ISKO 12's Bookshelf—Evolving Intension: An Editorial

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1.0 The 12th International ISKO Conference, Mysore, India

The 2012 biennial international research conference of the International Society for Knowledge Organization was held August 6-9, in Mysore, India. It was the second international ISKO conference to be held in India (Canada and India are the only countries to have hosted two international ISKO conferences), and for many attendees travel to the exotic Indian subcontinent was a new experience. Interestingly, the mix of people attending was quite different from recent meetings held in Europe or North America. The conference was lively and, as usual, jam-packed with new research. Registration took place on a veranda in the garden of the B. N. Bahadur Institute of Management Sciences where the meetings were held at the University of Mysore. This graceful tree (Figure 1) kept us company and kept watch over our considerations (as indeed it does over the academic enterprise of the Institute).

The conference theme was "Categories, Contexts and Relations in Knowledge Organization." The opening and closing sessions fittingly were devoted to serious introspection about the direction of the domain of knowledge organization. This editorial, in line with those following past international conferences, is an attempt to comment on the state of the domain by reflecting domain-analytically on the proceedings of the conference, primarily using bibliometric measures. In general, it seems the domain is secure in its intellectual moorings, as it continues to welcome a broad granular array of shifting research questions in its intension. It seems that the continual concretizing of the theoretical core of knowledge organization (KO) seems to act as a catalyst for emergent ideas, which can be observed as part of the evolving intension of the domain.

The proceedings of the conference (Neelameghan and Raghavan 2012) were used to generate the analysis reported here. For the first time in recent memory, many papers were not presented by their authors, but rather were presented by colleagues who were in attendance. Be that as it may, two papers (one by Szostak and one by Campbell) appear in the printed proceedings that were not presented in Mysore. After some rumination it was decided to include those papers in the present analysis, insofar as the printed record of the conference will live on into the future with those papers in the mix. It continues to be a problem for domain analytic research that Thompson Reuters *Web of Science*, for some reason, is not indexing international ISKO proceedings. Manual indexing such as that represented here is difficult and time-consuming, but

Figure 1. Garden at the B.N. Bahadur Institute of Management Sciences, University of Mysore

at the moment is our only option. Therefore the spreadsheet including the conference program as well as all of the references from all of the papers that was the nexus of the present analysis is available for download (caveat emptor!) at my *LazyKOblog* (http://lazykoblog.wordpress.com/). Ultimately, 55 papers included in the proceedings were used for this analysis.

2.0 International Presence and Thematic Foci

Like most international ISKO conferences, attendance is influenced to a greater or lesser degree by the location of the meeting and this conference was no exception. The country of affiliation of the first author of each paper was recorded. This yielded a list of seventeen nations represented, and these are shown in Figure 2.

Regional attendees were present in substantial numbers (18% from India, another 8% from Asian countries), presenting a different geopolitical mix from that of the 11th international conference in Rome in 2010, at which there was no Asian participation (Smiraglia 2011). Also impressive was the Brazilian presence, which accounted for nearly a third of the papers, more than doubling their presence in 2010. Notable newcomers were authors from Iran and Algeria. Clearly, the domain continues to grow internationally.

Conference sessions were divided thematically, and the distribution of themes as represented in the official conference programme is shown in Table 1.

Theme	No. of papers
digital KO	7
relationships	7
design and development	6
domain of KO	6
domain specificity	6
archives	4
ontology	4
users and context	4
categories	3
general classifications	3
information mining	3
navigation	3

