

Abstract: Within knowledge organisation studies, the Universal Decimal Classification (UDC) remains overlooked regarding the warrants upon which it is grounded, alongside its representation of mental health and mental illness. The research endeavours to determine the extent to which the schedule for psychiatry of the Universal Decimal Classification is based on literary warrant and scholarly warrant. Literary warrant, as an approach to domain analysis' bibliometric and terminological studies, is assessed through term co-occurrence analysis of titles and abstracts from journal articles in psychiatry. Conversely, scholarly warrant, as an approach to domain analysis' expert knowledge, is evaluated by theory-generating expert interviews with psychiatry specialists and hermeneutic analysis. The research leads to the formulation of methodological models for the evaluation of the literary warrant and scholarly warrant in knowledge classification systems, providing a more comprehensive understanding of Universal Decimal Classification's theoretical foundations.

Keywords: Scholarly warrant; Literary warrant; Knowledge organisation Classification theory.

Resumo: No que concerne ao estudo das garantias, tal como ao da representação da saúde e da doença mental, a Classificação Decimal Universal (CDU) surge descurada na literatura em Organização do Conhecimento. A investigação procura verificar em que medida a divisão de Psiquiatria da CDU se alicerça nas garantias literária e académica. A garantia literária, coadunada com as abordagens bibliométrica e terminológica à análise de domínio, é determinada por análise de coocorrência de palavras de títulos e resumos de artigos em revistas científicas de Psiquiatria. A garantia académica, em linha com a abordagem, à análise de domínio, de conhecimento de especialistas, é averiguada através de entrevistas com especialistas de Psiquiatria e análise hermenêutica das transcrições. A investigação resulta na formulação de modelos metodológicos para a avaliação das garantias literária e académica em sistemas de classificação do conhecimento, conduzindo a um conhecimento mais circunstanciado dos pressupostos teóricos da CDU.

Palavras-chave: Garantia académica; Garantia literária; Organização do Conhecimento; Teoria da classificação.

Introduction

Once regarded as an art and a philosopher's pastime pursuit, classification had acquired sufficient theoretical grounds to be perceived as scientific by the latter twentieth century, falling within the domains of information science and knowledge organisation (DAHLBERG, 1976).

Within classification theory, warrants represent a paramount construct, functioning as the authoritative rationales underpinning classification systems and other forms of knowledge organisation systems (KOS) likewise (BEGHTOL, 2017; BULLARD, 2017). Warrants legitimise the content and structure of classification systems, vouching for the

representation of epistemic realities within the systems. Besides, warrants serve as means to gauge the meaningfulness of classification systems (KWAŚNIK, 2010). Despite their pivotal role in classification theory, comprehensive studies on warrants remain scant (BARITÉ, 2019; LIMA, 2022), namely ones casting light on how warrants interact with and supplement one another (BULLARD, 2017). Moreover, despite the commonalities between warrants and domain analysis in addressing KOS (DIAS, 2015), mapping warrants onto approaches to domain analysis (HJØRLAND, 2002, 2017b; SMIRAGLIA, 2015) continues to constitute an uncharted opportunity for research.

Studies in knowledge organisation have adopted warrants to develop, evaluate, and revise KOS, approaching the systems not only from a technical perspective (BARITÉ, 2011; BEGHTOL, 1995; SCHNEIDER, 2004), but also from a socio-critical basis (BULLARD, WATSON & PURDOME, 2022; DABNEY, 2007; RUSQUART, 2023). Additionally, both domain-specific and universal KOS have been examined. Nevertheless, the *Universal Decimal Classification* (UDC) remains overlooked regarding the warrants in which it is grounded. Furthermore, if, for instance, the conceptual representation of ethnicity (SIMÕES, 2010) and gender (COURBIÈRES, 2013) in the UDC has been scrutinised, a topical social issue remains overlooked by researchers: mental health and mental illness.

Building upon these premises, we wonder: to what extent is the UDC schedule for psychiatry supported by literary warrant and scholarly warrant?

The literary warrant and scholarly warrant were selected because the UDC is supposed to be grounded in both these warrants (HJØRLAND, 2017b; ULLAH, KHUSRO & ULLAH, 2017). As for the selection of psychiatry, the reason behind it lies in psychiatry being a discipline that addresses mental health and mental illness, namely mental disorders (BERRIOS & MARKOVÁ, 2019). Besides, “Psychiatry partakes in the human and natural sciences. [...] It is the human sciences that configure the object of psychiatric inquiry” (BERRIOS & MARKOVÁ, 2019:64). This is especially relevant because the issue endures as a target of social stigma and marginalisation, and its representation in library classification systems may shape how both librarians and library users perceive the matter.

The research project endeavours to assess the extent to which the concepts/classes of the UDC schedule for psychiatry are grounded in literary warrant, by comparing them with terminology extracted from titles and abstracts of journal articles by applying term co-occurrence analysis. Theory-generating expert interviews with psychiatry specialists and hermeneutic analysis will be deployed to ascertain the extent to which the layout of those concepts/classes within the scheme is supported by scholarly warrant.

Thereby, the research outcomes will enhance the understanding of the theoretical backdrop of the UDC while affording to determine both technically and socio-critically the validity of its representation of mental health and mental illness. On a broader landscape, a more comprehensive insight into the complementarity between warrants will be attained, and a more congruent alignment between warrants and approaches to domain analysis will be set forth.

The present paper details a PhD thesis project in the field of knowledge organisation, within information science, and is structured into four sections, as follows: section 1 comprises the state of the art; the concept of warrant in bibliographical classification theory is introduced, alongside a further review of both literary and scholarly warrants; in section 2, the research

aims and objectives are outlined, the overall methodological approach is set forward, and the adequacy of the proposed research methods argued for; in section 3, preliminary results are disclosed and how they contribute to accomplishing the research objectives is emphasised; the proposed PhD thesis project concludes in section 4, research implications are presented, as well as a concise contingency plan; the expected contributions of the research outcomes to the advancement of knowledge in information science and knowledge organisation are underscored.

