The historical and epistemological relations between Librarianship and Information Science in the Brazilian scientific production

As relações históricas e epistemológicas entre Biblioteconomia e Ciência da Informação na produção científica brasileira

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Abstract

This is an exploratory qualitative and bibliographic research without a chronological framework that addresses the historical and epistemological relations of Library Science and Information Science from the Brazilian scientific production in Information Science. This study addresses how and which aspects in the historical and epistemological relation occur between Information Science and Librarianship in Brazilian scientific production. The general objective is to identify to what extent the content of publications brings the two fields together. Specifically, the objectives were as follows: list works within the Brazilian scientific production in Information Science that deal with the history and epistemology of Librarianship and Information Science; verify which works correlate historical and epistemological aspects of librarianship with Information Science; elicit some reflections on the historical and epistemological relations from the analysis of this research. The data collection was carried out in the Journal Portal of *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (Coordination for the Improvement of Higher Education Personnel) database of the Scientific Electronic Library Online, Library and Information Science Abstracts, Web of Science and Scopus. Based on the analysis of the corpus of 21 articles, the most predominant themes were the history of Librarianship, the development of Information Science, the documentation of Paul Otlet and Henri La Fontaine, and interdisciplinarity. It is important to deepen the historical and epistemological relations of Librarianship and Information Science in national scientific production since research shows a lack of theoretical depth in the studies retrieved from the corpus.

Keywords: Epistemology of Information Science. History of Information Science. Librarianship.

Resumo

Esta pesquisa é qualitativa e bibliográfica de caráter exploratório, sem nenhum limite cronológico, e aborda as relações históricas e epistemológicas da Biblioteconomia e Ciência da Informação na produção científica brasileira em Ciência da Informação. A pergunta que norteia este estudo é: como e em que aspectos ocorre uma relação histórica e epistemológica entre uma Ciência da Informação e

uma Biblioteconomia na produção científica brasileira? O objetivo geral é identificar até que ponto o conteúdo das publicações reúne as duas áreas. Especificamente, os objetivos são: listar os trabalhos dentro da produção científica brasileira em Ciência da Informação, que trata da história e da epistemologia da Biblioteconomia e da Ciência da Informação; verificar quais trabalhos relacionam os aspectos históricos e epistemológicos da biblioteconomia com a Ciência da Informação; suscitar algumas reflexões sobre as relações históricas e epistemológicas a partir da análise desta pesquisa. A coleta de dados foi realizada no Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior nas bases Scientific Electronic Library Online, Library and Information Science Abstracts, Web of Science *e* Scopus. *A partir da análise do corpus de 21 artigos, destaca-se que os temas de maior presença são a história da Biblioteconomia e o desenvolvimento da Ciência da Informação, a documentação de Paul Otlet e Henri La Fontaine e a interdisciplinaridade. Destaca-se, também, a necessidade de aprofundamento das relações históricas e epistemológicas da Biblioteconomia e Ciência da Informação, na produção científica nacional da área uma vez que a pesquisa evidencia pouco aprofundamento teórico nos textos recuperados pelo corpus.*

Palavras-chave: *Epistemologia da Ciência da Informação. História da Ciência da Informação. Biblioteconomia.*

Introduction

Saracevic (1996) while exploring the evolution and changing nature of information science defined its interdisciplinarity nature as the first of its epistemological characteristics. Although there is still no consensual way of defining this postmodern 'scientific' matrix, sometimes termed as inter/multi/transdisciplinarity, Saracevic's assertion is a consensus among information scientists.

Wersig and Nevelling (1975), although not using the term 'interdisciplinarity', show that Information Science was based on several fields, of which they cite: Computer Science; Librarianship; Philosophy and Taxonomy; Linguistics; Information Theory; Cybernetics and Mathematics. Thus, we can see the birth of Information Science from singular theories, variables and methodologies, in which different aspects of information have become a point of disciplinary intersection.

Interdisciplinarity cited in the literature of Information Science (IS), according to Bicalho (2011, p.119), is not always discussed or explained. The author also comments that "The recognition, almost unanimous, of the interdisciplinary character in the field of IS or its object of study is repeated in various ways".

