A Review and Methodological Reflection on Knowledge Organization Studies

Jie Zheng[1,2,*]

[1] *School of Foreign Languages, Northwest University, Xi'an, Shaanxi 710127, China*
[2] *School of Foreign Studies, Nanjing University, Nanjing, Jiangsu 210023, China*
[*]*Corresponding author. Email: bilex_jiezheng@163.com*

ABSTRACT

The isomorphism and interdisciplinarity of knowledge organization and terminography provide necessary prerequisites for interdisciplinary research in these two academic fields. Based on the literature synthesis, this article reviews the theoretical and applied research of knowledge organization in the world and China, discusses their enlightenment to the research of terminography, and proposes a theoretical framework of terminography-oriented knowledge organization methods around the properties of systematicness, functionality and adaptability.

Keywords: Knowledge organization, Terminography, Scientific method.

1. INTRODUCTION

Knowledge organization is derived from the document classification and cataloging pratice, and its theoretical discussion. Knowledge organization as a term can be traced back to the book *The Organization of Knowledge and the System of the Sciences* in 1929 and *The Organization of Knowledge in Libraries and the Subject-Approach to Books* in 1933 by the American librarian Henry Evelyn Bliss; Ingetraut Dahlberg founded the International Classification in 1974 and established the International Society of Knowledge Organization in 1989 [1][13]. Related literature reviews retrospect the development of knowledge organization research from different perspectives. For example, Smiraglia [2] reviewed the theoretical development of international knowledge organization research since the nineteenth century. Cao Shujin et al. [3] compared the research status of China and international knowledge organizations based on the two journals *Library and Information Service* and *Knowledge Organization*. Wei Min [4] summarized the four stages of the development of contemporary Chinese information organization and their achievements, etc.

With the deepening of its research around the world, the cross-disciplinarity, inter-disciplinarity or pan-disciplinarity of knowledge organization has attracted attention from almost all disciplines, especially in the application of knowledge organization tools in different fields [5][20]. The author of this article has discovered through a series of studies that the isomorphism and interdisciplinarity of knowledge organization and terminography provide necessary prerequisites for interdisciplinary research in these two academic fields. In contrast, the application of tools is becoming more extensive and mature. The theories of knowledge organization urgently needs in-depth exploration, and its integration with interdisciplinary theories in other academic fields such as terminography brings new perspectives and/or methods to this field [1], [6], [7], [8]. This article reviews international and Chinese knowledge organization theoretical research and applied research, discusses their implications for terminography research, and proposes a theoretical framework for knowledge organization methods (FMKO)[1].

1. In the article "Study on the Methods of Knowledge Organization in Terminography: Examplified by Linguistic Dictionaries", the present author constructs a tentative theoretical framework for methods of knowledge organization in terminography. That article has been published in No.1, 2022 of Foreign Language Research, a Chinese academic journal. The

2. THEORETICAL RESEARCH ON KNOWLEDGE ORGANIZATION

2.1 *Related Research on Knowledge Organization Theory in the World*

Through the perusal of relevant literature, the theoretical research on knowledge organization in foreign countries can be roughly divided into topics such as the principles and methods of knowledge organization, the types and functions of KOS, and the theoretical basis of knowledge organization in chronological order. Among them, research on the concept theoretical methods of knowledge organization, the types and functions of KOS, etc. reflects the influence of general terminology on the formation and development of the field of knowledge organization.

Knowledge organization principle is one of the research topics of knowledge organization formed by American librarian Henry Evelyn Bliss in the 1920s to 1930s on the basis of his rational reflection on the practice of book classification and cataloging practice. Bliss [9], [10][92-95] started from "structural organization", and clearly put forward a series of principles of knowledge organization (that is, scientific system), such as "organization and unification", "subordination", "coordination" and so on. ISKO founder Dahlberg [11][21-30] proposed "Information Coding Classification" based on "principles of paradigmatic organization" and "principles of syntagmatic organization". The former includes specific classification principles for categories, subject areas, and scopes, while the latter includes specific classification principles for "general relationships", syntactic relationships, and "special relationships". In order to eliminate the structural complexity of graphical representation, Warfield [12][319] proposed a definition principle for "structural types". Tognoli & Chaves Guimarães [13] discussed the historical status of "principle of provenance" and the status quo of terminology use, and believed that it is not only a principle of archive knowledge organization, but also a way to realize the authenticity and credibility of data in the digital environment.

