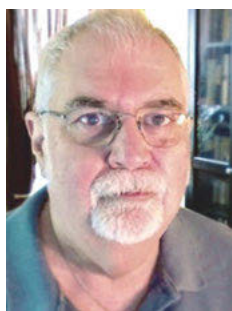


# Referencing as Evidentiary: An Editorial

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**Abstract:** The referencing habits of scholars, having abandoned physical bibliography for harvesting of digital resources, are in crisis, endangering the bibliographical infrastructure supporting the domain of knowledge organization. Research must be carefully managed and its circumstances controlled. Bibliographical replicability is one important part of the social role of scholarship. References in *Knowledge Organization* volume 45 (2018) were compiled and analyzed to help visualize the state of referencing in the KO domain. The dependence of science on the ability to replicate is even more critical in a global distributed digital environment. There is great richness in KO that make it even more critical that our scholarly community tend to the relationship between bibliographical verity and the very replicability that is allowing the field to grow theoretically over time.

Keywords: ISKO international conference, knowledge organization, citations, references

## 1.0 Referencing versus harvesting

That there is a crisis—looming or already upon us—in the referencing habits of scholars is obvious from a quick glance at any reference list in any article in any scientific journal. The once noble chore of jotting down the appropriate bibliographical characteristics of any work consulted in scholarship—a practice that guaranteed a sort of replicability—has given way to the harvesting of citations from online resources. The notion that a scholar must cite a source that other scholars also can consult has given way to various forms of ritual citation. The danger in ritual citation goes far beyond the obvious inaccuracy of references or the time wasted by scholars chasing dead ends looking to read a particularly interestingly cited piece of prior work. The danger lies in the collapse of the bibliographical infrastructure that supports all scholarship.

My mentor at the University of Chicago, Abraham Bookstein, famously opened his research methods course with the statement that all research is consciously premeditated inquiry (1982):

If we are seriously concerned with obtaining evidence that can substantiate our beliefs about some subject area, then we must develop approaches that yield information that is as valid and persuasive as possible. To the extent that the evidence we produce is compatible with our beliefs, and to the extent that alternative explanations for the evidence seem implausible, to that extent our research effort is productive. By subjecting our beliefs to a range of careful tests, we are able to expose ideas that are faulty and to gain confidence in those that are valid. In this way our comprehension of a substantive area is built up.

Bookstein's two points intermingle. The first is that research is self-conscious inquiry, which means the scholar manages every aspect of the research question and every aspect of evidence that can be applied to the answer. The second and related point is that research is premeditated, planned to control the circumstances by which evidence is gathered, analyzed and synthesized.<sup>1</sup>

## 2.0 The social role of bibliographical replicability

Another mentor, D. Kathryn Weintraub, was my cataloging professor at Indiana University in 1973-74. We had a pretty good rapport, and one day when I visited her office to discuss a paper I was writing about Brown's classification (e.g., see Beghtol 2004) she took the opportunity to show me how to work with research resources. I had brought a stack of things from the library with me. Dr. Weintraub put some paper in her typewriter, opened my first source, and typed out a perfect Chicago/Turabian reference based on what she could see by looking at the resource. Then she skipped a couple of spaces and typed a page number and started typing out passages I had highlighted—a practice I still follow today, albeit using a computer. It means, of course, that there is perfect replicability so long as the quotation is accurate and the resource citation is precise. There was no internet, there was only the actual evidence itself in printed form in peer-reviewed journals. It was a perfect system, but vulnerable, as we have learned subsequently, to inefficiencies of scale. Still, the lesson she taught me that day was that as a scholar I was part of a community that shared responsibility for the growth of knowledge. There was a clear social dimension.

That there is a social dimension to consciously premeditated inquiry almost goes without saying. Obviously, evidence must be acceptable across social boundaries, which means that phenomenological philosophical prerogatives apply to the interpretation of data, as well as to any conclusions from any particular act of consciously premeditated inquiry and stretch on into the extension of theoretical conclusions demonstrated by repeated hypothesis testing. Nagel (1979, 495 emphasis original) reminds us that "value-free social science is impossible, because value commitments enter into the very *assessment of evidence*." One hopes we all learned these tenets as beginning researchers and we all bring conscious premeditation to the statement of hypotheses derived from prior research, to the design of research methods, especially experiments, and to the construction of analytical tools and procedures. But what of the bibliographical parameters of research?

