The Spirit of inquiry’s power to influence in 21st-century KO research: Jesse Shera and Margaret Egan

Abstract
This study aims to examine the influence of Jesse Egan and Margaret Shera on scientific production in knowledge organization (KO) based on the citations that these authors have received in the literature. Thus, we conducted an ego-centric citation analysis of both authors in co-authorship as their collaborative effort was responsible for some of the most fruitful theoretical foundations for library and information science and knowledge organization. In this vein, we searched records that cited works co-authored by Shera and Egan in the database Scopus and, after making a selection of the citing papers whose titles suggested a link to knowledge organization, we analyzed the authors that were most co-cited with Shera and Egan, the main venues for publication, and the years of publication in order to analyze the permeability (power to influence) of the two authors in the KO field. The results reveal not only the effective influence of Egan and Shera on the theoretical-methodological universe of KO but also and more specifically on the ISKO universe.

Introduction
The Graduate Library School of the University of Chicago (GLS-UC) (1926-1989) played a special role in the scientific development of the Library and Information Science (LIS) field. This school institutionalized a "spirit of inquiry" (Richardson Jr. 1982) based on the German tradition of seminars (in opposition to the French tradition of lectures) as dialogical spaces for methodical inquiry in the search for scientific truths that are independent of their utilitarian applications (Richardson Jr. 2010). This aspect contributed to the construction of a kind of episteme of a scientific field which Pierce Butler (1933) called "library science,” the scientific study of books and users following a social-scientific approach, directly influenced by the ideas of John Dewey (1929) concerning identification of the sources of a science of education. This conception of library science also brought new techniques from the quantitative social sciences to the research problems of librarianship.

In this context and representing a second generation of GLS-UC faculty, Jesse Shera and Margaret Egan established an important scientific collaboration, especially in aspects related to the field of knowledge organization (KO). Egan and Shera (1952) coined the term “social epistemology” as a field of study related to the social production, distribution, and utilization of intellectual products in such a way that “informed social action” acts as the main goal of library service, by means of the evaluation of bibliographic services; and supported by a theoretical framework from the study of information-seeking behavior, knowledge organization, and bibliometrics (Furner 2004; Zandonade 2004). Shera and Egan (1956) also brought other...
contributions to the North American Knowledge Organization literature such as the general principles for the construction and maintenance of systematic or classified catalogs, an “uncommon device of American bibliothecal organizations” (Custer 1957, p. 122), that were more devoted to the Cutter’s tradition of dictionary catalogs.

Our paper aims to analyze the influence of Egan and Shera on scientific production in Knowledge Organization based on the citations that these authors receive in the literature.

Methodology

Our methodology is based on the idea of “the power to influence” used by Dietmar Wolfram (2016) in knowledge organization for his ego-centric citation analysis of Hope Olson (and whose most well-known work “The power to name” inspired Wolfram’s title). Ego-centric citation analysis (White 2000) was used as a way to verify “the influence of an individual, publication or journal based on the references they provide in their own work, the citations their works receive and the works and people with whom they are co-cited” (Wolfram 2016, p. 332), following three approaches: citation identity (all the authors that a citing author cites), citation image makers (authors who cite a certain author), and citation image (authors with whom a certain author has been co-cited). Other examples of ego-centered bibliometric analyses of prominent knowledge organization authors include those of MP Satija (Swain 2009), S.R. Ranganathan (Smiraglia 2013), and Paul Otlet (Rodríguez-Bravo et al. 2017). While citation analysis can be considered a way to represent social knowledge organization systems (Hjørland 2013), we believe our paper also falls under the category of domain analysis, bibliometric studies being one of the valid approaches to domain analysis sanctioned by Hjørland (2002, 2017). For the purpose of this paper, we consider Shera and Egan together as an individual for analysis (an ego), especially in relation to the relevance of their scientific collaboration and not only Jesse Shera for the development of the KO field (Furner 2004).