1. State of the art

1.1. Warrants in bibliographical classification theory

The concept of warrant is a fundamental piece of bibliographical classification theory. According to Beghtol (1986:110), warrant

can be thought of as the authority a classificationist invokes first to justify and subsequently to verify decisions about what classes/concepts to include in the system, in what order classes/concepts should appear in the schedules, what units classes/concepts are divided into, how far subdivision should proceed.

Kwaśnik (2010:107) further adds that warrant “acts as a lens through which we can assess the extent to which a classification has meaning and utility for the purposes it was created”. Furthermore, warrant may be adopted “as a conceptual framework for assessing any knowledge-representation system ... [encompassing] a set of conceptual tools that can be used to understand, analyze, evaluate and design classifications” (KWAŚNIK, 2010:107-108).

Regarding classification system design, Bullard (2017) delves into the role warrants play in it, arguing in favour of complementarity between warrants in developing a bibliographical classification system, despite some warrants being assumed to represent contradictory theories given their underlying dichotomic epistemological views. It has been traditional practice for classificationists to ground the construction of bibliographical classifications on a primary warrant supplemented by a secondary distinct warrant (BEGHTOL, 1994).

Moreover, complementarity of warrants plays a significant role in reviewing and revising classifications. As knowledge rapidly evolves, bibliographical classification systems are expected to keep pace with it, and warrants assist in ensuring the representation of the most accurate and up-to-date knowledge. However, from a postmodern epistemological perspective, knowledge is socially, politically, and historically contingent, heavily dependent on its cultural context (SUSEN, 2015). While scientific knowledge, especially in the social and medical sciences, tends to progress towards a more humanised orientation, science-based warrants require critical consideration. In cases where human nature is addressed, confronting science-based warrants with human-centred warrants, such as ethical warrant (BEGHTOL, 2002), may be wise.

Several authors have endeavoured to map the various warrants that have been featured in the literature of information science and knowledge organisation. Martínez-Ávila and Budd (2017) advance a table comprising 16 distinct warrants; however, some other warrants that are referenced throughout the text are left out from the set without a justification put forth.

Barité (2019) puts forward a systematisation and conceptualisation of warrants in the field of knowledge organisation. In his research, a total of 21 warrants are identified and to each one of them the author assigns the most suitable of Hjørland's (2017a) four epistemological theories/approaches to classification (empiricism, rationalism, historicism and pragmatism). Lima (2022) builds on the works of the aforesaid authors and present an extended table encompassing a total of 28 warrants.

Two of the earliest warrants to surface were literary warrant (grounded in an empiricist approach to classifying) and academic/scholarly warrant (a contemporary continuation of early-twentieth-century's scientific and educational consensus, thus associated with a rationalistic perspective of classification). Given their significance to the present research, each will be thoroughly examined in turn.

1.1.1. Literary warrant

The principle of literary warrant was originally outlined in the 1910s, by British librarian Edward Wyndham Hulme, to whom definition of classes to include in a bibliographical classification system should be solely rooted in the actual published literature being classified (BULLARD, WATSON & PURDOME, 2022; LIMA, 2022; RODRIGUEZ, 1984). Hulme argued that literature inherently conveys its real subject matter within its written content and that defining classes should rest upon extracting topics from it (BEGHTOL, 1995; RODRIGUEZ, 1984).

Beghtol (1986) suggests that in the conceptual development of literary warrant during the twentieth century, a narrow conception of it arose in bibliographical classification theory, that of terminological warrant. The difference between the terms, as the author puts it, lies in proponents of the latter "concurring with him [Hulme] that the semantic primitives of a system must be extracted from the literature, [having] narrowed the semantic base of classification systems from the subjects of documents to the terms that are found in the documents" (BEGHTOL, 1986:114). For our thesis proposal, we will adhere to the terminological approach to literary warrant, as it better aligns with the domain analysis approaches of bibliometric and terminological studies.

If the original scope of literary warrant may have somewhat narrowed throughout the twentieth century, its relevance has seen a broadening in the twenty-first century. Barité (2016, 2018) carried out thorough research on literary warrant and concluded that it is no longer exclusively used as a theoretical starting point for the construction of KOS, in the field of knowledge organisation, but also as: a tool for the evaluation, "particularly in operations of quality evaluation of terminology" (BARITÉ, 2018:526), and the revision of KOS; an instrument to assess the topicality of KOS, which "contributes to weighting the quality of conceptual structures of KOS to reflect the reality of a field [emphasis added], and the adequacy, timeliness or obsolescence of a KOS" (Barité, 2018:527); a tool for predicting research; and a *corpus*.

In fact, back in 2010, Barité *et al.* pointed out the use of literary warrant as a tool to evaluate KOS alongside its employment in the analysis of domains as modern applications of literary warrant. Concerning the latter, the authors reinforced the linkage between literary warrant and bibliometrics (as an approach to domain analysis), whose conjunction enables the extraction of both core and fringe topics within a domain, by quantifying the terms that appear in its literature. The body of literature to analyse in this context might be defined,

as Svenonius (2009:Literary warrant section) states, “as the canonical texts in the discipline or as the core set of documents of the discipline, as this is determined by citation frequency”. This last statement further underscores the relationship between literary warrant and bibliometrics, especially if we acknowledge Hulme’s statistical bibliography as an antecedent of bibliometric studies (RODRIGUEZ, 1984).

Literary warrant holds a paramount position in research concerning warrants (BARITÉ, 2011; BEGHTOL, 1995; BULLARD, WATSON & PURDOME, 2022; DABNEY, 2007; RUSQUART, 2023; SCHNEIDER, 2004). Literary warrant has been used to develop (SCHNEIDER, 2004), evaluate (BEGHTOL, 1995) and revise (BARITÉ, 2011) domain-specific KOS. Beghtol (1995) analysed the descriptors of an indexing system by quantifying terms in a corpus of journal articles within fiction studies. Schneider (2004) applied several bibliometric methods to journal articles to construct a thesaurus for periodontology, a specialisation within dentistry. In turn, Barité (2011) developed a model for revising KOS, applying it to the *Classification System for Knowledge Organization Literature*.

