofar as it allows the identification of the conditions under which scientific knowledge is built and socialized, domain analysis constitutes a relevant approach for the characterization and evaluation of science (Oliveira and Grácio 2013; Guimarães 2014). In this sense, Smiraglia (2011) considers that Domain Analysis is the study of the evolution of discourse around theoretical thoughts and currents, generally represented through the literature of a scientific community, which generates knowledge about the interaction between communities of researchers.

Particularly regarding the approach of bibliometric studies, Hjørland (2002) considers that they constitute a consistent approach to analyze and characterize a scientific domain because they are based on detailed analysis of the connections between documents and individuals. The author also highlights that when associated with epistemological, historical or other qualitative approaches, they provide a larger context for the consolidation to Domain Analysis studies.

In this scope, as highlighted by Grácio (2020), the core of the domain analysis approach is the study of activities and products developed by its members, to elucidate their intrinsic structures and meanings to their development, and the presence of common quotes between documents evidences their proximity to semantic relationships, which can be verified through the bibliographic co-citation and author coupling.

Considering that Hjørland and Albrechtsen (1995) and Hjørland (2002; 2017), as already commented, associate the concept of domain with the concept of discourse community, the following section is dedicated to present and discuss of the referred concept to contribute to a better understanding not only of the similarities between them, but also of the specificities that distinguish them.

3 Discourse communities

A discourse community emerges from a social perspective of discourse as a process and its multiple purposes, composed by a group of people linked through a common interest. Such group shares a set of social conventions and public objectives directed towards some purpose, made explicit through mission or consensual vision among the majority of its members (Swales 1990).

In line with P. Bizzell's definition, Kelly-Kleese (2004) describes a discourse community as a group of individuals who are bound together primarily by sharing language uses and practices, which can be seen as conventions arising from social interactions within the community and by its dealings with those outside it.

Thus, discourse communities are characterized by mutual dependence on language and a sense of belonging to that community. These communities can be composed in different ways – family, academic, professional, among others – with each one having its own language pattern.

Furthermore, they can be defined as social groups with similar linguistic terms and applied in pre-defined contexts understood by all members, as well as with similar ways of solving problems. Members of this community use textual products as proof of participation in each community or to express their desire to participate in a certain community (Pogner 2005).

In order to elucidate the reasons why not every group of individuals can be considered a discourse community, Swales (1990) proposes six defining characteristics to identify a discourse community: 1 - common objectives; 2 - intercommunication mechanisms; 3 - participatory mechanisms; 4 - specific genres in the communicative process; 5 - highly technical and specialized terminology; and 6 - high degree of relevant content and discourse expertise in general.

The first characteristic is noteworthy as the set of common objectives that are public and consensually agreed. These goals determine what is the real intention of the discourse community, however abstract, and may be formally described in documents or some way tacit. Furthermore, it is noteworthy that it is the communion of objectives, not shared objects of study that configures the criterion for validating the group as a discourse community, even if the objectives include the objects. Thus, the fact that a community has similar research objects or processes in common are not sufficient conditions to determine the formation of a discourse community, but the combination of similar research objects and the sharing of the same goals (Swales 1990).

The intercommunication mechanisms (second characteristic) between the members of a discourse community include various forms of information exchange, such as meetings, correspondence, telecommunications, among others, used mainly to inform and exchange interactions between members – it is not enough for members to be part of the community, it is necessary for them to actively participate by reading their communications and offering feedback to them. These mechanisms configure the initial movement towards cooperation in activities and actions that can contribute to the community as a whole. In the new digital context, these mechanisms can also be characterized by emails, tweets and blogs (Swales 1990).

Participatory mechanisms mainly mean to provide information (third characteristic of the discourse community), they enable community members to access and exchange information, which allow them to improve their knowledge and skills within the scope of the objective agreed upon in the community. Only individuals active in these mechanisms can be considered members

of the discourse community, that is, those who do not access the information exchange mechanisms cannot be considered as belonging to the discourse community (Swales 1990).

In this sense, it is highlighted that a discourse community communicates through approved channels, called "forums", which regulate the discourse. Each forum has rules governing suitability that members are required to adhere to. The explicitness and institutionalization of these rules vary between different communities (Porter 1986).