An important point to stress repeatedly in today's wired scholarly world is the importance of the notion that evidence must be replicable, and that bibliographic infrastructure is essential evidence. Incorrect references obfuscate replication by preventing any future scholar from following the tracks of a predecessor. References must be discoverable. Bibliographic replicability demands precision and accuracy—a form of scholarship once nobly known as "bibliography." As Krummel (1984, 9) reminded us "any text that is significant and substantial enough to be published ought to be known about so that it can be consulted," and "a text that is not discoverable,

like the one that is not available, for all practical purposes does not exist."

As it happens, even in the twenty-first century bibliographical accuracy is more than a matter of cutting and pasting from the "cite as" link on a website. Krummel describes the act of bibliographical description as the capturing of Platonic realities (25):

Any item appropriate to a list will by its nature have two Platonic realities. It occupies space, and will continue to do so through foreseeable time, thus assuming a physical form. It also consists of content—that is, a message, verbal, intellectual, artistic, or spiritual (however such terms may be defined), sent by an original creator, modified by intermediary producers, and eventually perceived by an audience of readers ... The title, for instance, describes the content and at the same time names the physical object; the imprint, by identifying the producer of the physical object, also tells where both the content and the physical object can, or at one time could, be obtained.

Thus, in the accurate reproduction of bibliographic data, scholarship has the opportunity to demonstrate the evidentiary role of a specific text in space and time, on the one hand, and to provide a direct pathway to its retrieval, and thus to its usefulness in replication, on the other.

In 2017 I wrote in this journal about the need for greater replication in knowledge organization research. It is a tenet of science that the organization and classification of discoveries is at the basis of any theory. Theory cannot grow from single isolated observations, but rather is always the result of the synthesis of accumulated observations undertaken across scholarly domains over time. I concluded (317): "science relies not on spiritual warrant, not even on common human sense, but rather on replicated and replicable and therefore empirically verifiable controlled observation, the results of which are classified." To get to that halcyon place in the evolution of the domain requires replicable evidence, and the demand for replicable evidence requires bibliographical precision. References are evidence, and evidence must be both precise and replicable.

## 2.1 What is a scholar to do?

Our editorial policy includes verification of every reference in every manuscript published in our journal. The scientific position we take with that policy is that we must verify the veracity of the cited evidence as it enters through our journal into the published science of knowledge organization (KO). Our journal is the bench-

mark for the domain of KO and we take our gatekeeping function seriously. We verify every citation—not just the formatting, but the facts (the Platonic realities as Krummel might have said). We are not alone in this—I recall having a very red metaphorical face in my earliest career as a scholar when a journal copy editor sent me two of my own citations that could not be verified and asked me to either correct them or provide evidence to support their veracity. Of course, I had made an error (in the dates of publication as I recall). With chagrin but also relief I made the corrections. Not all that long ago it happened again, in a joint submission for which I had left the references to a collaborator and the journal editors easily identified several errant references. Thus, it is a regular part of the responsibility of scientific publishing to maintain a high level of accuracy in references to work cited. The references are the direct routes to the authors' evidence, after all, as I hope I demonstrated earlier.

The majority of references by the majority of authors are accurate or require only slight emendation. That is the good news. Problematic references fall easily into two categories: 1) those for which it becomes clear the author has not actually consulted the source and has instead copied a reference from some other paper; and 2) conference papers in online proceedings. Obviously, these categories differ substantively. As for the first group, it is our editorial policy to inquire of authors, when necessary, exactly which text of the work cited has been consulted, and then we help to build or correct the reference from that document.

Conference papers are another matter altogether. The model for a reference for a conference paper derives from the once common practice of publishing print volumes of proceedings for all conference participants. Such volumes constitute anthologies, and the papers in them can be cited thus:

Schallier, Wouter. 2004. "On the Razor's Edge: Between Local and Overall Needs in Knowledge Organization." In *Knowledge Organization and the Global Information Society: Proceedings of the Eighth International ISKO Conference 13-16 July 2004 London, UK*, ed. Ia C. McIlwaine. Advances in Knowledge Organization 9. Würzburg: Ergon Verlag, 269-74.

Note the elegant detail: author, date, article title, complete title proper of proceedings volume in which it occurs, statements of responsibility for the proceedings, series statement, place, publisher and exact page numbers. All of the principal personalities identified and their relationships for the physical artifact clarified all in one succinct statement.