Although these previous studies take a technical-based approach, literary warrant has also proven fruitful in addressing social issues. Dabney (2007) emphasises how literary warrant of a controlled vocabulary used to index legal cases, the West’s Key Number System, influences users’ thinking of the law and thus law itself. Moreover, Bullard, Watson & Purdome (2022) demonstrate that a *Library of Congress Subject Headings*’ term missing literary warrant conveys prejudice. With a similar socio-critical perspective, Rusquart (2023) ethically evaluates the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), the *International Classification of Diseases* (ICD) and the *Dewey Decimal Classification* (DDC), adopting a mixed approach to literary warrant and scientific/philosophical warrant. Using schizophrenia as a case study, he argues that both DSM and ICD have progressed towards a more humanised approach to mental health, while DDC lags behind. Regarding the DDC, the author suggested further adjustments to how the subject is addressed. However, one must not overlook the technical distinct scope and purpose of medical classification and, conversely, bibliographical classification.

Thereby, literary warrant has been employed to analyse both technically and socio-critically KOS, including domain-specific and universal KOS. Moreover, it has demonstrated how terms within KOS may affect users’ perceptions of the subjects they represent. Nonetheless, the UDC remains overlooked regarding the warrants in which it is grounded. Although UDC is an analytical-synthetic classification system, potentially enabling for the representation of a broader range of subjects compared to an enumerative scheme, such as DDC, the latter stands as the most widely used bibliographical classification (BROUGHTON, 2015). The DDC exhibits a pronounced Anglo-American bias, making it adequate for libraries in the Anglo-Saxon world. Conversely, UDC, biased towards European culture (FANDINO, 2008), is more commonly used in Continental Europe, Hispanic countries, and Francophone African countries (SLAVIC, 2008). This might be one of the reasons why UDC has been overlooked in specialised literature, as English acts as the lingua franca in scholarly communication.

However, literary warrant is not without its criticisms, including its inability to extract complex concepts not reduced to single or compound terms, handle equally frequent terms representing the same concept, and to establish relationships between concepts (MERTES, 2018; RODRIGUEZ, 1984). Such limitations may be overcome by supplementing literary warrant with a different warrant. Nonetheless, while literary warrant secures a somewhat

robust foundation for terms/concepts extraction and validation, it is its adequacy of establishing hierarchical relationships between them within, *e. g.*, a bibliographical classification scheme, may be critically called into question. This issue is a shortcoming of Hulme's principle, which he unfortunately did not address (RODRIGUEZ, 1984). However, complementing literary warrant with another warrant might come in handy, particularly one based on the opinions of experts from the domain whose knowledge is being organised, such as academic/scholarly warrant.

1.1.2. Scholarly warrant

Even when used as the major warrant in bibliographical classification systems, literary warrant must align with expert opinion/consensus, also known as academic warrant or scholarly warrant (CLARKE, 2015; NYLUND, 2020). In fact, as Hoerman and Furniss (2000:44) assert,

the use of literary warrant is *de facto* consultation with subject experts; if the terms used in the documents are used for the subjects and the authors of the documents are assumed to be expert over that which they write, then expert opinion is reflected in literary warrant.

This is particularly true if peer-reviewed scholarly literature, *e.g.*, journal articles, is used as the source of literary warrant. However, while it may function as a joint warrant for bibliographical classifications' terms/concepts, it still does not guarantee a robust ground for establishing hierarchical relationships between classes within the scheme. That is why Barité (2019:650) states that "the warrant for hierarchical relationships that are established in a knowledge organization system should more reasonably come from the formal classifications of the disciplines (what is known as academic warrant)".

The aforementioned conception of academic warrant aligns with Henry Evelyn Bliss's principle of scientific and educational consensus, which originates from the early twentieth century. The scientific and educational consensus advocated for bibliographical classifications to mirror philosophical and scientific orderings of knowledge, as well as internal organisational structures of educational institutions (BROUGHTON, 2020). While discussing the semantic validity of bibliographical classification systems, Beghtol (1986) delves into Bliss's principle to posit that two warrants had evolved from it: scientific/philosophical warrant, on the one hand, and educational warrant, on the other hand. Although Barité (2019) and Lima (2022) attribute the coinage of the academic warrant to Sachs and Smiraglia (2004), it was Beghtol (1986) who first explicitly mentioned it, within the scope of classification theory, as synonymous with educational warrant. Moreover, Martínez-Ávila and Budd (2017), Barité (2019), and Lima (2022) all advance chronologies of the mentioning of the various warrants in the literature; nevertheless, none trace scholarly warrant back to its mention by Friman, Jansson & Suominen (1995), nor expert warrant (HIDER, 2015) nor specialist warrant (BERNARDINO *et al.*, 2017).

In Beghtol's (1986) understanding, academic warrant is built upon the internal organisational structure of universities, reflecting their division into faculties and departments. Most institutional repository systems nowadays comply with this warrant in classifying the knowledge universities generate.

In turn, for Sachs and Smiraglia (2004:168), academic warrant "represents scientific order shaped in academe and refined by individual communities of scholarship, politics, and

other cultural endeavour”. This definition of academic warrant aligns with Bliss’s original idea of consensus, underlining a collective concurrence on the order of knowledge, as well as with the concept of domain and its pivotal role in knowledge creation and intellection. More recently, GNOLI, SMIRAGLIA & SZOSTAK (2024:327), in their discourse around phenomenon-based classification, mention that academic warrant “purports to trace the development of thought as it evolves in academe”.

Nonetheless, in the understanding of other scholars, academic warrant (Nylund, 2020) or scholarly warrant (Clarke, 2015) is equivalent to expert opinion in a subject field. While diachronically reviewing the conceptualisation of academic warrant, Barité, Brozia & Rauch (2022:300), acknowledging its polysemic nature, concluded that, in the end, discussions over academic warrant revolved around “consensus, dissension, expert opinion, and the particularities of the discourse community of the respective domain”. Growing from this observation, the authors propose the conceiving of a discourse community warrant, which “would bring the issue of warrants decisively and enrichingly closer to domain-analytical approaches” (BARITÉ, BROZIA & RAUCH, 2022:301). A confluence between warrants and the domain-analytical paradigm had already been advanced by Dias (2015).

In summary, and for the purpose of our research proposal, we will adopt the term scholarly warrant, to move away from Beghtol’s (1986) both term and concept of academic warrant. Scholarly warrant will be perceived as a secondary/minor warrant governing the arrangement/structure of classes within a bibliographical classification scheme, based on the expertise of members of the domain being organised.