Within this perspective, the present article addresses specific analyses and reflections on the relation between the Librarianship field and Information Science, considering the presence of librarians in the initial discussions of IS. In Brazil, for example, the approaches of the subjects studied by Librarianship and Information Science are perceived in undergraduate and graduate disciplines of both fields, the methodologies used in research and, consequently, their historical and epistemological relations.

According to Dutra's (2010) view, the work of René Descartes, Immanuel Kant, John Locke, Berkeley and Hume, in a way, helped to develop epistemology as a discipline of Philosophy from the mid-seventeenth century to the eighteenth century, although the term was only used in the nineteenth century.

Japiassu (1977, p.24, our translation) questions that "If what lies beneath this term (its content) only surfaced in the last century, to what new conditions does this advent correspond to in the history of science and philosophy?". In this sense, we must agree with the author that epistemology has a relationship with both science and philosophy that causes an extensive debate among scientists and philosophers, not only regarding the nature and meaning of epistemology, but the epistemological relations present in a certain field of knowledge.

Hessen (1999) understands that the field of philosophy is subdivided into three parts: value theory, world view theory and science theory. The latter is further subdivided into logic and theory of knowledge. "While logic questions the correctness of thought form [...], the theory of knowledge questions the truth of thought content, its agreement with the object" (Hessen 1999, p.13, our translation).

With regard to epistemology, Dutra (2010) understands it as a discipline of philosophy responsible for trying to justify or elaborate theories of knowledge. Japiassu (1977, p.23, our translation) comments that epistemology

is "the critical study of the principles, hypotheses and results of different sciences", and further emphasizes that nowadays epistemology is not only made for scientists but by scientists.

In more general terms, Bunge (1980) defines epistemology as a branch of philosophy, responsible for studying scientific research as well as its product, that is, scientific knowledge. The author further states that the study of epistemology gained, over time, a place of importance in the philosophical debate that goes beyond the inclusion of scientists in the epistemological debate.

But how far does science propose an epistemological discussion and to what extent does it really do it? Within Information Science, based on the paradigms proposed by Capurro (2003), this discussion to occur within Information Science and it is at this point that we leave the philosophical discourse on epistemology and begin the debate within the scope of science.

It is also common to mention authors such as Shera (1977) when discussing epistemology. However, Durkheim's work, as well as John Dewey's pragmatism, guided the establishment of the University of Chicago's Graduate Library School, where the first doctorate in Library Science was offered in 1928. In addition, the notion of paradigm proposed by Thomas Kuhn influenced the interpretation of the paradigms mentioned by Capurro (2003).

In a quick search for the term "*epistemologia*" in the subject field of the journals *Transinformação, Perspectivas em Ciência da Informação* and *Informação & Sociedade*, ranked as Qualis A1, of the 23 articles retrieved, only eight were published in the last five years (Manso, 2014; Francelin, 2015; Silva; Gomes, 2015; Saldanha, 2015, 2016; Silveira; Caregnato, 2017a, 2017b, 2018). Only 7 articles on epistemology were published in these three journals in 2011, which shows that part of the scientific production was published between 2010 and 2013.

However, research on epistemology is gradually returning to the scenario of national scientific production. This return makes it possible to deepen the topic within Information Science in the coming years since it is perceived that the epistemological debate, in the scientific production of Brazil, involves three paradigms: physical, cognitive and social, which do not add much to what has previously been addressed by Capurro throughout the past 10 years (Capurro, 2003).

The content in the previous paragraphs brings up the following question: how and which aspects of the historical and epistemological relation between Information Science and Librarianship occur in the Brazilian scientific production. In this sense, the main objective is to establish the historical and epistemological content present in publications of the two fields by analyzing, at first, to what extent this content is related.

Therefore, the following specific objectives were established: list studies within the Brazilian scientific production in Information Science that deal with the history and epistemology of Librarianship and Information Science; verify which studies are related to the historical and epistemological aspects of librarianship and Information Science; elicit some reflections on the historical and epistemological relations by analyzing the corpus of the research.