Special theoretical discussions on knowledge organization methods have been seen earlier in the literature of scholars such as Smiraglia, and he [2] summarized knowledge organization methods as "pragmaticism and rationalism" in the 19th century,

"empiricism" and "logical positivism" after the 20th century, etc.; Dahlberg[14][161] summarized it as "mathematical-statistical approach", "mathematical-conceptual approach" and "concept-theoretical approach", and proposed "information coding classification" based on the third method; Gnoli [15] summed up five knowledge organization methods, "user-based approaches", "collection approaches", "documental approaches", "perspective approaches" and "phenomenon approaches".

The related research of KOS is produced along with the research of knowledge organization principles and methods. The type and function research focuses on theoretical research. It is generally believed that it started from Gail Hodge and developed by Marcia Lei Zeng and others. Hodge[16][5] divides KOS into three categories and 11 subcategories according to features such as structure and complexity, including: "term lists", "classifications and categories", and "relationship lists"; Based on Hodge's classification, Zeng [17] added a category of "metadata-like models" and three subcategories of "pick lists", "synonym rings" and "concept maps"; Souza [18] proposed KOS multi-dimensional classification model; Bratková et al. [19] [5] represents KOS as a five-level model from data, metadata to conceptual data model and so on. The functional research of KOS is scattered in related literature along with its type research. For example, Soergel [20] believes that KOS of digital library has various functions such as "semantic road map" and "Ontology for data element definition"; Zeng [17] [160-182] took the control vocabulary as the main research object and summarized the four functions of KOS.

With the maturity of knowledge organization research, scholars have gradually explored its theoretical basis in depth and comprehensively, and attempted to explore its essence from a philosophical perspective. Dahlberg [21][161] proposed the theoretical basis of information coding classification including "Integrative Level Theory", system theory, conceptual theory, etc. Among them, conceptual theory is recognized as one of the theoretical foundations of knowledge organization by academic circles [5], [22]. Smiraglia [5] systematically explored the theoretical basis of knowledge organization from the aspects of philosophical epistemology, semiotics, order [2], Husserl's phenomenology and

---

present article improves the framework based on a broader literature synthesis.

Wittgenstein's philosophy of logic in the third chapter of his book. ISKO's official website [3] divides the related literature on the theoretical basis of knowledge organization into five categories based on Ingetraut Dahlberg's related research, including: "conceptology", mathematics, system theory, psychology and science.

2.2 Related Research on Knowledge Organization Theory in China

The discussion of knowledge organization in China "begins in the late 1980s"[23][386]. Based on the retrieval on CNKI on October 28, the first Chinese document on the subject of knowledge organization was "Knowledge Organization Supporting the Knowledge Base of Multi-Expert-System" published in 1990 by Cheng Jianqun, Qin Tong and Hu Ming in the 8th issue of *Journal of Computer Research and Development*. The article defines knowledge organization as "an organization method implemented when building and maintaining...large-scale knowledge base systems...". Since then, scholars such as Liu Hongbo, Wang Zhijin, Jiang Yongfu, Su Xinning and others have conducted in-depth research on the construction of knowledge organization theory, forming a knowledge organization theory system that spans the fields of library and information science and information science. The following presents the theoretical development context roughly in chronological order:

- Knowledge organization theory.