1.2. Knowledge organisation and psychiatry

Studies in the field of knowledge organisation addressing the domain of psychiatry are notably scarce. Nevertheless, previous research has explored bibliographical and medical KOS (COOPER, 2017; HIEBERT, 2009; RUSQUART, 2023; TRZMIELEWSKI, 2020). Additionally, epistemology has emerged as a fertile ground for studying mental health and mental illness in relation to knowledge organisation (LÓPEZ-HUERTAS & LÓPEZ-PÉREZ, 2010; SALDANHA & SILVA, 2017).

Hiebert (2009) mapped National Library of Medicine Classification (NLM Classification) call numbers for psychiatry onto *Library of Congress Classification’s* (LCC) equivalents to develop a tool to support collaborative collection development by academic and medical libraries at a university. Trzmielewski (2020) also looks at one of the controlled vocabularies of the National Library of Medicine. He analysed *Medical Subject Headings* (MeSH) indexing terms and folksonomy tags of documents on students’ mental health. By merging both *corpora* the author constructed a taxonomy of the subject, built on an approach to scholarly warrant and user warrant. Cooper (2017) focused on a medical KOS instead and studied the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), a medical classification of psychopathologies. The author explored its development and revision procedure, as well as the underlying approaches upon which the classification conceptual framework is founded, and its most common criticisms, one of which being that mental disorders should not be classified at all.

In addition, López-Huertas & López-Pérez (2010) underscored societal context influence on theory formulation and the construction of epistemology within a knowledge domain,

taking knowledge organisation and psychiatry as case studies. Concluding on both domains facing epistemological problems, they argued in favour of considering such issues when representing and organising a given knowledge domain. Lastly, Saldanha & Silva (2017) discussed how classification contributes to the understanding of madness, delving into psychiatry's comprehension of the concept and art's depiction of it. Acknowledging the symbolic character of the representation of madness, they put forward the philosophy of symbolic forms as part of the solution to overcome, in their view, the blurry epistemological boundaries of knowledge organisation.

In summary, these studies have looked at not only domain-specific KOS, such as the NLM Classification, MeSH, the DSM and the ICD, but also universal KOS, such as the LCC and the DDC. Both bibliographical KOS (the NLM Classification, MeSH, the LCC and the DDC) and medical classifications (the DSM and the ICD) were included in the studies, as well as philosophical and social reflections on the matter. Nonetheless, the UDC remains overlooked regarding the representation of this topical social issue: mental health and mental illness.

2. Research aims and objectives and methodological approach

Building upon the research problem and research question outlined in the introduction, this thesis project endeavours to assess the literary warrant and scholarly warrant of the UDC, by analysing the psychiatry domain and the representation of psychiatric knowledge within it. However, if one could call into question the adequacy of domain analysis for studying a universal knowledge organisation system, which is presumably not domain-specific, the argument that “a universal classification should be considered the sum of a number of domain-specific systems” (HJØRLAND, 2017b:447) can be set forth. Hjørland (2017b:447) further adds that “advanced classification systems such as the UDC have [...] relied on domain-specific knowledge and subject specialists”.

The aforesaid broad endeavour can be parsed out into two research aims: 1. to evaluate the literary warrant of UDC classes/concepts concerning psychiatric knowledge; 2. to evaluate the scholarly warrant of UDC arrangement of classes/concepts concerning psychiatric knowledge. Moreover, both these research aims can be broken down into the following research objectives:

Research objectives to achieve research aim **1**:

- 1.1.** To define the domain of psychiatry for analysis;
- 1.2.** To determine the core corpus of terms that constitute the terminological and conceptual structure of the domain of psychiatry;
- 1.3.** To compare the extracted terminology with the classes/concepts of the UDC schedule concerned with the representation of psychiatric knowledge.

The definition of the domain of psychiatry will follow Tennis's (2003) axes of Areas of Modulation and Degrees of Specialisation of domains for domain analysis.

With regard to research objective 1.2, it is essential to clarify beforehand that the UDC edition under study is the Master Reference File 12, published in the English language and released in December 2018. Currently, this version of the UDC stands as its most up-to-date version. It should also be noted that the UDC, while being a bibliographical classification system, simultaneously functions as a document indexing language, suitable for bibliographical databases that index scholarly literature, such as journal articles (UDC CONSORTIUM, [20--]).

Considering that “a knowledge domain rests upon its conceptual structure, its terminology” (THELLEFSEN & THELLEFSEN, 2004:180), which can be studied by analysing the literature the corresponding discourse/thought community produces (MAI, 2004), and since literary warrant can find its ground in the most cited literature of a domain (SVENONIUS, 2009), it is coherent to align research objective 1.2 with bibliometric and terminological studies, both constituting methodological approaches to domain analysis (HJØRLAND, 2002, 2017B; SMIRAGLIA, 2015). Building on these premises, a *corpus* of psychiatry journal articles will be collated. Journals will be selected from the psychiatry category of the *Journal Citation Reports* (JCR). Solely peer-reviewed journals indexed in *Science Citation Index-Expanded* and ranked in the JCR 2019 5-year Journal Impact Factor (JIF) top quartile (Q1) will be considered. The JCR 2019 category of psychiatry comprises a total of 155 journals, with 38 ranking in the 5-year JIF top quartile. Journal Impact Factor will not be used to assess quality, but instead as an actual indicator of journal article circulation. Each journal’s aims and scope will be verified to ensure it is exclusively devoted to psychiatry. To mitigate the risk of the phenomenon of meaning-shift, a criticism of term co-occurrence analysis, a short time span will be examined (PETROVICH, 2021), covering a period of five years, from 2014 to 2018, simultaneously aligning with the 5-year JIF, which for 2014-2018 is disclosed in JCR 2019. The analysis will focus on titles and abstracts of journal articles, because they are supposed to convey the core concepts of the documents’ content. Keywords will not be included in the analysis to avoid the indexer effect (LAW & WHITTAKER, 1992).