Accordingly, we searched records that cited works co-authored by Jesse Shera and Margaret Egan in the database Scopus using the following retrieval profile: [REFAUTH(shera) AND REFAUTH(egan)]. By October 17th, 2017, we had retrieved 13 records co-authored by Shera and Egan, which after disambiguation resulted in five works receiving a total of 82 citations: “Foundations of a theory of bibliography” (1952), with 56 citations; “A review of the present state of librarianship and documentation” (editions of 1953, 1961 – in Portuguese –, 1966, and 1971), with nine citations (seven citations for the 1953 edition and one citation for the other editions); “Prolegomena to bibliographic control” (1949) and “Bibliographic organization” (1952), with six citations each; and “The classified catalog; basic principles and practices” (1956), with 5 citations. In a second stage, we selected the citing papers whose titles suggested a link to knowledge organization and analyzed the authors that
were most co-cited with Shera and Egan, the main venues for publication, and the years of publication in order to analyze the permeability (power to influence) of the two authors in the KO field. In other words, we considered this four-year period of scientific collaboration between Egan and Shera as an important domain to be analyzed and a seminal space for KO studies.

**Results**

Out of the 81 citations to the five works, 35 (43%) appear in the area of Knowledge Organization. The majority of them (80%) are in documents published after 1996, and 58% of them published in documents from 2001 to 2010. These citations suggest a link between the work of Shera and Egan and the current research in Knowledge Organization.

Figure 1 presents the diachronic analysis of these citations showing the preference of The Classified Catalog and Prolegomena to Bibliographic Control until 1985; a balance from 1986 to 2005, and the predominance of Foundations of a Theory of Bibliography and Bibliographic Organization after 2011.

![Figure 1: Distribution of citations to Shera and Egan’s works](image)

Out of the 55 citations to "Foundations of a Theory of Bibliography" 14 citations (25%) appeared in those papers whose titles suggest a connection with knowledge organization. Among the citing authors, Jack Andersen and Jonathan Furner are the contributors with the highest number of citations, with five citations each (and together accounting for 18% of the citations). As for the sources, the majority of these citations (36%) appeared in ISKO publications - the journal "Knowledge Organization" and the "Advances of Knowledge Organization" – (36%). The presence of 72% of the citations in ISKO publications is especially significant considering the relevance of ISKO as an
international scientific space for the KO field. It is important to stress that this high number of citations also reveals an effective concern of the ISKO environment with the historical foundations of the field.

The most co-cited authors with Egan and Shera in these papers were Birger Hjørland (16 citations), Jack Andersen and Jenna Hartel (nine citations each), and John Budd and Michel Foucault (eight citations each). It is interesting to observe that all of the most co-cited authors mentioned above are mostly known for their theoretical studies. This suggests that the impact of Egan and Shera was more theoretical than practical, something that is consistent with the investigative and reflective proposal of the GLS-UC.

Out of the nine citations to "A review of the present state of librarianship and documentation" five citations (56%) appeared in papers that we considered to be on knowledge organization and single-authored by the following people: J. Furner, T. Zandonade, C.K. Malone, J. Warner, and N. Oddone, N. These citations appeared in the following journals: "Library Trends" (two citations), "IEEE Annals of the History of Computing" (one citation), "Journal of Librarianship and Information Science" (one citation) and "Ciência da Informação" (one citation). The citation in the IEEE Annals of the History of Computing reveals the relevance of the work of Egan and Shera not only for LIS, but also the recognition of this relevance from the history of Computer Science. The main authors co-authored with Shera and Egan in these papers were: S. Fuller (12 citations), W.B. Rayward, and Sambaquy L. de Q. (six citations each), and J. Farradane, T.J. Froehlich, W. Goffman, and R.R. Shaw (four citations each).

All 6 citations to "Bibliographic Organization" appeared in papers identified as knowledge organization and mostly (83%) published during the period 2004-2012. The citing authors in these publications are: E. Milonas (two citations) with one citation in two papers, and Y. González Pérez, E.K. Jacob, T. Lincoln, and T. Zandonade, with one citation in one paper. The sources in which these citations appear are: "Library Trends" (two citations), "Acimed" (one citation), "Advances in Classification Research Online" (one citation), "Advances in Knowledge Organization" (one citation) and Cataloging & Classification Quarterly" (one citation). The main co-cited authors with Egan and Shera in these papers are: S. Fuller (12 citations), E.K. Jacob (six citations), T.J. Froehlich, W. Goffman, and B. Kules (four citations each), and V. Broughton, F. Machlup, and W.B. Rayward, E. Rosch, and B. Shneiderman, (three citations each). The wide range of citing and co-cited authors as well as of citing journals reveal the different ways in which the work of Egan and Shera has been relevant within the knowledge organization literature.

