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Knowledge Organization

First Annual “Best Paper in KO Award”
for Volume 40 (2013)†

Awarded jointly to:

Birger Hjørland,
for “Theories of knowledge organization—Theories of knowledge.”
KO 40, no. 3: 169-81

and

Jens-Erik Mai,
for “Ethics, values and morality in contemporary library classifications.”
KO 40, no. 4: 242-53.

Birger Hjørland, for “Theories of knowledge organization—Theories of knowledge.” KO 40, no. 3: 169-81.

ABSTRACT: Any ontological theory commits us to accept and classify a number of phenomena in a more or less specific way—and vice versa: a classification tends to reveal the theoretical outlook of its creator. Objects and their descriptions and relations are not just “given,” but determined by theories. Knowledge is fallible, and consensus is rare. By implication, knowledge organization has to consider different theories/views and their foundations. Bibliographical classifications depend on subject knowledge and on the same theories as corresponding scientific and scholarly classifications. Some classifications are based on logical distinctions, others on empirical examinations, and some on mappings of common ancestors or on establishing functional criteria. To evaluate a classification is to involve oneself in the research which has produced the given classification. Because research is always based more or less on specific epistemological ideals (e.g., empiricism, rationalism, historicism, or pragmatism), the evaluation of classification includes the evaluation of the epistemological foundations of the research on which given classifications have been based. The field of knowledge organization itself is based on different approaches and traditions such as user-based and cognitive views, facet-analytical views, numeric taxonomic approaches, bibliometrics, and domain-analytic approaches. These approaches and traditions are again connected to epistemological views, which have to be considered. Only the domain-analytic view is fully committed to exploring knowledge organization in the light of subject knowledge and substantial scholarly theories.

Birger Hjørland holds an M.A. in psychology and Ph.D. in library and information science. He is professor in knowledge organization at the Royal School of Library and Information Science in Copenhagen since 2001 and at the University College in Borås 2000-2001. He was research librarian and coordinator of computer based information services at the Royal Library in Copenhagen 1978-1990, and taught information science at the Department of Mathematical and Applied Linguistics at the University of Copenhagen 1983-1986. He is chair of ISKO’s Scientific Advisory Council and a member of the editorial boards of Knowledge Organization, Journal of the Association for Information Science and Technology and Journal of Documentation.
ABSTRACT: This paper explores the ethics of classification. The paper outlines recent conceptual moves in knowledge organization research and shows that contemporary classification theory is based on a pragmatic understanding of the world. It suggests that unjust statements and assumptions about the world challenge contemporary library classifications and that a proper response is needed. It outlines a framework for the development of ethical classifications based on MacIntyre’s practice-based ethical theory. It provides a framework within which editors and managers of library classifications can make ethically sound decisions.

Jens-Erik Mai is professor at the University of Copenhagen, Royal School of Library and Information Science in Denmark. He was previously associate professor at the Faculty of Information, University of Toronto where he also served as Vice Dean and Acting Dean. Prior to that he was assistant professor at the Information School of the University of Washington where he co-directed the Center for Human-Information Interaction. He earned his Ph.D. in library and information science from the University of Texas at Austin as a Fulbright Scholar and his master’s and bachelor’s degrees from the Royal School of Library and Information Science, Denmark.

He teaches classes in knowledge organization, information ethics, and knowledge media – and he writes papers about classification, the nature of information, trust and authority, and the design of controlled vocabularies.

Jens-Erik is interested in basic questions about the nature of information phenomena; he has explored these from a variety of conceptual points (e.g. semiotics, cognitive work analysis, late-modernity, philosophy of language, trust) often with a focus on issues and questions in the organization of information. He has contributed conceptual constructions as well as methodological and programmatic papers that have helped forward thinking about the organization of information.

Jens-Erik was a member of the ISKO Executive Board from 2002 to 2006, he has been a member of the program committee for the ISKO International Conference in 2000, 2002, 2004, 2006 and 2008, and he has been a member of editorial board for Knowledge Organization since 2006. Jens-Erik serves on ASIS&T Board of Directors (2012-2014), and he was the Conference Chair for iConference 2012 held in Toronto and is the Conference Chair for the 77th ASIS&T Annual Meeting 2014 to be held in Seattle.

† Awards Committee for Volume 40 (2013): Jonathan Furner, chair; Jesus Gascon-Garcia, Jose Augusto Guimaraes, Maja Zumer, Ia Mellwayne
Obituary.

Professor Arashanipalai Neelameghan

Prof. A. Neelameghan was born on 3rd July 1926, in Ooty, India. The year he was born saw the flowering of the Kurinji that spreads a carpet of blue flowers on the Nilagiri Mountain slopes every twelve years or so; hence the name ‘Neelameghan.’ He graduated in 1947 majoring in physics from the Madras Christian College. He obtained his Diploma in library science from the University of Madras and did his master's degree in library science in the USA on Rockefeller Foundation and Fulbright Scholarships.

Prof. Neelameghan began his professional career in the early 1950s and distinguished himself by providing innovative information services in different types of institutions including the Madras Medical College, Hindustan Antibiotics, etc. He joined the Documentation Research and Training Centre as a member of faculty at the invitation of its founder S. R. Ranganathan and retired as its professor and head.

Professor Neelameghan made significant contributions to the field of knowledge organization. Mention must be made of his contributions to the understanding of the epistemological foundations of knowledge organization by way of identifying and defining different modes of formation of subjects, his search for multi-disciplinary evidence in support of Ranganathan's postulate of absolute syntax to help identify universals in indexing languages, his work on the need for a theoretical basis for UDC, his work on the applications of Ranganathan's postulates and normative principles in the design of specialized databases, his research into developing a typology of lateral semantic relations, etc. His more recent work was on expressing the concept of time in knowledge organization systems.

Prof. Neelameghan served as Chair of FID (International Federation for Information and Documentation/Fédération Internationale d’Information et Documentation)/Classification Research from 1972 and was instrumental in organizing the Third International Study Conference on Classification Research of FID/CR at Bombay in 1975. He was also chair of the Second International Conference of ISKO on cognitive paradigms in knowledge organization held in Chennai, India in 1992; He is also one of the editors of the ISKO Conference volume Categories and Relations in Knowledge Organization (Volume 13 in the series Advances in Knowledge Organization), 2012. Prof. Neelameghan also served as a member of the FID/SRC-Group (Subject Reference Code) which, after 1974, became the BSO (Broad System of Ordering) panel.

Prof. Neelameghan authored over 600 papers of which more than 250 are research papers, several with S.R. Ran-
ganathan and with colleagues in the DRTC, and researchers in India and abroad. He has also authored, coauthored and/or edited some 25 books and conference/seminar volumes; prepared course materials for open university programmes; prepared a large number of technical reports to international organizations, governments and institutions in India and abroad following advisory and technical assistance missions undertaken to various countries on behalf of or at the invitation of international organizations. Prof. Neelameghan was one of the contributing editors of the journal *International Classification* which now is the present journal *Knowledge Organization*.

Prof. Neelameghan was Head, Section on Institution Building and Networking, UNESCO/PGI (General Information Programme), and also the Regional Advisor for Asia-Pacific, UNESCO/PGI. He undertook Technical Assistance missions to a number of developing countries in Asia, Arab League States, Africa, Latin America and the Caribbean sponsored by UNESCO/PGI, United Nations Development Programme, International Development Research Centre, etc. These missions included formulation of national information policies, development of information institutions, organizing and teaching in national and regional training workshops in information studies. He established a regional post-graduate programme for training science information specialists in South Asia at the University of Philippines in Manila, a similar programme for Africa by establishing the School of Information Studies for Africa at the University of Addis Ababa, Ethiopia, and another programme for Latin America at the University of Simon Bolivar, Caracas, Venezuela. He was also responsible for building a national training programme for China in Beijing. He initiated the regional information network ASTINFO (Regional Network for the Exchange of Information and Experiences in Science and Technology in Asia and the Pacific). Prof. Neelameghan retired from UN civil service in 1986. His contributions as a member of staff of UNESCO PGI and as a UN consultant are many and varied. Until the very end he was closely and actively associated with the Sarada Ranganathan Endowment for Library Science (SRELS 1963-) and the Ranganathan Centre for Information Studies (1993-), both not-for-profit organizations promoting research, lectures, and publications in information studies.

Prof. Neelameghan passed away in Bangalore on 28th July 2014 leaving behind two sons, two daughters, grandchildren and a large family of students, friends and admirers.

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PES Institute of Technology
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ISKO 13’s Bookshelf: Knowledge Organization, the Science, Thrives—An Editorial†

Richard P. Smiraglia

1.0 The 13th International ISKO Conference, Krakow, Poland

Krakow, Poland was the host city for the 13th International ISKO Conference held May 19-22, 2014. Conference-goers attended a grand opening session in the Collegium Novum at the Jagiellonian University (JU); the conference was included as part of the celebrations of the 650th anniversary of the JU. Three full days of research presentations followed in the venue of the Institute of Information and Library Science at the JU. In honor of the 25th anniversary of ISKO’s founding, attendees were treated to a talk at the opening session by founding scientist Dr. Ingetraut Dahlberg, concerning the bases of the science of knowledge organization (KO). The conference ended with a panel discussion on the future of ISKO (see Green 2014). The high level of research and interaction highlighted at the conference is evidence of the vibrance of ISKO and of the still emergent science of knowledge organization.

Since 2008 I have used the occasion of the international conference to bring a domain analytical lens to bear on some core characteristics of the ongoing evolution of knowledge organization (see Smiraglia 2008, 2010, 2013). Using the rubric of “ISKO’s Bookshelf,” my analyses are aimed at a key research question: “what are the contributors reading (or perhaps I mean citing)?” and its corollary, “what can we observe in this manner about shifts in the intensity and extension of KO as a domain?” Those questions inform the analysis presented in this editorial.

The conference proceedings (Babik 2014) were published in print at the conference and subsequently became available online at the Ergon-Verlag ISKO Members’ portal at http://www.ergon-verlag.de/isko_ko/. There are seventy-six papers represented in the proceedings (one paper has only a reference to its publication elsewhere). The conference program lists seventy-seven papers and twenty-three posters. This analysis is based on the papers printed in the proceedings. As before, I was constrained to manually index the proceedings in order to analyze the citations in the papers, because Thomson Reuters Web of Science is not indexing ISKO proceedings. However, I am pleased to learn that Elsevier’s SCOPUS is indexing ISKO international conference proceedings, which will be a great boon to dissemination of the core literature of KO.

The original spreadsheet containing the references from all of the papers can be found on my blog at http://lazykoblog.wordpress.com/. It continues to be a problem that inconsistent editing of the proceedings, particularly with regard to citation practice (which, in this case, was not standardized), requires much manual cleaning of the data before analysis can proceed.

2.0 International presence and thematic foci

This was the first international ISKO conference to be held in Poland, and it was very well-attended by participants from all over the world. To get a sense of the national affiliations represented, the country of affiliation of each first author was recorded. With the caveat that this method misses cases of international collaboration, Figure 1 shows the twenty countries represented.

Roughly a quarter of the contributions came from the United States, with another proximate third from Poland and Brazil. It is not unusual for the host country to have a bulge in its numbers and here we see 17% from Poland or roughly a sixth. Brazil, host country of the 2016 conference, had 13%. India, host country in 2012, dropped from 18% (Smiraglia 2013) to 5%. There were no other
large clusters, although we see Singapore, Iran, Nigeria, Romania, Hungary and Taiwan this time, but nothing from Morocco or Algeria, who were newcomers in 2012.

Each host country’s organizing committee generates its own conference theme and then subsequently provides thematic monikers for panel sessions. These can be used to get a sense of the thematic core of the conference, as a way of determining the parameters of the extension of the domain at this one point in time. (Co-word analysis is used later, below, to analyze the intention.) Table 1 shows conference themes from the program together with the numbers of papers in each:

An interesting note is that a distinction is made between systems (KOS) and tools—thesauri, classifications, taxonomies, ontologies, terminologies—which usually are described as KOS. Countries of affiliation associated with each theme are visualized in Figure 2.

The visualization shows how well spread the themes are across global boundaries. Only two categories were country-specific: all of the papers on automated classification systems were from the USA.

Table 1. Program themes

<table>
<thead>
<tr>
<th>Program Theme</th>
<th>Number of Papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Global Problems in Knowledge Organization</td>
<td>5</td>
</tr>
<tr>
<td>Knowledge Organization Domain and Epistemology</td>
<td>8</td>
</tr>
<tr>
<td>Methods of Knowledge Organization</td>
<td>6</td>
</tr>
<tr>
<td>Knowledge Organization Systems (KOS)</td>
<td>4</td>
</tr>
<tr>
<td>Knowledge Organization Tools: Thesauri</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge Organization Tools: Classifications</td>
<td>9</td>
</tr>
<tr>
<td>Knowledge Organization Tools: Taxonomy, Ontologies, Terminology</td>
<td>7</td>
</tr>
<tr>
<td>Automatic classification systems</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge Organization and Representation for IRS</td>
<td>11</td>
</tr>
<tr>
<td>Knowledge Organization for Special Domain</td>
<td>6</td>
</tr>
<tr>
<td>Knowledge Organization for Libraries</td>
<td>6</td>
</tr>
<tr>
<td>Knowledge Organization Education</td>
<td>4</td>
</tr>
<tr>
<td>Knowledge Organization History and Future</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 1. Countries of Affiliation
sification came from Brazil, and all of the papers on KOS without specific definition came from the United States.

3.0 Citation analysis

There were a total of 1,217 references in 76 papers, for a mean of 16, and a mode and median of 15. The range was from zero to 45. A mean number of references per paper per country also was calculated; these hovered around the true mean at 18, with a range from 5 for Romania to 30 for Germany with all the rest near the mean. There is an observable dichotomy in KO in which roughly equal numbers of research papers are epistemologically either empirical science or humanistic narrative. The former tend to have few recent citations, and the latter tend to have many older citations. This conference is a bit of an outlier, because most of the papers fall into the scientific range with 5-15 citations. Oddly, German papers at this conference had 30 or more citations.

Dates of cited works ranged from 1873 to 2014, or, the age of works cited ranged from 0-141 years. The mean age of works cited was 15.6 years (the median was 8). Thus the majority of works cited were fairly recent, as shown in Figure 3.

Figure 4 contains histograms of the distributions of age of cited work and number of references. The histograms help visualize the normativity of the means—most papers have between 10-20 references, and the age of most works cited peaks around 10 years. This is consistent with a social scientific epistemology. ANOVA indicates there is no statistically significant influence of either variable on the other.

A mean age of cited work was calculated for each paper, and then these were averaged to develop a mean for each country; these are shown together in Table 2 with the mean number of references per country.

The number of references was more or less consistent across geopolitical boundaries. The mean age of work cited ranged from 4.7 to 41.3, which is rather a wild divergence. The explanation likely is the consistent dichotomy between scientific papers and humanistic papers. The median of 8 years tells us that there is a social-scientific distribution in the rate of absorption of scientific data in the community. But the large discrepancy reminds us that quite a few authors in the domain are not reporting empirical evidence, but rather are engaging in historical or rationalist narratives. The histograms help visualize the normativity of the means—most papers have between 10-20 references, and the age of most works cited peaks around 10 years. This is consistent with a social scientific epistemology. ANOVA indicates there is no statistically significant influence of either variable on the other.

Table 2 is arranged in ascending order of mean age of cited work per country; there seems no logical explanation other than that the countries with the larger number of papers also have wider ranges in mean age of works cited. Table 2 also shows the mean number of references per country.

Number of references and age of cited work also were arrayed by theme and this is shown in Table 3.
Five thematic clusters exceed the mean age of cited works: domain and epistemology, automatic classification, KOS, global problems, and classifications. Four thematic clusters exceed the norm for number of references: history and future, knowledge representation, domain and epistemology, and global problems. More than one explanation is possible. It is realistic to conclude that the majority of the thematic clusters contain scientific works with few recent citations. One might expect history and future and global problems to consist of more narrative and less science. Domain and epistemology likely contains more narrative works on epistemological questions; in fact, most of the domain analytical scientific studies are contained in the “methods” cluster. Finally, “classification,” contains mostly papers considered to be “theoretical,” which in KO more often means rational and historical narrative than empirical hypothesis testing.

The distribution of media types is also an interesting indicator not only of what might be on ISKO’s bookshelf, but of the epistemic stances brought to bear by conference
The largest category was journal articles, and the second largest category was monographs, but the proportion of articles to monographs is higher than we have seen in recent conferences. The 440 journal citations were made to 134 different journals, 30 of which were cited more than once. Journals cited five or more times are shown in Table 5.

Nearly half of the citations are to Knowledge Organization, which received more than three times as many citations as any other journal. It continues to be a problem

<table>
<thead>
<tr>
<th>Country of first author</th>
<th>Age range</th>
<th>Mean age</th>
<th>Mean refs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>4.75</td>
<td>4.7</td>
<td>8</td>
</tr>
<tr>
<td>France</td>
<td>5-6.2</td>
<td>5.6</td>
<td>15</td>
</tr>
<tr>
<td>Romania</td>
<td>8.4</td>
<td>8.4</td>
<td>5</td>
</tr>
<tr>
<td>Poland</td>
<td>3.1-20.3</td>
<td>8.5</td>
<td>15.6</td>
</tr>
<tr>
<td>Iran</td>
<td>8.8-10</td>
<td>9.4</td>
<td>8</td>
</tr>
<tr>
<td>Taiwan</td>
<td>10.1</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>India</td>
<td>6-16.3</td>
<td>10.3</td>
<td>11.5</td>
</tr>
<tr>
<td>Mexico</td>
<td>11</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>Spain</td>
<td>4.5-26.9</td>
<td>11.1</td>
<td>12.5</td>
</tr>
<tr>
<td>Nigeria</td>
<td>4.8-18.5</td>
<td>11.7</td>
<td>23</td>
</tr>
<tr>
<td>Canada</td>
<td>9.5-27.8</td>
<td>13.8</td>
<td>12.8</td>
</tr>
<tr>
<td>Brazil</td>
<td>10.1-26.2</td>
<td>17.2</td>
<td>18.8</td>
</tr>
<tr>
<td>Germany</td>
<td>10.1-23.4</td>
<td>17.3</td>
<td>29.7</td>
</tr>
<tr>
<td>Finland</td>
<td>18.2</td>
<td>18.2</td>
<td>14</td>
</tr>
<tr>
<td>USA</td>
<td>3.6-54.6</td>
<td>19.2</td>
<td>16.5</td>
</tr>
<tr>
<td>Croatia</td>
<td>22.4</td>
<td>22.4</td>
<td>18</td>
</tr>
<tr>
<td>UK</td>
<td>20.5-30.1</td>
<td>25.3</td>
<td>14.5</td>
</tr>
<tr>
<td>Italy</td>
<td>13.6-41.8</td>
<td>27.7</td>
<td>17</td>
</tr>
<tr>
<td>Hungary</td>
<td>41.3</td>
<td>41.3</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 2. Age of cited works by country

<table>
<thead>
<tr>
<th>Theme</th>
<th>Age</th>
<th>Refs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Global Problems in Knowledge Organization</td>
<td>18.8</td>
<td>23.7</td>
</tr>
<tr>
<td>Knowledge Organization Domain and Epistemology</td>
<td>16.2</td>
<td>20.8</td>
</tr>
<tr>
<td>Methods of Knowledge Organization</td>
<td>13.8</td>
<td>10.5</td>
</tr>
<tr>
<td>Knowledge Organization Systems (KOS)</td>
<td>18.7</td>
<td>13.7</td>
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<td>12.2</td>
<td>10.5</td>
</tr>
<tr>
<td>Knowledge Organization Tools: Classifications</td>
<td>28.8</td>
<td>14.6</td>
</tr>
<tr>
<td>Knowledge Organization Tools: Taxonomy, Ontologies, Terminology</td>
<td>9.6</td>
<td>15.5</td>
</tr>
<tr>
<td>Automatic classification systems</td>
<td>17.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Knowledge Organization and Representation for IRS</td>
<td>12.5</td>
<td>19.5</td>
</tr>
<tr>
<td>Knowledge Organization for Special Domain</td>
<td>11.6</td>
<td>16</td>
</tr>
<tr>
<td>Knowledge Organization for Libraries</td>
<td>7.9</td>
<td>14.3</td>
</tr>
<tr>
<td>Knowledge Organization Education</td>
<td>13.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Knowledge Organization History and Future</td>
<td>6.4</td>
<td>16.8</td>
</tr>
</tbody>
</table>

Table 3. Theme by age of cited work and number of references

contributors. The references were sorted by source. The distribution of media types is given in Table 4.
that KO’s impact factor is artificially low, because this major source of citations to research in the journal is not counted by Thomson Reuters. Notice that but for the title change, which split the file, the journal from the American Society for Information Science and Technology and its predecessor would have taken second place with 29 references.