Complying with the criteria, a literature search will be conducted in the Web of Science database to retrieve the metadata. Only metadata in English will be collected. Data will then be analysed using term co-occurrence analysis, a type of network analysis. The five-year time span will be analysed as a whole, but also as a set of five one-year time slices, with each slice being individually analysed. Such approach will facilitate the construction of a longitudinal thematic map of the domain, enabling the visualisation of the evolution of its conceptual structure over the time span. Additionally, grounding in Callon, Courtial & Lavoie’s (1991) measures of centrality and density and strategic diagram will allow us to ascertain the domain’s motor themes, basic and transversal themes, highly developed and isolated themes, and emerging or declining themes (COBO *et al.*, 2011). The Bibliometrix (ARIA & CUCCURULLO, 2017) tool will be adopted for the analysis.

The body of psychiatric terms the previous step will provide will subsequently be mapped onto the classes/concepts of the UDC schedule concerned with the representation of psychiatric knowledge, facilitating the assessment of the extent to which the UDC is grounded in literary warrant.

Research objectives to achieve research aim 2:

- 2.1.** To elicit the understanding of psychiatry experts on how the UDC's classes/concepts of psychiatric knowledge are structured;
- 2.2.** To restructure the classes/concepts according to experts insights;
- 2.3.** To compare the ensued scheme with the UDC schedule for psychiatry.

The collection of experts' opinions on the arrangement of classes/concepts within the UDC schedule for psychiatry will be rooted in the theory-generating expert interview. This data collection method is appropriate for "cases where the analytic purpose of an investigation of the subjective dimension of meaning is the reconstruction of collective orientations and patterns of interpretation" (BOGNER & MENZ, 2009:74). Furthermore, it aims "to outline interrelations in the empirical data and to develop theoretical approaches" (DÖRINGER, 2021:267). Given these premises and the concept of scholarly warrant, theory-generating expert interviews are considered suitable for accomplishing research objective number 2.1. Despite not prescribing a specific interview structure, the method tends towards an unstructured approach (BOGNER & MENZ, 2009), which will be adopted. Concerning expert selection, a group of eight to ten psychiatry scholars (heads of psychiatry academic departments), psychiatrists (directors of hospital psychiatric units), and scholars of the epistemology of psychiatry will be constituted. This diverse range of expertise, coupled with some experts being steeped in a Portuguese cultural context and others in a Norwegian one, will contribute to gathering a wider epistemic breadth of insights.

Another feature of theory-generating expert interview lies in its pursuit of generating "theory via the interpretative generalization of a typology" (BOGNER & MENZ, 2009:48), which harmonises with the purpose of research objective number 2.2, as a somewhat consensual outcome is desirable. Ergo, hermeneutic analysis, an interpretative method of data analysis, will be utilised to analyse the interviews' transcripts. Hermeneutic analysis revolves around the development of an organising system (BARTLEY & BROOKS, 2023; PATTERSON & WILLIAMS, 2002), enabling a holistic understanding of the phenomenon being studied, as it casts light on the linkages between the units of meaning of textual data (PATTERSON & WILLIAMS, 2002). As the units of meaning are already categorised — *i.e.*, the concepts in the UDC schedule for psychiatry — the interrelationships between them constitute our object of study. Therefore, hermeneutic analysis is more suitable for research objective 2.2 than, *e. g.*, content analysis, which tends to centre around the units of meaning and not the linkages between them instead (PATTERSON & WILLIAMS, 2002). The adoption of this singular approach to hermeneutic analysis to analyse interview transcripts has proven fruitful in other areas of the social sciences, such as tourism (PATTERSON & WILLIAMS, 2002), education (KARMELITA, 2020) and management (BARTLEY & BROOKS, 2023). The methodological approach we set forth endeavours to extend it to information science and knowledge organisation. Such overall approach concurs with the expert knowledge approach to domain analysis put forward by Hjørland (2002). The resulting organising system will then be compared to the UDC schedule for psychiatry, enabling us to ascertain the extent to which the UDC is grounded in scholarly warrant.

3. Current work plan and preliminary results

Research is yet in its early stages; therefore, current development revolves primarily around the search and review of literature, which has been conducted embracing a hermeneutic approach (BOELL & CECEZ-KECMANOVIC, 2014).

Nonetheless, concerning the attainment of research objectives, the psychiatry journals from whose articles the terminology is going to be extracted were already identified. Table 1 summarises the list of journals, in descending order of the 5-year JIF, selected in compliance with the criteria outlined in Chapter 2. Out of the 38 journals, 28 met the aforesaid criteria.

Table 1 – Selected psychiatry journals ranked in JCR 2019’s top 5-year JIF quartile

5-year JIF ranking	Journal title
2	The Lancet Psychiatry
3	JAMA Psychiatry
4	The American Journal of Psychiatry
5	Psychotherapy and Psychosomatics
6	Molecular Psychiatry
7	Biological Psychiatry
8	Journal of the American Academy of Child & Adolescent Psychiatry
9	Schizophrenia Bulletin
10	The British Journal of Psychiatry
14	Neuropsychopharmacology
17	Translational Psychiatry
18	Depression and Anxiety
20	Acta Psychiatrica Scandinavica
21	Journal of Psychiatry & Neuroscience
22	Epidemiology and Psychiatric Sciences
23	Psychoneuroendocrinology
24	Australian and New Zealand Journal of Psychiatry
25	Current Opinion in Psychiatry
26	The Journal of Clinical Psychiatry
27	Bipolar Disorders
29	Current Psychiatry Reports
30	European Psychiatry
31	The Canadian Journal of Psychiatry
32	Psychosomatic Medicine
33	International Journal of Neuropsychopharmacology
34	Journal of Psychiatric Research
35	European Neuropsychopharmacology
36	Journal of Affective Disorders

Source: authors.

Broadly looking into the selection of journals, one acknowledges it encompasses an overall and heterogeneous coverage of psychiatric knowledge. Not only does it include journals exclusively devoted to different specific mental disorders and specialties, but it also comprehends journals falling under distinct approaches to psychiatry, such as the biological and the social ones. Such diversity of scopes will contribute to the extraction of terminology representative of psychiatry’s sundry aspects and perspectives, thereby ensuring a fairer assessment of the *Universal Decimal Classification’s* literary warrant, above all given the universal nature of the classification.