The products of a discourse community are texts, which are "acceptable" within the forums (e.g. journals) only when they follow the format conventions and have an ethos that conforms to the standards of this community, including evidence of familiarity with previous research and about their contribution to the field, as well as the use of a scientific method in the analysis of their results, that is, these texts reflect the episteme of the community. Furthermore, every text accepted in a discourse community changes the composition of that community, which can revise its discourse practice (Porter 1986).

The fourth defining characteristic of a discourse community - the use of specific genres in the communicative furtherance of its goals -, it is highlighted that the similar communicative genres used by the community result from the appropriation of research topics, the form and functions of elements of discourse, in addition to the operations developed by the community (Swales 1990).

The fifth characteristic - having highly technical and specialized terminology -, it is emphasized that the members of a discourse community have their own lexicon, consisting of a set of specialty terms that are common to the community's discourse, such as technical terms in the field of medicine or the use of abbreviations and acronyms (Swales 1990).

The sixth – high general degree of expertise –, a discourse community has a member threshold with an adequate level of relevant content and discourse expertise. For this feature, discourse communities are dynamic, since individuals entering as apprentices and leaving them for voluntary and involuntary reasons, including death. In this scenario, the survival of a community depends on a reasonable balance between novice and expert members (Swales 1990).

Therefore, as observed by Flowerdew (2000), to be a member of a discourse community, the individual needs to know the agreements, norms and commitments, whether tacit or explicit, about practices, formalities, precepts and expertise that support the six criteria proposed by Swales (1990).

In this context, it is also highlighted that the members of a discourse community share the understanding of what objects are appropriate for analysis and discussion, what procedures can be performed on them, what constitutes "evidence" and "validity" and the formal conventions to be followed. However, a discourse community can have a well-defined ethos, or it may have competing groups and undefined boundaries. Furthermore, it may have a poorly established regulatory system and no clear leadership. But some discourse communities are consolidated, such as the scientific community (Porter 1986).

In the academic sphere, discourse communities can be understood as groups of specific interests, whose main interest lies in the construction of knowledge and scientific texts in the field in which they are inserted. These communities have means of sharing information, use specialized terminology and also specific textual genres, such as articles from journals and event annals, research reports, submission letters, among others. In the official context, the focus is on argumentative texts based on clearly documented research results. Furthermore, the position of the producers of this knowledge in relation to the rest of the community contributes to the good acceptance of these data as legitimated by the community (Pogner 2005).

Working within a broader concept called community of work, formed by two complementary concepts – discourse community and community of practice-, Karl-Heinz Pogner (2005) bases the concept of discourse community on written knowledge, based on the refinement of the notion of community interpretation, resulting from socio-cognitive research on critical theories. For this author, the concept of discourse community is widely applied in the academic field from written productions. Still, for this author, the concept of community of practice, which is essentially based on the idea of social learning, i.e., together, is focused on processes and how they can be used to share knowledge.

From the analysis of socially constructed networks, it can be seen that these communities are constructed independently of geographic space. In this context, technological development –

especially the use of computers – has contributed to the very diverse composition of members of these communities. As a definition of communities, the author brings that they are characterized by the conception of certain behaviors and norms, as well as by the sense of belonging and commitment. The result of this set results in similar points of view and ways of thinking, which leads to the sharing of professional practices, interests and activities. This is a distinctive feature to characterize discourse communities: knowledge development and sharing, essentially through the production of texts (Pogner 2005).

Pogner (2005) summarized the characteristics of a discourse community as it follows:

- **Aim**: producing and disseminating knowledge in texts and discourses.

- Participants/members: no formal membership. Persons working on similar problems and with shared interests.

- Basis of cohesion: common (professional) interest. Participations in the joint discourse for problem-solving and for knowledge production.

- Duration: as long as there is interest in the problem. Even if members often change, the DC continues to exist.

More recently, in an article that revisits the concept of Discourse Community, Swales (2017) emphasizes that it is possible to identify three types of discourse communities in the academic sphere: the local, which concerns the group of people who work in the same place or in a same occupation in the same area; the focal, which are characterized as associations of some kind that go beyond the boundaries of regions or nations, even acting internationally, which may be of different ages or professions, but unite around a goal or hobby; and finally, the "folocal", which is a combination of the previous ones, such as, for example, a researcher who understands how things work in his department, as well as in the entire university and even other universities.