Papers in proceedings of conferences accounted for 11% of the references. Of these a majority, 72, were citations to papers from the proceedings of individual conferences; several major organizations such as CAIS (Canadian Association for Information Science), ASIST (Association for Information Science and Technology), DCMI (Dublin Core Metadata Initiative) and ACM (Association for Computing Machinery) were represented but no two citations were from any particular single conference. The rest were references to papers in ISKO international conference proceedings or ISKO regional chapter conferences. These are shown in Table 6.

<table>
<thead>
<tr>
<th>ISKO International Conferences</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools for knowledge organization and the human interface: Proceedings of the 1st International ISKO Conference (Darmstadt, Germany, August 14-17, 1990)</td>
<td>1</td>
</tr>
<tr>
<td>Cognitive paradigms in knowledge organisation: Second International ISKO Conference (Madras, India, August 26-28, 1992)</td>
<td>4</td>
</tr>
<tr>
<td>Dynamism and stability in knowledge organization: Proceedings of the Sixth International ISKO Conference (Toronto, Canada, July 10-13, 2000)</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge organization for a global learning society: Proceedings of the Ninth International ISKO Conference (Montréal, Canada, August 5-8, 2008)</td>
<td>2</td>
</tr>
<tr>
<td>Culture and identity in knowledge organization: Proceedings of the Tenth International ISKO Conference (Montréal, Canada, August 5-8, 2008)</td>
<td>10</td>
</tr>
<tr>
<td>Categories, contexts and relations in knowledge organization: Proceedings of the Twelfth International ISKO Conference (Mysore, India, August 6-9, 2012)</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISKO Chapters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I Congress of ISKO Spain and Portugal / XI Congress ISKO Spain, 7-9 November 2013</td>
<td>2</td>
</tr>
<tr>
<td>ISKO UK Conference 2009, Content architecture, exploiting and managing diverse resources, University College London, 22-23 June</td>
<td>2</td>
</tr>
<tr>
<td>North American Symposium on Knowledge Organization 2011</td>
<td>2</td>
</tr>
</tbody>
</table>

| UDC | |

It is interesting to observe that despite the apparent scatter of papers from proceedings overall, there is a solid core of ISKO research, some of it legacy research, being cited by today’s authors. Papers from the first ISKO international conferences are still cited. Apart from the immediately preceding conference in Mysore, with 12 citations, the 2008 conference in Montréal received the next highest number of citations (10).
Table 7. Monographs cited more than once

<table>
<thead>
<tr>
<th>Title</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birger Hjorland. Information Seeking and Subject Representation: An Activity Theoretical Approach to Information Science (Westport, Conn: Greenwood Press)</td>
<td>4</td>
</tr>
<tr>
<td>Henry Evelyn Bliss. The Organization Of Knowledge In Libraries And The Subject Approach To Books (New York: H.W. Wilson)</td>
<td>4</td>
</tr>
<tr>
<td>Ranganathan, S.R. Prolegomena to Library Classification, 3rd ed (Bombay: Asia Publishing House)</td>
<td>3</td>
</tr>
<tr>
<td>Komninos, Nicos. Intelligent Cities and Globalization of Innovation Networks (London and New York: Routledge)</td>
<td>2</td>
</tr>
<tr>
<td>Buckland, Michael K. Information and Information Systems (New York: Greenwood)</td>
<td>2</td>
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<tr>
<td>Lakoff, George and Mark Johnson. Metaphors we live by (Chicago: The University of Chicago Press)</td>
<td>2</td>
</tr>
<tr>
<td>Sosińska-Kalata, Barbara. Modele Organizacji Winding w Systemach Wyzwiskowania Informacji (Warszawa: Wydawnictwo SBP)</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 7. Monographs cited more than once

Table 8. Anthologies cited more than once

<table>
<thead>
<tr>
<th>Title</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smiraglia, Richard P and Hur-Li Lee. Cultural Frames of Knowledge (Würzburg: Ergon)</td>
<td>4</td>
</tr>
<tr>
<td>Rayward, W. Boyd. International Organisation and Dissemination of Knowledge: Selected Essays of Paul Otlet (Amsterdam: Elsevier)</td>
<td>3</td>
</tr>
<tr>
<td>Helen Myers. Ethnomusicology: An Introduction (London: Macmillan)</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 7 shows the fourteen monographs that were each cited two or more times.

This list is remarkable for the continued appeal to legacy texts that it demonstrates with reliance on texts by classic KO authors. But the list also is remarkable for the works from outside the domain that are being brought to bear on current KO research. Eighty citations were to chapters or papers in anthologies. Only a few of these (six) received more than one citation and these are shown in Table 8.

The legacy publication here is the collection of essays by Otlet, whose work is enjoying renewed interest in the KO community. The other volumes include culture, epistemology and terminology along with issues of current interest in the semantic Web.

3.1 Authors most cited and author co-citation analysis

The most prominent indicator of a research front in a domain is the appearance of a coherent set of prolific and heavily cited authors, whose work drives hypothesis-testing and theory-development. The influence of these authors usually adheres to a power law such that their work is substantially more influential than the rest of the domain taken together. This is why they are said to constitute a research front; their work is at the forefront of new developments. Often some of the most-cited authors in a research front, however, are classic authors in the domain whose work remains substantially important over time. These are all signs of coherence in a domain, and there has been a consistent, if evolving, research front visible in KO over time.

Author co-citation analysis is a means of visualizing the intention, or theoretical depth, of a domain by mapping authors whose work is frequently cited together by others in the domain on the presumption that co-citation indicates a theoretical relationship of some strength. Using the names of the authors in the research front, and creating a matrix of the incidences of their co-citation, multi-dimensional scaling can be used to generate a three-dimensional map of the intellectual space, in which the authors are perceived to be clustered together (or in separate clusters at some distance apart) according to their theoretical relationship. In studies of ISKO conferences it has been useful to gather co-citation totals from Thomson Reuters Web of Science to map the perception of the research from by the KO community in general. But it also has been useful to manually gather co-citation totals from the papers in the individual conference proceedings, to map the perceptions of closeness among the immediately contributing authors. Both methods are used here.

There were 1,140 authors names in first-author position among the citations in the proceedings. After sorting and matching, there were 63 authors who were cited mo-
re than once. Thus there was a “long-tail” of 1,077 au-
thors whose names were cited only once in the confer-
ce proceedings. Of the rest, 31 were cited five or more
times and these authors names appear in Table 9.

<table>
<thead>
<tr>
<th>Author</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hjørland</td>
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</tr>
<tr>
<td>Gnoli</td>
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</tr>
<tr>
<td>Smiraglia</td>
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<td>Szostak</td>
<td>12</td>
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<tr>
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<td>11</td>
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<tr>
<td>López-Huertas</td>
<td>10</td>
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<td>Broughton</td>
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<td>Dahlberg</td>
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<td>Mai</td>
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<tr>
<td>Olson</td>
<td>8</td>
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<tr>
<td>Babik</td>
<td>7</td>
</tr>
<tr>
<td>Bliss</td>
<td>7</td>
</tr>
<tr>
<td>Buckland</td>
<td>7</td>
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<tr>
<td>Tennis</td>
<td>7</td>
</tr>
<tr>
<td>Otlet</td>
<td>6</td>
</tr>
<tr>
<td>Ranganathan</td>
<td>6</td>
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<tr>
<td>Vickery</td>
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</tr>
<tr>
<td>Bloch</td>
<td>5</td>
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<td>David</td>
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<tr>
<td>De Santis</td>
<td>5</td>
</tr>
<tr>
<td>Dousa</td>
<td>5</td>
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<tr>
<td>Foucault</td>
<td>5</td>
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<tr>
<td>Hajdu Barát</td>
<td>5</td>
</tr>
<tr>
<td>Kaiser</td>
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<td>Kruk</td>
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<tr>
<td>Lakoff</td>
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<tr>
<td>Lancaster</td>
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<tr>
<td>McIlwaine</td>
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</tr>
<tr>
<td>Rosch</td>
<td>5</td>
</tr>
<tr>
<td>Saracevic</td>
<td>5</td>
</tr>
<tr>
<td>Svenonius</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 9. Most cited authors

This is a curious gathering of names. The top ten names
are all familiar authors in KO who are both reasonably
prolific and highly cited. There are some other names—
such Otlet, Ranganathan, Kaiser and Bliss—who are well-
known classical authors in the domain from earlier eras.
There are still other names—Lakoff, Bloch, Rosch and
Foucault—who are well-known by their contributions in-
corporated in the domain by contemporary authors. And
yet there are several very active authors in the domain
whose names do not appear because they were cited 3 or
fewer times by conference authors. Finally, there are names
such as Buckland and Svenonius, whose work is well incul-
cated in the domain but who are not usually direct partici-
pants in the domain, but rather, are associated with the
neighboring domain of information science. Whatever the
interpretation, it is safe to assume the top ten names are in
the research front as represented by this conference, as well
as some of the names in the lower part of the distribution.
As it happens, author co-citation analysis relies on the
presence of co-citation by peers in the domain, and when
names for which little or no co-citation was identified are
removed, the final list of authors in the research front con-
tains 17 names, as shown in Table 10.

<table>
<thead>
<tr>
<th>Author</th>
</tr>
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<tbody>
<tr>
<td>Hjørland</td>
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<tr>
<td>Gnoli</td>
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<tr>
<td>Smiraglia</td>
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<tr>
<td>Szostak</td>
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<td>López-Huertas</td>
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<td>Dousa</td>
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<tr>
<td>McIlwaine</td>
</tr>
<tr>
<td>Otlet</td>
</tr>
<tr>
<td>Foucault</td>
</tr>
<tr>
<td>Ranganathan</td>
</tr>
</tbody>
</table>

Table 10. ISKO 13’s research front.

Author co-citation of this research front as represented
by peer authors gathered from Web of Science appears in
Figure 5, and co-citation by conference authors appears
in Figure 6. These MDS plots were produced by IBM-
SPSS™. Both plots are good representations of the data.

Figure 5 visualizes an external analysis revealing the
perception of the domain at large about this cluster of
authors whose research is most cited in the contributed
papers for this conference. To the extent that the partici-
pants in ISKO 13 have identified through their citations a
research front, this visualization of co-citation is a snap-
shot of how the KO domain sees itself at this point in
time. The figure is a two-dimensional visualization of a
three-dimensional plot, which somewhat impairs our ability to see depth connections, but different kinds of dotted lines have been used for that reason. For example, the core cluster is that pointing directly at left of center, with a dashed line and containing Otlet, Foucault and Dahlberg; this segment represents classical concept theory, general classification and domain analysis. Imagining a third dimension shows us that the two clusters with the solid lines which are closer to the forefront (or, between the reader and the core cluster) connect groups anchored by Olson and Hjørland; these clusters represent cultural, temporal and epistemological points of view. In the distance (metaphorically speaking) are the two segments connected by small dots and connecting groups anchored by Ranganathan and Gnoli; here was have facets, integrative levels, pragmatism, semiotics and other recent modes of thought about knowledge organization. Co-citation is trace evidence of the perception of co-occurrence. Rather than pointing to causation, co-occurrence shows us what components are key and how they work together in the domain. There is a lot of space in this visualization, which could be taken as an indicator both that the connections are somewhat loose and also that each of the authors represented is seen as somehow holding a critical position in the domain. The motion of the research front as visualized here is from the epistemological base, stretching away from the reader, through the semantic core to an experimental cluster.

In Figure 6 we see the perception of this research front from the point of view of conference participants, and in particular, of its members. There are fewer names in this visualization because Otlet and Foucault were not co-cited with these contemporary authors, although Ranganathan continued to be co-cited. We have essentially the same components as before but in a slightly different configuration suggesting different subtleties of interpretation. The core (at the center) is classical KO, containing founder Dahlberg and many of the authors who have contributed to perceptions of the domain’s research agenda. In the metaphorical foreground we have semiotics, classification theory, and approaches to general classification. In the distance we have classical epistemology and facet theory. As before the clusters are tightly interwoven, suggesting the players visualize themselves at different points on the same continuum.

### 3.2 Co-word analysis

Co-word analysis is a technique for visualizing intellectual concept space by looking for term co-occurrence. The steps involve isolating the most frequently used terms in a domain, and then searching for terms that co-occur with them in the literature of the domain. In this case, all of the titles of the 75 papers were entered into Voyeur.ca’s Voyant text engine and an initial visualization and chart of word (not term) frequencies was developed. A word cloud ap-
pears in Figure 7 and the top of the frequency distribution appears in Table 11. There were 16,571 words in the corpus, of which 5,080 were unique. Those words appearing 20 or more times are shown here (some editing has resulted in partial words being removed).

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Keyword-in-context analysis (see KWIC below) tells us that many of the terms at the top of the distribution identify publications, rather than topical keywords, so although they appear in the Voyant visualization we can remove them from the frequency distribution. We see from Table 10 that although there are many words occur between 20 and 50 times, the rate drops below 2% of total occurrence pretty rapidly. Most of these words represent a sort of solidified granularity.

The same titles were entered into WordStat™. WordStat™ allows the creation of a term thesaurus (called a “dictionary”) which, together with specific language exclusion features can be used to filter the file. A dictionary of key ISKO terms has been developed for prior research, and was used again here. Figure 8 is an MDS plot of those terms as they co-occur in the titles of these conference papers.

The plot in Figure 8 is a fairly good model of the data. What is interesting here is how the co-occurrence data lead us to draw the clusters. Notice, for instance, that there is a solid core cluster with knowledge organization, classification, concepts, categories, ISKO and cognition. But behind it is a small cluster with models, and behind both is another cluster where domain analysis and ontology are associated with information science. This suggests that there is, among the contributors to this conference, an ontological discrepancy between concept theory (which is classic KO) and domain analysis, by which concepts are derived, which is perceived rather as closer to information science (IS). Cognition is classic KO, users are IS, but information retrieval models are in their own cluster apart from both.
WordStat™ also has a keyword-in-context feature that allows viewing each instance of a term in context. From this we are able to see that the main terms are mostly used in formal ways. The key terms in this conference are those that are not used routinely. These are compiled, each with three KWIC examples, in Table 12.

The thousands of words used in the long tail of the frequency distribution are essentially words that define types of information retrieval, categories, ontologies, thesauri, users, models, and cognition. This short list is the extension of the ISKO domain as realized by contributors to ISKO 13. It is interesting to notice that a key term from the thematic conference program list shown in table 3 above is missing, “tools.”

### 4.0 Discussion: ISKO 13’s bookshelf

In sum, ISKO 13 was once again a fulsome exercise in bringing together the disparate parts of the KO community. It is a problem that KO must compete with knowledge management, which is not the same science, for intellectual space in the representation of science in gen-

<table>
<thead>
<tr>
<th>Word</th>
<th>Frequency</th>
<th>%</th>
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<td>systems</td>
<td>50</td>
<td>2.34</td>
</tr>
<tr>
<td>subject</td>
<td>48</td>
<td>2.24</td>
</tr>
<tr>
<td>theory</td>
<td>48</td>
<td>2.24</td>
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<tr>
<td>university</td>
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</tr>
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<tr>
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<td>semantic</td>
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<td>1.99</td>
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<tr>
<td>indexing</td>
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<table>
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<tr>
<th>Word</th>
<th>Frequency</th>
<th>%</th>
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</tr>
<tr>
<td>using</td>
<td>22</td>
<td>0.94</td>
</tr>
</tbody>
</table>

**Table 11.** Most frequently occurring title words 50-20 occurrences
eral. KO as a scientific community must insist that indexing services make a clear distinction between KO and knowledge management. This conference, more than others of recent vintage, shows that even among participants there is a distinction between KO and information retrieval. This is ontologically correct, but epistemologically a tautological red herring. We do not organize knowledge only for retrieval; rather, our science is devoted to understanding the actual empirical order of knowledge. But that, of course, could be useful for information retrieval. But this distinction is perhaps also an artifact of the conference organization. ISKO ought to take more care that its international conference program committees are run by its Scientific Advisory Committee, and not by local arrangement committees. This is critical for the advancement of the science of knowledge organization.

Another limitation of this analysis arises from the keynote papers. Hjørland’s presentation was published elsewhere, and thus his citations and keywords are not present in this empirical analysis. And Buckland and Soergel, who also were invited as keynote speakers, are not really part of the current research front of the domain. So the empirical evidence from their papers, which is here, is perhaps influencing the interpretation.