Alas, scholarly societies increasingly are abandoning the expensive production of printed volumes in lieu of online proceedings, which are more than adequate for the task of

providing recent content to participants in digital form. But the "published" proceedings then frequently lack even title pages, the title of the conference might vary from place to place in the digital resource, and details of publication (i.e., such niceties as place of publication and publisher name) often are missing altogether. The venerable Association for Computing Machinery (ACM) has a massive digital library containing many sets of proceedings, and they thus provide (responsibly, I might add) detailed reference data. Here is an example:

Zubiaga, Arkaitz, Christian Körner and Markus Strohmaier. 2011. "Tags vs Shelves: from Social Tagging to Social Classification." In *HT'11: Proceedings of the 22nd ACM Conference on Hypertext and Hypermedia; June 6-9, 2011, Eindhoven, the Netherlands*. New York, NY: Association for Computing Machinery, 93-102. doi:10.1145/1995966.1995981

But there also is the problem that many papers presented at conferences are not actually published in online proceedings, and thus should be identified not as "In *Proceedings* ...." but rather as "Unpublished paper presented at ...." As Krummel reminded us, to generate a reference for "*Proceedings* ...." is to create a sort of bibliographic ghost—a reference to a physical or digital resource that actually never existed and therefore cannot be consulted.

### 3.0 One year of *KO* references: some data, some comments

A few observations about the role of bibliographical references in our journal can be garnered from a brief overview of the references in a recent volume. All references in the journal in volume 45 from 2018 were compiled for this purpose. Let us state for the record that our journal uses the author-date referencing system, so each "work" only occurs in a reference list once per article, no matter how many times it might be "referenced" from within that article's text. As this is not a domain analysis, but rather simply some descriptive research to help illuminate the state of referencing in our journal, only a few parameters are reported. In addition to the commentary provided here, good readers are invited—welcomed even—to consider the references in the examples below to be standard and reusable for the core literature cited.

There were 2,525 references in 44 articles, of which 32 were regularly contributed articles and 12 were review articles contributed by the online *ISKO Encyclopedia of Knowledge Organization* (<https://www.isko.org/cyclo/>). The mean number of references per article was 60.56; the median and mode were both 43. However, the articles from *IEKO* are review articles, with much more detailed

reference lists. The mean number of references per review article was 127, the median was 81 and the mode was 120.5. The range of dates of publication stretched from 1635 to 2018. The mean age of citation was 19 years; the median was 11 years; and the mode was 2 years. Thus, most of the references were to very recent research, but a large component also referenced core theoretical material. Another way of looking at this is to consider that most of the citations are not to classical texts for which standard bibliographic details are well-known. Rather, most of the citations were to recent publications in online journals and conference proceedings—perilous territory for bibliographic veracity.

Further evidence of this trend arises from the fact that there are 1,935 singleton references—works by authors who are not cited again in the corpus. We recognize, of course, the outlines of a standard Bradford-like power distribution—most contributions are singletons, a very few represent works from the members of a more oft-cited research community. Three quarters of the references (76.6%) in this single volume of our journal, then, were to

works by authors that were cited only once. A small body of works by authors cited more than once (23.3%) might point to the presence of a theoretical core. In fact, there were 590 references to authors' whose names appear more than once. 179 authors appeared twice, 42 appeared three times, and 28 appeared 4 times. Table 1 shows those 75 authors whose names appear 5 times or more.

It is difficult to know where to draw a line across segments of this frequency distribution. Obviously, those named with the highest frequencies are the most influential, at least in this particular volume year of the journal. We might also hazard a guess that the group of authors at the top of the distribution, at least in 2018, were defining the domain of KO. But the whole list itself is also very informative, including names of classical (and ritually-cited) authors from the history of the related field of information science.

Greater insight comes from analysis of the works represented. Of the 75 oft-cited authors in Table 1, only a few represent specific works that are cited 3 or more times. These are shown in Table 2.