In this study, Swales (2017) includes more two criteria that characterize the discourse community: these communities develop a sense of "silent relationships", in which there are things that do not need to be said or reinforced in speeches, as they are already in common agreement or understanding between the members; in addition, discourse communities develop horizons of

expectations, based on the definition of frequency of activities, a sense of history and values that define what is good or bad to work with.

In Information Science, Amorim and Café (2016) the term "discourse community" is present in several articles by B. Hjørland dealing with the thematic domain analysis. The author noted that, in this context, the term "discourse community" was associated with the properties: social organization; defining what can be communicated; formed by humans (actors and receptors) and non-humans (sources and services); it has a structure that organizes it; it shapes information and knowledge; explains the uses of information; it resembles the concept of discipline. However, the author highlights those other terms were also detected in Hjørland's work to refer to the same idea, including the scientific community and the epistemic community, reinforcing the terminological and conceptual flexibility of the author's work.

Thus, the concept of epistemic community also surrounds the concept of domain and proves to be relevant to Information Science. The following section is dedicated to discussing epistemic communities, in line with the perspective presented by P. Haas in 1992, one of the most prominent scholars on the subject (Evangelista 2021).

4 Epistemic communities

An epistemic community can be defined as an active network of professionals with recognized expertise, who work to solve problems in a domain or area, with relevant authority and knowledge, which gives them an implicit power to control knowledge and information. These communities emerge from a demand for information on a topic, in which the need for specialists to provide studies makes them important political actors at national and international levels, who start to influence those who make decisions in the area, institutionalizing their influences (Haas 1992).

Recently, Håkanson (2010) presents the definition of epistemic community as a group of people who dominate the theories, codes (as specialization languages) and tools of a given practice. For the author, these three elements are essential for the delimitation of an epistemic community and refer to the frames of reference that make it possible to exchange information among the

participants, to the symbols used by the community to communicate - such as languages of specialization, formulas mathematics, images and graphics – and the tools that allow analyzing the studied phenomena.

Although an epistemic community may be composed of different professionals, its members share: a set of norms and principles based on community values; causal beliefs arising from the practice, used for potential political actions or desired outcomes; notions of validity as internally defined criteria to assess and validate knowledge on the subject; a common policy, in which practices associated with a set of problems in the area of the community's professional expertise are highlighted to achieve social well-being. They also share aversions based on reluctance to policies and principles considered unacceptable by their members (Haas 1992).

In this context, an epistemic community occurs regardless of whether members reside in the same country or meet regularly (Håkanson 2010). Furthermore, the greater the extent of these communities – involving actors from different countries – the greater their influence in attributing values and practices and in motivating other people to dedicate themselves to composing these communities (Adler and Haas 1992).

Given their expertise, these communities determine the limits, delimit the options and have the authority to establish policies on the topic in which they operate. Through citations, the scientific production socialized by its members in events is disseminated by those who were influenced by knowledge, which thus generates a "systematic impact" (Haas 1992). Because of this extensive diffusion, transnational communities tend to be more intense and sustainable than those developed more locally. In this scenario, epistemic communities bring identity and prestige to their members, certifying them as a reference in their research scope (Håkanson 2010).

Mere groups of professionals or the scientific community are distinguished from epistemic communities in that they may have different norms and commitments, although they also have similar approaches and a consensual knowledge basis. In this context, it is highlighted that the ethical commitments assumed in epistemic communities are not exposed in code, but arise in accordance with the principles of the problem in question, seeking values and beliefs pursued by the society in which they are inserted (Haas 1992).

It should also be noted that an epistemic community is formed by members who have adopted similar approaches to solving a problem for intellectual, ideological or political reasons, despite the potential differences between them. Community participants know each other well, meet frequently in debates and roundtables, and in some cases are colleagues at nearby universities and have learned from each other about research issues. Furthermore, international cooperation is established in transnational meetings, in which prestigious researchers from different countries meet to discuss their perspectives on common problems (Adler 1992).

In this scenario, the fact that the companionship among members of the epistemic community is strengthened by institutional ties, informal sharing networks - such as invisible schools - and political practices, environments responsible for structuring the exchange of information and finding moral support for their beliefs (Haas 1992).