Mr. Liu Hongbo published six related documents from 1991 to 1992. In response to the "knowledge exchange theory" prevailing in the field of library information at that time, he proposed the "knowledge organization theory" and believed that "the essence of library internal activities is knowledge organization", including the activities of "search", "organization" and "collection". He also analyzed its "simulation" of "public knowledge memory structure" and "brain knowledge memory structure", and explored from the concepts of "flexibility" and so on [24][13-17].

- The disciplinary basis of knowledge organization.

Mr. Wang Zhijin published 13 related documents from 1998 to 2014, and published the

book *Knowledge Organization Theory and Methods* in 2009. His research has conducted in-depth theoretical discussions on the research content such as "conceptual model", "ten principles", "philosophical foundation and eight methods", and "semantic relations". By exploring the relationship between knowledge organization and "logic", "mathematics", "system theory", "psychology" and "knowledge engineering", the "disciplinary foundation of knowledge organization" has been laid [25][31-53].

- Library philosophy and knowledge organization theory.

Mr. Jiang Yongfu published 17 related documents from 1999 to 2011. His monograph *General Theory of Library Science* took "knowledge organization theory" as one "basic theory of library science in China after the founding of the People's Republic of China" and one of the "theoretical foundation of library science". His research involves library philosophy, knowledge organization methods, and knowledge organization theory. Regarding library philosophy, Jiang Yongfu believes that "libraries are social organizations that organize knowledge" [26][19]; Library science takes "objective knowledge" as the "ontological object", "subjectivization of objective knowledge" as the "epistemological object", and "the organization of objective knowledge" as the "methodological basis" [27][34]; library science takes "objective knowledge" as the "logical starting point", "knowledge organization" as the "logical intermediary", and "people" as the "logical end point" [27]. Regarding knowledge organization methods, Jiang Yongfu et al. [28][3] summarized seven methods including "knowledge representation", "knowledge reorganization", "knowledge clustering", etc. Regarding knowledge organization theory, Jiang Yongfu explored the "concept", "meaning", "essence" and "history" of knowledge organization, and the principles of "grammar", "semantics" and "pragmatics" of knowledge organization[29][5]. It is believed that knowledge organization theory can provide a better theoretical underpinning for "revealing the internal activity mechanism of the library..." [23][387].

- Knowledge organization oriented to knowledge services.

Mr. Su Xinning published a total of 19 related documents from 2009 to 2019, and published the book *Knowledge Organization Theory and Method Oriented to Knowledge Service* in 2014, which mainly involves "knowledge management research

---

3. Isko. 2018. Classification System for Knowledge Organization Literature [EB/OL]. 2020-10-23. https://www.isko.org/scheme.php.

on semantic web ontology" and "theories and methods of knowledge organization for knowledge service". Focusing on "knowledge management research on semantic web ontology", Wang Hao and Su Xinning construct and describe the CSSCI ontology conceptual model through the "ontology object-oriented knowledge organization method", and based on this, they conduct subject association analysis and build a "knowledge retrieval service platform" [30][22]. Focusing on "theories and methods of knowledge organization for knowledge services", Su Xinning et al. [31] carry out a comprehensive and in-depth discussion on the themes such as the "research content", "tools", "related theories and methods", "user needs and knowledge services", etc. of knowledge organization, and build a "knowledge organization system oriented to knowledge services", including three levels of "knowledge resource layer", "knowledge organization layer" and "knowledge service layer", which respectively realize three types of processes: "data ordering", "data knowledgization" and "knowledge servitization". It is worth noting that the key project of China's National Social Science Fund, "Research on Domain Knowledge Processing and Organization Model in Big Data Environment", hosted by Mr. Su Xinning, was established in 2020. As can be seen from the name of the project, the research object began to focus on domain knowledge, that is, the research category of "terminography as a general concept" [32][120-121].

- Related theoretical research on terminography in the field of knowledge organization.