The domain of KO as a science clearly is lively, evolving, emergent, and thriving. Every one of the triangulated methodological tools here points to a tightly knit cluster of key terms involving knowledge organization, categories, concepts and classification. The other five thousand words, many used more than once, define the granularity of applications of KO systems (not tools). KOS apply to every aspect of human existence. This is why KO is a science of the substrate of everything else. In that it is like the science of information. But I increasingly believe the future of KO is in comprehending that it is a science of its own and not a sub-domain of information. The methodological triangulation of citation analysis and co-word analysis shows the vivid common core of KO in concept theory and cognition, its research front in applied systems, and the immense granularity of applicability of those theories and systems. Based on the evidence from this conference in sequence, it is clear KO as a science is thriving.
What is on ISKO 13’s Bookshelf? First and foremost, the journal *Knowledge Organization*. There is little difference globally in the resources being applied. There is a constant and useful tension between historicist and empirical epistemic stances. Next to our journal, the most important resource for KO scientists comes from the proceedings of ISKO international and regional chapter conferences. We rely on a good mix of classic texts from Ranganathan, Bliss and Otlet, and from major monographs by Hjörland and Svenonius. Perhaps most interesting is the set of cited anthologies, including works on the so-called semantic web, on culture and epistemology, and on

<table>
<thead>
<tr>
<th>Concept (71 occurrences)</th>
<th>Constructing your First concept map</th>
<th>Prototype Theory: An Alternative concept of ’aboutness’ in subject indexing</th>
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</thead>
<tbody>
<tr>
<td>Cognit* (37 occurrences)</td>
<td>Late adolescent and adult cognitive development</td>
<td>Modeling what users see: A cognitive viewpoint</td>
</tr>
<tr>
<td>Ontolog (29 occurrences)</td>
<td>A reference ontology for biomedical informatics</td>
<td>A pattern-based ontology for image categorization</td>
</tr>
<tr>
<td>User (25 occurrences)</td>
<td>Thesaurus for end-user indexing and retrieval</td>
<td>Preservation of - generated content</td>
</tr>
<tr>
<td>Model (23 occurrences)</td>
<td>Towards a Comprehensive model of the cognitive process</td>
<td>Propaedia: a conceptual model of knowledge organisation</td>
</tr>
<tr>
<td>Thesaur* (21 occurrences)</td>
<td>Augmenting thesaurus relationships</td>
<td>Mapped multilingual thesauri in the agriculture domain</td>
</tr>
<tr>
<td>Construct (15 occurrences)</td>
<td>On the construction of selection systems</td>
<td>The Case for constructivist classrooms</td>
</tr>
<tr>
<td>Domain analysis (12 occurrences)</td>
<td>Theoretical referents in knowledge organization: a domain analysis of the knowledge organization journal</td>
<td>Transition in education: domain analysis from the <em>Encyclopedia Of Milwaukee</em></td>
</tr>
<tr>
<td>Classif* (174 occurrences)</td>
<td>The need for a faceted classification as the basis of all methods</td>
<td>On concepts and classifications of musical instruments</td>
</tr>
<tr>
<td></td>
<td>Teaching classification 1990-2010</td>
<td></td>
</tr>
</tbody>
</table>

*Table 12. KWIC examples of most frequently occurring terms*
Otlet’s dreams of universal knowledge availability. All of it is fueled by Dahlberg’s dream of an interoperable application of the empirically discovered heuristics of knowledge organization.

References


Making Sense of Big Data: A Facet Analysis Approach

Ali Shiri

School of Library and Information Studies, University of Alberta, Edmonton, Alberta, T6G 2J4, Canada, <ashiri@ualberta.ca>

Abstract: Understanding, exploring and investigating big data to inform the development of policies and best practices requires a solid analysis, identification and mapping of the key facets and aspects of big data. The objective of this paper is two-fold: a) to provide a facet analysis of big data key topics and issues; and, b) to present a select number of information science research methodologies and study frameworks that may have the potential to be applied to research on big data. Six facets, namely data type, environment, people, operations and activities, analytics, and metadata are introduced to capture the key aspects of big data. Furthermore, sub-facets are created for each facet to demonstrate specific aspects that constitute the key topics. This type of conceptualization of big data will contribute to our learning and understanding of big data and its key components and characteristics. A number of suitable methodological frameworks from information science are introduced along with their potential applications for big data.

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Keywords: Big Data, facet analysis, research, metadata

1.0 Introduction

The vast volume, variety and complexity of digital data available on the web has resulted in the emergence of what is called “big data.” De Witt et al. (2012) note that:

Facebook uploads three billion photos monthly for a total of 3,600 terabytes annually. The data are generated by a lot of humans, but each is limited in their rate of data production. In the 10 years to 2008, the largest current astronomical catalogue, the Sloane Digital Sky Survey, produced 25 terabytes of data from telescopes. By 2014, it is anticipated that the Large Synoptic Survey Telescope will produce 20 terabytes each night. By the year 2019, The Square Kilometre Array radio telescope is planned to produce 50 terabytes of processed data per day, from a raw data rate of 7000 terabytes per second.

Social media sites, search engines, cloud-based computing infrastructures as well as virtual collaboratories, e-science, e-humanities and e-social sciences projects produce massive volumes of data that call for proper management and preservation-planning approaches and strategies in order to provide users with effective and efficient access.

There are many different terms used in the literature that may refer to or be associated with the phenomenon of “big data,” including such terms as research data, digital data, linked data, open data, web of data and data repositories. The availability and discourse of these data types presents new research, development and policy opportunities as well as challenges. Domains and disciplines within natural sciences, social sciences and humanities can leverage the power of big data to create new research initiatives and avenues and to inform the development of policies, practices, systems and services.
The objective of this paper is twofold. The first objective is to present a faceto-analytical perspective of big data. In particular, the paper presents a categorization of topics and issues important for the understanding, analysis, learning, teaching, research and policy development for big data. The second objective is to draw upon research methodologies and analytical frameworks developed in information science to briefly provide new ways of analyzing and making sense of big data. The main argument in this paper is that information science in general and knowledge organization methods in particular can provide a solid basis for the understanding and the study of big data. The first part of this paper provides a delineated view of big data using facet analysis, which is a well-established knowledge organization method. The second part of this paper argues that there is a broad array of information science research methodologies and approaches that have particular and advantageous applications for studying and making sense of big data.

Recent discussions and studies of big data have focused on individual big data initiatives and projects. The variety of terminology used to refer to the phenomenon of big data warrants the development of a typology of various facets and types of big data. This kind of typology may serve as a basis for the conceptualization of big data in the context of research, development and teaching activities. Furthermore, it has the potential to provide a theoretical and terminological framework that could be used to investigate the various facets and aspects of big data in different contexts, environments and disciplines.

2.0 Context and definitions

Facet analysis as a knowledge organization and analysis technique was first introduced by Ranganathan (1967). Hjørland (2013) has recently provided a historical and logical examination of the facet analysis theory and notes that the “facet-analytic paradigm is probably the most distinct approach to knowledge organization within library and information science, and in many ways it has dominated what has been termed modern classification theory.” Foskett (2009, 1819) notes that a facet may consist of entity terms, such as elements in chemistry, or crops in agriculture; forms of entities, such as solid, liquid, gas; operations made on entities, such as combustion, forging, harvesting; tools for operations, such as presses, X-rays for therapy; microscopes; states of being, such as health and disease. He also argues that the use of the term “analysis” versus the term “division” “has a wider connotation and may be applied to the study of complexes as well as to the entities.” This technique has been widely used in the development of various knowledge organization systems, including classification systems, thesauri, taxonomies, as well as in the development of website architectures and visual and navigational information structures. The notion of web facet has been proposed to provide a meaningful approach to the presentation and categorization of search engine results (Milonas 2011). Facets and faceted classification seem to be among the critical thematic areas that North American Knowledge Organization (NASKO) researchers have studied (Smiraglia 2009). La Barre (2010) provides a comprehensive review of the facet analysis theory and its historical and developmental stages, providing various recent applications such as databases, retrieval systems, interfaces, faceted metadata, faceted data modeling, and faceted search and browsing systems. A number of studies have made use of facet analysis as a way of delineating the various characteristics, attributes and aspects of complex, compound and multi-faceted topics. For instance, interactive information retrieval research has made use of the facet analysis technique for the analysis and proper understanding of such complex concepts as “task” in the information seeking and retrieval process (Li and Belkin 2008) and the concept of query in interactive information retrieval (Shiri 2013). In this paper, the goal was to benefit from facet analysis as an approach to the analysis of the concept of big data and how it is emerging and evolving as a subject area.

A number of definitions have been proposed for big data in the literature. Because of the multifaceted nature of this phenomenon, scientists, information technology managers, information scientists, policy makers and funding agencies have approached it from various perspectives. This is, in part, due to the vague nature of the term big data and what it means to people from various educational and occupational backgrounds. For instance, the National Science Foundation report on Long-lived Digital Data Collections (2005) avoids using the term “big.” Rather it focuses on the longevity and proper management of digital data. The report defines digital data as follows:

The term “data” is used in this report to refer to any information that can be stored in digital form, including text, numbers, images, video or movies, audio, software, algorithms, equations, animations, models, simulations, etc. Such data may be generated by various means including observation, computation, or experiment.

This definition has a clear focus on demonstrating the vast variety of data, its origins and the associated techniques for its analysis and maintenance. A more technologically and industrially focused definition is offered by Kusnetzky (2011) who defines big data as follows: “In simplest terms, the phrase [big data] refers to the tools,
processes and procedures allowing an organization to create, manipulate, and manage very large data sets and storage facilities.” This definition takes a more pragmatic approach to big data and places emphasis on the volume of data and the challenge of its technical management.

Jacobs (2009, 40) approaches big data from a database technology perspective and notes that the fact that most large datasets have inherent temporal or spatial dimensions, or both, is crucial to understanding one important way that big data can cause performance problems, especially when databases are involved. His meta-definition of big data stresses the significance of temporal data as a key factor and believes that big data should be defined at any point in time as “data whose size forces us to look beyond the tried-and-true methods that are prevalent at that time.” In today’s world, it may mean that data is too large to be placed in a relational database and analyzed with the help of a desktop statistics/visualization package—data, perhaps, whose analysis requires massively parallel software running on tens, hundreds, or even thousands of servers. Dumbill (2013, 1) provides a more recent definition for big data: “Big data is data that exceeds the processing capacity of conventional database systems. The data is too big, moves too fast, or doesn’t fit the strictures of your database architectures. To gain value from this data, you must choose an alternative way to process it.”

In line with technological approaches to big data, Warden (2011) provides a particularly useful glossary of big data that provides a listing and description of 60 most recent technological innovations in the area of big data that can help those working with large data sets navigate the large number of new data tools available. These technologies vary from noSQL databases, MapReduce, storage and servers to natural language processing, machine learning, acquisition and visualization.

In the context of the sciences, Borgman (2007) makes use of the term “data deluge” and refers to the variety of data created, ranging from laboratory and field notebooks, slides from talks and composite objects to graphic visualizations of data. Examples of data in the science may include X-rays, protein structures, spectral surveys, specimens and events and objects. She argues that it is difficult to separate data from software, equipment, documentation and knowledge required to use them. This observation points to the challenges of defining data and data carriers. Borgman (2007) also provides a categorization for the types of data created by social scientists. The first category is data collected by researchers through experiments, interviews, surveys, observations. The second type is data that is collected by other people or institutions usually for purposes other than research. These include government and institutional data such as census figures, economic indicators, demographics and other public records. Other data sources such as mass media content and records of corporations, she notes, can be useful sources of social science data. She suggests that in the area of humanities the distinction between documents and data is the least clear due to the fact that almost any document, physical artifact and any record of human activity can be used to study culture. Further, Borgman (2012) discusses the approaches to handling data and notes that data collection can be viewed from various perspectives, including observatory vs. exploratory, empirical vs. theoretical, describing phenomena vs. modeling systems, data collection by hand vs. by machine, collaborative vs. individual data collection.

Bizer et al. (2011) argue for the meaningful and semantic use and applications of big data by providing four challenges, namely: a) the fact that big data integration is multidisciplinary; b) web of data and structured data as part of big data faces processing and integration challenges; c) lack of good use cases to provide the opportunity for experimenting with open linked data on the Web; and, d) demonstrating the value of semantics in data linking and integration.

The idea behind the Digging into Data Challenge, an international grant competition:

Was to address how ‘big data’ changes the research landscape for the humanities and social sciences. Now that we have massive databases of materials used by scholars in the humanities and social sciences—ranging from digitized books, newspapers, and music to transactional data like web searches, sensor data or cell phone records—what new, computationally-based research methods might we apply? As the world becomes increasingly digital, new techniques will be needed to search, analyze, and understand these everyday materials. ‘Digging into Data’ initiative challenges the research community to help create the new research infrastructure for 21st century scholarship.

Hodson (2012), the Research Manager for JISC Digital infrastructure names a number of areas that deal with the big data issue, namely web archiving, learning analytics, usage statistics and research data. In line with big data in the context of social sciences, JISC has sponsored a project to be conducted by the Oxford Internet Institute titled Big Data: Demonstrating the Value of the UK Web Domain Dataset for Social Science Research, which aims to enhance JISC’s UK Web Domain archive, a 30 terabyte archive of the .uk country-code top level domain collected from 1996 to 2010. It will extract link graphs from the data and disseminate social science research using the collection. In his final remarks for the Eduserv Symposium 2012: Big Data, Big
Deal? held in London, UK in May 2012, Powell (2012) suggests that there seems to be confusion about open data and big data and that there is a potential confusion between big data and data that happens to be big. He notes that open data is considered to be big data. He also suggests that we need to think carefully about the kinds of questions we need to ask when dealing with big data.

The National Science Foundation and the National Institutes of Health's Core Techniques and Technologies for Advancing Big Data Science & Engineering (BIGDATA) solicitation states the aim of big data as:

To advance the core scientific and technological means of managing, analyzing, visualizing, and extracting useful information from large, diverse, distributed and heterogeneous data sets so as to: accelerate the progress of scientific discovery and innovation; lead to new fields of inquiry that would not otherwise be possible; encourage the development of new data analytic tools and algorithms; facilitate scalable, accessible, and sustainable data infrastructure; increase understanding of human and social processes and interactions; and promote economic growth and improved health and quality of life.

These two organizations emphasize that big data does not exclusively refer to the volume of the data, but also to its variety and velocity. They note that: “Big data includes large, diverse, complex, longitudinal, and/or distributed data sets generated from instruments, sensors, Internet transactions, email, video, click streams, and/or all other digital sources.” Davenport et al. (2013) approaches the notion of big data from the perspective of business processes and lists three ways in which the organizations that capitalize on big data differ from traditional data analysis environments, namely:

- They pay attention to data flows as opposed to stocks.
- They rely on data scientists and product and process developers rather than data analysts.
- They are moving analytics away from the IT function and into core business, operational and production functions.

Wu et al. (2014) propose a theorem to model big data characteristics called HACE. The HACE big data model starts with large-volume, heterogeneous, autonomous sources with distributed and decentralized control, and seeks to explore complex and evolving relationships among data.

A review of definitions and characteristics of big data demonstrates the complexity and variety of concepts and terms used to identify what constitutes big data. One could argue that research data, open data, linked data and semantic web data can be construed as part of big data. These terms refer to the growing volume of different types of structured and unstructured data, their complex and heterogeneous nature and machine-processability and the challenges they pose for creators and users of big data. The organization, curation, exploration, management, preservation, visualization and access to and use of these types of data pose similar technological and computational challenges.

A succinct analysis of the definitions provided above illustrates the different characteristics and properties of big data as presented below:

- Very large integrated and linked data sets
- Variety of data and its typology
- Storage facilities
- Processing capacity
- Temporal and spatial dimensionality
- Heterogeneous, diverse, distributed, complex, evolving nature
- Analytical and visualization tools, technologies and models
- Semantic vagueness and confusion around big data

As can be inferred from these characteristics, one can note the reason behind the fact that many different disciplines and subject domains are interested in and have started conducting research in the area of big data.

The review above of big data literature shows that there does seem to be a confusion surrounding big data terms and concepts and their definitions. The present paper, therefore, aims to provide a basic categorization of big data terms and concepts to facilitate the understanding and the development of the discourse surrounding big data. This categorization makes use of the facet analysis technique to capture and present concepts in a meaningful and logical order.

3.0 Big data topics and issues: a facet analysis approach

A number of publications have proposed categorizations of big data. For instance, The NSF (2005) report on Long-Lived Digital Data Collections suggests that “Data can also be distinguished by their origins – whether they are observational, computational, or experimental. This distinction is crucial to choices made for archiving and preservation.” The report also proposes three types of digital data collections, namely research data collections, resource and community data collections and reference data collections. The European Bioinformatics Institute (EBI) and the Natural Environment Research Council (NERC) refer to canonical
data (data which has minimal variation) and episodic data (changing data e.g. in life of a cell), which may be unique in time and place e.g. climate information. A further categorization is into raw, processed, derived data and metadata (Lyon 2007). More recently, Wallis et al. (2012) in a study of Center for Embedded Network Sensing (CENS) data identified six dimensions of CENS data: a) background and foreground; b) observation, experimental, and simulation data; c) old and new; d) collection in lab or field; e) raw versus processed; and, f) collection by the team or obtained from external sources.

In order to provide a more comprehensive perspective of the topics and issues surrounding big data, the general principles of facet analysis is used to develop high level categories as well as sub-facets that represent specific types, instances or aspects of the high level facets. Facet analysis was introduced by Ranganathan (1962) as a model for the development of knowledge organization systems such as library classifications and thesauri. Based on this theory, Aitchison et al. (2002) provide a more specific and descriptive set of fundamental categories that are useful as a practical basis for facet analysis. These are as follows:

1. Entities, things, and objects subdivided by characteristics and function
2. Actions and activities
3. Space, place, location, and environment
4. Time
5. Kinds or types; systems and assemblies; applications and purposes

In this paper, a set of facets was developed to provide a framework for the conceptualization, discussion, exploration and research on topics and issues related to big data. This analytical framework does not claim to be comprehensive, rather it aims to provide a starting point for developing and documenting the discourse of big data in order to support research, teaching, learning and practice in the area of big data.

To develop a set of facets to categorize topics and issues related to big data, a wide range of sources were consulted. These include research reports produced by the funding agencies in the US, Canada and in the UK, journal articles, scholarly monographs, technology blogs, and conference proceedings. Particular attention was paid to the ways in which the literature conceptualized and categorized topics and themes related to big data. The review of literature demonstrated an evident gap for a concept map that could illustrate the key facets and aspects of big data in a coherent and meaningful fashion. Based on this analysis, six high level facets were developed, namely data type, environment, people, operations and activities, analytics, metadata. Figure 1 shows a visual representation of these facets.

The proposed facets here can be mapped onto the fundamental categories proposed by Aitchison et al. (2002) as follows:
Activities and operations = Energy
People = Agent
Environment = Space
Data Type = Property
Metadata = Entities
Analytics = Kinds or types of (systems)

While the first four categories namely “activities and operations,” “people,” “environment” and “data type” are easier facets to map onto the fundamental categories, the last two, namely “metadata” and “analytics” prove to be more subtle. Metadata is viewed as an entity here because of its unique function in identifying and locating data packages and should be distinguished from the “data type” facet. The distinction between data and metadata in this context is important as the review of emerging literature on big data points to a vague conceptualization of big data without any particular reference to how crucial a role metadata can play in this context. The “analytics” facet is proposed to cover the systems of analysis and visualization, since these two are among the most referenced topics in the big data literature. Further, they tend to be among the terms that co-occur particularly frequently with big data in the literature.

It should be noted that due to the highly conceptual and theoretical nature of facet analysis and the various approaches to its implementation, the mapping between the fundamental categories and the big data facets proposed in this paper could be subject to a variety of interpretations. This kind of mapping is conducted to demonstrate how facet analysis can be used to make sense of new and emerging areas of research and developments. As a result, the analysis and the facets may not be representative of a mutually exclusive set of categories.

Table 1 provides the high level facets as well as sub-facets, values for each sub-facet and instances of each value. Each facet has its own sub-facets, which aim to provide a more specific, detailed and categorized account of a facet. The values listed, provide a more specific set of aspects or areas related to each sub-facet. In some cases, Table 1 provides instances of a particular value. This is to provide examples and instances to clarify each sub-facet or value. It should, once again, be stressed that the “analytics” and “metadata” facets are considered and highlighted as separate facets due to their importance in the process of managing and making sense of big data. With the emergence of big data sets and repositories, it is crucially important to discuss the role and importance of metadata for the organization, access, retrieval and reuse of big data.