Table 1. Conference themes

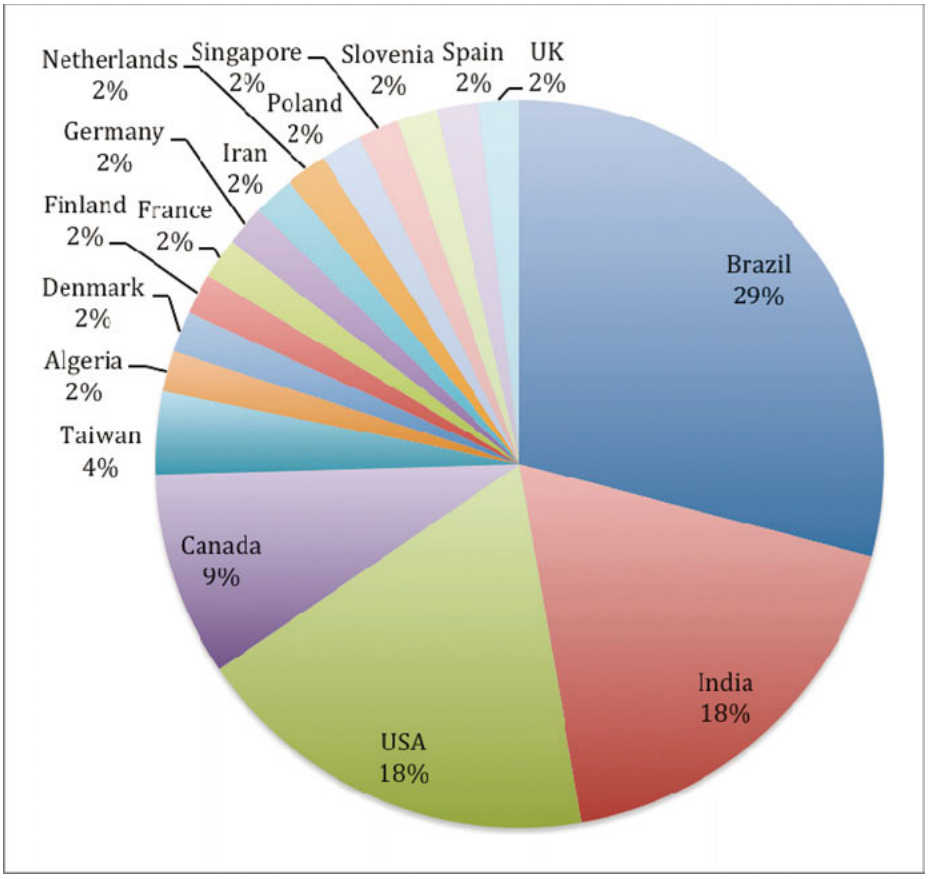

Figure 2. Countries of affiliation

Thematically speaking, the contents of the conference were typical, with "digital KO" and "relationships" forming the largest clusters, and new clusters (since 2010) for "information mining" and "archives." A 2x2 matrix was used to generate a three-dimensional visualization of the thematic interests by country of affiliation, shown in Figure 3. There is greatest diversity in the large cohorts from Brazil, India, Canada and the USA, but thematic diversity is spread evenly across the whole geographic distribution as well.

3.0 Citations

There were 850 citations in 55 papers. The number of citations per paper ranged from 1 to 36 with a mean of 14.45 (which is comparable to the 2010 mean of 14.88). The median was 12 and the mode was 8, which were both higher than in 2010. In other words, most papers had 8 citations within a fairly wide range. The mean per country was analyzed, ranging from 6 to 18.7 with most hovering near the mean. The age of work cited also was analyzed; the mean was 13.1 years, with a median of 9 years and a mode of 1 year. This means most citations were to very recent material, but as always, there was a wide range (from 1 to 173). Calculated by country of affiliation the mean age of citation ranged from 6 (Slovenia) to 18.7 (Poland). The mean age of work cited and mean number of references per country were plotted together and this is shown in Figure 4.