Based on the premise that science is a "collective art", epistemic communities pay attention to how scientific knowledge is produced and disseminated, sharing a certain faith in scientific methods as "producers of truth". Furthermore, these communities are not static and do not have fixed spaces, they are dynamic and have different modes of organization and existence (Meyer and Molyneux-Hodgson 2010). In this sense, communities are determined according to the time and space defined by the studied problem (Adler and Haas 1992) and time and spare are determinant not only to characterize the epistemic communities but also to organize the knowledge produced by them (Guimarães 2017).

In this context, Meyer and Molyneux-Hodgson (2010) establish four basic characteristics for epistemic communities: they act with knowledge – they produce, disseminate and control knowledge; they are stable and carried out according to the demands of the community; they are dynamic and change according to possibilities, temporal changes and interaction intensities; they produce knowledge and are responsible for training knowledge producers, by configuring and articulating future specialists to compose communities.

Cross classifies epistemic communities into "weak" or "strong" due to factors such as internal cohesion, with international cooperation positively affecting this factor, authority on the subject and the ability to persuade. In this sense, epistemic communities have different levels of

influence, and the more cohesive they are, the greater is their dominance in political decisions (Cross 2011).

Having presented the definitions and main characteristics of the three concepts that are the focus of this study - domain, discourse community and epistemic community - the following section is dedicated to exploring the similarities between them and their specificities.

5 Affinities and specificities between the concepts of domain, discourse community and epistemic community

In the previous sections, we sought to characterize the concepts of domain, discourse communities and epistemic communities, according to their definitions in the context of Linguistics and the Sociology of Science. Based on the premise that these concepts constitute a significant contribution to the foundations of Information Science studies, since they contribute to the discernment of their appropriate applications, this section analyzes their similarities (overlaps) and specificities.

A first similarity among these concepts is the context in which these ideas emerged: all three concern the scientific and sociological analysis of knowledge production, although they are not limited to this sphere. In addition, the beginning of the studies about them is emerged in the same historical context - although the concept of discourse communities and epistemic communities were initially proposed in the late 70s and early 80s, they were in fact discussed and studied in the beginning of the 90's, close to the moment that the concepts of domain and domain analysis were proposed in the field of Information Science. From this context, it can be inferred that they started from the same need found at the time: to analyze how knowledge is shared and transformed into new knowledge.

It is important to highlight that in the domain analysis approach, Hjørland uses the term domain as a synonym for discourse community several times. This lack of distinction may be due to the fact that the two concepts emphasize the sociological aspects of intellectual and formally presented works, through scientific communications, for example. In his entry on domain analysis in the ISKO Encyclopedia, Hjørland (2017) lists the concept of epistemic community as a

theoretical position in the domain approach. In this sense, it can be inferred that these communities are focused on the moral and political analysis of these domains.

This associative relationship can also be understood as a hierarchical relationship: in domain analysis, the analysis of discourse communities expressed through recorded knowledge mechanisms is performed, so that the values and forms of influence of a specific, characterized group are subsequently identified by epistemic communities.

Particularly regarding the relationship between the concepts of domain and discourse community in the work of B. Hjørland, Amorim and Café (2016) concludes that, in Hjørland's articles, a discourse community sometimes appears to compose a domain, and sometimes it is the domain itself. According to the author, in Hjørland's work these concepts are intersected because and it is impossible to establish relationships between them, that is, whether domain is generated by the discourse community or the opposite.

R. Smiraglia analyzes the domain analysis methodology in a hierarchical manner in relation to the concept of discourse community, since the starting point of domain analysis is the description of knowledge, based on the delimitation of its research themes in pre-existing discourse communities that, in most cases, have not yet been explicitly defined. Defining domain analysis as a scientific methodology to establish the conceptual basis of knowledge in a community, Smiraglia (2012) also brings it closer to the concept of discourse community. This understanding stems from the author's definition of domain, understanding it as a group that shares an ontological basis and an epistemological consensus regarding methodological approaches and social semantics, which does not allow us to be clear about the difference between the concepts of domain, discourse community and even invisible colleges.

These three concepts demonstrate similarities as they presuppose academic groups that research certain problems, as well as the construction of a social network among members who are concerned with similar scientific issues. However, Smiraglia (2012) points out a contrast between domain and discourse community, since this concerns an active exchange of information, while the other assumes intellectual limits. More specifically, from domains, understood as communities in which individuals are accepted as members based on their research similarities, Smiraglia (2012) implies an explicit complicity among members and the delimitation of their

research interests. Thus, this participation can be considered as part of a discourse community, which leads us to consider the existence of a hierarchical relationship between the concept of domain and the discourse community.