Figure 2 provides a delineated and visual representation of the Data Type facet and its many different dimensions and aspects.
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<td>- Researcher created: Scientific data</td>
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<td>- Open crowd-sourced data</td>
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<td>- and videos, bookmarks</td>
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<td>By publication</td>
<td>- Published</td>
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<td>- Web analytics</td>
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<td>- Exploratory &amp; confirmatory analysis</td>
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<td>- Transaction log analysis</td>
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<td>- Textual, discourse, content, conversation &amp; interpretive analysis</td>
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<td>Metadata</td>
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(Table 1.)
This kind of conceptualization of big data does not claim to be all-encompassing, but it aims to provide a framework for thinking and talking about big data in a more systematic manner. Research, teaching and development related to big data can benefit from the facets proposed in Table 1.

4.0 An information science perspective: Research areas and methodologies

Taking a broader perspective, this section aims to highlight some of the contributions that information science can make to the better understanding and studying of big data. As was noted in the introduction, the second objective of this paper was to draw on the methodological and theoretical frameworks in information science to propose new ways of looking at and researching big data. A number of research methodologies and approaches have been devised and developed in information the potential to benefit research into big data. Analysis and evaluation of information search behaviour, user transaction and interaction data analysis, usability evaluation, semantic and subject analysis of content as well as citation analysis and webometric methodologies are examples of research methods and approaches that could be utilized to study big data. For instance, textual, semantic, qualitative and subject analysis of large data sets can benefit from knowledge organization systems such as ontologies, thesauri, taxonomies and other types of controlled vocabularies that have been widely used by information scientists for decades. These tools, most of which available digitally, may be used for the analysis of and provision of access to big data repositories. Further, they could be used for automatic description and assignment of subject metadata to big data repositories and collections. Currently, there are a number of prototype systems that have incorporated knowledge organization systems to support the organization and management of and access to linked data repositories. These projects make use of Simple Knowledge Organization System (SKOS), a World Wide Web Consortium standard for organizing large open data collections. Standards such as SKOS could be introduced to support the description and discovery of big data.

Table 2 provides a select number of areas of research methodologies and approaches in information science that could contribute to the study, exploration and development of big data. The specific areas listed in the second column provide a more granular set of methodological frameworks that can be utilized in the context of big data. The third column provides specific examples of analysis and evaluation in relation to big data. For instance, the use of big data repositories by scientists, social scientists and humanities scholars could draw upon the frameworks developed for the evaluation of user information interaction behaviour. The ways in which researchers may make use of big data for research and teaching purposes can be traced using webometric, informetric and bibliometric approaches. Best practices developed in the area of digital libraries in the past twenty years can contribute to the management, preservation, and sustainable development of big data repositories.

Interoperability between and among big data repositories can be facilitated through the effective use of collection level metadata and subject description. Lynch (2008, 28)
<table>
<thead>
<tr>
<th>Research approaches and methodologies</th>
<th>Specific frameworks &amp; areas</th>
<th>Big data applications</th>
</tr>
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<tbody>
<tr>
<td>Information retrieval interaction methodologies</td>
<td>-Information searching and retrieval models -Cognitive, affective and emotional aspects of information search and retrieval -Human information interaction -Relevance research</td>
<td>-Term level analysis -Search level analysis -Interaction level analysis -Behaviour level analysis -Context level analysis -Situation level analysis -User level analysis -System level analysis</td>
</tr>
<tr>
<td>Information behaviour</td>
<td>-Information needs and use behaviour assessment</td>
<td>-Potential, perceived and actual needs and uses of big data sources and repositories in the context of teaching, research and learning</td>
</tr>
<tr>
<td>Webometric, informetric and bibliometric methodologies</td>
<td>-Web impact factor -Link and path analysis -Citation, co-citation and domain analysis -Scholarly communication -Research evaluation</td>
<td>-Establish methodological frameworks to automatically explore and evaluate links and citations between and among different big data repositories, in particular the process of creating, publishing, re-using and repackaging</td>
</tr>
<tr>
<td>Transaction log analysis methodologies</td>
<td>-Search behaviour patterns -Query formulation and expansion behaviour -User-web interaction behaviour -Usage analysis -Viewing, reading and downloading behaviour</td>
<td>-Analysis of different types of users and their interaction with big data, including the evaluation of the use, re-use, integration, visualization, as well as a delineation of types and nature of interaction (viewing, searching, and making sense of data, data manipulation, data integration, data presentation)</td>
</tr>
<tr>
<td>Knowledge organization and representation</td>
<td>Simple Knowledge Organization System (SKOS)</td>
<td>-Identification, consistent description and registry of big data sources and repositories using ontologies, thesauri, taxonomies and classification schemes -Evaluation of subject access to data -Evaluation of metadata-enhanced access to big data based on new data-specific metadata elements and access points -Exploring the effectiveness of various metadata generation approaches for big data</td>
</tr>
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Table 2. Select list of information science research areas and methodologies and their applications for big data.

Stresses the importance of metadata for big data. He notes that one of the key aspects of data stewardship is:

To define and record appropriate metadata—such as experimental parameters and set-up—to allow for data interpretation. This is best done when the data are captured. Indeed, descriptive metadata are often integrated within the experimental design. Description includes tracing provenance—where the data came from, how they were derived, their dependence on other data and all changes made since their capture. Proper stewardship requires documenting the storage formats.
The crucial role of metadata in relation to big data becomes increasingly evident as many big data repositories are created and require efficient access mechanisms. Proper metadata assigned to big data could have many advantages, including facilitating collaboration among organizations and institutions responsible for the creation and maintenance of big data collections. The key concept of metadata interoperability suggests that big data sets could be described using standard metadata in order to support the re-use and re-purposing of big data sets held by various institutions and organization. In order to achieve this, there is an evident need to develop and use metadata interoperability models and practices to allow big data to be flexibly and effectively used across many different platforms, domains, disciplines, systems and services. Some of the key questions that metadata could answer in the context of big data initiatives and projects are: How do we collect, code, describe and cite data? How do we describe and provide access to legacy data? How do we ensure consistent description and constant access to various big data collections and their associated technologies? How do we integrate digitized collections into big data collections? How do we develop big data-specific registry and metadata application profiles?

The rationale behind Table 2 lies in the recognition of some of the long standing research traditions and methodologies in information science that can now serve us in thinking, conceptualizing, analyzing and making sense of big data. This not only provides a new frontier for information scientists and information professionals to be involved in current digital data developments, but it will also present new opportunities for cross and interdisciplinary information work that will benefit researchers in information science as well as in other domains and disciplines. A number of American LIS schools have already started developing big data and data science courses and programs. It is timely and important to conceptualize and discuss the role of information science with regards to big data developments.

5.0 Conclusion

The overarching aim of this paper was to create conceptual and concrete links between information science and knowledge organization methods and traditions and the emerging area of big data. This paper provided a facet analytical approach to big data to lay a basic framework for the study, exploration and discussion of various big data related topics and issues. Six high level facets, namely data type, environment, people, operations and activities, analytics, and metadata, were introduced to map the big data issues and areas along with sub-facets and instances of those sub-facets. In line with the second objective of this paper, a number of information science research areas and methodological frameworks were introduced to demonstrate their applicability and suitability for research on big data.

Following the emergence of search engines, digital libraries and various types of information repositories in the 1990s and 2000s, the notion of big data is gradually finding its way into our new digital information environment. The increasing pace of data-intensive teaching, learning, business, research, and development necessitates a well-rounded understanding of the key concepts and issues of big data. This understanding will support effective and efficient planning and management of the processes and procedures for the identification and streamlined use of big data. The successful operations of many organizations and institutions that produce, process, manage, use and maintain big data hinges on a clear understanding of the complexity and multifaceted nature of big data and its associated challenges.

Future research needs to expand and enhance this typology to cover the more subtle and nuanced aspects and areas of big data. Furthermore, due to the multidisciplinary nature of big data, various disciplines can build on this typology and can contextualize it as a framework for the discussion, conceptualization and exploration of big data.

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Is Facet Analysis Based on Rationalism?
A Discussion of Satija (1992), Tennis (2008), Herre (2013), Mazzocchi (2013b), and Dousa & Ibekwe-SanJuan (2014)

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Abstract: In several writings I have claimed that the basis of knowledge organisation (KO) must be found in subject knowledge, and that researchers and practitioners in KO must achieve knowledge about the domains that they are organising. Domain knowledge is not neutral, but rather is based on competing epistemologies and worldviews, and the classifier is therefore participating in struggles related to worldviews. Different traditions, approaches and paradigms in knowledge organisation research (and practice) can best be understood as more or less associated with one of four epistemologies: empiricism, rationalism, historicism/hermeneutics, or pragmatism/critical theory (of which only the last position fully acknowledges the non-neutrality of knowledge organisation). Ranganathan—and the whole facet-analytic school—has formerly been exemplified as a rather clear example of rationalism. Some have objected to this claim, and Satija (1992), Tennis (2003), Mazzocchi (2013b), Herre (2013), and Dousa and Ibekwe-SanJuan (2014) have each provided important arguments that need to be considered. This paper therefore takes these authors' studies as the point of departure and examines the arguments that have been raised in relation to my position.

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Keywords: empiricism, rationalism, knowledge, classification, Ranganathan, eclecticism

1.0 Introduction

My working hypothesis has been—for a long time—that any kind of knowledge (whether scientific or not) is based on ontological and epistemological presumptions. By implication, research and practices (as well as specific systems) in the field of classification research and knowledge organisation (KO) must also be based on epistemological assumptions (either explicit or implicit).

There are a great many epistemological positions in contemporary discourses: accordingly, the field is crowded, fragmented and somewhat unclear. Hjørland and Nicolaisen (2010) list 43 positions, but it makes no sense to ask how many exist, because many are deeply interconnected. It is also less fruitful to consider each position individually, because some have identical methodological implications for the construction and evaluation of classification systems. An example: from a feminist epistemological point of view, it may be asked whether a given classification reflects a male-dominant point of view and is therefore suppressing feminist views. This way of considering classifications is related to the consid-
eration of how class interests are reflected, how ethnic interests are reflected and how colonial interests are reflected. Instead of having multiple specific epistemologies for each of these questions, we may say that they all represent a kind of critical-theoretical view on KO, which is again connected with a pragmatic view of knowledge (i.e., knowledge serves practical aims) and therefore knowledge has to be evaluated in relation to which (and whose) practical aims it supports, and to whether other aims and values are relatively suppressed. Therefore, one family of epistemologies may be termed the pragmatic view of knowledge (not to be confused with practicalism, which is a kind of anti-theoretical view). If pragmatism represents one family of epistemologies, which other major families of epistemology exist?

Since the Enlightenment, the classical epistemological antagonists have been defined as rationalism and empiricism. Each of these positions has its famous philosophers, such as the rationalists René Descartes (1596–1650), Baruch Spinoza (1632–1677) and Gottfried Leibniz (1646–1716), and the empiricists Francis Bacon (1561–1626), John Locke (1632–1704), George Berkeley (1685–1753) and David Hume (1711–1776). It may seem strange that it is necessary or relevant to consider such archaic philosophy alongside modern (information) science. Is it not the general consensus today that all science must be empirical? And has empirical methodology not made great advances in recent times, as is reflected, for example, in methodology textbooks?

Yes, science is empirical, but empirical studies are always made on the basis of sets of assumptions, and assumptions related to rationalism, empiricism and pragmatism are still very much active in contemporary (information) science. Rationalism (Descartes’ version), for example, explicitly informed the linguist Noam Chomsky and is an important basis for modern cognitive science. I have claimed previously that the whole facet-analytic tradition must be interpreted as basically rationalist (Hjørland 1997, 2013a). Classical empiricism is also very visible in modern (information) science, for example, in studies collecting information on user behavior, in which users are selected in ways that are neutral in respect to the hypotheses of the researcher. Induction is very much related to empiricism, for example, induction from a sample to the whole population (by the same token, deduction is much related to rationalism, and abduction is related to pragmatism). Logical positivism, which dominated in the first part of the twentieth century, was brought to an end by—among others—Thomas Kuhn’s (1962) book *The structure of scientific revolutions*, which may be understood as a historicist and pragmatic turn in the philosophy of science. The main problem for logical positivism has been described in this way (Smith 1986, 64):

Logical positivism arose as the joint product of two intellectual traditions that conflicted deeply with one another [rationalism and empiricism]: In attempting to unite these traditions, its adherents created an extremely influential approach to philosophy but one that embodied serious intellectual tensions from its dual ancestry.

It is the opinion of some researchers (myself included) that rationalism and empiricism are based on common assumptions, which represents a philosophical trap. This trap concerns three common assumptions in particular, listed as follows. Both rationalism and empiricism are based on:

- Individualism/atomism (rather than on holistic/collectivistic/social epistemologies)
- Ahistorical thinking (rather than on historicism/evolutionary epistemology)
- Claimed neutrality (rather than on engagement/political interests/partisanship/values/pragmatic enterprises)

Bruce Aune ([1970] 1995) has written an introduction to three major epistemologies: rationalism, empiricism and pragmatism. Often historicism—rather than pragmatism—is considered the third major theory. Although historicism and pragmatism are closely related (and therefore sometimes difficult to distinguish from each other), I have—in a number of writings—considered these four schools of theory as fundamental to understanding knowledge organisation:

“Rationalist theories of KO” suggest that subjects are constructed logically from a fundamental set of categories. The basic method of subject analysis is then “analytic-synthetic,” to isolate a set of basic categories (analysis) and then to construct the subject of any given document by combining those categories according to certain rules (synthesis). Also, the applications of other rules, such as logical division, are by principle part of the rationalist view.

“Empiricist theories of KO” are based on the idea that similar (informational) objects share a large number of properties. Objects may be classified according to those properties, but this should be based on neutral criteria, not on the selection of properties from theoretical points of view, as this introduces a kind of subjective criteria, which is not approved by empiricism. Numerical statistical procedures are based on empiricist philosophy. Also, the search for consensus among indexers is an approach that may be interpreted as based on empiri-
cism: the correct indexing is the one that indexers agree on, and empirical studies of inter-indexer agreement are believed to reveal correct indexing (which is a problematic assumption because, as argued by Cooper (1969), indexing—as done by the majority of indexers—may be consistently bad).

“Historicist and hermeneutical theories of KO” suggest that the subject of a given document is relative to a given discourse or domain and, by implication, the classification should reflect the need of a particular discourse or domain. According to hermeneutics, a document is always written and interpreted from a particular horizon. The same is the case with systems of knowledge organization, and with all users searching such systems. Any question put to such a system is put from a particular horizon. All those horizons may be more or less in consensus or in conflict. To index a document is to try to contribute to the retrieval of “relevant” documents by knowing about those different horizons.

“Pragmatic and critical theories of KO” are in agreement with the historicist point of view that subjects are relative to specific discourses, but emphasise that subject analysis should support given goals and values and should consider the consequences of indexing. These theories emphasise that classification and indexing cannot be neutral and that it is a misleading ideal to try to classify subjects in a neutral way. Classification is an act (and computer-based indexing is acting according to the programmer’s intentions). Acts serve human goals. Libraries and information services also serve human goals, and this is why their classification should be done in a way that best supports these goals. The core of indexing is, as stated by Rowley and Farrow (2000), to evaluate a paper’s contribution to knowledge and index it accordingly; or, with the words of Hjørland (1997), to index its informative potentials. What is known as “request-oriented indexing” (not to be confused with user-based indexing) is very much in accordance with pragmatic and critical views of indexing.

My main argument is that facet-analysis is based on rationalism because (1) it has not a well-developed empirical methodology (2) it ignores the theory-laden, cultural and value-based aspects of classification. In a former paper I wrote:

Facet analysis is primarily a logical approach to classification and knowledge organization. Although the methodological principles also sometimes mention empirical elements (such as examining a representative sample of texts) and pragmatic criteria (such as producing the most helpful classification), these elements are so vaguely peripherally described that they do not change the general conclusion of FA as a rationalist approach based on a priori knowledge, not on empirical knowledge or on historical or pragmatic methods (Hjørland, 2013a).

Satija (1992) is a monograph that makes a conclusion in contradiction with mine. The rest of the authors mentioned in the title of this paper have, in different ways, discussed or criticised my view. In particular, my claim that facet analysis should be considered a rationalist position has been challenged. This paper considers the arguments that these authors have provided.

2.0 Satija (1992)

My interpretation about the lack of empirical basis of Ranganathan’s system seems to be directly opposed to the conclusion made by Satija (1992, 63), who wrote: “Like any true scientist, Ranganathan started not with theory but with facts. Any science is rationality rooted in facts. Verifiable facts are its basis. Facts are primarily obtained by observation,” and (147) “In his academic and intellectual life, he [Ranganathan] was a staunch positivist, camping with Auguste Comte, John Locke [sic], John Stuart Mill and Ernest Mach. His power of observation was very keen.” A whole chapter is devoted to “Observations and getting the facts: Collection of data.” However, almost all examples provided are about how Ranganathan educated himself, how he studied the literature about library classification, how he learned about practical issues and problems in libraries, and how he cooperated with others. None of this qualifies as empirical methodology as usually understood. A proper empirical study should instead report how given conclusions depends on reported observations (and carefully argue how the observations have been selected and which generalizations may be made from the sample observed).

The closest Satija comes to report an empirical study is the following quotation (1992, 70):

His another [sic] great contribution ensues from the empirical studies. He minutely observed the way new specific subjects are formed and the knowledge is atomized in commercial houses, research and academic institutes. As a follow-up work, he advises that the entries in abstracting periodicals should be examined, grouped, tabulated and statistically studied in order to isolate the modes of formation of new specific subjects (Ranganathan 1989, sect. 3831, 271).
This sounds as an aspiration on the part of Ranganathan to base some conclusions in bibliometric studies (by Ranganathan, 1989, 271, called “librarymetry”). However, an aspiration is not the same as completed studies. In order to qualify as empirical science, any decision about how to design a classification system should be derived from reported empirical studies. Generally this is not done in the facet-analytic tradition and the fact is that the facet-analytic tradition and the bibliometric tradition have not has much mutual influence. Satija, Madalli & Dutta (2014, 202) wrote: “Ranganathan and McGarry mostly discovered these modes [of how new specific subjects are formed] by impliedly empirical studies based on the published literature. Ranganathan was more speculative and intuitive.” This remark seems like a retreat from Satija’s (1992) claim that Ranganathan’s findings are empirically based.

Ranganathan’s famous five categories (PMEST) are, for example, not derived from reported empirical studies. When consulting his work (such as his *Prolegomena to library classification* from 1967) principles are listed without any reference to empirical studies from which they should be derived. Part P (Formation, structure and development of subjects) makes no reference to the above mentioned librarymetric studies.