Although this kind of research has already attracted the attention of the library and information science community [33], Mr. Song Peiyan, the representative of systematic researchers, published 16 related documents from 2011 to 2018, and published the book *Terminology Computing and Knowledge Organization Research* in 2018. His research focuses on KOS such as the thesaurus in the network environment, and he proposes a "terminology service system based on knowledge organization" and a "terminology dictionary knowledge organization model". The 2011 National Social Science Fund Project "Research on Terminology Service Based on Knowledge Organizations" and the 2020 National Science and Technology Terminology Committee Project "Research on Integration Methods of Terminology Databases of International Organizations" hosted by Mr. Song Peiyan can be regarded as research on

terminography methods under the network environment.

In addition, scholars such as Bi Qiang, Mu Dongmei, and Teng Guangqing have systematically explored the theories of "digital library knowledge organization in the semantic network environment" and "KOS of digital libraries" since 2005 [34]; Wen Tingxiao et al. conducted systematic research on the theoretical basis, concepts, and types of knowledge association; Chang Chun et al. [35][146] constructed a "knowledge organization ecosystem research framework" based on "ecology principles", including four levels of "conceptual examples", "conceptual populations", "conceptual communities" and "ecosystems"; Zeng Xinhong et al. [36] discussed the semantic description scheme of Chinese KOS.

3. APPLIED RESEARCH ON KNOWLEDGE ORGANIZATION

According to the subject area of the research object, the applied research of knowledge organization in China and foreign countries can be divided into three approaches: general research, specialized domain-based research and inter-disciplinary research (in the broad sense).

The general research approach is oriented to general knowledge organization tools such as general book classification tables and general thesauruses, which can be traced back to the ancient simple knowledge classification ideas and book classification practices in China and foreign countries [37]. There are newer studies such as "knowledge organization of think tank resources" et al. [38][120]. This kind of research roughly corresponds to the two basic categories of "4 General Classification System and Thesaurus" and "8 Application Classification and Indexing" in the "Classification System for Knowledge Organization Literature" on the ISKO official website [33][4].

The specialized domain-based research approach is geared towards a knowledge organization tool in a certain subject field. In the above-mentioned document classification system, it corresponds to nine subject fields ranging from formal sciences such as logic and mathematics to language, literature and art and so on. For example, Garbacz [39][27] expanded the conceptual framework of ontology engineering in the field of philosophy and applied it to a simple OWL ontology; Weissenberger [40][290] explored the ethics issues in traditional Irish music literature from the

perspective of "ethics of evidence", based on "informativenss of documents" and oral documents; Chen et al [41] took the control thesaurus in the field of Chinese art as the research object, analyzed the concept alignment problem of Chinese-English terminology structure, and proposed four semantic interoperability modes; Garbacz [42] constructed a formal ontology model "CIDOC-CRM" in the field of cultural heritage from the perspective of ontology logic, for information exchange and integration in this field. Scholars in China have paid attention to this kind of research since 1990. For example, Li Bing and Xu Youfu published the article *Foundation of ESDDTL's Knowledge Base* in the 8th issue of *Journal of Computer Research and Development* in 1994, focusing on "medical diagnosis and treatment expert knowledge"; Since the 21st century, related research in China has grown rapidly.[4] In addition to the common natural sciences such as medicine, the humanities have also received increasing attention from the academic community. For example, Ma Chuangxin [43] aimed at the problem of knowledge representation in annotation literature, focusing on the field of exegetics, and proposed a "ontology and XML-based knowledge representation scheme". Based on this, he constructed the "initial ontology of exegesis" and explored the "automatic transformation method of the knowledge structure of the annotation and sparse literature"; Liu Ningjing et al. [44] focused on "academic celebrities" and constructed a "descriptive framework model" and an "entity relationship model"; Deng Jun et al. [45][1] focused on "the Qing dynasty officials" and realized "fine-grained knowledge organization" at the "knowledge unit" level.