Once the historical and epistemological approximations between Librarianship and Information Science are known, it will benefit the studies focused on the history and epistemology of the IS. This occurs because Information Science has difficulties in "characterizing the concept and object of study and, therefore, consistent academic practices and theoretical-epistemological foundations" (Silva, 2016, p.23) due to the influence of different fields of knowledge. Thus, the discussions in this article become crucial due to the results of the bibliographical survey that point out the historical and epistemological approximation between the two fields. Furthermore, the present study points out the scarce academic studies that may indicate possible future research objects.

Methodologically, the present study is characterized as a qualitative exploratory bibliographical research without a chronological framework of the Brazilian scientific literature. The *corpus* of 21 documents was retrieved from the survey carried out in the Journal Portal of *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*

(Capes, Coordination for the Improvement of Higher Education Personnel), a digital library focused on making international scientific production available to teaching and research institutions in Brazil. In this digital library, the search was restricted to the Scientific Electronic Library Online (SciELO), Library and Information Science Abstracts (Lisa), Web of Science and Scopus.

The results indicate a historical and epistemological approximation of both fields from the beginning of the development of Librarianship and Information Science. Other points of approximation consist of the Documentation of Paul Otlet and Henri La Fontaine and interdisciplinarity, which are components of Information Science and consequently broaden the epistemological debate between this field and other fields of knowledge that formed the development process of IS.

History of Librarianship

The genesis of Librarianship as a practice of organizing, preserving and allowing access to knowledge is subsumed to the history of libraries. Santos and Rodrigues (2013), for example, consider it as one of the oldest disciplines related to information. However, we must take into account the different proportions in the analogies between what begins the library process and what comes to develop a discipline or science by anachronistically relating the history of libraries and librarianship and characterizing the historical process of the epistemological development of the Librarianship field.

In this study, it is understood that it was in humanistic Europe of the 15th and 17th century that Librarianship as we know it was created. The main concern during this period was the physical preservation and preservation of supporting material, particularly books. In order to respond to this demand, these studies served as a basis for manuals and treatises, especially bibliographies.

As bibliographic material increased, libraries required qualified personnel to manage these collections. The concern for professional qualification also drove the development of Librarianship as treaties focused on professional practices and daily services of libraries. The work of Gabriel Naudé (1600-1653), "*Advis pour dresser une bibliothéque*" (1627), is a good example during this period and it served as the conceptual framework of the field (Santos; Rodrigues, 2013). From then on, the technical development of Librarianship began.

Regarding its technical or practical characteristics, Silva (2016) states that the development of Librarianship has taken two paths: the preparation and description of bibliographies and use of documentary support, and the development of different library classification systems. These systems, such as the codes developed by Melvil Dewey, Cutter and Bliss, were important for the development of higher education courses in Librarianship.

However, as bibliographical production and information increased, what had been developed solely for libraries and its services no longer met the real demands of mankind. New methods for dealing with information processing became necessary and, as a result, the deepening of Librarianship studies became essential during this new stage.

History of Information Science

The great information diffusion began with the creation of printing technology, as mentioned by Freire (2006), as this instrument enabled the rapid propagation of knowledge. This fact allowed information professionals to expand their scope of interest and performance. However, a diversity of professionals who have worked in different fields such as Librarianship, Documentation, Information Retrieval, began working with information aspects using different approaches. This process of change and disciplinary transformation enabled the development of Information Science.

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Along with World War II, the ideals of Enlightenment modernity began to be questioned in view of the material, social and human disaster of the war. The reflections of modern critics such as Arendt (2013), for example, defend the end of modern optimism and unrestricted belief in reason and Cartesian objectivity within the philosophical and scientific society. It is within this context that we perceive the emergence of new fields of knowledge, among them Information Science.

Although Information Science began to gain strength with the advancement in scientific and technological production in the mid-20th century, it is important to consider works and studies conducted before that period. Paul Otlet and Henri La Fontaine were already beginning studies with a greater focus on the content of documents, information itself, in the famous "*Traité de Documentation*" of 1934. From these studies, Wersig and Neveling (1975) point out that even Information Science having been consolidated as a discipline around the 1950s, there had already been researchers involved in the subject. However, studies were isolated and the term "Information Science" was not used.