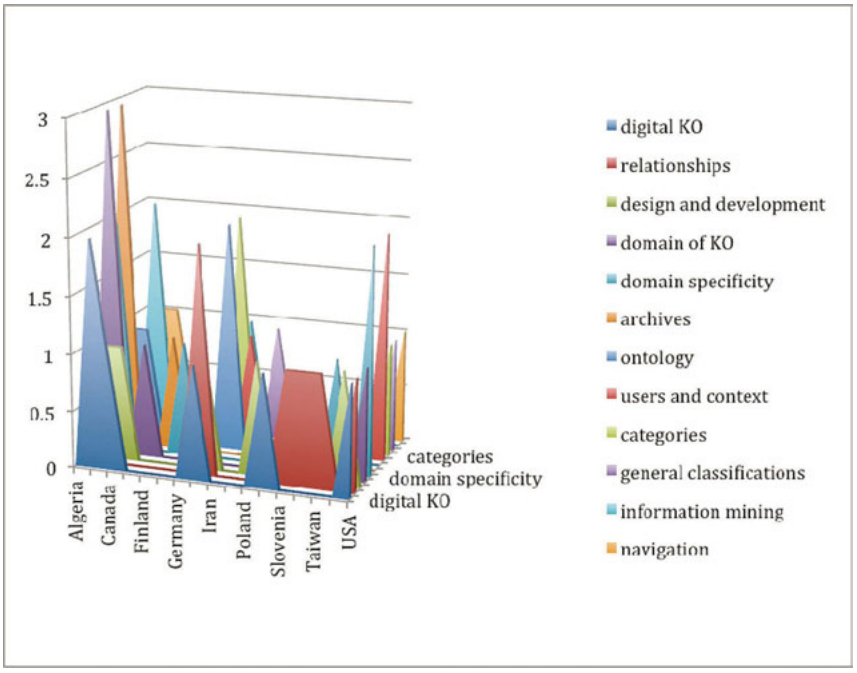

Figure 3. Theme by Country; Country by Theme

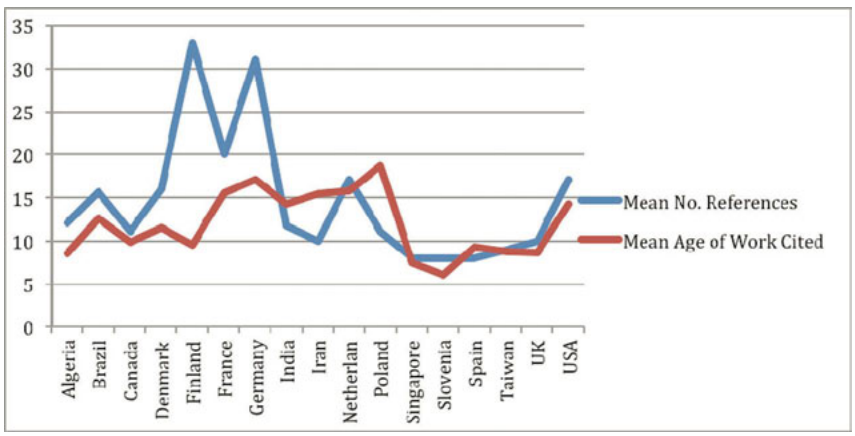

Figure 4. References and age of citation by country of affiiliation

The figure helps visualize the variation by country, although it also emphasizes the fact that both hover near the overall means. Thematic clusters also were analyzed and plotted and these are shown in Table 2 and visualized in Figure 5.

Theme	Mean # of References	Mean Age of Citation
archives	15.7	9.9
categories	17.6	23
design and development	10.8	9.5
digital KO	12.8	8.6
domain of KO	21.3	14.2
domain specificity	15.8	17.8
general classifications	12	23.4
information mining	8.6	7.1
navigation	15.6	14.7
ontology	18.5	10.5
relationships	11.2	9.9
users and context	13	9.9

Table 2. References and age of citation by theme

T-tests showed that the differences from cluster to cluster were not statistically significant, suggesting the variation is due either to the individual preferences of the researchers involved, or to epistemological differences reflected methodologically. That is, humanistically-oriented papers likely will have more and older references than papers that report empirical research results.

The distribution of media was also analyzed. Table 3 shows the distribution.

About half of the citations are to journal articles. If KO were truly a "science" one might expect that proportion to be higher. But, given that there are few journals in the domain, and the constant stream of conferences provide a platform for the presentation of new research, one could read this the other way and say that about half of the papers cited are not from journals, but rather come from more immediate and scholar-oriented publications. 56 journals were cited; the most cited journals are shown in Table 4.