Vickery (1960) also describes the methodology of faceted classification schemes without describing the empirical basis of collection the scientific terms on which the systems are constructed. Finally, the Bliss Bibliographic Classification, 2nd ed., developed in London by the Bliss Classification Association (Mills and Broughton, 1977-), which probably is the most advanced classification system developed in the facet-analytic tradition, fails to describe its empirical basis. The first volume contains a comprehensive description of the methodology on which the system is based as does each specific volume. It is obvious that the classification of a given domain is based on the collection of terminology in that domain. However, this empirical aspect of the methodology is not described or discussed. Therefore, I conclude, opposite Satija, that facet-analysis has not developed an empirical methodology.

### 3.0 Tennis (2008)

Joe Tennis wrote (2008, 108) under the heading “2.1.1 Pragmatic rationalism (postulationalism)”: Ranganathan, in what can be characterized as a pragmatic rationalism, claimed that all categories of subjects could be reduced to these five [Personality, Matter, Energy, Space, and Time (PMEST)].

[Ranganathan's theory] is not a strict rationalist stance, but more of a pragmatic, if not neo-pragmatic epistemic stance and method (cf. Rorty 1982, 1999). Try it, and if it works, if it is useful, don’t worry about real or true. For Ranganathan utility was the final judge. His fundamental categories were used to classify in order to save time for the reader.

This interpretation differs from others’, but is an attempt to align an implicit epistemic stance with the technique of writing in order to design a system.

This quotation reflecting Ranganathan’s view is somewhat surprising compared with the three following:

In effect, many authors … have stressed how the way Colon Classification depicts reality should be seen as an expression of a Hindu worldview. It seems difficult to fully understand Ranganathan’s thought if it is taken out of this context. This concerns also Ranganathan’s argument for a basic set of categories. There is in fact a strict resemblance between PMEST and classical Hindu categorial system which is worth investigating more thoroughly (Mazzocchi 2013b, 768).

To discover these laws [on which Ranganathan based his classification theory] in operation was to discover the very nature and order of things, an order based on principles which are eternal, unchanging, and all-encompassing. There is virtually no area of Ranganathan’s work and personal life in which this quest for discovering the inner or essential order behind the visible world is absent (Miksa 1998, 67).

In the end, there is a strong indication that Ranganathan’s use of faceted structure of subjects could have represented his need to find more order and regularity, in the realm of subjects, than actually exist (Miksa 1998, 73).

The three quotations seem to contradict Tennis’s that categories are just pragmatic choices (and this conflict is in Ranganathan’s writing, not in Tennis’s). I believe that the quotations by Mazzocchi and Miksa are closer to Ranganathan’s philosophy than is Tennis’s. However, even if we take Tennis’s quotation as the point of departure, I still would not consider Ranganathan a pragmatic philosopher, because I make a sharp distinction between “pragmatism” and “practicalism” (these terms are often confused, and Bertrand Russell was especially known for his attacks on pragmatism, which he thought was little more than epistemological relativism and short-sighted practicalism). Ranganathan probably made many practicalist decisions, but I...
consider Melvil Dewey (1851–1931) to be the main practi-
calist influence in library and information science. His clas-
sification system (Dewey Decimal Classification or DDC) did
not attempt to optimise findability in any specific collec-
tion or for any specific user group. Nor did it try to find
optimal scientific or philosophical solutions to the problem
today termed “information retrieval.” Instead, DDC was a
compromise and a standard that could be used by many
different collections. His system embodies the dream of
library management far more than the dream of users.
Dewey’s approach—and practicalism in general—may have
blocked the development of library science towards be-
coming a scholarly field, by not connecting the field to phi-
osophy and subject fields. Although Dewey felt that it was
important for libraries to mediate high-quality books and
culture, he saw it as the job of subject specialists to make
the document selection. His library science was thereby re-
duced to purely technical issues (and such technical issues
were not understood as being connected with content, but
instead were based on a dualistic view of technology and
content). It is also characteristic of Dewey that he took the
cultural values of his time and of his class and sex for
granted; they were not examined, but rather, considered as
a given.

In a similar way, Ranganathan may also be considered a
practicalist classificationist researcher. In order to qualify
for the label “pragmatist,” one should consider that differ-
ent classifications serve different goals and values, and one
should explicitly discuss which values and goals a given
classification should serve. By not considering such issues,
Ranganathan does not deserve the label “pragmatist.”
Richard Rorty (mentioned by Tennis) is very explicit about
the democratic ideas on which his philosophy is based,
whereas Ranganathan's philosophy—as far as I can tell—is
based on the assumption that it is neutral in relation to
epistemological, cultural and democratic values.

Tennis (2003) also asked: “What is a domain?” I an-
swered that question in Hjørland (2013b, 178) and shall
not repeat my answer here, but I will say that the way the
question is asked reveals for me an underlying rationalist
way of thinking.

4.0 Herre (2013)

Heinrich Herre (2013, 332) found that “the onto-
axiomatic method, of graduated conceptualizations, of
levels of reality, and of top-level-supported methods for
ontology-development” cannot be subsumed by one of
the approaches presented by Hjørland:

In Hjørland (2008), the following six approaches to
KO are described in more detail: the traditional ap-
proach, exemplified by Bliss (1935); the facet-
analytical approach, founded by Ranganathan
(1933); the information retrieval tradition, discussed
by Warner (2002); user-oriented views; bibliometric
approaches; and domain analytic methods. The ap-
proach presented in the current paper cannot be
subsumed by one of these approaches, though
there are close relations to some of them that will
be explicated throughout the paper.

Herre is claiming that there is a way of constructing
knowledge organisation systems (KOS)—here, ontolo-
gies—that is unique in relation to the approaches that I
have so far identified and discussed.

Herre’s claim is difficult to answer for several reasons:

– The article often refers to many other sources, which
  have to be considered before the issues can be prop-
  erly discussed.
– The article introduces a lot of concepts and issues that
describe the system constructed by the author, but not
always in ways that illuminate its epistemological basis.
– The author often declares “This is work in progress”
in relation to questions of importance for the present
paper.

The article presents concrete work on designing ontolo-
gies. It is of high theoretical quality. However, how a
concrete domain is analysed, which theoretical assump-
tions are made, and how a negotiation between different
views of the domain is conducted are all questions that
have not been answered. Concerning facet analysis, Herre
has written as follows:

An interesting project is the ontological foundation
of facet theory. Various authors remark that the
original ideas of Ranganathan (1933, 1957, 1965,
1998) are rather vague and insufficiently established
(Hjørland 2013a; Spiteri 1998; La Barre 2010). We
believe that the GFO framework is sufficient ex-
pressive to allow a ontological reconstruction of
facet theory. Such a reconstruction could provide a
deeper understanding of notions as facet, subject,
idea, isolate, etc. This is work in progress.

The article emphasises the formal approach and may
therefore be considered closest to a rationalist approach
(and to facet analysis). However, further studies seem to
be needed.

5.0 Mazzocchi (2013b)

Fulvio Mazzocchi’s paper is first and foremost a contri-
bution to understanding the work of S. R. Ranganathan
on the basis of examining the Indian philosophical tradition and the Hindu worldview that influenced it—such as the inclination to analyse existence into fundamental categories. However, it also provides some objections to views that I have expressed:

Hjørland reframes the issue [of the nature of facet] in terms of the rationalism-empiricism debate. However the analysis of Ranganathan’s thought cannot be restrained within the limits of this debate because it involves conceptual elements which are extraneous to the Western tradition. Besides we risk overlooking another important question, namely the possible cognitive role of foundational items which is beyond the rationalism-empiricism debate (Mazzocchi 2013b, 773).

In my view, there are important shared assumptions in the worldview that I have described as “rationalism” and in the worldview that Mazzocchi has described as the Hindu worldview. It is not decisive whether or not a historical connection can be established between these two traditions. The decisive issue is the nature of their assumptions (in relation to classification theory). For me, the characteristics mentioned by Mazzocchi are clearly rationalist in the sense that they share the same basic assumptions, as reflected, for example, in the quotes given above by Miksa about the belief in an underlying nature and order of things, an order based on principles that are eternal, unchanging, and all-encompassing.

Mazzocchi exemplifies what he considers to be beyond the rationalism-empiricism debate:

The dynamic process of knowledge development implies the transformation of concepts, vocabularies, methods, etc. As argued by Thomas Kuhn (1962), in the history of scientific knowledge this can correspond to a “revolution,” i.e. a paradigm shift in which a new theoretical view of the world is established. However this does not mean that everything is put under discussion. For example, scientific revolutions do not impair the fundamental epistemic principles of science (e.g. observation, induction and deduction). There are certain “deep” levels of assumptions which are less exposed to transformation (and are instead used to assess the sense of it) [note omitted]. This may be applied to semantic (and general cultural) planes too. (Mazzocchi 2013b, 773)

I believe that this quotation grossly underestimates the radicalism of Kuhn’s theory. The core of that theory is the theory-ladenness of observation and of the meaning of scientific terms (cf. Andersen et al. 2006). Kuhn is generally considered a philosopher associated with historicism and pragmatism, and he brought an end to logical positivism (which combined empiricism and rationalism). When Mazzocchi writes, “we risk overlooking another important question, namely the possible cognitive role of foundational items which is beyond the rationalism-empiricism debate” (2013b, 773), this is for me an indication that Mazzocchi is providing a rationalist argument: it is precisely the idea of concepts and categories fixed to the human cognitive system (and thus not empirical or culturally relative) that for me, define rationalism in classification. This rationalist view by Mazzocchi is surprising in relation to other views expressed by the same author in another article from the same year:

Tacitly or not, classificatory thinking and practice depend heavily on the underlying (ontological and) epistemological foundations.

Hermeneutics and post-positivist epistemology highlighted respectively the historicity of understanding and the incommensurability of alternative scientific theories (Mazzocchi 2013a, 370).

Since a universal or neutral meta-system is not available, each contender would naturally use his own systems to carry out this analysis. However by using one system over another for such a demonstration, we have already taken for granted that it is superior, i.e., that system is correct and others are not. In other words, what must be demonstrated is presupposed (Mazzocchi 2013a, 370).

Any classification can be seen as a reflection of the basic codes of a culture, meaning that different orders can be imposed on the world as a result of different ways of looking at it (Foucault 1970). Classifications exist because boundaries are projected on things. This implies that if we are to “view” something, something else has to be excluded (Mazzocchi 2013a, 370-371).

Yes, indeed! But none of these views has been articulated in the facet-analytic tradition. I feel fully in line with the quotations from Mazzocchi (2013a), but I feel that this view is opposed to opinions expressed in Mazzocchi (2013b).
as well as Brian Vickery’s method of facet analysis, combine classical features of rationalism with elements of empiricism and pragmatism; they argue that such eclecticism is the norm, rather than the exception for knowledge organisation systems (KOS) in general.

First, a few words about eclecticism based on Slife and Williams (1995). Eclecticism is defined as the tendency to use more—perhaps conflicting—theories in one’s work. However, eclecticism is also a theoretical choice with important implications. An advantage in the eclectic position is that it does not discard a theory on a prejudiced attitude. In principle, it should be more open to considering the strengths and weaknesses of various positions. Although taking an eclectic approach to theory may seem to imply the suspending of belief in any given theory, it should be kept in mind—as Slife and Williams (1995, 46-48) write—that eclecticism is itself a theoretical position, which implies that it is desirable to suspend theoretical judgment and commitment. Such a suspension is not a logical fact, but it is actually in itself a theory about how our research should be carried out. There are disadvantages of this view of theorising. It may, for example, lead us to believe in theories that are mutually contradictory. Eclecticism is supposed to stand outside all the various theoretical positions in the field and to take all views equally seriously. However, there exists no elevated platform from which to evaluate different views. In not explicating the basis on which theories are selected, evaluated and used, eclecticism is not taking any of the theoretical positions seriously. In the same way that a core problem with both empiricism and positivism is that they believe in observations that are independent of the observer and his/her theoretical make-up, a core problem with eclecticism is that it presupposes a neutral ground from which to judge the different theories.

Any given theory is built on assumptions and has implications, while only a small part of the assumptions and implications is carefully examined and explicated. The eclectic position is open to all the theoretical mistakes that it tries to avoid. Although eclecticism at first glance may seem to provide richer explanations because it is not bound to only one theory, it should be able to argue when and why a given theoretical view is appropriate. In doing this, the eclecticist becomes increasingly committed to a certain theoretical view. In conclusion, we may consider eclecticism as a necessary view to a certain degree, especially for the applied researcher. It should, however, be seen primarily as an interim solution, as the ultimate goal in research is to establish a coherent theoretical view without internal contradictions.

Now, back to Dousa and Ibekwe-SanJuan (2014). They may be right that eclecticism is widespread in KOS, but where does this leave us? If most KOS can be shown to depend on an eclectic combination of rationalism, empiricism, historicism and pragmatism, this is of course in itself a valuable contribution to understanding the theoretical basis of KO. One of the problems with this conclusion is, however, that the approaches are more or less conflicting and therefore cannot just supplement each other. The same system cannot, for example be a neutral system based on logical division and at the same time be a partisan system supporting given interests. It should also be considered that each position is an ideal type. Rationalism and empiricism clearly cannot exist in a pure form: you cannot classify objects without empirical knowledge of which objects exist, or without categories and concepts in which you organise your empirical observations. It is therefore no surprise that Dousa and Ibekwe-SanJuan (2014) are able to identify some empirical and pragmatic elements in rationalist systems. As I have argued in Hjørland (2013a), facet analysis has an elaborate rationalist methodology, while its empirical and pragmatic methodology is almost absent and not specified in a way that can be considered to provide design principles for KOS.

7.0 Conclusion

Some authors have questioned my view that the facet-analytic school of KO is based on rationalism. In this paper, I have considered their arguments and maintained my position. Is this just an expression of stubbornness on my part? Why is it important whether facet analysis should be considered rationalist or not? Why is it important to classify approaches to KO based on epistemological views? My answer is that these epistemological theories provide knowledge organisation as well as information science with a fruitful theoretical foundation.

Perhaps somebody will ask why it is good for KO to have a fruitful theoretical foundation. Can we not just have a plurality of views and knowledge organisation systems, based on new technologies, user evaluations and market forces? My answer is that new technological solutions and market-driven developments take place all the time. Our job is to provide scholarly criteria for progress, and to try to influence developments based on scholarly theory. Therefore, the theoretical foundation of KO is extremely important to us. I have proposed one theoretical foundation here. I’ll happily discuss other suggestions.

References


Implications of the Adoption of BISAC for Classifying Library Collections

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Abstract: We analysed the written statements of libraries that have adopted the bookstore model for coherence or lack of coherence with common public library guidelines. We used a text-based Foucauldian genealogical discourse analysis to investigate the written statements used by libraries that have adopted BISAC and other aspects of the bookstore model. Libraries adopting bookstore models such as BISAC should consider the potential consequences of adopting a commercial model for a public entity. This paper has practical implications for libraries considering adopting any aspect of the bookstore model, but especially the BISAC system, as it examines the potential benefits and drawbacks of the bookstore model popular in some libraries with respect to the purposes and goals of public libraries. BISAC application in libraries seems to be part of a trend of applying commercial practices, values and terminology in libraries, perhaps not with the purpose of replacing libraries with bookstores, but with the aim for both systems to converge into a new kind of commercial entity and context. The influence of one kind of system over the other does not seem to be totally reciprocal, since the application of library practices, values and standards in bookstores has not had the same effects and resonance as has occurred in the opposite direction.

Keywords: BISAC, Dewey Decimal Classification, bookstores, public libraries, users, classification, browsing

1.0 Introduction

Libraries and bookstores are often perceived to be similar entities by society and individual people, since both can basically be defined as open spaces with books. However, there are some practical and theoretical characteristics that make libraries and bookstores dissimilar entities. That does not mean that the two institutions cannot learn from each other. Many libraries benefited from incorporating comfortable seating, better signage, more book and media displays, lower shelving, and coffee shops. A more recent change includes changes to organization with some public libraries abandoning the Dewey Decimal Classification (DDC) and replacing it with the Book Industry
Standards and Communications Subject Headings List (BISAC). However, these commercial practices also raise some questions: What are the potential impacts of the use of bookstore methodologies, such as the BISAC subject headings, in libraries? How might the use of bookstore methodologies affect the balance between the mission and purpose of libraries and bookstores?

According to the IFLA Public Library Service Guidelines (Koontz and Gubbin 2010, 1):

A public library is an organisation established, supported and funded by the community, either through local, regional or national government or through some other form of community organisation. It provides access to knowledge, information, lifelong learning, and works of the imagination through a range of resources and services and is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, economic and employment status and educational attainment.

The public library should also provide opportunities for personal creative development, create and strengthen reading habits in children, provide a focus for cultural and artistic development in the community, and provide a public space.

Conversely, the ultimate goal of a bookstore, as any business, is profitability, making money while offering a service or good, which could benefit society or not. If the bookstore can accomplish some constructive goals for society it may be rewarded as a consequence of corporate social responsibility, but if a bookstore is not profitable such a service would not be sustained since the main motivation for the private sector is profit. A library as a public service would offer such a good or service to all the community it serves irrespective of their ability to pay. This argument is traditionally recognized even among the customer-driven library advocates (Woodward 2004, xiv): “Bookstores exist primarily to make money.... Libraries are focused not on profit but on their mission to support a democratic, information-literate society.... We provide services to the people who need them, not just the people who can pay for them.” The dilemma arises when funding for public libraries is reduced. Librarians may start to look to private sector industries related to books, bookstores, in the hope they will be able to reduce costs by using bookstore methodologies, including the use of alternative classifications such as BISAC. But is it possible to accomplish this goal without changing the fundamental, defining purpose of the library? In our paper, we give a brief introduction to BISAC, analyse the arguments used by libraries to justify the adoption of BISAC (as well as other commercial techniques), and finally we discuss the main differences between bookstores and libraries that illustrate the bigger issue for libraries in which this classificatory experiment is cast.

2.0 Methodology

Our text-based approach could be described as either a Foucauldian genealogical discourse analysis or investigative reporting. As Foucault pointed out (Foucault cited by Andersen 2003, 13), the field of discourse analysis is “the compilation of all actual statements (spoken or written) in their historical dispersion and in their specific momentary value.” While it is also hard to dissociate genealogy and archaeology in discourse analysis (Martínez-Ávila 2012), in terms of quantifying consumption, this means an exhaustive number of sources would be recovered and an attempt would be made to consult everything related to the object (Foucault 1998, 263): “One ought to read everything, study everything. In other words, one must have at one’s disposal the general archive of a period at a given moment. And archaeology is, in a strict sense, the science of this archive.” In this regard, it is vital that statements from institutions should be read, as well as those statements that illustrate the practice and concepts that are not necessarily integrated into the mainstream. In addition, care must be taken not to make preconceived distinctions between official sources and those which are more private and individual (as if these last were somehow outside the discourse). To operationalize this approach we have gathered texts from the library literature, the popular press, library websites and online catalogues, corporate and institutional websites, other reports, and the texts of DDC and BISAC. While we have tried to be comprehensive and include scholarly literature in addition to existing material from professionals and the popular press, the scholarly literature on the subject was limited.

While other studies on the adoption of BISAC have focused on the discourses and motifs of the developing institutions, such as the BISG and OCLC (Martínez-Ávila et al., 2012a; 2012b), and its relation to reader-interest classifications (Martínez-Ávila and San Segundo, 2013; Martínez-Ávila et al., 2014), in this paper this paper we focus on the fundamentals of why librarians say they make the change to using bookstore methodologies in relation to the fundamental differences between bookstores and libraries.