Out of the six citations to "Prolegomena to bibliographic control", five citations (83%) appeared in papers considered to be on KO according to the titles. M.L. Mackenzie authored two of these papers, and J. Furner, H.H. Wellisch, and T. Zandonade each authored a paper citing this work. These papers were published in the
following titles: "Library Trends" (two citations), "Journal of the American Society for Information Science" (one citation), "Library and Information Science Research" (one citation), and "Proceedings of the ASIS Annual Meeting" (one citation), during the period 1980-2004. The most co-cited authors include: S. Fuller (with 12 citations), W. Goffman, and L.B. Heilprin (with four citations each) and M. Kaltenbach, F. Machlup, and W.B. Rayward (with three citations each).

All 5 citations to the work "The classified catalog" appeared in papers in knowledge organization and single-authored by the following people: L. Butler, T.H. Connell, R.L. Liske, N. Roberts, K. Rondestvedt, and L. Summerville. These citations appeared during the period 1972-1998 in the following sources: "Cataloging & Classification Quarterly" (two citations), "Audio Visual Communication Review" (one citation), "Journal of Internet Cataloging" (one citation), and "Social Science Information Studies" (one citation). The most co-cited authors with Shera and Egan in these papers were C. Palowitch, with 3 citations, and G. Barhydt, M.J. Bates, E. Coates, A.C. Foskett, D. Haykin, F. Riggs, C. Schultz, V. Sessions, and M. Taube, with two citations each. These results might be unexpected if this is considered the most specific work by Egan and Shera in the KO field. On the other hand, the low number of citations confirms that the influence of Shera and Egan was greater on the theoretical dimension of KO than on the practical side, as this book was devoted to the steps and procedures for developing a classified catalogue.

Figure 2 shows the co-citation network of Shera & Egan's works and the most co-cited authors with these works. We observe that five authors (in green circles) are co-cited with three of Shera & Egan's works, thus being the main contributors to the creation of the Shera & Egan's citation image. Among them, we highlight Steve Fuller with the highest intensity of co-citation (shown in the figure by the thickness of the connection with the works). It is also worth mentioning the intense co-citation of Hjørland with the work “Foundations of a Theory of Bibliography”. As for the other works, with the exception of Classified Catalog, all of them were co-cited with a wide range of co-authors.
Results & conclusion

The results show that, among all the authors citing these five works, Tarcísio Zandonade is one of the most important contributors (image creator) to the image of Shera and Egan as scientific collaborators, as he cited three of the analyzed works by them: "A Review of the Present State of Librarianship and Documentation", "Bibliographic Organization", and "Prolegomena to Bibliographic Control". Jonathan Furner also plays an important role as he used two of the analyzed works in his research: "A Review of the Present State of Librarianship and Documentation" and "Prolegomena to Bibliographic Control". Finally, Jack Andersen is also an important image creator as he based several of his papers on "Foundations of a Theory of Bibliography".

Citations appeared more frequently in the ISKO publications – "Knowledge Organization" and "Advances of Knowledge Organization" –, the journal "Library Trends", and, to a lesser extent, the journal "Cataloging & Classification Quarterly". The authors that were most co-cited with the analyzed works by Shera and Egan are: Steve Fuller, Birger Hjørland, and William Goffman. Other important authors that also contributed to the creation of the citation image of the scientific collaboration between Shera and Egan, although with less co-citations, include: Jenna Hartel, W. Boyd Rayward, Jack Andersen, John Budd, Michel Foucault, and Thomas J. Froehlich.

In general, the effective influence of the Egan and Shera collaboration on the theoretical-methodological universe of KO is patent, especially considering the universe in which the works are most cited (the ISKO publications) and the
epistemological nature of the authors that cite them. This aspect confirms the pioneering character of the GLS in terms of academic conception and research orientation, which, even some decades later, would still find a fertile environment for reflection in the ISKO.

References
Hjørland, Birger (2013). Citation analysis: a social and dynamic approach to Knowledge Organization. *Information Processing and Management* 49: 1.313-1.325.
Shera, Jesse Hauk and Margaret E. Egan (1956). *The Classified catalog: basic principles and practices*. Chicago; ALA.