Another element that can characterize the similarity between the three concepts is their approach to understanding the construction of knowledge in spiral cycles in these communities. By starting from the analysis of the scientific literature of a theme, the diachronic analysis of a domain, such as a discourse community, or an epistemic community allows the characterization of the spiral element of knowledge construction, which is also defined by Guimarães (2006) as the helicoidally movement of knowledge construction in scientific communication. This perception that knowledge changes while problems and issues are investigated and solutions emerge is very close to Thomas Kuhn's conception of scientific paradigms and revolutions. In this sense, the definitions of the three analyzed concepts reveal approximations with Kuhn's ideas, demonstrating the influence of the Sociology of Science in their conception.

Another similarity among the three concepts is the assumption of a common theoretical basis for community members, who, once they know their basic concepts, do not need to reiterate them in new researches, unless they can present new points of view. As an example, the fact that there is a shared understanding of the meaning of the term Knowledge Organization among the members of the scientific community of such area does not demand the continuous re-presentation of such concept in research carried out in the field, even if it is not theoretically grounded. This feature is what Swales (2017) would call "silent relationships".

In the three concepts of community dealt with here, it is expected that these silent relationships are present, especially with regard to the semantic aspects of the terms of the specialty that aggregate community members, since all members must understand them in the same way, without that there is a need for an explanation of them in all discussions.

Another similar element between the discourse community and the epistemic community concerns ethical values. Although in 1990 when dealing with the concept of discourse community, Swales´ definition did not mention elements related to the ethical values of the members, when the author revisited the term in 2017, he included a new characteristic: the assumption that the members of this community have a common sense between what is good or bad for the community.

For the concept of epistemic community, the ethical issues have always been a crucial element since the configuration of a community as an epistemic one needs that members have common policies, moral values and objectives to solve problems raised. In this sense, and understanding a discourse community for its revisited concept, it is clear that the proximity between the two notions becomes increasingly explicit. However, it is important to highlight that the characteristic of members sharing moral and ethical principles is most notable in the concept of epistemic communities because the normative principles and the members' set of beliefs are fundamental elements for these communities. On the other hand, although this notion has been included in the concept of domain, it is limited only to the idea of what should be considered adequate at the time of research.

Another common element among these conceptions concerns the presence of reasoning patterns among members that are shared through formal discourse practices, materialized from textual documents. Therefore, although existing, the delimiting line between discourse community and epistemic community is tenuous.

Now, referring to the distinctions among domain, discourse and epistemic communities, a first point to be highlighted is the level of interaction among the members and the place in which they are inserted. In a domain or a discourse community, it is not expected that there is a consensus among the ideas of different members, but only that they have themes of interest inserted in the same domain. For the epistemic community, on the other hand, consensus is expected: all researchers involved in that theme are dedicated to solving similar issues, despite different solutions – it is the union of these ways of thinking and different solutions to the problems that moves the community to achieve its objective.

With respect to the contexts of conceptions of these communities, a domain can be formed in any context – whether academic, professional or even a hobby. However, the epistemic community requires a group of individuals – researchers - inserted in a scientific universe, whether they are from any area of knowledge. According to Haas (1992), epistemic communities must share the same scientific paradigm, which also implies the homogeneity of their ideas, since they share theoretical bases and also similar understandings about these bases.

In accordance to what was previously discussed, it is possible to observe that the concepts of domain, epistemic community and discourse community share the following characteristics, since they all are composed by groups of individuals with common goals, and ontological and epistemological consensus, have their own social semantics (and use and practice an own lexicon), reveal an intersubjective agreement with own relevance criteria, have a dynamic, time-dependent and space-independent composition, establish their own form of communication, are composed by members with high degree of expertise, produce knowledge and have their own information systems.