Cited Author	Frequency
Hjørland, Birger	83
Smiraglia, Richard P	34
Gnoli, Claudio	26
Buckland, Michael K	21
Mai, Jens Erik	19
Dahlberg, Ingetraut	18
Olson, Hope A	17
Shera, Jesse H	14
Frohmann, Bernd; Mazzocchi, Fulvio	13
Beghtol, Clare; Guimarães, José Augusto Chaves; Otlet, Paul; Ranganathan, S; Vickery, B	12
Lancaster, Frederick Wilfrid	11
Furner, Jonathan; Lund, Niels Windfeld; Soergel, Dagobert; Zeng, Marcia Lei	10
Floridi, Luciano; Rafferty, Pauline	9
Andersen, Jack; Berners-Lee, Tim; Briet, Suzanne; Broughton, Vanda; Chan, Lois Mai; Fox, Melodie J; Frické, Martin 2009; Fugmann, Robert; IPCC (Intergovernmental Panel on Climate Change)	8
Bates, Marcia J; Berman, Sanford; Bliss, Henry Evelyn; Eco, Umberto; Foskett, Douglas John; Golub, Koraljka; Miksa, Francis; Oh, Dong-Geun; Rayward, W; Svenonius, Elaine; Wilson, Patrick	7
Anderson, James D; Barité, Mario; Bawden, David; Chen, Chaomei; Cleverdon, Cyril W; Ibekwe-SanJuan, Fidelia; International Organization for Standardization (ISO); Kuhn, Thomas S; Library of Congress; Peters, Isabella; Satija, Mohinder Partap	6
Borgman, Christine L; Ellis, David; Farradane, Jason; Fouillée, Alfred; Fuller, Steve W; García Gutiérrez, Antonio 2002; Grolier, Éric de; Gross, Tina; Kipp, Margaret E; Leonelli, Sabina; Munk, Timme Bisgaard; Nelson, Theodor Holm; Ørom, Anders; Rowley, Jennifer; Slavic, Aida; Small, Henry G; Swanson, Don R; Van Rijsbergen, C; Weinberg, Bella Hass; White, Howard D; Zhao, Dangzhi; Žumer, Maja	5

Table 1. Authors cited 5 or more times.

Cited work	Frequency
Briet, Suzanne. 1951. <i>Qu'est-ce que la documentation?</i> Collection de documentologie 1. Paris: Éditions documentaires, industrielles et techniques. – [includes 2 translations]	7
Hjørland, Birger 2017a. "Classification." <i>Knowledge Organization</i> 44: 97-128.	6
Hjørland, Birger. 2008. "What is Knowledge Organization (KO)?" <i>Knowledge Organization</i> 35: 86-100.	6
Beghtol, Clare. 2002. "A Proposed Ethical Warrant for Global Knowledge Representation and Organization Systems." <i>Journal of Documentation</i> 58: 507-32.	6
Bliss, Henry E. 1929. <i>The Organization of Knowledge and the System of the Sciences</i> . New York, NY: Henry Holt and Company.	6
Kuhn, Thomas S. 1962. <i>The Structure of Scientific Revolutions</i> . Chicago, IL: University of Chicago Press.	6
Lancaster, F. W. 2003. <i>Indexing and Abstracting in Theory and Practice</i> . London: Facet Publishing. – [includes 3 eds.]	5
Shera, Jesse H. 1951. "Classification as the Basis of Bibliographic Organization." In <i>Bibliographic Organization: Papers Presented Before the Fifteenth Annual Conference of the Graduate Library School July 24-29, 1950</i> , ed. Jesse H. Shera and Margaret E. Egan. The University of Chicago Studies in Library Science. Chicago: University of Chicago Press, 72-93.	5
Otlet, Paul. 1934. <i>Traité de documentation: Le livre sur le livre, théorie et pratique</i> . Bruxelles: Editiones Mundaneum.	5