Interdisciplinary field-based research aims at the limitations of subject-based classification methods, and explores the challenges and countermeasures brought by interdisciplines or discipline intersertion to knowledge organization tools. For example, Szostak et al[46][210] proposed a phenomenon-based classification method under an integrative approach, and explored its feasibility; Wei Jianxiang[47][7] explored the interdisciplinary "knowledge discovery" and "visualization" technology through "clustering algorithm"; Zheng

---

4. On November 5, 2020, the author of this article searched CNKI's literature on the subject of "knowledge organization" and included "fields". The overall trend of the research shows that the growth rate was the fastest from 2003 to 2006, from 9 to 40 articles, and 2013 was the peak with 78 articles published.

Yi's [48] doctoral dissertation proposed the "ontology construction method of interdisciplinary knowledge" by expanding the "seven-step method", and extended the "ontological relationship of interdisciplinary knowledge" by taking computer science and biological sciences as examples.

4. CONCLUSION

Knowledge organization research in China and the world are similar in application, and can be divided into three research approaches: general, subject-field-based, or interdisciplinary field-based, but theoretical research of each approach has its own characteristics. Internationally, the theoretical research is carried out around the principles, methods, theoretical basis of knowledge organization, and the types and functions of KOS, forming a relatively loose theoretical system in the field of knowledge organization. The theoretical research of knowledge organization in China is mainly intended for increasingly in-depth and systematic theoretical construction centering on the theory of knowledge organization. In recent years, the focus of theoretical research in China has been increasingly laid on domain knowledge organization methods (under the big data environment), and some scholars have begun to pay attention to the knowledge organization methods of terminology dictionaries and terminology databases, which is the intersection of KO and terminography. However, due to the different subject characteristics, especially the main research objects, the two fields of knowledge organization and terminography have different research focuses: the field of knowledge organization focuses on literature-based knowledge organization research, and the field of terminography focuses on terminology-based knowledge organization research, which requires high precision and multi-dimensional conceptual analysis, while knowledge organization can provide theoretical elements for terminography research. In general, knowledge organization related theories are huge and loose, and there is no relatively definite theory; at the same time, the related research on the terminography in the field of knowledge organization [49], [50], [51] focuses on taking the thesaurus, ontology and other KOS specific construction methods or technology research and development as the mainstream. The terminography certainly requires the application of these advanced technical methods, but from a research perspective, it is more necessary to use the relevant theoretical elements of knowledge organization to explore in-

depth issues such as its own theoretical mechanism. Therefore, it is necessary to systematically sort out and integrate the content of relevant documents, and debug the adaptability of the relevant theoretical elements of knowledge organization to form a theoretical method of knowledge organization suitable for the study of terminography.

Based on the synthesis of existing literature, a theoretical framework of knowledge organization methods is formed around the three fundamental properties of knowledge organization, namely systematicity, functionality and adaptability. It can be seen from "Table 1" that the systematicity of KO is mainly expressed as "structure" [9] and

"integrity, relevance, and dynamic balance" [31], the specific methods of which involve book classification to reflect the scientific system, etc.; the functionality of knowledge organization is mainly expressed as "maximal efficiency"[9], use and retrieval[52], vocabulary control [17], and semantic road signs[20], the specific methods of which involve the combination of traditional book classification, open retrieval system, etc., as well as the thesaurus control method and drawing concept space for the network environment; the adaptability of knowledge organization is mainly expressed as plasticity, user center, etc., and the specific methods are embodied in book classification such as classifying, defining, indexing, and other methods to realize knowledge proliferation [31].

Table 1. Theoretical Framework for Methods of Knowledge Organization (FMKO)