3.0 Brief introduction to BISAC

The BISAC Subject Headings List, also known as the BISAC Subject Codes List, is a standard used by many
companies throughout the supply chain to categorize books based on topical content. It is maintained and developed in the US by the Book Industry Study Group (BISG). Many major businesses require that publishers use BISAC Subject Headings when submitting data. One of the biggest assets of BISAC is that the scheme is available online at no cost for one-to-one look-ups. However, those organizations that want to download versions of the subject headings list in Excel, PDF and Word, in order to incorporate the scheme into their internal systems need to request an end user license from the BISG.

The BISAC Subject Heading list is an industry-approved list of subject descriptors, each of which is represented by a nine-character alphanumeric code. The descriptor itself consists of two, three or four parts, which means that, by definition, the system is not allowed to reach a higher level in the hierarchy than 4. The list of headings includes 52 main subject areas: 51 subject terms in a first level of the hierarchy (e.g., HISTORY) plus a Non-classifiable term (NON000000 NON-CLASSIFIABLE) for titles that do not have subject content, i.e. a blank book. An example of a BISAC term of a third level of specificity would be “HISTORY / Military / Vietnam War.”

In contrast, DDC has a much more extensive hierarchy and provides much more specificity in subjects than BISAC. For example the BISAC term for all books on the United States Civil War from 1850-1877 is “HIS036 050 HISTORY / United States / Civil War Period (1850-1877)” whereas DDC subdivides this subject into dozens of important subcategories including (top level categories only): 973.71 Social, political, economic history, 973.72 Diplomatic history, 973.75 Naval history, 973.76 Celebrations, commemorations, memorials, 973.77 Prisoners of war; medical and social services, and 973.78 Other military topics and personal narratives. Thus, there is a tension between the simplicity of the BISAC terms and the specificity of DDC.

Since the second half of the 2000s, several public libraries in the United States have been experimenting with BISAC as an alternative classification system to DDC. These libraries have dropped DDC for the physical location and arrangement of books and have organized their collections using BISAC and other bookstore and commercial marketing techniques. Although this trend in classification might be included in the broader trend of building a customer-driven library following the bookstore model (Woodward, 2004), the truth is that most libraries adopting the book industry standard primarily emphasized the adoption of this classification system over any other additional consideration as their main force for improvement.

4.0 Why are libraries changing? What libraries say

Changes in libraries should be motivated by the search for improvements or extensions to core services. Even when changes are motivated by third party pressure such as budget cuts the changes should be made with an eye to maximising the potential of user services. In order to study whether changes made in libraries are indeed improvements for the libraries or not, it is necessary to study the reasons given for the changes and the potential impact of these reasons on the core mission of the library. This section will examine two different groups of arguments for switching from the DDC to a BISAC or BISAC-based scheme. We have examined published and unpublished materials from libraries that have switched from DDC to BISAC or have considered doing so.

4.1 Motivations to adopt BISAC in U.S. public libraries

The most common argument given is that the DDC is outdated and not appropriate for the needs of the users of our time. Officials at the Rangeview Library District in Adams County, Colorado, one of the libraries that adopted BISAC, claim that DDC no longer meets the needs of a new generation of readers (Whaley, 2009). Commenting on the case of Maricopa County Library District in Arizona, the first library to adopt BISAC in the United States, Karen G. Schneider (2007) pointed out in “The ALA TechSource blog” that “years of focus groups had taught the Maricopa County system that 80 percent of their users came to their libraries to browse popular reading, and Dewey organization didn't meet their needs: it wasn't friendly, and it wasn't familiar.” This statement suggests that most of their users are browsers who are not looking for specialized materials but popular reading. DDC does not seem to be the most appropriate system for browsing those materials, since it is not considered friendly or familiar for casual users.

Schneider also added that “complaints from users indicated they wanted the library to be more like a bookstore,” a suggestion which some libraries have taken to indicate that they should switch to BISAC, since bookstore classifications are felt to be more friendly and familiar for users. The familiarity concept related to the bookstore scheme is being expressed in terms of comparison with a better-known pattern. However, this claimed lack of familiarity might also mainly be caused by a lack of understanding of the system. According to Barbara Fister, an online survey of over one hundred public librarians in August 2009 revealed that one of the three main factors related to patrons’ difficulty in finding non-fiction is that they feel intimidated by a classification system they do not understand well, while the other two factors are related to the online
catalogue and the desire of going straight to the right shelf without having to look anything up. Fister also reflects statements by Marshall Shore (2008), consultant and former adult services coordinator at Maricopa, reporting that when interviewing non-users ‘I heard over and over ‘those numbers scare me,' 'I don't understand them,' ‘they make me feel stupid.' The goal of having a BISAC-based scheme is to put customers at ease and help them become more self-sufficient and comfortable using the library.” “The Arizona Republic” also reflected Shore’s words (cited by Wingett 2007): “A lot of times, patrons feel like they’re going to a library and admitting defeat because they don’t understand Dewey Decimal and can’t find the book they're looking for.” And in “The Man Who Said No to Dewey: Marshall Shore,” he also states that “he’s simply serving another, often-ignored group: people who don’t want to learn our complicated system [DDC]” (Shore 2008). It seems that the solution proposed by Shore and the Maricopa County Library District was to adopt a simplified system that does not make the people feel stupid, by making it more familiar and intuitive according to the standards of the people that do not want to ask for help or learn the system.

Similar aspects were pointed out by Nanci Hill (2010, 16), when talking about the Maricopa County Library District case: “Some customers were embarrassed to ask for help because they didn't know how to use Dewey and felt uncomfortable. In these situations, customers probably left the library without finding what they wanted,” and when citing Nicole Lyons in a blog post about Darien (Connecticut) Library (cited by Hill 2010, 18): “What impressed me most about the new Darien Library is the fact that the books, everywhere, but especially in the children's room, have been shelved, labelled, and organized in a way that makes me feel less like a moron and more empowered to find what I'm looking for on my own.”

This argument was also shared by the “Dewey free” working team at Frankfort (Illinois) Public Library District, who acknowledged having been inspired by the Maricopa project, when they commented on their blog that: “We do not expect our patrons to learn a new system, but hope that in de-coding Dewey by replacing numbers for a particular subject, we can enable our patrons to locate materials in an easier and timelier manner. We are aiming to make the categories as intuitive as possible by considering what our patrons ask for and how they ask for it.” Thus, both the Maricopa and Frankfort projects are trying to solve a known problem with libraries: the disconnect between users and library classification systems. According to Kathy Shimpock-Vieweg (1992, 77), Director of Library Services at O’Connor, Cavanagh, Anderson, Westover, Killingsworth, & Beshears, in Phoenix, Arizona: “it should be noted that no other service-oriented organization requires its users to learn an arbitrary system in order to access needed materials,” which can be seen as a justification for such a change.

Additionally, many libraries suggest that DDC does not support browsing as well as BISAC (Oder, 2007; Hill, 2010), either because it separates related materials, such as, for instance, travel books and language (Darien librarian Kate Shehaan cited by Fister, 2009) or because DDC “is simply not suited to a popular collection intended more for browsing than research” (Casey and Stephens 2009, 19). Hill (2010, 17), writing about the Darien Library, also linked this aspect to the fact that DDC is a 19th century conception: “Dewey, created in 1876, does not reflect today’s library collections. Where does personal finance belong in a Dewey collection? Is it next to the books about investing, which could also be of interest to the patron browsing the personal finance collection?”

The argument for using bookstore classifications is mainly presented in opposition to the way classes are displayed and arranged on library shelves as bookstores are commonly organized by natural language systems instead of notational systems, since the latter are considered harder for users to understand. BISAC is presented as being simpler and easier to understand and learn than DDC. In comparing library organization to that of a bookstore, Paul Scott (2007) suggested that BISAC is more intuitive than Dewey because “History is History not 979, no system is required of patrons” and added that “a patron who doesn't know Dewey, wouldn't be able to find the Dewey section. They would have to learn the system first, then they could go right over.” Many libraries also add signage to help patrons navigate, displaying BISAC literals to indicate general subject areas available on a shelf instead of DDC numbers and mimicking the way subjects are identified in bookstores.

Although libraries’ adoption of bookstore practices has generally been considered enriching and innovative, not everyone agrees that bookstores always have better commodities and signage than do libraries. Francine Fialkoff (2009, 8) stated:

I decided to compare the new Barnes & Noble in my New York neighborhood with some of the libraries I've been to recently. The store spans two floors below ground (no window displays to entice me), with lots of open spaces, few places to sit down other than the cafe (but what a huge number of tables and chairs there), and poor signage …. There's no doubt that the library trumps the bookstore, not to mention that its services are free, paid for by our taxes.

With so many changes, it is hard to separate and evaluate all the factors involved in bookstore-model adoptions by
libraries to indicate which are successful and which have little impact or a negative impact on the functioning of the library.

Raymond (1998), from the bookstore point of view, claimed that bookstores have been traditionally better in some regards, such as selection, opening hours, and comfortable amenities including coffee and couches, while bookstores fall short in aspects related to customer service, payment and employee morale, and a classification system that is flawed and frustrating. This author strongly criticizes the bookstore classification system claiming that it not only discourages browsing, but, due to daily classification headaches; books are frequently lost, missing, or otherwise not locatable, and items are routinely miscategorized. Similarly, Hassett (2007, 47) claimed that “while libraries have already learned much from the popularity of bookstores (availability of food and drink, frequent cultural programming, friendly customer service), organization is not one of the strengths of commercial book vendors.”

Brisco showed that bookstore organization and information systems are not necessarily more efficient than those in libraries and also demonstrated that the emphasis on market requirements (such as the new books department) can negatively affect the performance of retrieval and access, being designed to encourage users to find staff for assistance (Brisco 2004; Alt 2007), and suggestion of further items for purchase (Stauffer 2008). Stauffer noted (49) that: “Ironically, many promote the ‘bookstore arrangement’ for libraries to encourage patron independence and reduce the need to ask librarians for assistance.”

As van Riel and Forrest (2002) pointed out, browsing is also a new emerging pattern in consumer buying behaviours. They cite research quoted in Bookseller of 2002 revealing that 72% of customers’ decisions to buy are made after they have entered the shop. Similar reasoning is given by Woodward (2004, 205): “Bookstores want to call attention to their merchandise so that customers will make more purchases... Most of our customers do not arrive at the library with any special titles in mind. They want to look or browse around and find something that appeals to them. When books are stuffed on shelves, they are far from appealing.”

However, Hopkins (2007), justifying the introduction of a bookstore-based classification in Bayside Library, Victoria, Australia, pointed out that observational research on shopping behaviour indicated that shoppers have extremely limited tolerance for obstacles placed between them and the object they desire. This aspect has also been pointed out as a disadvantage in bookstores when both systems are compared (Sullivan 2010): “Entry to a bookstore usually disorients me with items for sale everywhere; in a library, all I need is to see is where the catalog is and where the Dewey numbers begin.”

So while customers often make decisions about what they want while inside the bookstore or library, suggestions should be subtle since they are not willing to work hard to make a decision and their tolerance is not high. This raises the question of what mechanisms or factors exist in bookstores that might facilitate customer decision-making and whether they are related to the classification systems or to some kind of guidance by clerks and marketing techniques, such as recommendations by experts, facings, latest releases etc.

Finally, a strong argument against DDC is the bias seen in some of its classes. However, the social-cultural argument does not seem to be directly used by any of the librarians promoting these changes, although it is commonly used by academics or analysts, such as Andrew Lavallee (2007) or Bob Hasset (2007). This may not be seen as a valid argument though, since BISAC also is biased.

4.2 Justifications for adopting BISAC in public libraries

Libraries that have switched to BISAC or have considered switching have provided a number of justifications for their actions. A common justification is the opening of a brand new library, which offers an opportunity to “experiment with ways of providing better access to our materials,” as suggested by Michael Casey (Casey and Stephens 2009, 19), knowing that “if it doesn’t work they can always go back to Dewey” (Courtright cited by Schneider, 2007).

Other advantages for testing this change in a new library are that “the community hadn’t been conditioned into what to expect in a neighborhood library and also ... there weren’t issues with retrofitting records” (Schneider, 2007). The retrofitting argument is a good one that must always be kept in mind with changes, no matter what type, but the expectations argument is again implicitly related to perceptions and comparisons with previous experiences more related to concepts such as usability, training, marketing, interests, etc.

Another justification for the experiment is the influence of other libraries that have adopted bookstore practices and claim good results, although, in most cases, exactly the same experiment was rarely implemented and the previous libraries just served as examples of “innovative practices” (Rice, 2009; 2010; Noonan et al., 2010; Pyko et al., 2008). The almost evangelistic, commitment of these libraries in dropping DDC for other schemes is noteworthy. For instance, in Henry County Library in Kentucky they started a website called Dewey Free: Trying to Change the Library for the Better, where influence on other libraries was stated in their mission (Dewey Free 2014).

Schneider notes that Jesse Haro, from the automation department at Phoenix Public Library, “has been demonstrating that at least in the world of online library cata-
logs, BISAC may be better than Dewey for topical browsing of large library collections … the language is simple, the subcategories broad, and the main groupings are designed around user browsing and buying habits, such as ‘I'm looking for new mysteries’ or ‘I am planning a wedding’” (Schneider 2007). Schneider also wrote that “the Dewey system wasn't designed to be easy for casual users in a neighborhood library where the emphasis is on self-service; it was designed to be efficient for large collections organized and managed by knowledge workers.”

Size in relation to specificity is explored by Scott (2007), who states that “for a smaller collection, 50 subject headings work, but a library would have to break it down if they decided to change course and provide a strength in a particular collection, or if they became bigger.” This concern was also noted by respondents of an online survey on BISAC use in libraries by Barbara Fister in August 2009 regarding whether the system would scale in larger collections. Respondents also noted that libraries that have implemented BISAC were small branches (Fister 2009): “When you get to the larger collections with a much greater subject range, I'm not sure how well one can divide everything into a smaller group of categories,” a respondent wrote. Similarly, Andy Barnett (2010, 7) of McMillan Memorial Library, noted that libraries implementing subject-based displays, especially BISAC, tended to be small libraries with approximately 30,000 books or fewer, stating that: “It works best in a smaller branch, where a deep collection is near at hand. It is harder to implement at a large library, since it takes up a great deal of space, but would involve only a small portion of the collection.” Barnett also notes that “In smaller libraries, [the] entire collection can be displayed.” Michael Casey of Gwinnett County Public Library in Lawrenceville, Georgia, also suggested a link between library size and the efficiency of DDC-less shelving in relation to findability, recommending a maximum 100,000 books (Casey and Stephens 2009, 19): “the relationship between shelving style and findability has a lot to do with the size of the collection. Smaller collections (perhaps 100,000 volumes or less) are probably better suited to de-Dewey shelving strategies.”

On the other hand, by alleging that DDC is not appropriate for browsing in modern libraries as a consequence of the characteristics of the library service during the 19th century when it was conceived (more focused on knowledge workers than on browsing and library self-service), these librarians are also assuming that this change of classification system should be a natural consequence of a new era of library self-service in search of user-friendliness and customer-satisfaction. Bosman and Rusinek (1997, 72) stated that there is not necessarily an implication that a user-friendly library means self-service, “but that patrons have a right to use the library without having to ask for assistance.” However, the dominant view in today’s most innovative libraries tends to be self-service as a sign of quality, ever since Paco Underhill (1999) stated that self-service is often the best service. What is often not stated is that a very important risk of self-service is non-service, which is rarely considered to be the best option in libraries. While it might be argued that customers prefer to be left alone in stores and malls, this argument does not necessarily apply to libraries.

Concerning the self-service nature of bookstores, Susan Varscsak, transitions coordinator for the district of Maricopa, stated in “Sun City City Library Embraces Deweyless World” that “[their library] is more like a bookstore, so it makes them [the users] a little more independent, which we think is a good thing” (Varscsak cited by Wang, 2009). On the other hand, Shonda Brisco (2004) and Suzanne Stauffer (2008) point out that users in bookstores need guidance as well. The original reasoning expressed by Haro about BISAC being user-centric and adequate for browsing has further implications too: if old systems are not appropriate for casual users, and we are adopting “user-centric” schemes designed for customers, we are also assuming an equivalence between public library casual-users and customers with buying habits (at bookstores?), at least in the nature of their needs and browsing behaviours.

By accepting the argument about customers, buying habits and best sales in libraries, an equivalence between uses (or the easier to measure indicator, loans) and sales could also be established. This would fit the first BISAC benefit alleged by the BISG (2014a) perfectly: “provide the publisher with the opportunity to tell the retailer and the general book trade of the primary and secondary store sections within which the title will best fit (and, hopefully, sell best). There is further benefit in that the language of this suggestion is standardized.” It might be argued that the expression “sections within which the title will best fit and sell best” could be translated into librarians’ terms as reaching a wider audience or meeting the users’ needs, which could be achieved by improved browsing and better arrangement.

The second important benefit of using BISAC suggested by the BISG, standardization of language, is, ironically, also a justification for retaining DDC. However, few of the libraries that have adopted BISAC use this as a justification for the change, probably because they are trying to depart from the standardized nature of DDC and they are not thinking about long-term consequences. But the key here seems to be that, if BISAC is being proposed as a local solution to most DDC shortcomings, open recognition of the standardized nature of BISAC can hardly be presented as an advantage, at least for the library.
Many of the libraries that have adopted BISAC or a similar approach argue that this change will increase use of their collections. For instance Pyko et al. (2008) of Topeka (Kansas) and Shawnee County Public Library, stated that: “our library’s goal was to increase circulation in non-fiction ... [by] pulling together the best features of libraries and bookstores.” These objectives seem to be commonly repeated in the “second generation” of libraries that have dropped DDC, such as the Frankfort Public Library District’s ultimate goal (Rice and Kolendo 2009, 12): “there are many reasons why we undertook this project, all with the ultimate desire and hope to provide greater accessibility to our non-fiction materials.” Promotion of browsing and accessibility as synonyms or near synonyms of use seems to be Frankfort Library’s ultimate goal.

Fister (2009) suggested that “many librarians feel BISAC’s relative simplicity and user-friendly language have an advantage over Dewey’s complexity.” Pam Sandlian Smith (cited by Fister 2009), director of the Rangeview (Colorado) Library District, where the Wordthink BISAC-based system was adopted, claimed that “customers often comment that when they visit bookstores, they can find things easily and would like that ease of use in libraries,” and “the elegant simplicity of the system becomes evident immediately. People love the idea of simply finding all their favorite books together under a word heading, which is so easy to navigate.” In a more general way, Rice and Kolendo (2009, 15) stated that:

We’re not in the business of selling information and content, but we want to encourage patrons in our library to feel the way they feel when they are in bookstores—enjoying the browsability of materials and utilizing our space to gather with friends and colleagues ... there are elements that customers respond to in a retail setting and we believe that libraries need to recognize those elements and adapt them to their own library and community.