Ranganathan, S. R. 1967. <i>Prolegomena to Library Classification</i> , 3rd ed. Ranganathan Series in Library Science 20. Bombay: Asia Publishing House.	5
Vickery, Brian C. 1956. "Notational Symbols in Classification. Part 2: Notation as an Ordering Device." <i>Journal of Documentation</i> 12: 73-87.	5
Zeng, Marcia Lei. 2008. "Knowledge Organization Systems (KOS)." <i>Knowledge Organization</i> 35, no 2: 160–82.	5
Olson, Hope A. 2002. <i>The Power to Name: Locating the Limits of Subject Representation in Libraries</i> . Dordrecht, The Netherlands: Kluwer Academic Publishers.	4
Mazzocchi, Fulvio. 2018. "Knowledge Organization System (KOS): An Introductory Critical Account." <i>Knowledge Organization</i> 45: 54-78.	4
Frické, Martin 2009. "The Knowledge Pyramid: A Critique of the DIKW Hierarchy." <i>Journal of Information Science</i> 35: 131-42.	4
Wilson, Patrick. 1983. <i>Second-hand Knowledge: An Inquiry into Cognitive Authority</i> . Contributions in Librarianship and Information Science 44. Westport, CT: Greenwood.	4
Ibekwe-SanJuan, Fidelia and Geoffrey C. Bowker. 2017. "Implications of Big Data for Knowledge Organization." <i>Knowledge Organization</i> 44: 187-98.	4
Smiraglia, Richard P. 2015. <i>Domain Analysis for Knowledge Organization: Tools for Ontology Extraction</i> . Chandos Information Professional Series. Waltham, MA: Chandos Publishing.	4
Mai, Jens-Erik. 2011. "Folksonomies and the New Order: Authority in the Digital Disorder." <i>Knowledge Organization</i> 38: 114-22.	4
Mai, Jens-Erik. 2013. "Ethics, Values and Morality in Contemporary Library Classifications." <i>Knowledge Organization</i> 40: 242-53.	4
Mai, Jens-Erik. 2011. "The Modernity of Classification." <i>Journal of Documentation</i> 67: 710-30.	4
Hjørland, Birger and Albrechtsen, Hannah. 1995. "Toward a New Horizon in Information Science: Domain Analysis." <i>Journal of the American Society for Information Science</i> 46: 400-25.	3
Hjørland, Birger. 2012. "Is Classification Necessary after Google?" <i>Journal of Documentation</i> 68, 3: 299-317.	3
Hjørland, Birger. 2015. "Theories are Knowledge Organizing Systems (KOS)." <i>Knowledge Organization</i> 42: 113-28.	3
Hjørland, Birger. 2015a. "Classical Databases and Knowledge Organization: A Case for Boolean Human Decision-making During Searches." <i>Journal of the Association for Information Science and Technology</i> 66: 1559-75.	3
Hjørland, Birger. 2016. "Informetrics Needs a Foundation in the Theory of Science." In <i>Theories of Informetrics and Scholarly Communication: A Festschrift in Honor of Blaise Cronin</i> , ed. Cassidy R. Sugimoto. Berlin: Walter de Gruyter, 20-46	3
Dahlberg, Ingetraut. 1995. "Current Trends in Knowledge Organization." In <i>Organización del conocimiento en sistemas de información y documentación: actas del II Encuentro de ISKO-España, Getafe, 16 y 17 de noviembre de 1995</i> , ed. Francisco J. García Marco. Zaragoza: Universidad de Zaragoza, 7-26.	3
Frohmann, Bernd. 1990. "Rules of Indexing: A Critique of Mentalism in Information Retrieval Theory." <i>Journal of Documentation</i> 46, no. 2: 81-101.	3