Principles of KO		Methods of KO
Properities	Relevant statements	Relevant statements
Systematicity	Structure: "organization and unification", "subordination", "coordination", "gradation in speciality"[9], [10] "Integrity, relevance, dynamic balance" [32][20]	Book classification reflecting "system of the sciences"[9] "Looking for the connection between knowledge or data... rises to a semantic relationship"; "Maintaining the balance of various elements" [32][20]
Functionality	"maximal efficiency"[9] use and retrieval: 1) "Books are for use"; 2) "Every person [has] his or her book"; 3) "Every book [has] its reader"; 4) "Save the time of the reader" [52] vocabulary control: "eliminating ambiguity", "synonymy control", "establishing semantic relationships", etc. [17][160] "semantic road map"[20][29]	"collocation", etc. [9] Location, opening hours, furniture, librarians; 2) user surveys, extensive publicity, etc.; 3) "open access system", shelving, cataloging, etc. [52] "Qualifier", context; preferred terms, references and codes; indentation, codes [17] Draw the concept space, classify, and make cross-disciplinary, cross-language, and cross-cultural associations between concepts and terms[20][29]
Adaptability	"Plastic system, adaptive as well as expansible" (*The organization of knowledge in libraries and the subject-approach to books* written by Bliss in 1933) "growing organism" [52] "User-centered"[32][75]	Specific methods of classification, definition, naming and indexing Colon classification "User-oriented needs and problems", "Adapt to personalized and professional services", "Realize the proliferation of knowledge"[32][75]

The above-mentioned three properties of knowledge organization coincide with the characteristics of our research objects — terminology dictionaries, terminology databases and other terminological resources. Systematicity is the most basic principle of terminology, and it has guided the research and practice of terminology and its subdisciplines since its inception; functionality and adaptation are both hot topics in lexicography, and the function of terminology has also received increasing academic attention from the academic circle [53], [54], but there is still a lot of room for research on the functionality and adaptability of terminology resources in the field of

terminography. From the above three properties and methods of KO, three research paths of terminography can be derived, namely, systematic research in terminography, functional research in terminography, and adaptive research in terminography. In-depth discussions will be conducted around these three paths in the near future.

AUTHORS' CONTRIBUTIONS

This paper is independently completed by Jie Zheng.

REFERENCES

[1] Zheng Jie, New Interpretation of Terminography from the Perspective of Knowledge Organization [J]. China Terminology, 2020, 22(04): 12-17. (in Chinese)

[2] SMIRAGLIA R P. The Progress of Theory in Knowledge Organization [J]. Library Trends, 2002, 50(3): 330-349.

[3] Cao Shujin, Wang Zhihong, Wang Lianxi, The Research and Development of Knowledge Organization in China and Abroad: A Comparative Review study of Library and Information Service and Knowledge Organization [J]. Documentation, Information & Knowledge, 2017(04): 100-112. (in Chinese)

[4] Wei Min, 70 Years Development of Information Organization in New China [J]. Library Journal, 2020, 39(03): 32-40. (in Chinese)

[5] SMIRAGLIA R P. The Elements of Knowledge Organization [M]. Switzerland: Springer International Publishing, 2014.

[6] ZHENG J. Study on the Design Features of "Key Concepts in Chinese Thought and Culture" and Its Picture Book: Proceedings of the 2020 International Conference on Language, Communication and Culture Studies (ICLCCS 2020) [C], Moscow, Russia: Atlantis Press, 2020:185-192.

[7] ZHENG J. The Model Construction of Knowledge Organization System in Terminography—Taking Chinese Linguistic Terminology as an Example: The 7th International Conference on Education, Language, Art and Inter-cultural Communication (ICELAIC 2020) [C], Moscow, Russia: Atlantis Press, 2020:154-163.

[8] Zheng Jie, On the Isomorphism Between Knowledge Organization and Terminography [J]. Library Theory and Practice, 2020(02): 85-89. (in Chinese)

[9] Bliss H E. The Organization of Knowledge and the System of the Sciences [M]. New York: Henry Holt and Company, 1929.

[10] Bliss H E. The System of the Sciences and the Organization of Knowledge [J]. Philosophy of Science, 1935, 2(1): 86-103.

[11] DAHLBERG I. Possibilities for A New Universal Decimal Classification [J]. Journal of Documentation, 1971, 27(1): 18-36.

[12] WARFIELD J N. Some Principles of Knowledge Organization [J]. IEEE Transactions on Systems, Man, and Cybernetics, 1979,9(6): 317-325.