4. Research implications

The thesis project, designed as such, endeavours to expand the knowledge around warrants within bibliographical classification theory, in the context of knowledge organisation and information science. The research will illuminate the interplay between warrants pertaining to dichotomist epistemological approaches to classification, highlighting their complementary usage. Besides, it will map warrants onto domain analysis' approaches, putting forth a sturdier congruence between warrants and the domain-analytical paradigm. It will be demonstrated how literary warrant conforms to bibliometric and terminological studies as approaches to domain analysis, and how scholarly warrant aligns with expert knowledge, also as an approach to domain analysis. As an outcome, reproducible methodological frameworks to evaluate the literary warrant and scholarly warrant of KOS are going to be outlined. The frameworks may then be applied to any bibliographical KOS focusing on a domain of choice as case study.

In addition, the bibliometric analysis covering psychiatric research from 2014 to 2018 might serve as a baseline for a follow-up study. Türközer and Öngür (2020) argue that the COVID-19 pandemic significantly affected psychiatry's research culture and scholarly publishing. Thus, a similar bibliometric analysis of the period from 2019 to 2023 could reveal the actual breadth and nature of the shift in the field.

Furthermore, while establishing, on a technical level, the validity of the representation of psychiatric knowledge in the UDC, the thesis project will also, and on a socio-critical basis, look at how the UDC represents a topical social issue: mental health and mental illness.

Nevertheless, despite careful planning, unforeseen occurrences may affect the research work plan in two main ways. If the extracted terminology barely coincides with the UDC schedule for psychiatry, it might hinder the ensuing analysis. To overcome this, factorial analysis may be employed to the corpus of terms, enabling to create a dendrogram, thus rendering a revised schedule. Additionally, a shortage of experts willing to be interviewed may compromise the whole research aim 2. Then, a comparison between the UDC and medical classifications, such as the *Diagnostic and Statistical Manual of Mental Disorders* and the *International Classification of Diseases*, can offer an alternative and complementary approach to scholarly warrant, based on scientific/philosophical warrant.

Conclusion

Our overall PhD thesis project aims to determine the extent the UDC is upheld by literary warrant and scholarly warrant, using the representation of the knowledge domain of psychiatry as a case study.

To attain the research objectives, the methodological approach of the research abides by the domain-analytical paradigm in information science and knowledge organisation. Domain analysis' bibliometric and terminological studies are adopted for evaluating the degree to which the concepts/classes within the UDC schedule for psychiatry conform with literary warrant. Term co-occurrence analysis will be employed to a corpus of titles and abstracts from psychiatry journal articles. The extracted terminology will be mapped onto the aforesaid concept/classes, facilitating the assessment of the extent to which the UDC schedule for psychiatry is supported by literary warrant. Conversely, domain analysis'

expert knowledge is utilised as an approach to addressing scholarly warrant. Theory-generating expert interviews with psychiatry specialists along with hermeneutic analysis of the ensuing transcripts will serve as means to explore the grounding of the structure of the UDC schedule for psychiatry in scholarly warrant.

Based on the proposed research design, the PhD thesis is expected to cast light on the theoretical grounds underlying the UDC. This holds particular significance due to the lesser scientific scrutiny of the UDC compared to its counterparts, namely the *Dewey Decimal Classification* and the *Library of Congress Classification*. Besides, the PhD thesis will address a subject of urgent and current interest: mental health and mental illness. Exploring the issue merits serious consideration given the potential impact that controlled vocabularies may have in influencing how those who interact with them perceive the realities represented within. On a broader scope, the PhD thesis will put forward an enhanced insight into how warrants pertaining to distinct epistemological approaches to classification interplay. Given its crucial role in classification decision-making, how warrants interact with and supplement one another remains a topic in classification theory substantially passed over by researchers, and worthy of further examination.

Furthermore, to ensure the ongoing evaluation and validation of the research outcomes, regular submissions of abstracts for conferences and manuscripts to journals will be made.

References

ARIA, M.; CUCCURULLO, C.

2017 Bibliometrix: an R-tool for comprehensive science mapping analysis. *Journal of Informetrics*. 11:4 (2017) 959-975.

BARITÉ, M.

2019 Towards a general conception of warrants: first notes. *Knowledge Organization*. 46:8 (2019) 647-655.

BARITÉ, M.

2018 Literary warrant. *Knowledge Organization*. 45:6 (2018) 517-536.

BARITÉ, M.

2016 Literary warrant revisited: theoretical and methodological approach. In INTERNATIONAL ISKO CONFERENCE, 14th, Rio de Janeiro, 2016 - *Knowledge organization for a sustainable world: challenges and perspectives for cultural, scientific, and technological sharing in a connected society: Proceedings*. Ed. by J. A. C. Guimarães, S. O. Milani & V. Dodebei. Rio de Janeiro: Ergon, 2016, p. 146-155.

BARITÉ, M.

2011 La Garantía literaria como instrumento de revisión de sistemas de organización del conocimiento: modelo y aplicación. [Online]. Granada, 2011. Available at: <http://hdl.handle.net/10481/17583>.
Doctoral dissertation - University of Granada.

BARITÉ, M.; BROZIA, A. I.; RAUCH, M.

2022 Academic warrant and knowledge representation: consensus, dissension and expert opinion. In INTERNATIONAL ISKO CONFERENCE, 17th, Aalborg, 2022 - *Knowledge organization across disciplines, domains, services and technologies: Proceedings*. Ed. by M. Lykke et al. Aalborg: Ergon, 2022, p. 297-302.

BARITÉ, M. [et al.]

2010 Garantia literária: elementos para uma revisão crítica após um século. *Transinformação*. 22:2 (2010) 123-138.

BARTLEY, K. A.; BROOKS, J. J.

2023 Fusion of horizons: realizing a meaningful understanding in qualitative research. *Qualitative Research*. 23:4 (2023) 940-961.

BEGHTOL, C.

2017 Classification theory. In *Encyclopedia of library and information sciences*. Ed. J. D. McDonald, M. Levine-Clark. 4th ed. Boca Raton: CRC Press, 2017, vol. 2, p. 958-973.

BEGHTOL, C.