Table 2. Works cited 3 or more times.  
(continued on next page)

Cited work	Frequency
Frohmann, Bernd. 1990. "Rules of Indexing: A Critique of Mentalism in Information Retrieval Theory." <i>Journal of Documentation</i> 46, no. 2: 81-101.	3
Mazzocchi, Fulvio. 2013. "Images of Thought and their Relation to Classification: The Tree and the Net." <i>Knowledge Organization</i> 40: 366-74.	3
Guimarães, José Augusto Chaves. 2017. "Slanted Knowledge Organization as a New Ethical Perspective." In <i>The Organization of Knowledge: Caught Between Global Structures and Local Meaning</i> , ed. Jack Andersen and Laura Skouvig. Studies in Information 12. Bingley, UK: Emerald, 87-102.	3
Vickery, Brian C. 1953. "The Significance of John Wilkins in the History of Bibliographical Classification." <i>Libri</i> 2: 326-343.	3
Lund, Niels Windfeld. 2004. "Documentation in a Complementary Perspective." In <i>Aware and Responsible: Papers of the 2001 Nordic-International Colloquium on Social and Cultural Awareness and Responsibility in Library, Information and Documentation Studies (SCARLID)</i> , ed. W. Boyd Rayward. Lanham, MD: Scarecrow Press, 93-102.	3
Rafferty, Pauline and Rob Hilderley. 2007. "Filckr and Democratic Indexing: Dialogic Approaches to Indexing." <i>Aslib Proceedings</i> 59: 397-410. doi:10.1108/00012530710817591	3
Broughton, Vanda. 2004. <i>Essential Classification</i> . New York: Neal Schuman.	3
IPCC (Intergovernmental Panel on Climate Change). 1996. <i>Climate Change 1995: Impacts, Adaptations and Mitigation of Climate Change; Scientific-Technical Analyses; Contribution of Working Group II to the Second Assessment Report of the Intergovernmental Panel on Climate Change</i> , ed. Robert T. Watson, Marufu C. Zinyowera, and Richard H. Moss. Cambridge: Cambridge University Press.	3
Webster, Peter J., Greg Holland, Judith Curry, and H.R. Chang. 2005. "Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment." <i>Science</i> 309: 1844-6.	3
Berman, Sanford. 1971. <i>Prejudices and Antipathies: A Tract on the LC Subject Heads Concerning People</i> . Metuchen, N.J.: Scarecrow Press	3
Miksa, Francis. 1998. <i>The DDC, the Universe of Knowledge, and the Post-Modern Library</i> . Albany, NY: Forest Press.	3
Rayward, W. Boyd. 1994. "Visions of Xanadu: Paul Otlet (1868-1944) and Hypertext." <i>Journal of the American Society for Information Science</i> 45: 235-50.	3
Svenonius, Elaine. 2000. <i>The Intellectual Foundation of Information Organization</i> . Digital Libraries and Electronic Publishing. Cambridge, MA: MIT Press.	3
Wilson, Patrick. 1968. <i>Two Kinds of Power: An Essay on Bibliographical Control</i> . University of California Publications: Librarianship 5. Berkeley: University of California Press.	3
Bawden, David and Lyn Robinson. 2012. <i>Introduction to Information Science</i> . London: Facet.	3
Peters, Isabella and Katrin Weller. 2008. "Tag Gardening for Folksonomy Enrichment and Maintenance." <i>Webology</i> 5, no 3: 1-18.	3
Munk, Timme Bisgaard and Kristian Mørk. 2007. "Folksonomy, the Power Law & the Significance of the Least Effort." <i>Knowledge Organization</i> 34: 16-33.	3
Rowley, Jennifer and John Farrow. 2016. <i>Organizing Knowledge: An Introduction to Managing Access to Information</i> , 4th ed. London: Routledge.	3
White, Howard D. and Kate W. McCain. 1998. "Visualizing a Discipline: An Author Co-Citation Analysis of Information Science, 1972-1995." <i>Journal of the American Society for Information Science</i> 49: 327-55.	3
Žumer, Maja. 2017. "IFLA Library Reference Model (LRM): Harmonization of the FRBR Family." ISKO Encyclopedia of Knowledge Organization. Available at <a href="http://www.isko.org/cyclo/lrm">http://www.isko.org/cyclo/lrm</a>	3
Smiraglia, Richard P. 2015. "Domain Analysis of Domain Analysis for Knowledge Organization: Observations on an Emergent Methodological Cluster." <i>Knowledge Organization</i> 42: 602-11.	3
Buckland, Michael K. 1997. "What is a 'Document'?" <i>Journal of the American Society for Information Science</i> 48: 804-9.	3
Buckland, Michael. 2018. "Document Theory." <i>Knowledge Organization</i> 45: 425-36.	3

Table 2. Works cited 3 or more times. (continued from previous page)

Here we have fifty-one "core" articles. (And, we might note also, here we have fifty-one properly formatted and verified references for those core works.) That is, in the volume year 2018, these fifty-one papers are considered to be influential, and their influence is demonstrated by the citation frequency. But, on the other hand, dispersion is

more common than clustering. For example, of 83 citations to work by Hjørland, 27 are to 8 specific works cited 3 to 6 times.

Figures 1 and 2 provide visualizations of the works that are cited the most.