[13] TOGNOLI N, CHAVES GUIMARÃES J A. Provenance as a Knowledge Organization Principle [J]. Knowledge Organization, 2019(7): 558-568.

[14] DAHLBERG I. Knowledge Organization: A New Science [J]. Knowledge Organization, 2006, 33(1): 11-19.

[15] GNOLI C. Introduction to Knowledge Organization [M]. London: Facet Publishing, 2020.

[16] HODGE G. Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files[R]. Washington, DC: Digital Library Federation, Council on Library and Information Resources, 2000.

[17] ZENG M L. Knowledge Organization Systems (KOS)[J]. Knowledge Organization, 2008, 35(2/3): 160-182.

[18] SOUZA R R, TUDHOPE D, ALMEIDA M B. Towards a Taxonomy of KOS: Dimensions for Classifying Knowledge Organization Systems [J]. KNOWLEDGE ORGANIZATION, 2012, 39(3): 179-192.

[19] BRATKOVÁ E, KUČEROVÁ, HELENA. Systémy organizace znalostí a jejich typologie [J]. Knihovna, 2014, 25(2): 5-29.

[20] SOERGEL D. Digital Libraries and Knowledge Organization [M]//Kruk S R, McDaniel B. Semantic Digital Libraries. Berlin, Heidelberg: Springer Berlin Heidelberg, 2009:9-39.

[21] DAHLBERG I. The Information Coding Classification (ICC): A Modern, Theory-Based Fully-Faceted, Universal System of Knowledge Fields [J]. Axiomathes, 2008, 18(2): 161-176.

[22] BROUGHTON V, HANSSON J, HJØRLAND B, et al. Knowledge Organization [M]// Kajberg L, Lørring L. European Curriculum Reflections on Library and Information Science Education. Copenhagen: The Royal School of Library and Information Science, 2005:133-148.

[23] Jiang Yongfu, General Theory of Library Science [M]. Harbin: Heilongjiang University Press, 2009: 387. (in Chinese)

[24] Liu Hongbo, Knowledge Organization Theory — A Description of the Internal Activities of the Library [J]. Library, 1991(02): 13-18. (in Chinese)

[25] Wang Zhijin, Li Pei, Li Ying, etc. Knowledge Organization Theory and Method [M]. Beijing: Intellectual Property Publishing House, 2009. (in Chinese)

[26] Jiang Yongfu, Library and Knowledge Organisation: Understanding Library Science from the Point of View of Knowledge Organisation [J]. Journal of Library Science in China, 1999(05): 19-23. (in Chinese)

[27] Jiang Yongfu, Zhang Hongyan, What is Library Science — To Reconsider Library Science [J]. Library and Information Service, 2002(07): 34-38. (in Chinese)

[28] Jiang Yongfu, Li Jingzheng, On the Methods of Knowledge Organization [J]. The Journal of The Library Science in China, 2001(01): 3-7. (in Chinese)

[29] Jiang Yongfu, On Knowledge Organization [J]. Library and Information Service, 2000(06): 5-10. (in Chinese)

[30] Wang Hao, Su Xinning, Services Platform for Knowledge Retrieval Based on CSSCI_Onto [J]. New Technology of Library and Information Service, 2011(03): 22-29. (in Chinese)

[31] Su Xinning, etc., Knowledge Organization Theory and Method Oriented to Knowledge Service [M]. Beijing: Science Press, 2014: 75. (in Chinese)

[32] Ye Qisong, Keywords of Terminology Studies [M]. Harbin: Heilongjiang University Press, 2016: 120-121. (in Chinese)

[33] Wang Zhijin, Research Scope and Development Strategy of Knowledge Organization [J]. ournal of Library Science in China, 1998(04): 3-5. (in Chinese)

[34] Bi Qiang, Mu Dongmei, Chen Xiaomei, The Change and Innovation of KOS in Digital Library [J]. Research on Library Science, 2009(11): 11-14. (in Chinese)