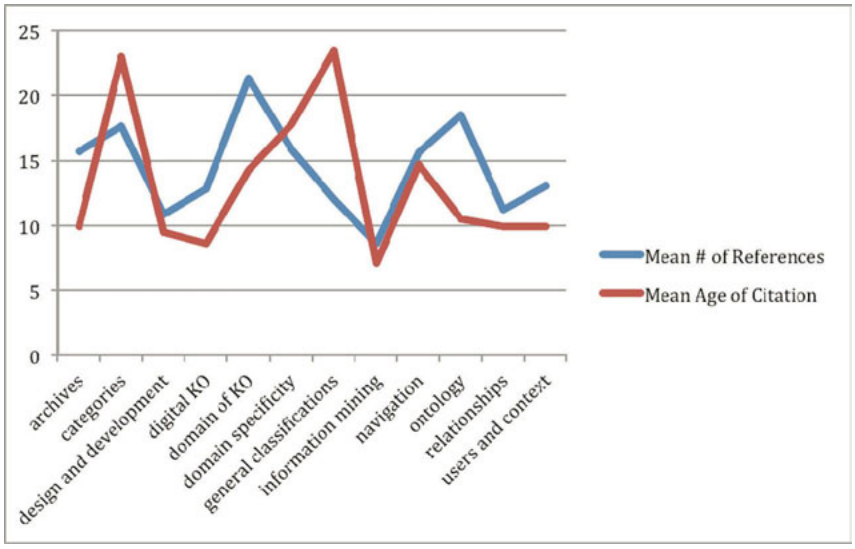

Figure 5. References and age of citation by theme

Medium	Proportion
journal articles	47%
conference papers	16%
monograph	15%
chapter	9%
web	7%
theses	2%
unidentifiable	1%

Table 3. Media types

Journal title	No. of citations
Knowledge Organization	33
Journal of the American Society for Information Science	21
Journal of Documentation	17
Information Studies	9
Information Processing and Management	5
Cataloging & Classification Quarterly	4
Ciência da Informação	4
Scire	4
Archivaria	4

Table 4. Most cited journals

There are no suprises in this table—the present journal received the most citations, and as we saw in Table 3, the next largest cluster came from conference proceedings.

3.1 Citedness

The 789 citations in the 55 contributed papers were sorted by first author and duplicates removed to generate a list of most-cited authors. This demonstrated that the citations were to 382 individual works, a large number for certain but demonstrating much less breadth than the 2010 conference (in which 972 citations were to 891 works). Single-occurrence authors were removed from the list, leaving 101 multiply-cited authors. The remaining authors were arrayed by frequency of citation, and the upper tier of this distribution appears in Table 5.

Author	Frequency of citation
Smiraglia	22
Hjørland	18
Neelameghan	16
Ranganathan	12
Dahlberg	11
Tennis	11
La Barre	8
Szostak	8
Gardin	7
Guimarães	7
Beghtol	6
McIlwaine	6

Table 5. Most cited authors

These names were used to generate two co-citation analyses. First, the proceedings were analyzed for co-citation among the contributed papers. This matrix was plotted using SPSS and appears in Figure 6.

In this case we are visualizing the perceptions of the authors who contributed papers to the Mysore conference concerning similarities among the co-cited authors. The plot exactly fits the model, however only 7 of the 13 authors were co-cited sufficiently to run the software. There are no secrets in this plot—the upper left cluster represents the movement for subject ontogeny started by Tennis and now joined by research teams studying the history of the UDC. The other cluster clearly joins concept theory with faceted classification; interestingly, the Brazilian influence on the conference is seen clearly in this cluster. These are artifacts of the particulars of the Mysore conference.

A second author co-citation analysis was compiled using the same set of most-cited authors, but this time deriving co-citation data from *Web of Science*; this means that this external analysis reveals the perception of the domain at large about this cluster of authors whose research is most cited in the contributed papers for this conference. This is visualized in Figure 7.

This plot also closely fits the model. This time co-citation is abundant. There are two major clusters, but both closely adhere to a separate cluster around the classic Ranganathan. In the upper cluster are digital systems for KO, and in the lower cluster is classical North American KO, but now clearly including an approach to faceted classification. Notice the proximity of La Barre to Ranganathan (facets) and also the distance of Beghtol and Hjørland, anchoring classical concept-theoretical positions similar to the author co-citation analysis of the most-cited 2010 authors. Notice also the density of the research front. When we compare the two visualizations we see clearly how the research front represented by the authors who contributed papers to this conference perceives the movement of the domain's intension, toward faceted digital systems. But we also see a tightening of the core theoretical positions. These are signs of a domain that is intellectually secure, and is protecting its extension, while allowing experimentation on a broad scale in its intension.