Santos and Rodrigues (2014, p.94) mention that interdisciplinarity "can be considered as a cohesion factor among different fields of knowledge that transforms the structure of each discipline to build a new and common axiom of all of them". In this sense, Wersig and Neveling (1975) believe that Information Science was developed under the strong influence of Documentation and Information Retrieval, and point out disciplines such as Computer Science, Library Science, Philosophy and Taxonomy, Linguistics, Information Theory, Cybernetics and Mathematics, as other fields with a strong influence on the development process of the field.

Still regarding the history of the development of Information Science, some publications and events can be considered historical milestones. Saracevic (1996) and Freire (2006) point out the following: the publication of Vannevar Bush's article "*As we may think*" in 1945; the concept of "*Informatika*" developed by Mikhailov around 1966 and 1969; and the article "*Information Science*: *What is it*?", published by Borko in 1968. In his article, Borko (1968) defines Information Science as a discipline responsible for investigating the properties and behavior of information, the forces governing the flow of information, and the means related to the origin, collection, organization, storage, retrieval, interpretation, transmission, transformation and use of these information representations.

In addition to Borko's concept, which was widely discussed in Information Science, Saracevic (1996) discusses Goffman's definition of the 1970s, Belkin and Robertson's observation of the purpose of Information Science in 1976 and its own redefinition in the decade of 1990. In the same essay, Saracevic still mentions three characteristics of Information Science that would be responsible for the existence and evolution of the field: interdisciplinarity, the connection with information technology, and participation in the information society.

In relation to the essence of Information Science, Freire and Silva (2012) affirm that it is divided into two perceptions: the first would be related to the diversity of concept about the field due to many factors that influenced the development of the Information Science; the second would address the domain of knowledge that would be crucial for the structural formulation of the scientific field. In addition, according to the same authors, the field focuses on the actions of information and its contexts, seeking to understand information flow.

Campos (2013, p.151) states that de Information Science was "classified under the categories of paradigms, conceptual models or projects" and mentions the Capurro paradigms as guidelines for this classification. As for Silva (2016), the development of Information Science is based on two basic phenomena: the appropriation of theories from other fields; and the adaptation of these theories to be applied, generally, to the activities of libraries and other types of information units.

In the first case, according to Silva (2016), the appropriation is done uncritically, there is only the insertion of terms, methods and fundaments from other fields without a reflection or attempt to dialogue with Information Science. While in the second phenomenon, this dialogue is prioritized as well as the critical analysis of what comes from another field and that will be adapted by Information Science. It is in this second moment that the discussions

about Epistemology, Information Technology and Management/Politics/Information Economy become appropriate.

This system of "information sciences" is best exemplified by Wersig and Nevelling (1975), in which it is possible to verify the presence of disciplines such as Archivistics, Museology, Mass Communication, Education and Librarianship as part of this system.

In addition, there is a number of studies in Psychology of Information, Sociology of Information and Economics of Information collaborating with those disciplines, all of them involved in General Information Theory. This theory also dialogues with Cybernetics, Semiotics, System Theory, Communication Theory, Philosophy, Science of Science, Mathematics, Linguistics, Law, and Computer Science. However, for the purposes of this study, the focus will be on Librarianship.

It is in science that the epistemological debate becomes present. Wersig and Nevelling (1975) present the "information sciences" as the dismemberment of a field that is composed of several "sciences" for its development. Each of these sciences brings its epistemological assumptions that serve as the background for its disciplines.

Fourez (1995) comments that the discipline seen as a 'subject' taught in educational settings starts to exist in the seventeenth century and it is consolidated in the modern eighteenth century. The author still argues that science is born daily and that, with the origin of the disciplines, it delimits the scientific object that will be treated by science.

It is understood that the epistemological construction of each science is the true backdrop for the development of its discipline and object of study. Therefore, since Librarianship has epistemological foundations that have given it a disciplinary body and, at the same time, evidencing its scientific character, it is possible to establish historical and epistemological relations of this field with Information Science.