Returning to Marshall Shore’s (2008) argument about buying habits and serving people who do not want to learn a complicated classification system, some librarians have suggested simplifying (or enriching) DDC for people who do not understand it. This idea is supported by almost half of Fister’s online survey respondents when asked about the best solution (Fister, 2009). Of the respondents, 11.8% agreed with the idea that libraries would be better off if they scrap DDC and adopt the kind of user-friendly browsing categories they have in bookstores, 9.7% agreed with the idea that throwing away DDC is throwing away something valuable and widely used just to follow a trend, 3.2% did not see any reason to change, 26.9% agreed that simply adding better signage would improve the ability of patrons to find what they want easily, and 48.4% agreed with the idea of combining some categories and that adding words to the call number label in order to indicate a general subject area would be sufficient. In total, 88.2% of the respondents disagreed with completely dropping DDC or even with the assumptions in the phrase “the kind of user-friendly browsing categories they have in bookstores.” The majority of the respondents, in fact, felt that better signage and labelling would be sufficient to improve browsability in the library.

However, the highest overall response calls for a hybrid model, that is a combination of DDC number with BISAC literal, where BISAC can be the primary facet for physical arrangement and DDC numbers can be used for ordering within categories or, at best, retained in case the collection needed to go back to DDC. This is the approach followed by many libraries embracing bookstore-based systems, including the Anna Porter Public Library (Gatlinburg, Tennessee) and the Phoenix Public Library. Additionally, justification for this hybrid approach is given at Darien Library, by librarian Kate Sheehan (cited by Fister 2009) who stated that “we wanted to retain the findability of Dewey while encouraging and enabling browsing” and “Dewey is great for the grab-and-goers, and we didn’t want to lose that. Dewey is not so great for the destination users ... don’t those two make more sense with each other?,” or as Michael Casey noted (Casey and Stephens 2009, 19), when talking about Rangeview: “improving findability will not take us closer to becoming bookstores nor will it lead to the ‘commodification’ of libraries in general. It will make access to our materials easier for our users to understand, which will improve use, which will result in happier library customers.”

5.0 Differences between bookstores and libraries

As Brian Kenney recalled (2007, 9), the idea that “libraries should be run more like businesses” came into play during the Reagan Administration and is one still heard from time to time, usually referring to finances and the privatizing of libraries in order to make them more profitable. The private solution, however, contradicts the IFLA Public Library Service Guidelines, which suggest that primary sources of funding for public libraries should be taxation at local, regional or central levels and block grants from central, regional or local levels (Koontz & Gubbin 2010, 28); and the IFLA/UNESCO Public Library Manifesto, which states (120): “collections and services should not be subject to any form of ideological, political or religious censorship, nor commercial pressures.” The private solution and partnership with the commercial sector would need to be carefully managed since private sector partners always want a return on in-
vestment. As Miranda McKearney noted (1990, 61), for the public library: “commercial money was available, but only on the right terms. Firstly we had to be careful about identifying the likely objectives of the sponsors and setting out to meet them, rather than just expecting them to be happy with a logo on the printed material.”

According to Gloria Leckie and Jeffrey Hopkins (2002), however, it is not only growing dependence on private funding, but also decreased government funding together with increasing costs of information management and dissemination, and the need for on-site commercial ventures, which indicate that the library's place identity has changed. Costs and ways of classification and organization of information might also be included here. They also point out (330) that:

Public institutions (hospital, libraries, museums, schools, universities) are increasingly challenged by politicians and citizens alike who adhere to a user-pay mentality suspect of universal services for all. When underfunded by governments and compelled to compete for private philanthropists who are global in scope and not necessarily committed to any one institution, city, country, or continent, such public institutions necessarily turn more and more toward private, corporate sponsors and commercial ventures to fill the financial void.

Miller et al. (2003, 14) also note that the cultural significance of bookstores and their use as public spaces is mainly a result of genuinely public institutions being treated as wasteful: "there are clear limits to how people use Chapters [a bookstore] as public space. And it is important to recognize that Chapters is not motivated by altruism. Indeed, when the costs of providing an inviting space outweigh the ability to induce customers to purchase more books, the chain acts less like a congenial host and more like the corporate enterprise it is." However, not so long ago, the public nature of libraries, distanced from the activities of the private sector, was a matter of pride. One example of this importance can be found in John Drinkwater’s words, cited by John R. Allred (1972, 203), highlighting the importance of the public role of the libraries: the most important thing in a good modern city is “the public health; but second only to this far reaching influence on the lives of citizens is its public library.”

Nowadays, studies continue to examine new ways of measuring the importance of public libraries in contributing to social capital and social trust, including both society-centred and institutional viewpoints. According to Varheim et al. (2008, 886): “it is reasonable to assume with socio-psychological research that contacts made on an equal footing in a public space like the library could have more positive consequences for social capital than more asymmetrical meetings in commercial spaces, where buying power is crucial.”

This point is also very important in relation to the construction of social capital and social trust in those elements and actors who most need it, those who are outside the systems or even the margins of the classification schemes. Some of those groups will inevitably overlap with what Varheim et al. call “disadvantaged groups of non-users,” who are also socially benefited from the public component of public libraries and often ignored by the private sector. In addition, the level of socializing, although also present in bookstores (Dixon et al. 2001, 172), has been observed to be higher in libraries (McKechnie et al. 2004).

On the other hand, the assumption that bookstore practices, including classification and display of books, will improve results in physical libraries, thus enabling them to give better service to society does not always seem to be true. Indeed, in 1999, at the height of economic prosperity and the rise of the online bookstore market (and also before the electronic book explosion), sales in physical bookstores also went down (Carvajal 1999). Indeed, it is hard to imagine how adopting practices from a sector in crisis might improve library results. In 2008, Fister also pointed out this crisis and claimed that while library visits were surging, the book business had an aura of crisis and gloom and really did need to be saved from itself. She also suggested some areas where bookstores could learn from libraries, such as collaboration; and a culture of sharing. Fialkoff (1999) suggested that, even if bookstores adopt some library activities, they will never be a real threat since libraries are better and free. In addition, Raymond (1998, 42), from the bookstore’s point of view, claimed: “no librarians have little to fear from bookstores, and, trust me, probably even less to learn.”

5.1 Use of commercial terminology in public library discourses

A related issue of interest is the terminology used to refer to those who use the library or shop in a bookstore. On this, Barnett (2010, 3) says: “language can confuse as well as enlighten. Libraries loan (and that loan is free), which scrambles most business models. Adopting business models in such situations leads to using terminology that conceals more than it reveals—e.g. customers.” However, it should be recognized that the popularity of the term “customer” has increased during the last ten years to the level of being authorized and preferred by the IFLA Public Library guidelines. While the first edition of “The Public Library Service: IFLA/UNESCO Guidelines for Development” used the terms user and patrons interchangeably throughout the text, it still had a whole chapter titled “Meeting the needs of the users” (Gill 2001, 23).
However, in the second, completely revised edition this chapter was retitled “Meeting the needs of the customers” (Koontz & Gubbin 2010, 35), and stated that: “Customer is the term used primarily throughout the Guidelines (just as user, patron or client might be) to optimise consideration of public library non-users as potential customers. Also implicit in the term customer, individuals have expressed wants and needs to be identified and met.”

As Siess (2003, 1) pointed out, this commercial vocabulary was unusual ten years ago, perhaps because of economic connotations: “most librarians, especially those in public libraries, are unaccustomed to calling the people they serve customers. For years we have used the term patron or sometimes user.” Hernon and Altman (1998, 3) noted that: “perhaps we have avoided the term customer because it implies an exchange [of money] occurring between the library and the people using the service.”

Although it is more and more common to use commercial terminology in librarianship and in libraries, it should be noted that bookstores and commercial environments rarely use library terminology even when they want to appear socially committed or culturally grounded. Bookstore customers are never called users, perhaps because, although they can use services and goods for free (while they are inside the building), this use without an exchange of money is not considered at all desirable over the mid-to-long term. The final goal of every bookstore is to turn customers’ undecided wants into sales.

5.2 The educational role of libraries in society

Another current difference between libraries and bookstores is their role in research and education. According to the “IFLA Public Library Service Guidelines,” the first purpose of the public library should be education (Koontz & Gubbin 2010, 2): “Supporting both individual and self-conducted education as well as formal education at all levels.” In the United States, since modern day library classifications like DDC were adopted, the commonly accepted main role of public libraries and special libraries is research and educational support. Melvil Dewey claimed that libraries should be more like schools than museums and the role of librarians more like teachers or educators than curators. The DDC was intended to facilitate this goal by creating a map of knowledge to educate the user (Miksa 1998, 78). Based on a 1994 survey published in “The Bowker Annual” this view is shared by the American public, who believe that the main role of a library is to be an education and research centre. Studies show that Americans see the public library as: educational support for students (88%), a learning centre for adults (85%), and a discovery and learning centre for preschool children (83%). One must look further down the list to find the library listed as “recreational reading center of popular materials and best-sellers” (45%), which is the area in which library operations overlap most with bookstores as new “public spaces.” In 1998, Bernard Vabrek (2000) took a survey of adult Americans for Clarion University that dealt with the question of the impact of the public library on their daily lives. 51% of respondents (the majority) perceive that public libraries contribute to quality of life, while 46% of respondents think libraries are more important than bookstores in providing books for enjoyment or hobbies. When asked (61): “how has the library made your life better?” 98% of respondents answered “as a source of educational enrichment” while only 87% answered “as a source of entertainment.”

Regarding the educational role of libraries through classification, by teaching and reinforcing a structure of knowledge that shapes and affects society, some researchers have also warned about the dangers and consequences of using and transmitting such structure in the scheme, especially when this can be discriminatory and biased (Olson 1999; 2002; García Gutiérrez 2007 and 2013; Martínez-Ávila and Guimarães 2013). The dangers of transmitting any kind of insensitive and unethical practice may be higher when using a standard developed by the business world that is more interested in promoting and exalting the best-selling and most carefully calculated trend than in attempting a universal classification of knowledge. In this regard, the view of the world represented in BISAC, and the privilege of some classes over others, would not follow the literary warrant as in the Library of Congress Classification, or any other kind of Baconian and Hegelian epistemology as in DDC (Olson 2001, 2004 and 2010), but a new criterion for the inclusion and arrangement of classes based on current market demands and interests, what we have called “market warrant.”

5.3 The recreational use of libraries in society

However, according to Lyn Donbroski (1980, 4), former East Sussex County librarian in the United Kingdom, various user surveys conducted before the 1980s showed that public libraries were used primarily for recreational purposes. The same argument was given by Ainley Tortedell (1978, 13), also in the United Kingdom, who stated that “It is significant that all the evidence from surveys suggests users have ‘voted with their feet’ for a largely recreational service, the one aspect of library purpose most consistently ignored by the theoreticians.”

More recently, several studies have supported the recreational use of libraries (Proctor et al. 1996; Smith 1999; Davis 2009). Denise Davis ranked recreation in US libraries over education at the top of the list of library purposes (4): “After borrowing library materials, Americans rank entertainment (35%) and educational purposes, such
as for homework or taking a class (28%), as the top two reasons for using the library. That's more than 145.8 million Americans."

Similarly, Douglas Betts (1982) claimed that several unpublished surveys in the United Kingdom pointed out the importance of libraries as recreational centres and that a substantial majority of public library borrowing is, by a variety of definitions, for recreational or leisure-orientated purposes. Betts seemed to suggest that everything outside the recreational purpose might go against the clientele's needs (61): "While by no means wishing to negate the educational (more accurately self-educational) role of the public library, it has to be seen in perspective; too often that role, through stock selection, resource allocation, staff attitudes and stock presentation, takes precedence to the detriment of satisfying the major needs of most of our clientele."

Ainley and Totterdell (1982) also drew attention to a study of David Spiller's (1980) that stated that 60% of public library loans are fiction. In 2000, Spiller attributed this problem to the divergences between users' needs (what they respond/want) and the official statements more concerned with educational development. Spiller summarized the problem as follows (5): "In part, the public libraries' problems arise from the very broad claims made for them in various official statements in relation to different groups of users and different types of user needs. These look good on paper; but librarians, with limited budgets, have to pick and choose from the official claims as they translate them into services and collections.” Sharr (1974), in Australia, defended the recreational purpose of libraries as positive but only if it does not prevail over the educational purpose.

5.4 The educational role of bookstores in society

Several studies have shown that bookstores do not function well as research centres. Despite this, some librarians began looking at bookstore practices when they started to be viewed as competitors. Vabrek (2000, 60) pointed out that some libraries want coffee shops to be part of the library community because they want to compete with bookstore chains where people are encouraged to hang out at the coffee shop. On the users' side, an observational study by McKechnie et al. (2004, 55) concluded that “one of the most telling observed differences between the super bookstores and the public library was the coffee that people brought with them or purchased on site for consumption.”

However, there does not seem to be a homogenous opinion in the literature concerning competition between bookstores and libraries. For instance, a 1996 Benton Foundation report concluded that:

The super bookstores, such as Borders and Barnes and Noble, surfaced as strong competitors to libraries. Not only did these stores have popular books in stock (something libraries fell down on), but they created a welcoming atmosphere with comfortable chairs, coffee, and music playing in the background … Among other key findings of the public opinion research: There is enormous overlap among library users, bookstore patrons, and home computer users. While some library leaders fear that computers and bookstores will increasingly draw library users away from libraries, at least for now this concern appears groundless—one market seems to draw sustenance from the other markets.

On the other hand, a different argument is reflected by Siess when she said (2003, 18): “not only do our users have and use other sources, they also measure our libraries against them. Your competition may be the megabookstore (Borders, Barnes and Noble, W.H. Smith, and others). Does your library look as inviting or as well lit?… Even academic libraries are not immune to competition.” She also pointed out that many college and university students are using the Internet for their academic research, because of the comfort of their dorms and alternative spaces to libraries, also suggesting a possible parallel in competition between libraries and the Internet with the competition between libraries and bookstores.

Feinberg (1998, 50) noticed that many undergraduate students were apparently using superstores such as Barnes & Noble as libraries, claiming currency, number of copies, and conditions of materials and organization as their reasons. According to some of these students, books in their library were disorganized, and it was “not as good as it could be … [it was] hard to find things. Things were cataloged strangely. The only good thing about the library is you can take things out.” However, some of the students also pointed out that although Barnes & Noble and the Internet allowed them to complete most of the course work, for “heavy research” it might be better to use the library.

The educational use of bookstores was also noticed by Dixon et al. (2001) and Miller et al. (2003) in Chapters, a Canadian equivalent to Barnes & Noble, although Dixon et al. also pointed out that (165): “overall, in contrast to the library’s more serious purpose, Chapters seems to function more as an entertainment centre.” The advantage of availability based on the number of copies, at least for the more popular readings, was something that was also echoed by Barnett (2010) of McMillian Memorial Library (Wisconsin Rapids, Wisconsin) and an alleged reason to use bookstores by some of the Benton Foundation report’s survey respondents.
However, not everybody seems to be satisfied with the research possibilities of bookstores, one of the students said that she had difficulty finding research material at the store (Holloway, 1999), because "they were just listed by author at the store. The computers are not set up to find things by subject." In addition, Raymond (1998, 42), an American bookstore clerk, claimed that: "the scholastic potential of the bookstore environment has been greatly exaggerated," pointing out that there are not enough retrospective materials, scholarly materials or even copying machines. According to Raymond only procrastinators and last-minute C-students think that bookstores are about to supplant libraries. Finally, in Canada, a Chapters bookseller complained (Miller et al. 2003, 12) that: "We were having problems with students, coming up and using Chapters as a big happy library…. Students were going in there and just staying in there for like 10 hours. Studying, horsing around. But usually studying, you know and it’s, why would you go to a retail store to do school work? That's like going to a food court in a mall to do school work."

5.5 Differences between bookstores and libraries:

The nature of stock and its availability

Perhaps the major differences between libraries and bookstores are in the nature of the use and the availability of their materials. Tisdale (1997) linked this availability to a library’s most essential purpose and the threat of the market when she said that libraries are market-driven when books rarely read are seen as books without value. In addition (73) she wrote:

One of the several ways I seem to be out of touch with the new library is that I consider 'potential use' to be one of the most important aspects of any library—because the things subsumed under that term are often found nowhere else…. This is what the library does best: it provides a place where the culture is kept, without judgment or censor, a record of life as it was, is, and may be. And the most important part of that record is what cannot be found anywhere else and will be lost forever if the library doesn't keep it.

Along these same lines, while bookstore stock has to be sold and in superstores, renewed even if it is not sold, library stock will not “disappear” since profitable is not a synonym for useful, and that is not the purpose of public libraries. Indeed, an overload of titles and copies might also have a negative effect on retrieval tasks, which is one of the perceived advantages of bookstores. This finding was also noticed in libraries in the mid 1950s by Baker (1986 and 1988).

This is also related to the costs and consequences of keeping pace with each version of BISAC. In strict adoptions of BISAC, the process of reclassification within each new release would be assisted by an approved list of changes provided free of charge by the BISG, so, in the end, this problem would not be bigger than with the new release of any other classification, such as the DDC. In bookstores this problem is considered minor since it is assumed that old stock will be sold sooner or later (BISG 2014b): “What happens if I do not deactivate the inactivated headings? The Subject Codes Committee anticipates that most users would not re-categorize backlist. After all, in due time, most titles with inactivated headings will go out of print and the headings will retire with the books.” In the case of libraries strictly adopting BISAC, not only the situation is different than in the case of bookstores since the stock classified with the outdated versions will not be sold, but it is also assumed that there would be less support by the BISG given the previous statement.

On the other hand, differences in the material available in libraries and bookstores are not only a matter of numbers, but also concern the nature of this material. A bookstore will only stock books which they believe will be immediately profitable while a library may be able to stock books by local authors or books with potential longer term benefits to the community. Bookstores may have a large inventory, but fewer titles and more copies than do libraries. While Coffman claimed that (1998, 40): “the average superstore now stocks anywhere from 150,000 to 200,000 titles or more, and the number seems to grow steadily” and “the typical Barnes & Noble now houses more books than 85% of all the public library systems in the United States,” these numbers include far more duplicate titles than would be present in a library and will not include material which is still relevant and useful but no longer in print. Additionally, these numbers for bookstores may also include additional copies of books that are not displayed on the shelf (or that are put in more than one location, making the overlap of BISAC categories irrelevant). Maker (2008, 171) stated that:

When borrowing from another model we must be sure to understand not only the nature of the model itself, but how and what elements will be transferred. A library is not a bookstore. The two models are not, to use a mathematical term, isomorphic but they are analogous in that they correspond in some particular but not in all respects. A bookstore, for example, does not stock large print books. It would be foolish to assume, though, that a library should not do so. A certain amount of selectivity obviously comes into play.
While the bookstore by necessity defines book utility by the probability that it will sell quickly, whether in answer to a specific need or a specific want induced by marketing, the library defines utility by the potential benefits to the user community. While from the bookstore point of view every sale counts equally when customers are willing to pay for a book, in libraries high loan rates of materials (which barely meet that need) do not necessarily mean a high rate of user satisfaction. As Morris (1994) pointed out, while citing Andrew Green (1990), a user-centred approach to reference (and this reflection might well be extrapolated to any other information service) has at its core the assumption that it is the information need that should be addressed, not wants or demands, although they are not necessarily the same.