4.0 Co-Word Analysis

The titles of the 55 contributed papers were entered into WordStat and a frequency distribution of title keywords was generated. An unfiltered distribution yielded 301 keywords from the titles of the confer-

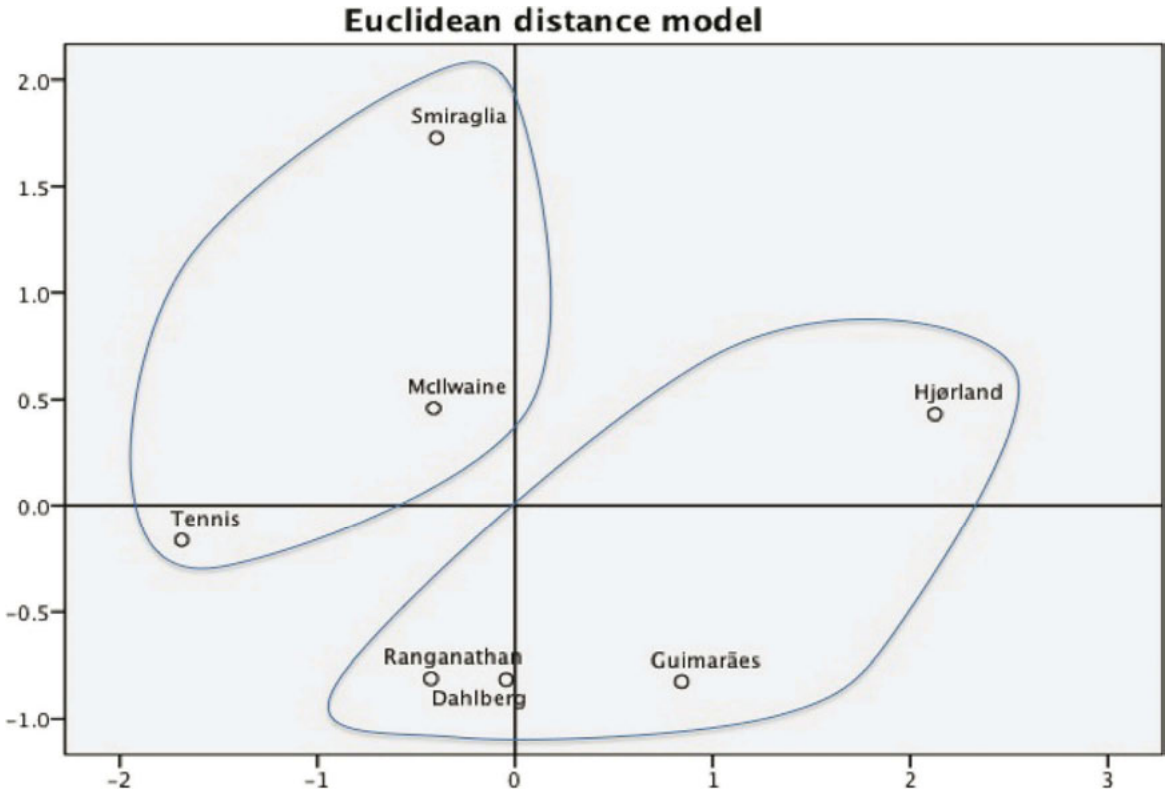

Figure 6. Interconference author co-citation (stress = 0 R^2 = 1)