Methodological Procedures

The present study is characterized as an exploratory qualitative bibliographical research without a chronological framework of the Brazilian scientific literature. At first, the corpus was collected from the Capes Journal Portal by searching SciELO, Library and Information Science Abstracts (Lisa), Web of Science and Scopus databases, since these databases are widely recognized by the field. Four search strings were used for the survey: (a) "Information Science and Epistemology"; (b) "Information Science and History"; (c) "Librarianship AND Epistemology"; (d) "Librarianship AND History". All strings were searched in Portuguese since the focus of this study was Brazilian scientific production, and the 'title' and 'subject' were subjected to filters as well as restricting the search for articles.

The initial corpus elaborated from the above described searches recovered 44 documents. It was discarded documents of foreign authors, duplicates and one article that was not part of the fields analyzed. Thus, the *corpus* consisted of 21 documents that received individual designations ranging from D001 to D021. In order to verify which works containing the historical and epistemological aspects of Librarianship were related to the Information Science, first the descriptors listed by the authors of the texts were analyzed. Then, by reading the title, abstract and keywords, it was possible to list descriptors that represented the content of each document.

With these two lists of descriptors, it was possible to compare which themes were listed by the authors and which were listed from the analysis and, using comparative analysis, it was possible to survey the points of congruence that reflect the historical and epistemological aspects between Librarianship and Information Science, according to the Brazilian scientific production.

It is understood that the number of documents retrieved does not reflect, in its entirety, the national historical and epistemological relations between Librarianship and Information Science. However, the retrieved articles are more than an opening point for epistemological dialogue in the field and, in this sense, are capable of sustaining a discussion, even by the low number of documents retrieved, considering that the topic is discussed in the field, including at the "*Encontro Nacional de Pesquisa e Ciência da Informação*" (Enancib, National Meeting on Research and Information Science).

Results and Discussion

From the universe of 21 articles, we considered the authors' keywords and the subject descriptors from the database to determine the relationship of the Information Science and Librarianship fields in the subjects of "Epistemology" and "History". A preponderance of the relationship between Information Science and Epistemology was observed in nine articles and Librarianship and History in five articles. Next, we analyzed the relationship between Information Science and History, and between IS, Epistemology and History, both with two articles. With only one article each, the relationship between Librarianship and Epistemology, Information Science, Librarianship and History was observed; and Information Science, Librarianship and Epistemology, as shown in Figure 1.

The analysis of the quantitative descriptors and their relation to each other in the articles of the corpus show a national tendency to group the theoretical studies of Information Science to Epistemology and those of Librarianship to History.

Considering only the keywords of the authors, except for the descriptors "Information Science", "Librarianship", "History" and "Epistemology", it was possible to group the other subjects as shown in Table 1.

In the articles retrieved with search strings focused on Information Science, the subject "Science" is featured, especially in the interfaces of Law, Philosophy and Scientific Objects and "Discourse Analysis", which appear in four articles.
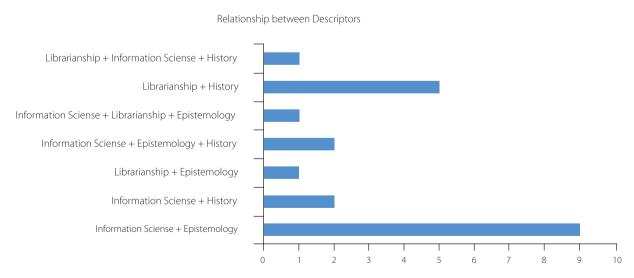
Relationship between Descriptors

Figure 1. Subject Descriptors of Portal of Periodical Capes.

Source: Elaborated by the authors (2018).

Table 1. Subjects other than database descriptors.

Information Science	
Keywords	Quantity (n)
Analysis of citations	2
Speech analysis	4
Bibliometrics	1
Science (Law, Philosophy, Object)	4
Scientific Communication	1
Documentation	1
Theory of knowledge	3
Edgar Morin	1
Gaston Bachelard	1
Information	1
Interdisciplinarity	2
Intertextuality	2
Michel Foucaltut	1
Paradigms	3
Polyphony	1
Postmodernity	2
Society	1
Technology	1
Vannevar Bush (1890-1974)	1

Librarianship	
Keywords	Quantity (n)
Learning - Teaching	3
Evaluation of collections	1
Bibliometrics	1
Librarian	2
Library	3
Cooperative cataloguing	1
Regional Library Board - 14	1
Development of collections	1
Documentation	2
Reading	3
Technology	1

Source: Elaborated by the authors (2018).