Based on the previous sections ad notes above, Table 1 presents a summary of the similarities shared by these concepts, as well as the characteristics that are peculiar to each of them:

Table 1 - Main similarities and distinctions between Domain (D), Discourse Community (DC), and Epistemic Community (EC)

Characteristic	D	DC	EC
Consensual discourse	X	X	
Diffuse border	X	X	
A consensual world view or mission		X	X
Highly specialized terminology		X	X
Sense of a silent belonging		X	
Sharing professional practices and activities		X	
Texts is the main way to share knowledge		X	
Intellectual and social knowledge organization	X		
Interaction with other similar ones	X		
Members actively participate in sharing cognitive work	X		X
Own forms of knowledge organization	X		
Structure and patterns of cooperation	X		X
Active networking relationship			X
All members are authority and reference, with prestige and relevant knowledge in the area			X
All members are expert professionals			X
All members are influential political actors in institutional decision-making at national and international levels.			X
Consensual ethical commitments			X
Implied power of members to control knowledge and information			X
Oriented towards to collective benefits, with a common policy to achieve social well-being			X
Restricted to the scientific sphere			X
Shared aversions based on reluctance to policies and principles deemed unacceptable			X

Source: the authors (2021)

According to the Table 1 presented, it is possible to observe that the discourse is consensual both in a domain and in a discourse community. On the other hand, domains and epistemic communities reveal structures and patterns of cooperation among their members who actively participate in sharing cognitive work, while the members of discourse and epistemic communities share a high specialized terminology and a consensual world view or mission.

Although these three concepts share common characteristics, they can be also individually characterized by peculiar characteristics which allow us to consider them as specific instances. In

this sense, a domain has its own forms of organizing knowledge, both in an intellectual and social perspective, and has diffuse borders what can be explained by its high level of interaction with other similar ones. A discourse community, in turn, is composed by members who share professional practices and activities, reveal a special sense of belonging, and share the produced knowledge mainly through texts. In a more specific configuration, an epistemic community is peculiarized by being restricted to the scientific sphere and by having expert members with authority, national and international reputation in institutional decision-making, and relevant knowledge in the area and, consequently, an implied power to control knowledge and information. Such members have high consensual ethical standards oriented towards a collective acting through an active networking relationship and towards to collective benefits (with a common policy to achieve social well-being and clear reluctance to policies and principles deemed unacceptable).

From the characteristics presented in Table 1, it is considered that, in Information Science, the Domain Analysis approach can be used for the analysis of discourse and epistemic communities, adopting for the analysis of these two types of communities, among the eleven Hjørland's approaches, those that meet the characteristics shared by these concepts. On the other hand, there is a need to include others that can address the specific characteristics of these other two concepts, such as the strong aspect of political action of epistemic communities, as well as their influence on institutionalized decision-making at the national or international level and the authority perceived by the community at large. On the other hand, approaches that focus primarily on the strong linguistic character involved in discourse communities should also be considered, such as Discourse Analysis and Content Analysis, among the approaches added to deal specifically with discourse communities.

6 Conclusions

This paper intended to present – and compare - the concepts of domain, discourse communities, and epistemic communities especially by discussing their emergence, their context in Information Science, their similarities, and differences and, finally, to highlight methodological procedures for their identification.

It was possible to see that these concepts have similarities to each other, such as their contexts arising from the need to understand sociological aspects of science; the mutual understanding among its members about the specialized languages and theoretical bases used; the analysis based on tacit documents, duly expressed and recorded. These aspects of similarities demonstrate that these concepts can be understood as belonging to the same set, and inserted in the overarching area of Sociology of Science.

Even so, these concepts have their characterizing features, which distinguish their analysis objectives and also their peculiar scientific biases.

In this context, it is considered that, in the field of IS, studies based on the concepts of Epistemisc Community or Discourse Community, as they are more aligned with the specificities of these concepts rather than the concept of domain, could follow the Domain paradigm, adapting to the characteristics of these other two concepts. Thus, those Domain approaches that focus on characteristics that are common to domain, Discourse Community and Epistemic Community would also be adopted for analyzing these types of communities. For the specific characteristics of each one, approaches that specifically address them could be added. In this sense, further theoretical studies are recommended in order to reflect on the methodological aspects of analyzing these concepts, especially the discourse community and the epistemic community, so that they can be applied with a greater methodological foundation in IS.

We also recommend empirical studies that examine and validate the similarities and specificities of the three concepts analyzed, thus contributing to expanding the knowledge and use of these concepts in the context of Information Science. Metatheoretical studies based on these concepts are also suggested in the various fields of knowledge, expanding the contribution and interdisciplinary action of IS to the advancement of scientific knowledge, especially in scientific communication and sociological science studies.

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