[35] Chang Chun, Yang Jing, Li Yongze, Formation and Research Progress of Knowledge Organization Ecosystem [J]. Library and Information Service, 2019, 63(7): 146-150. (in Chinese)

[36] Zeng Xinhong, etc. Chinese Knowledge Organization System — Semantic Description, Co-construction and Sharing Services [M]. Beijing: Chemical Industry Press, 2016. (in Chinese)

[37] Wang Zhijin, Ma Jing, Wang Xuan, On the Philosophical Basis and Eight Methods of Knowledge Organization [J]. Library Theory and Practice, 2013(04): 37-44. (in Chinese)

[38] Li Huijia, Wang Nan, Study on Knowledge Organization of Think Tank Resources based on Semantic Link [J]. Library & Information, 2020(01): 120-126. (in Chinese)

[39] GARBACZ P. Challenges for Ontological Engineering in the Humanities – A Case Study of Philosophy, Cham: Springer International Publishing, 2015: 27.

[40] WEISSENBERGER L. Traditional Musics and Ethical Considerations of Knowledge and Documentation Processes [J]. Knowledge Organization, 2015,42: 290-295.

[41] CHEN S, ZENG M L, CHEN H. Alignment of conceptual structures in controlled vocabularies in the domain of Chinese art: a discussion of issues and patterns [J]. International Journal on Digital Libraries, 2016, 17 (1): 23-38.

[42] GARBACZ P. Un modello ontologico per l'integrazione delle informazioni del patrimonio culturale: CIDOC-CRM [J]. Italian Journal of Library, Archives and Information Science, 2016, 7(3): 43-77.

[43] Ma Chuangxin, Structured Knowledge Representation of Annotated Documents [D]. Nanjing Normal University, 2014. (in Chinese)

[44] Liu Ningjing, Liu Yin, Wang Moyan, etc. Research on the Knowledge Model Construction of Famous Scholars from the Perspective of Digital Humanism — Take the Digital Resource Center of Tsung Dao Lee as an Example [J]. Library and Information Service, 2019,63(23): 113-121. (in Chinese)

[45] Deng Jun, Zhong Chuyi, Wang Ruan, etc. Knowledge Organization and Relation Analysis of Officials in Qing Dynasty — Taking Changchun County Annals·Changchun Official Examination and Interpretation Form as An Example [J]. Library and Information Service, 2020: 1-9. (in Chinese)

[46] SZOSTAK R, GNOLI C, LÓPEZ-HUERTAS M. Interdisciplinary Knowledge Organization [M]. Switzerland: Springer, 2016: 210.

[47] Wei Jianxiang, Interdisciplinary Knowledge Discovery and Visualization [M]. Nanjing: Nanjing University Press, 2011: 7. (in Chinese)

[48] Zheng Yi, Organization and Application of Interdisciplinary Knowledge based on Ontology [D]. Wuhan University, 2015. (in Chinese)

[49] Zhu Hui, Subject Term Ontology Construction [M]. Nanjing: Nanjing University Press, 2018. (in Chinese)

[50] Chen Baixue, Chang Chun, Wang Liu'an, Acquisition of the Term Relationships of Thesaurus Based on Term Definitions [J]. Library and Information Service, 2017,61(10): 125-130. (in Chinese)

[51] KO Y M, SONG M S, LEE S J. Construction of the structural definition-based terminology ontology system and semantic search evaluation [J]. Library Hi Tech, 2016, 34(4).

[52] RANGANATHAN S R. The Five Laws of Library Science [M]. Madras: The Madras Library Association, 1931.

[53] Jiang Na, Wei Xiangqing, Evaluation Criteria for Metaphorical Term Translation Based on Dual Rhetorical Functions: Exemplified by EC Translation of Economic Metaphorical Terms [J]. Foreign Languages in China, 2021, 18(05): 106-111. (in Chinese)

[54] Sun Huan, Terminology Function and its Variability in Functioning [D]. Heilongjiang University, 2009. (in Chinese)