Note: Terms in blue are those common to both disciplines.

Secondly, with three articles, "Knowledge Theory" and "Paradigms" appear, followed by "Interdisciplinarity", "Intertextuality" and "Postmodernity" with two articles each. In the documents retrieved with search strings focused on Librarianship using the term "Learning" in the interface of Disciplinary Teaching and the training of the Librarian, "Libraries" and "Reading", all of terms appear in three articles. Following, "Librarian" and "Documentation" appear in two articles.

These subjects, along with the descriptors in the databases (Information Science, Librarianship, Epistemology and History), allow an in-depth analysis of the content of Brazilian articles published between 1998 and 2015. Therefore, although with a reduced scope of research, it is possible to visualize that the discussions in the articles of the scientific society had focused on historical and epistemological studies. In this sense, to fulfill the main objective of the research, we identify the main themes (Table 2) that show the historical and epistemological relations between Librarianship and Information Science as shown in Figure 1 and Table 1.

We found that the epistemological relations are more strongly mentioned by the corpus that characterizes Information Science as an emerging science still searches for definitions in the field and it investigates in Librarianship, and in related themes, foundations that support and justify its epistemological conceptions.

Methodologies such as 'Discourse Analysis' and 'Bibliometric' studies emphasize the approaches of these two sciences concerning their practical sense in the development of research. Thus, it may be inferred that the relations of the two fields surpass the theoretical perspective of the relations identified between these fields through epistemology, which is the framework of these two domains of knowledge.

The Documentation related to Paul Otlet and Henri La Fontaine is also a recurrent subject in both Information Science and Librarianship, confirming the approximation of these fields not only regarding their historical and epistemological aspects, but also themes the two address. Moreover, descriptors such as 'Interdisciplinarity' and 'Postmodernity' show the contemporary nature of problems related to an Information Society, which demands actions and approaches that are not always contemplated in the modern or cartesian scientific models.

Table 2. Themes resulting from the corpus analysis process.

Themes found	Quantity (n)
Speech analysis	4
Bibliometric	2
Library	3
Documentation	3
Epistemology	13
History	10
Interdisciplinarity	2
Postmodernity	2
Technology	2

Source: Elaborated by the authors (2018).

Finally, it is important to emphasize that "Technology" is also one of the terms found in both fields. Whether it is the development of library automation systems or the advancement of digital tools in virtual environments, the technological component is the starting point for numerous studies of the history and epistemology of Information Science in its relations with Librarianship. Thus, the analysis of this corpus reveals the existence of points of congruence between the historical and epistemological aspects of Librarianship and Information Science, which create a theoretical-practical link between these fields, to further advance the epistemological consolidation of Information Science. However, these points of intersection evidenced by the analysis of the texts and the keywords of documents, compared to the terms indexed in the databases, may enable the beginning of a discussion that, theoretically, demands a greater deepening in the long term.

Final Considerations

Based on the methodological approach used, it was possible to retrieve articles that deal with historical and epistemological aspects of Librarianship and Information Science. With a corpus of 21 documents, it was possible to identify themes that suggest approximations regarding the historical and epistemological relations of the two fields analyzed, which were: the history of Library Science and the development of Information Science, the documentation of Paul Otlet and Henri La Fontaine and interdisciplinarity, which is a characteristic of postmodern science that promotes epistemological debates among scientifically interconnected sciences, as is the case of Information Science.

Based on these approximations, this study may be expanded as more documents about the subject are found that reflect the international panorama of the historical and epistemological studies in Librarianship and Information Science.

The reflections initiated in the discussion of the results open new possibilities for further research related to the current dialogue between the sciences studied to understand to what extent the link between Librarianship and Information Science is present in the development of theoretical and practical studies as well as the theoretical-methodological framework of these studies. Research can also be conducted relating the contributions of Librarianship that, somehow, have been adopted by Information Science and that still constitute this field.

Contributors

K.R. Vieira collaborated in the conception, collection and analysis of data and writing the article. C. Karpinski collaborated in conception, analysis of data, writing and reviewing the article.

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