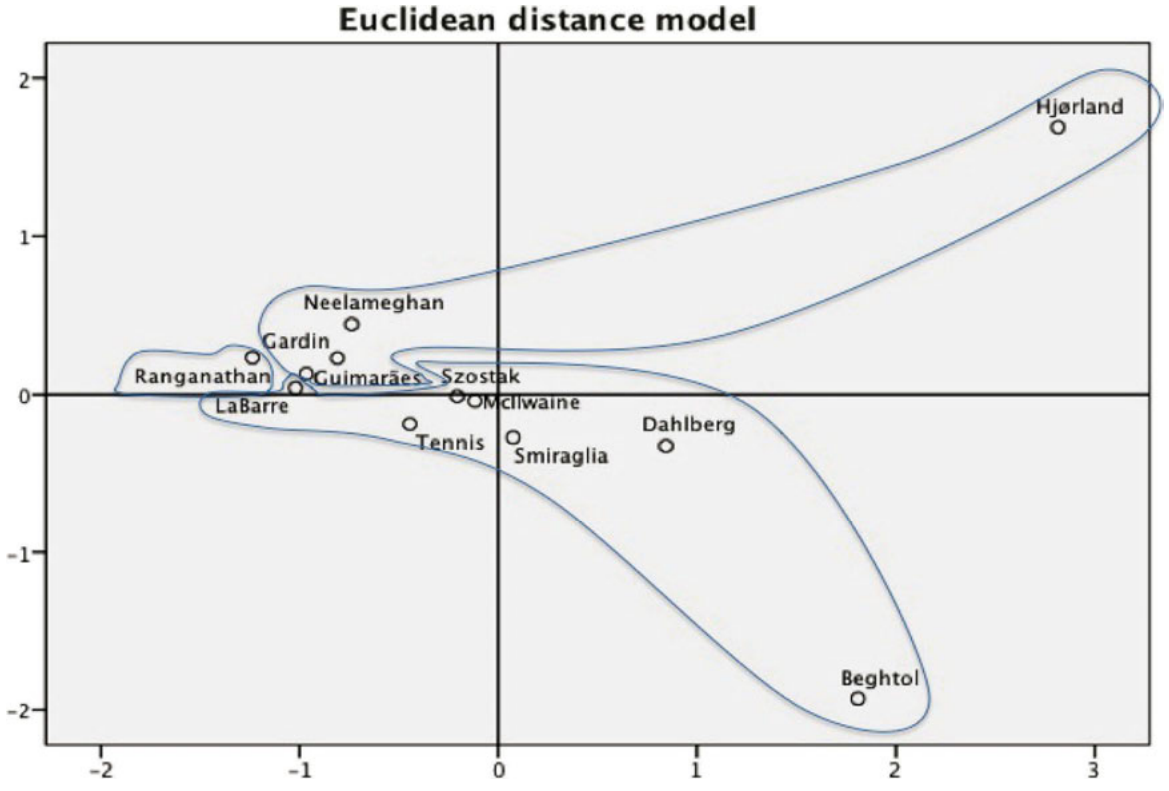

Figure 7. Author co-citation from *Web of Science* (stress = .03066 R^2 = .99763)

ence papers; when passed through a dictionary designed for ISKO, the filtered distribution revealed 21 key terms. These two lists are brought together in Table 6.

The filtered terms fit (more or less) with the thematic clusters from the conference programme; the unfiltered terms show us what the contributing researchers had in mind. There are few surprises, except that the granularity in the long tail (not shown here) included another 260 terms. Even frequently used terms such as "classification" appear only 2.1% of the time. So this is further evidence of the expanding, or shifting, or arguably evolving intension of the domain as represented by the papers contributed to this conference. A three-dimensional plot of the filtered keywords helps us visualize the thematic core of the domain as represented by the papers contributed to this conference. This is shown in Figure 8.

The model fits the plot fairly well. As in the author co-citation analysis we have little density and clearly defined clusters. The associations are relatively consistently weak, but there are two distinct clusters. These clusters are familiar from earlier analyses of parts of the KO domain; there is a theoretical cluster around classification and concept theory; and there is a systems design cluster around the development of specific KO systems. Interestingly, in this cluster, epistemology resides with the system design cluster.

5.0 Mysore is Different

This conference is different in many ways from those that preceded it. Of course, it was in India, and not in North America. Yet, although there was increased presence from Asian scholars, the theoretical core of the domain seems not to have shifted greatly. There is less granularity than we saw in Rome in 2010, but there is still sufficient activity in hypothesis-generation to keep the intension shifting gelatinously. Journal productivity measures, number of citations, and age of citation are consistent with the 2010 conference. The most-cited author list is a bit different from usual, although the visualization of the intellectual core that it provides indicates a shifting intension in the domain, particularly regarding facets, subject ontogeny, and digital solutions.

References

Neelameghan, A. and Raghavan, K.S. eds. 2012. *Categories, contexts and relations in knowledge organization: Proceedings of the Twelfth International ISKO Conference 6-9 August 2012 Mysore, India.* Würzburg: Ergon Verlag.

Smiraglia, Richard P. 2011. ISKO 11's Diverse Bookshelf: An Editorial. *Knowledge organization* 38: 179-86.