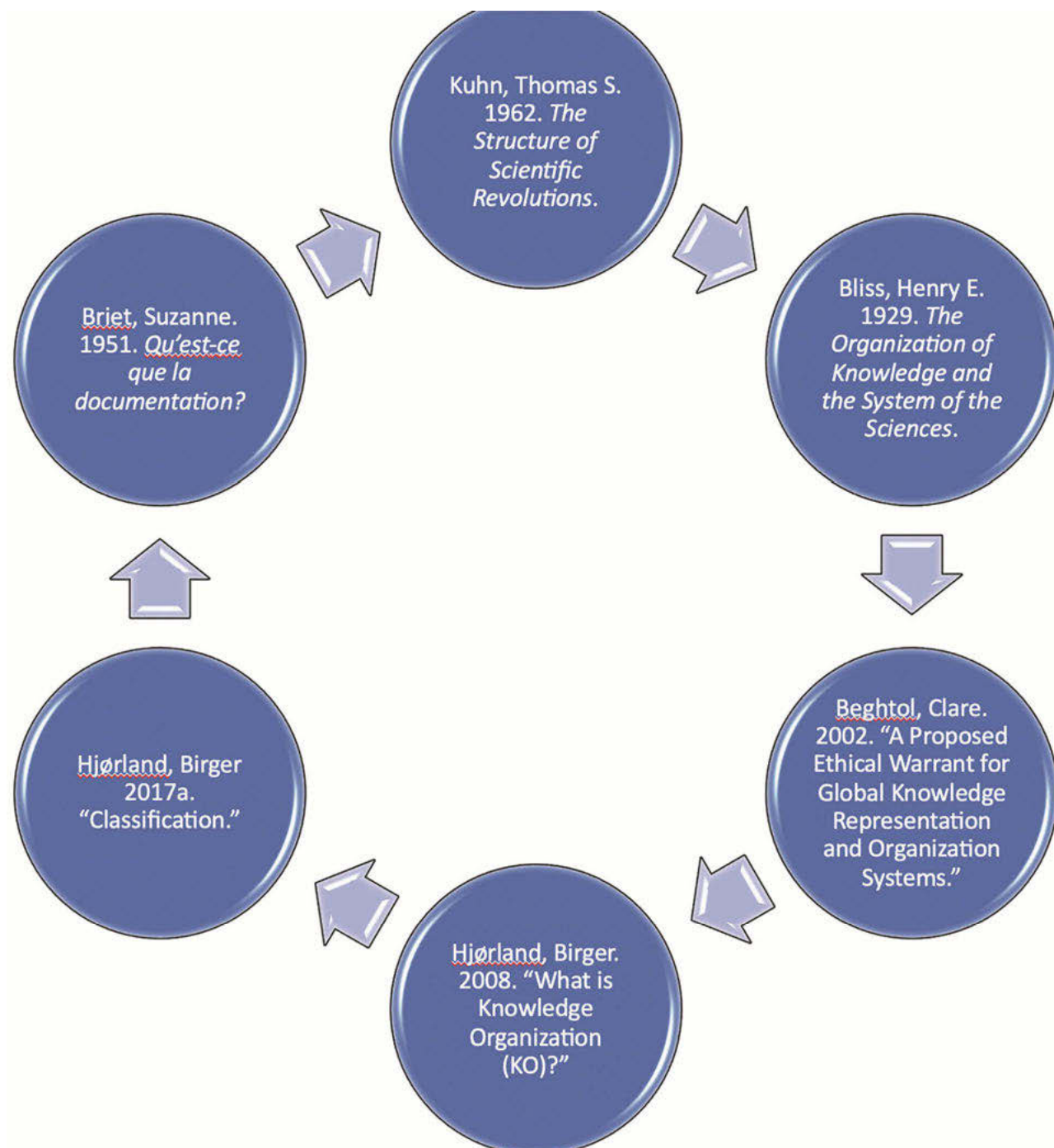


Figure 1. Briet to Kuhn: the most cited works in 2018.

#### 4.0 On bibliographical verity, replicability, and referencing in KO

As scholarship changes so must its technicalities shift and that means the task of embracing the amazing body of digitally-available cited scholarly literature must somehow be adapted to the task of bibliographical verity. The dependence of science on the ability to replicate is even more critical in a global distributed digital environment. I

have not even raised the issue of instantiation here (Smiraglia 2018) but it is relevant always to ask a scholar exactly which "version" of that paper were you reading when you made the synthetic leap that caused you to cite it? The question certainly extends from the matter of editions of printed texts to the now commonplace practice of producing texts on demand. The Platonic realities of space and physicality notwithstanding, it is incumbent on the KO community to corral the practices of refer-