2002 A Proposed ethical warrant for global knowledge representation and organization systems. *Journal of Documentation*. 58:5 (2002) 507-532.

BEGHTOL, C.

1995 Domain analysis, literary warrant, and consensus: the case of fiction studies. *Journal of the American Society for Information Science*. 46:1 (1995) p. 30-44.

BEGHTOL, C.

1994 *The Classification of fiction: The development of a system based on theoretical principles*. [S. l.]: The Scarecrow Press, 1994.

BEGHTOL, C.

1986 Semantic validity: concepts of warrant in bibliographic classification systems. *Library Resources & Technical Services*. 30:2 (1986) 109-125.

BERNARDINO, M. C. [et al.]

2017 Rural cultural goods: an experience report of the taxonomy construction in the context of the historical farms of São Paulo. In *Knowledge Organization and cultural diversity*. Ed. J. A. C. Guimarães & V. Dodebei. Recife: ISKO-Brazil; Federal University of Pernambuco, 2017, p. 363-374.

BERRIOS, G.; MARKOVÁ, I. S.

2019 The Epistemology of psychiatry. *Estudos do Século XX*. 19 (2019) 59-70.

BOELL, S. K.; CECEZ-KECMANOVIC, D.

2014 A Hermeneutic approach for conducting literature reviews and literature searches. *Communications of the Association for Information Systems*. (2014) 257-286.

BOGNER, A., MENZ, W.

2009 The Theory-generating expert interview: epistemological interest, forms of knowledge, interaction. In *Interviewing experts*. Ed. A. Bogner, B. Littig, W. Menz. London: Palgrave Macmillan, 2009, p. 43-80.

BROUGHTON, V.

2020 Henry Evelyn Bliss. In *ISKO Encyclopedia of Knowledge Organization*. Ed. Birger Hjørland, Claudio Gnoli. [Online]. [S. l.]: ISKO, 2020. Available at: <https://www.isko.org/cyclo/bliss#col>.

BROUGHTON, V.

2015 *Essential classification*. 2nd ed. [Online]. [UK]: Facet Publishing, 2015. Available at: <https://doi.org/10.29085/9781783302383>.

BULLARD, J.

2017 Warrant as a means to study classification system design. *Journal of Documentation*. 73:1 (2017) 75-90.

BULLARD, J.; WATSON, B.; PURDOME, C.

2022 Misrepresentation in the surrogate: author critiques of "Indians of North America" subject headings. *Cataloguing & Classification Quarterly*. 60:6/7 (2022) 599-619.

CALLON, M.; COURTIAL, J. P.; LAVILLE, F.

1991 Co-word analysis as a tool for describing the network of interactions between basic and technological research: the case of polymer chemistry. *Scientometrics*. 22:1 (1991) 155-205.

CLARKE, R. I.

2015 Designing disciplinary identity: An analysis of the term "design" in Library and Information Science vocabulary. *Proceedings of the Association for Information Science and Technology*. 52:1 (2015) 1-4.

COBO, M. J. [et al.]

2011 An Approach for detecting, quantifying, and visualizing the evolution of a research field: a practical application to the Fuzzy Sets Theory field. *Journal of Informetrics*. 5:1 (2011) 146-166.

COOPER, R.

2017 Diagnostic and statistical manual of mental disorders (DSM). *Knowledge Organization*. 44:8 (2017) 668-676.

COURBIÈRES, C.

2013 La Représentation documentaire du genre dans les classifications décimales. *Hermès, La Revue*. 66:2 (2013) 112-118.

DABNEY, D.

2007 The Universe of thinkable thoughts: Literary warrant and West's Key Number System. *Law Library Journal*. 99:2 (2007) 229-247.

DAHLBERG, I.

1976 Classification theory, yesterday and today. *Knowledge Organization*. 3:2 (1976) 85-90.

DIAS, C. da C.

2015 A Análise de domínio, as comunidades discursivas, a garantia de literatura e outras garantias. *Informação & Societdade: Estudos*. 25:2 (2015) 7-17.

DÖRINGER, S.

2021 The Problem-centred expert interview: Combining qualitative interviewing approaches for investigating implicit expert knowledge. *International Journal of Social Research Methodology*. 24:3 (2021) 265-278.

FANDINO, M.

2008 UDC or DDC: a note about the suitable choice for the National Library of Liechtenstein. *Extensions & Corrections to the UDC*. 30 (2008) 45-47.

FRIMAN, M.; JANSSON, P.; SUOMINEN, V.

1995 Chaos or order? Aby Warburg's Library of Cultural History and its classification. *Knowledge Organization*. 22:1 (1995) 23-29.

GNOLI, C.; SMIRAGLIA, R. P.; SZOSTAK, R.

2024 Phenomenon-based classification: an Annual Review of Information Science and Technology (ARIST) paper. *Journal of the Association for Information Science and Technology*. 75:3 (2024) 324-343.

HIDER, P.

2015 A Survey of the coverage and methodologies of schemas and vocabularies used to describe information resources. *Knowledge Organization*. 42:3 (2015) 154-163.

HIEBERT, J. T.

2009 Beyond mark and park: classification mapping as a collection development tool for psychiatry/psychology. *Collection Management*. 34:3 (2009) 182-193.

HJØRLAND, B.

2017a Classification. *Knowledge Organization*. 44:2 (2017) 97-128.

HJØRLAND, B.

2017b Domain analysis. *Knowledge Organization*. 44:6 (2017) 436-464.

HJØRLAND, B.

2002 Domain analysis in information science: Eleven approaches, traditional as well as innovative. *Journal of Documentation*. 58:4 (2002) 422-462.

HOERMAN, H. L.; FURNISS, K. A.

2000 Turning practice into principles: a comparison of the IFLA principles underlying subject heading languages (SHLs) and the principles underlying the Library of Congress Subject Headings system. *Cataloguing & Classification Quarterly*. 29:1/2 (2000) 31-52.

KARMELITA, C.

2020 Advising adult learners during the transition to college. *NACADA Journal*. 40:1 (2020) 64-79.

KWAŚNIK, B. H.

2010 Semantic warrant: a pivotal concept for our field. *Knowledge Organization*. 37:2 (2010) 106-110.

LAW, J., WHITTAKER, J.