Filtered Term	Freq.	%	Unfiltered Term	Freq.	%
Organiz*	17	28.80%	Knowledge	19	4.40%
Classificat*	8	13.60%	Organization	17	4.00%
Domain	5	8.50%	Information	10	2.30%
Ontolog*	4	6.80%	Classification	9	2.10%
Model	3	5.10%	Study	9	2.10%
Access	2	3.40%	Domain	8	1.90%
Cognit*	2	3.40%	Semantic	6	1.40%
Concept	2	3.40%	Subject	5	1.20%
Construct*	2	3.40%	Analysis	4	0.90%
Domain_analy*	2	3.40%	Categories	4	0.90%
Thesaur*	2	3.40%	Indexing	4	0.90%
User	2	3.40%	Systems	4	0.90%

Table 6. Title Keywords

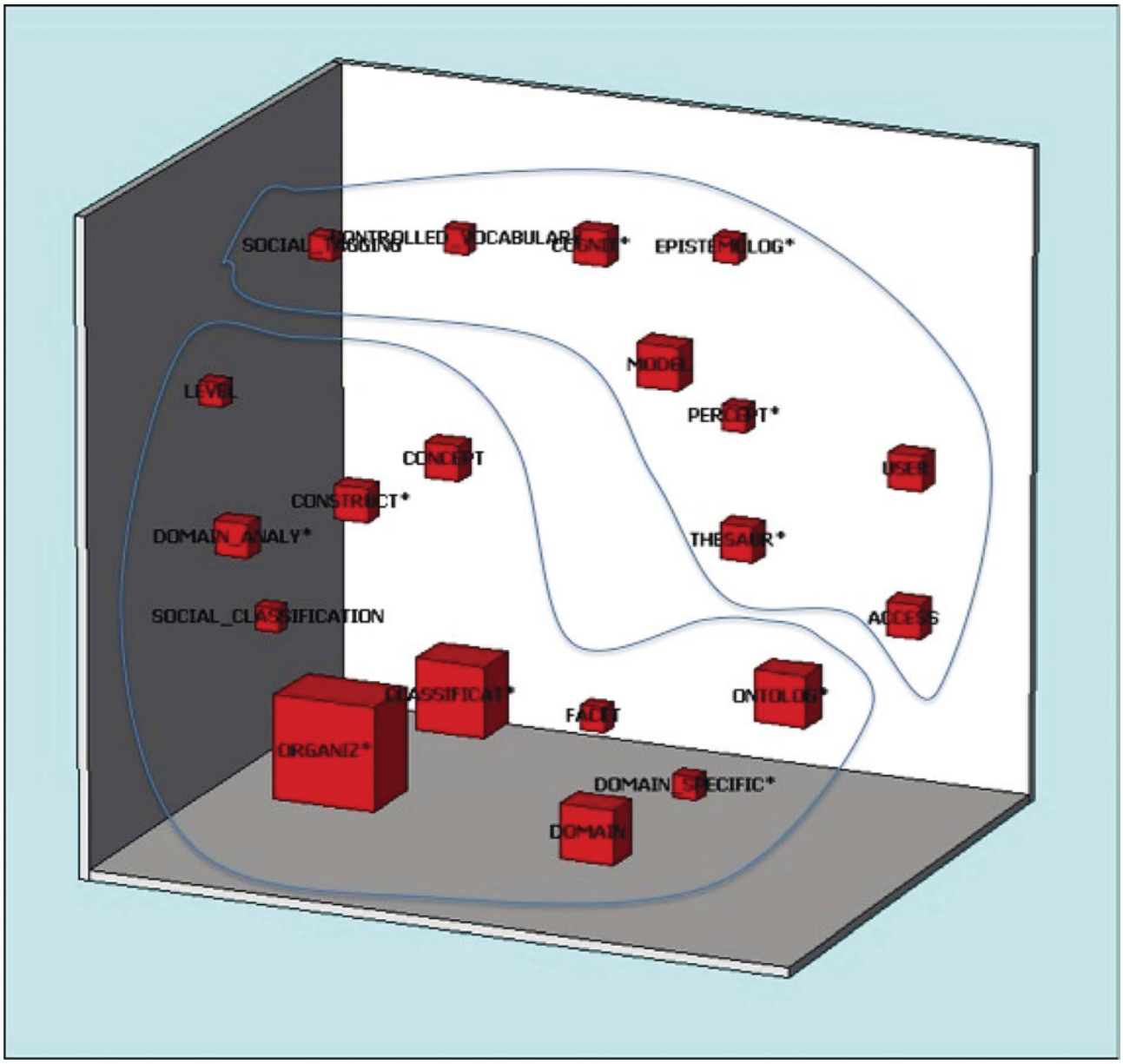

Figure 8. Co-Word Analysis (stress = 0.26976 R^2 = 0.7517)