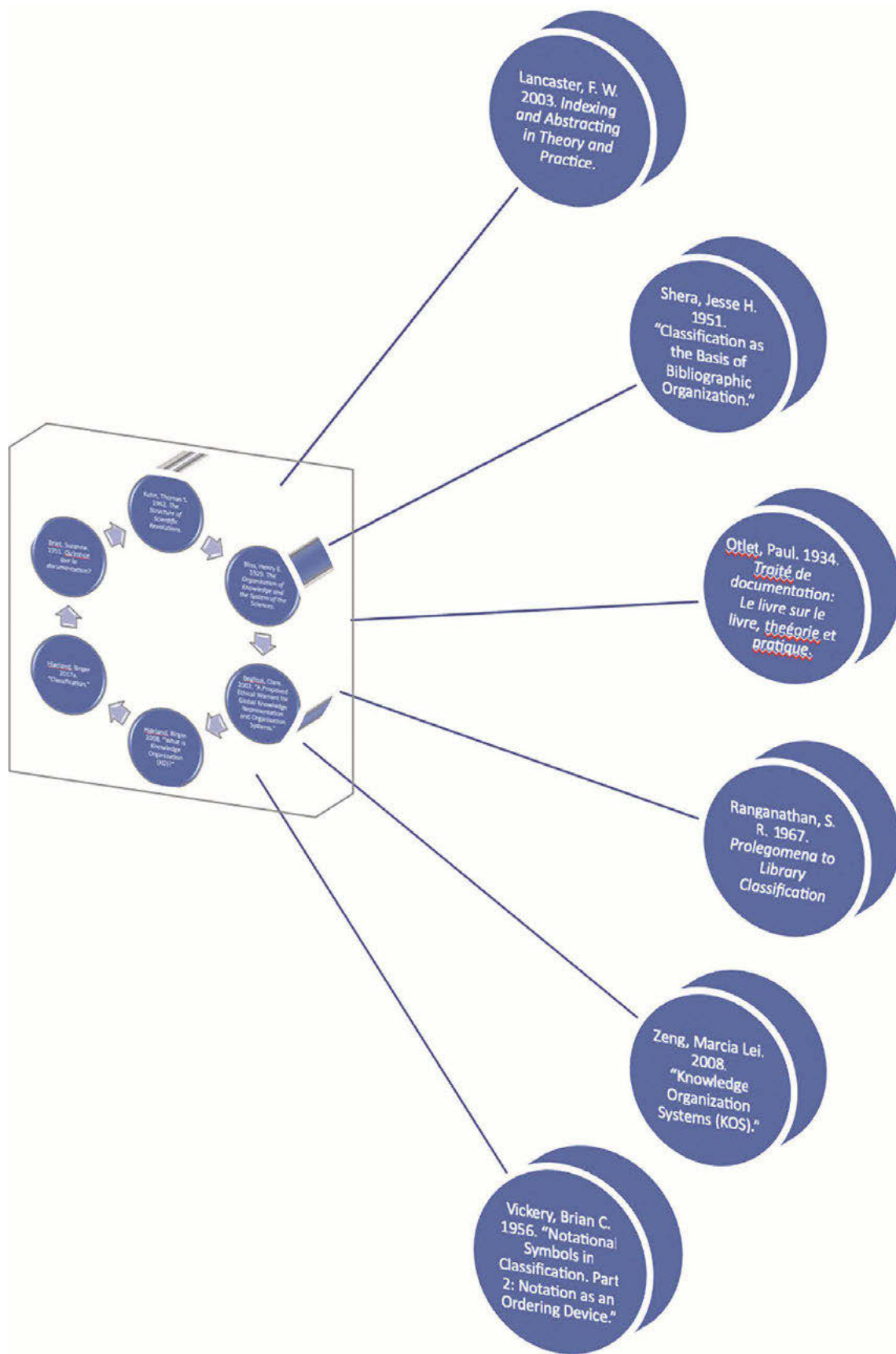


Figure 2. Lancaster to Vickery: the second tier of most cited works in 2018.

encing that create the theoretical bibliographical infrastructure of the science of KO. It is worth noting that a large bibliography of KO related texts is maintained by ISKO on its website ("KO Literature" <https://www.isko.org/lit.html>) but that there is little coherence across that database in the format of references.

We see from this brief glimpse of one year of references that our science is sufficiently complex to yield in a single volume of a journal a long tail of 1,935 singleton references, and that even those works cited with higher-frequency constitute more of a diverse cluster than a critical core. These are signs of great richness in KO that make it even more critical that our scholarly community tend to the relationship between citation practice (or referencing as I have called it here), bibliographical verity and the very replicability that is allowing the field to grow theoretically over time. This theoretical growth, demonstrated very clearly in the growth of the *ISKO Encyclopedia of Knowledge Organization* is dependent on continued attention to the bibliographical infrastructure of our domain.

## Note

1. Abraham Bookstein's commitment to empirical research, and indeed, to "consciously premeditated inquiry," was most influential in my own work in the extension of his application of probabilities of selection in sampling. Famously, his exemplary articles "How to Sample Badly" (1974) and "Sampling from Card Files" (1983) are simple and direct presentations of the im-

portance of conscious premeditation on the problems of generalizing from samples of informetric objects to large populations. He carefully guided me in designing the procedure for sampling works from a population of carriers, for example (see Smiraglia 2001, 155-64 "Sampling Works").

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