1992 Mapping acidification research: a test of the co-word method. *Scientometrics*. 23:3 (1992) 417-461.

LIMA, G. A.

2022 The Literary warrant in the representation of knowledge. *Frontiers of knowledge representation*. 2:2 (2022) 164-195.

LÓPEZ-HUERTAS, M. J.; LÓPEZ-PÉREZ, M. J.

2010 Epistemological dynamics in scientific domains and their influence in knowledge organization. In INTERNATIONAL ISKO CONFERENCE, 11th, Rome, 2010 - *Paradigms and conceptual systems in knowledge organization: Proceedings...* Ed. C. Gnoli, F. Mazzocchi. Rome: Ergon, 2010, p. 91-97.

MAI, J.-E.

2004 Classification in context: relativity, reality, and representation. *Knowledge Organization*. 31:1 (2004) 39-48.

MARTÍNEZ-ÁVILA, D.; BUDD, J. M.

2017 Epistemic warrant for categorizational activities and the development of controlled vocabularies. *Journal of Documentation*. 73:4 (2017) 700-715.

MERTES, K.

2018 Term selection. *Indexer*. 36:2 (2028) 48-55.

NYLUND, I. B.

2020 Using the concept of warrant in designing metadata for enterprise search. In INTERNATIONAL ISKO CONFERENCE, 16th, Aalborg, 2020 - *Knowledge Organization at the interface: Proceedings...* Ed. M. Lykke et al. Aalborg: Ergon, 2020, p. 328-337.

PATTERSON, M. E.; WILLIAMS, D. R.

2002 *Collecting and analyzing qualitative data: Hermeneutic principles, methods, and case examples*. Champaign, Illinois: Sagamore Publishing, 2002.

PETROVICH, E.

2021 Science mapping and science maps. *Knowledge Organization*. 48:7/8 (2021) 535-562.

RODRIGUEZ, R. D.

1984 Hulme's concept of literary warrant. *Cataloguing & Classification Quarterly*. 5:1 (1984) 17-26.

RUSQUART, J.

2023 The Ontogeny of the subject as an approach to the ethical evaluation of classification systems: Mental health case study. *Communication, technologies et développement*, [Online]. 14 (2023) 1-23. Available at: <https://doi.org/10.4000/ctd.9779>.

SACHS, M. Y.; SMIRAGLIA, R. P.

2004 From encyclopedism to domain-based ontology for knowledge management: the evolution of the Sachs Classification (SC). In INTERNATIONAL ISKO CONFERENCE, 8th, London, 2004 - *Knowledge Organization and the global information society: Proceedings...* Ed. I. C. McIlwaine. London: Ergon, 2004, p. 167-172.

SALDANHA, G. S.; SILVA, M. L. G. da

2017 Da Loucura e da arte nos limites de uma epistemologia da Organização do Conhecimento. In ENCONTRO NACIONAL DE PESQUISA EM CIÊNCIA DA INFORMAÇÃO, 18^o, Marília, 2017 - *Anais...* [Online]. Marília, 2017. Available at: <https://brapci.inf.br/v/104809>.

SCHNEIDER, J. W.

2004 *Verification of bibliometric methods' applicability for thesaurus construction*. Copenhagen, 2004.
Doctoral dissertation - Royal School of Library and Information Science, Danmark.

SIMÕES, M. da G. de M.

2010 *A Representação de etnia e a sua evolução na Classificação Decimal Universal*. [Online]. Salamanca, 2010. Available at: <https://hdl.handle.net/10316/20839>.
Doctoral dissertation - University of Salamanca.

SLAVIC, A.

2008 Use of the Universal Decimal Classification: A world-wide survey. *Journal of Documentation*. 64:2 (2008) 211-228.

SMIRAGLIA, R.

2015 *Domain analysis for knowledge organization: Tools for ontology extraction*. [Online]. [S. l.]: Elsevier, 2015. Available at: <https://doi.org/10.1016/B978-0-08-100150-9.09996-X>.

SUSEN, S.

2015 *The 'Postmodern Turn' in the social sciences*. [Online]. London: Palgrave Macmillan, 2015. Available at: <https://doi.org/10.1057/9781137318237>.

SVENONIUS, E.

2009 *The Intellectual foundation of information organization*. Cambridge: The MIT Press, 2009.

TENNIS, J. T.

2003 Two axes of domains for domain analysis. *Knowledge Organization*. 30:3/4 (2003) 191-195.

THELLEFSEN, T. L.; THELLEFSEN, M. M.

2004 Pragmatic semiotics and knowledge organization. *Knowledge Organization*. 31:3 (2004) 177-187.

TRZMIELEWSKI, M.

2020 Representation of students' mental health in information resources and in medical knowledge organization systems. In COLLOQUE INTERNATIONAL INTERDISCIPLINAIRE EN LIGNE, Toulouse, 2020 - *La Santé mentale sur les campus universitaires face aux défis contemporains: de la discrimination à la COVID-19*. [Online]. Toulouse, 2020. Available at: <https://hal.science/hal-02981321v2>.

TÜRKÖZER, H. B.; ÖNGÜR, D.

2020 A Projection for psychiatry in the post-COVID-19 era: potential trends, challenges, and directions. *Molecular Psychiatry*. 25:10 (Oct. 2020) 2.214-2.219.

UDC CONSORTIUM

[20--] *UDC fact sheet*. [Online]. [20--]. Available at: <https://udcc.org/index.php/site/page?view=factsheet>

ULLAH, A.; KHUSRO, S.; ULLAH, I.

2017 Bibliographic classification in the digital age: current trends and future directions. *Information Technology and Libraries*. 36:3 (2017) 48-77.

Paulo Vicente | pvicente@student.uc.pt

University of Coimbra - Faculty of Arts and Humanities / CEIS20 — Centre for Interdisciplinary Studies, Portugal

Ana Lúcia Terra | anaterra@fl.uc.pt

University of Coimbra - Faculty of Arts and Humanities / CEIS20 — Centre for Interdisciplinary Studies, Portugal

Jamie Johnston | jamijo@oslomet.no

Oslo Metropolitan University - Faculty of Social Sciences, Department of Archivistries, Library and Information Science, Norway