Information needs are often ambiguous and not easily articulated (Taylor 1968), and understanding and clarifying ambiguous information needs is a primary goal of information professionals. In bookstores and commercial institutions user needs are defined by marketing, which can involve the use of advertising to convince users that they need a particular book, while the library on the other hand concentrates on providing access to information, not on selling specific titles. In addition, it should be noted that in libraries the bookstore-driven paradigm was not solely caused by (library) user orientation, but by the need to deal with financial problems and maximize resources, which means that this practice might not always be desirable. Some of the alleged advantages of this philosophy include such unrelated aspects to users as “having a lot more money, as a result of paying your staff a lot less than you do now and getting a lot more public-service hours out of them” (Coffman 1998, 44).

In addition to the issue of materials availability, both bookstores and libraries must also deal with the question of access to materials. A number of studies have indicated that the majority of patrons gain access to materials in physical libraries by browsing.

5.6 The application of the bookstore model in libraries

Studies of the behaviours of library patrons and bookstore customers show a certain convergence, as not only are libraries adopting the characteristics of bookstores but bookstores are also adopting the characteristics of public spaces such as libraries, and are being perceived as such by the population. Indeed, according to Leckie and Hopkins (2002) the shopping mall could be considered a public space by Canadians, ranked third after home and work or school as the most popular place they use. As these authors point out, shopping malls or bookstores are “public” places in that they are used by and open to the public, but they are privately owned and subject to the control and management of private interests: not everyone is welcome in a shopping mall.

However, Jennifer Miele (cited by Whelan 2007), manager of the Perry Branch Library in Maricopa County, which adopted a bookstore model using BISAC to organize books, noticed that “Students don’t seem to care or know the difference” between DDC or BISAC, however, it seems that what people do notice are changes related to the new environment such as, conveniences, refreshments (especially coffee), signage, etc. “The kids are more interested in the fact that the library allows food and drinks and that it has its own semi-private Teen Oasis section, equipped with red and purple velvet lounge chairs and lots of computers” (Whelan 2007). Library adoption of bookstore approaches, even when the media highlights the classification scheme as the main aspect of the project, seems to also be related to those facilities and new features.

According to Hill (2010, 15): “The Dewey-less concept is more than just using words on books rather than numbers. It includes the way the library is arranged, the signage, the furniture, and shelving. Self-service and one-customer service desk are also integral parts of the effort.” Similarly, Hill also pointed some critical reception and public reactions to the whole environment in Maricopa:

They [librarians that came from all over the United States and Canada as well as South America because they were interested in trying the bookstore method in their own libraries] also were fascinated by the libraries’ other features such as the many New York Times bestsellers and latest DVDs, the One Service Desk model, snack/beverage machines in the libraries, flat-screen TVs showcasing new books, best-sellers and library announcements—all standard in the library district.

Therefore, all of these additional changes made in the BISAC experiments had the purpose of attracting more young users and making libraries more appealing. However, the idea of libraries being inspired by bookstores’ facilities, with no relation to the classification scheme, was previously suggested by authors such as Hicks (1994), Sannwald (1998), and, in a very broad sense, Underhill (1999).

Maker (2008a, 169) pointed out the outdated image of libraries among the youth in the UK: “public libraries are under increasing pressure to correct the perception that they are outmoded and largely irrelevant institutions, particularly by today’s youth” and cited an Audit Commission of 2002 in the United Kingdom which recommends the adoption of “bookshop” approaches by the library in order to improve its services. The report specifically suggests that the aspects that libraries should learn from
bookstores are all those related to “customer” expectations (24): “the challenge is to cater to a wider audience. Libraries need to buy more of the books people want, and make them available when they want them. Councils need to look at what is that bookshops are getting right and rethink their services in line with rising customer expectations (particularly as bookshops have themselves learned from library services—extending opening hours, encouraging browsing, etc.).”

Another point covered by the report is the competition between libraries and bookstores in relation to services and people’s habits. The report also adds that: “While the Government is expecting them [library services] to deliver more, libraries are having to compete with an increasing range of alternatives to their services - in particular, bookshops and the Internet. Spending on library books and access to services have been cut significantly” (Audit Commission 2002, 8).

The underlying assumption in the Audit Commission’s Report is that bookstores deal with the users’ recreational needs much better than libraries. However, while recommending libraries learn from bookstores in this aspect, it also points out that they should not forget their core values (25): “Providing what people want does not mean stocking only bestsellers. Learning from bookshops does not mean giving up on core values.... Making popular books more available will help to overcome people’s views that libraries have little or nothing to offer them.” This example was given in the context of the provision for the most demanded books in the collection, something that might not be the primary mission of libraries, but it might also be linked to other aspects related to the differences between the public purpose of libraries and its practices, such as the classification and arrangement of books to make them available to the public.

6. Conclusion

One of the main motivations for adopting BISAC in US public libraries is criticism of the Dewey Decimal Classification. This criticism includes arguments suggesting that it is an outdated system, it does not meet the needs of users, is not appropriate for browsing, it is unfamiliar and unfriendly, complicated to learn, and it scatters related books and subjects across the library. Justifications for using BISAC include the opportunity that a new branch opening offers, the opportunity to go back if the experiment does not work, the inspiration of its use in other libraries and bookstores, BISAC’s adequacy for present times, its simpler language, and the fact it is friendlier, more familiar and more intuitive for users, it is better for browsing, for grouping together related books that otherwise would be scattered, and for promoting self-service. Criticism of BISAC, however, notes that it is based on “market warrant” rather than on actual user needs, it is no less biased than DDC, it does not deal well with multi-lingual populations, it is not well-suited for medium to large sized collections, it is not designed for re-classification and updates in libraries, and that it does not allow users to locate books precisely or browse within specialised and academic topic areas due to its broad categories. Additionally, it has been claimed that some of the alleged advantages of BISAC might be inherited from some other factors introduced at the same time and therefore probably unrelated to the classification system.

Regarding BISAC’s field of application, there does not seem to be a great deal of continuity in the discursive formations of bookstores and libraries. What this means is that it hardly seems acceptable to talk about these two kinds of institution and their functions as though they were similar and interchangeable entities for the application of all types of information organization systems without creating exclusions. Although the desirability and advantages of bookstores over libraries have not always been agreed, BISAC application in libraries seems to be part of a trend of applying commercial practices, values and terminology in libraries, perhaps not with the purpose of replacing libraries with bookstores, but with the aim for both systems to converge into a new kind of commercial entity and context. The influence of one kind of system over the other does not seem to be totally reciprocal, since the application of library practices, values and standards in bookstores has not had the same effects and resonance as has occurred in the opposite direction. While libraries have usually needed to adopt hybrid approaches to accommodate the adoption of bookstore approaches (such as the retention of DDC in BISAC-like classification systems adopted in libraries), the equivalent hybrid approach in bookstores seems to be ameliorated by the market-driven forces that lead their functioning.

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Declassifying Knowledge Organization

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Abstract: Classification, as is common knowledge, is simultaneously an operation (classer) and an instrument of knowledge organization (classifier), regardless of more technical or specific designations used in that area of research, although an operation that ‘naturally’ transcends the very realm of knowledge organization (KO) to which it descended from the logos. In this text, a summary of more than 35 years of work, the author presents a series of hypothesis and itineraries of declassified thought, a way of thinking based on strategies of reflexivity and pluralism that buttress the automatic, hierarchical and essentialist tendencies enhanced by totalitarian mind, whether this be harsh or subtle, which are imposed by all levels of power in order to re-orientate them towards civic commitment, re-politicization of KO practices that were never depoliticized. Declassification is a hermeneutics of KO that recuperates criticism, rhetoric, reflection, emotions, affection and even contradiction as the cornerstones of systematic knowledge production processes. The world is not only full of heterogeneous knowledge but also heterogeneous forms of knowing that must be restored and deliberated upon on an equal basis. That is the aim of declassification on putting forward an open and alternative interpretation of rethinking and practising identity, culture, memory or social sciences and KO, particularly in the new digital space of unlimited interaction.

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1.0 Introduction: classification and symbolic violence

The classification of the human exomemory, thousands of years before the advent of specific devices for organizing repositories of knowledge, was already a powerful strategy of the logos for ordering the world (ordo: ruling and control) by means of essentialist demarcations and ontological purifications in an illusion of universalism and consistency which it would only be able to partially
and just barely break through by exercising sensitive self-surveillance and emancipatory will.

As a weapon of domination, classification has always formed a part of territorial and, above all, cultural and cognitive colonization projects, lurking behind many acts of symbolic violence, reaching its paranoiac climax in the ideology and classified archives of Nazism. As with any other human institution (languages, social organizations, beliefs, sciences, etc.), classification becomes inward-looking so as to defend its colonizing action, revealing totalitarian structures and objectives (even ‘authors’ resort to a natural ‘authoritarianism’). In one way or another, classification usurps, distorts, overlaps, subordinates and colonizes the unlimited flow of sense (semiosis), making free movement practically impossible in the world that it controls by means of its categories.

Furthermore, the inevitability of classification cannot be denied, nor can the good services that it has rendered knowledge, for instance, relating to several discoveries made by positivist epistemology (despite their severe side effects). Nonetheless, and in view of the great harms that hierarchical ordering has brought upon culture, knowledge and human coexistence, in this work what is advocated for is what will be called ‘declassification,’ an undefined, fragile and hybrid form of organization, not opposed to defined, strong and essentialist classification but as an alternative that embraces it. From this perspective, classification would be an exclusionary epistemological operation of categorization, characterized by closed concepts whose ultimate intention (whether the mediator-classifier is aware or not) is dogmatism.

Moreover, declassification should be understood as a hermeneutic operation involving ideas open to different sensibilities whose cornerstone and aim is logical, cultural, social, political or cognitive pluralism. Classification veils, divides and separates while declassification reveals, aggregates, reunites.

Neither do I doubt the good intentions, even when they have tragic consequences, which are sometimes behind some classifying evaluations promoted by culture: Olivé (1999) writes that in Papua New Guinea, when the elders of a certain ethnicity sense their imminent death, they ask their family to bury them alive under the manure of their livestock, with only a reed to breathe through. Charitable Western doctors—convinced that they are doing the right thing—try to prolong their lives by transferring them to Australian hospitals and thus preventing them from exercising their right to a dignified death (on the strength of being the chosen form). In this remarkable episode we can see a form of symbolic violence that our classification of the world, economic model or digital technology applies to alien knowledge or worlds with the same aim of ‘saving their lives.’

Declassification implies adopting a complex perspective that does not exclude any pre-, post- or para-epistemological tool. Contradiction, for instance, is a basic resource that, in specific cases, provides if not explanations, then powerful intuitions and pragmatic acceptations of the world which do not conform to traditional logic: we want to finish the chocolate cake but we do not want it be finished; we want and, then again, do not want our children to grow up; on being the same tree, it should not change but it does at each and every instant; present time has to pass so as to continue to be; thanks to oxygen, our organism lives while it self-incinerates.

Contradiction is the most taboo concept of the effective world for systematic thinking. Nonetheless, it is one of the staunchest allies of declassification and the subject of the last section of this essay, where several operative strategies that open knowledge to all horizons, contesting the three sacred principles of the logic that governs us (which, however, has been challenged by quantum mechanics for nearly a century now), will be proposed.

I venture to say that, in the majority of statements, concepts and positions, it would be possible to elaborate a contradiction, provoke its paradoxical regimen. From ‘Aufhebung’ to deconstruction, this means that negativity is at the heart of positivity, in other words, that contradiction forms a part—however worthless—of our factual world. For many years now, I have adopted a strategic posture of alliance with contradiction. In this way, when conventional reason reaches its limit, I rely on contradiction as a post-epistemological resource (post- or any other prefix would do here). Detecting contradictions so as to invalidate or reject a piece of preceding knowledge (or theory), one of the frequent objectives of the epistemological battering ram, would not be the goal of declassification. A most atrociously barbaric world gathers pace every day, in spite of ‘rational’ denunciations, against the logic of any judicious subject. In its desire to explain the world through its contradictory rationale, declassification even favours the fabrication of laboratory contradictions (such as oxymora, for instance, see 4.1 and García Gutiérrez 2007) so as to break and extend the limits of that same knowledge.

All the aforementioned might be sufficient to denounce the violence of classification: the act of classifying does not involve any more than a prescription or proscription, a forcing that leaves little room for appeal. Knowledge (the subject, in sum) cannot but vanquish its sensibility (its aisthésis) with the aim of adjusting itself to the labels provided (as an-aisthésis) by the ‘hierarchy of credibility’ (Becker 1967). But classification also has its Achilles heel: it is not only about organizing something in consonance with some of other point of view, but also disorganizing a previous, conceivably invisible system. In fact, we decompose a world so as to impose another
composition on it; since any new classification involves a calculated or spontaneous dismantling of the area concerned. Therefore, classifying declassifies and declassifying reclassifies: the difference lying in the metacognitive, pluralist and explicitly subjective commitment of declassifying versus the automation, false objectivism or a preference for the establishment hierarchy by classification.

In the same way that a secret file is unclassified so as to make it public, we should declassify the complexity of the world in order to make it once again accessible to knowledge. And this can only be achieved by installing a metacognitive tool, of critical self-vigilance, in our system of reasoning, based on logical pluralism, which is no more than a profound conviction of respect for the other, the only logic worthy of its name, but let us take good note: whether it be contemporary, successors or predecessors.

Attempting to avoid classification, or even just trying to sidestep it, is just as utopian as wanting to flee in the face of language or thinking. If we manage to invalidate a system, another takes its place simultaneously. This is so because classification is a condition for knowledge. We could know with other categories, but this always has to be done through categories. Those other categories and the concepts that they organize ought to prevent impenetrability, impermeability, dogmatism, and relativism, and endow themselves with open, permeable, self-critical, sensitive, plural configurations.

In Bluebeard's Castle (1974), George Steiner solemnly stated that all that he wrote and thought revolved around the Auschwitz catastrophe. History was radically changed by the Shoah. Nothing would be the same again. And that suffering cannot be rationalized for Auschwitz is beyond reason. Mélitch (1998) has conscientiously analyzed the work of Steiner, stating that the key to contemporary thinking must be found there: "How can you perform Schubert at night, read Rilke in the morning, and torture at midday?" The answer to this would be philosophy's greatest challenge. Today's philosophers and scientists continue to produce knowledge as if the 20th century, the most violent in the history of mankind, had never existed. Knowledge organization (KO) should not be an exception either.

2.0 Reason as a belief

In his Philosophical Fragments (1985), a work as monumental as it is modest, with extreme lucidity Kierkegaard took reasoning about faith to the unplumbed depths of the psyche only to proclaim it as a paradox. Reason, nonetheless, as an instrument for demonstrating anything, although exceptionally faith, falls into the inextricable circle of causality, so that, although nobody could deny the Danish philoso-
therefore, scarcely detectable but overwhelmingly present in our daily discourses, choices and actions.

The Portuguese sociologist Boaventura Santos (2005, 153-56) considers that metonymic reason is a form of rationality that imposes: “a homogeneity on the whole and the parts, which do not exist beyond the relationship with the totality…. So it is incomprehensible that some of the parts have their own life beyond the whole …. Western modernity, dominated by metonymic reason, not only has a limited understanding of the world but also of itself.” The conviction, so firmly rooted in the West, of assigning a universal value to a strictly local and contemporary worldview has penetrated not only in the daily imaginary of westerners but also in pro-Western and fringe cultures, in many cases by means of the silent and gradual adoption of those same Western worldviews, technologies and languages.

Two immediate cognitive actions are produced through metonymic reason:

– The fragmentation and division of all the instances so as to be studied, dominated and exploited by parts like the human body, invaded cultures, or the Western agencies themselves at the service of an essentialist supra-Western efficiency, as occurs in the field of science, politics, values or the division of labour.

– The promotion of an arbitrary logic that, far beyond Morin’s hologrammatical principle (2008), involves identifying the division with the whole of which it was just a part. Thus, classes and parts are regarded in an uncontrolled process as species and wholes, and that such a logic begins to operate in daily practices as an ebullient epistemological flow. In the forest of classified knowledge, each tree, trunk and branch would occupy an unquestionable place.

2.2 Dichotomic reduction

Once it has obtained the license of metonymic production, classifying thought arms itself with two keen properties:

– Sliding: this involves a kind of uncontrollable movement that allows us to pass unjustifiably from one instance to another for the mere fact of possessing homonymous, homographic and homophonic representations. Lacan used to underline the effect of metonymic sliding across the structure of signifiers themselves. The discursive situation is undoubtedly responsible for the sliding that occurs in one direction or another. But, despite being generated on the surface of meaning, the effects on this (for understanding or for enunciation) could not be more decisive.

– Dichotomization: dichotomy offers a world constructed by means of opposing pairs. All instances are constructed on an opposite reference. True enough: dichotomies produce knowledge, but only dichotomic knowledge. What is paradoxical is that this reductive cognitive mode has ended up absorbing other more complex modes. Its nature is based on the following properties:

1) Binarism: subjectivity expresses experiences and perceives the world in conceptual pairs: good or bad, faithful or unfaithful, man or woman, master or slave, North or South. Symbolic comprehension, automation and submission are favoured on reducing alternatives to a binary polarization.

2) Opposition: those pairs, not necessarily harmonic or sympathetic, offer themselves up as an expression of tension or conflict, thus legitimizing it: good versus bad, faithful versus unfaithful, man versus woman, North versus South.

3) Subordination: the pair’s order would not be neutral but determined by a hegemonic criterion: good over bad, faithful over unfaithful, man over woman, North over South.

4) Generalization and negative exclusion: in certain dichotomies, the subordinate element is presented dismissively as a negation of the subordinating instance that initializes the pair, by means of prefixes such as in-(fidel), un-(loyal), non-(believers), ab-(normal), etc., the denied instance habitually representing a larger or more diverse world than that which is represented by the denying instance: Christians/infidels (Muslims, Animists, Buddhists, atheists, agnostics, etc.), normal/abnormal, and even classified/declassified, however much decategorification embraces classification as another mode of organization, but not vice versa.

After dichotomies comes a crushing logical order that I think that, to differ from the opinion of Santos, is not exclusive, even less so of Western culture, but rather a constant in any culture or personality that seeks domination and expansion. And such an order impregnates morals: good/bad; law: innocent/guilty; politics: in favour/against; and even digital technology: 1/0.

I will end this section with an illustrative example which allows us to rethink the ordinary in extraordinary situations: In the excellent film XXY (name of a chromosome), by the Argentine moviemaker Lucía Puenzo (2007), Alex—a teenager classified as intersexual or hermaphrodite by medical taxonomies—is asked by her/his father (Ricardo Darín), anxious because of the physical and psychic violence suffered by the adolescent, in order to know when and what sex will she/he finally choose,
male or female: “Dad, what if there were nothing to choose?,” Alex (choosing) answered him.

2.3 Analogical reduction

As Umberto Eco stated in *Kant and the Platypus* (2000), which, in my opinion, is his best work on knowledge theory, with repercussions that cannot be ignored by experts in KO, British zoologists spent a part of the 19th century debating on how to classify the platypus, a likeable animal discovered for Western biology by colonists in Australia and New Zealand. The aborigines had already made this discovery thousands of years before and had never argued about its zoological classification. The platypus has a duck’s beak and lays eggs (bird), a furry tail and strange mammary glands (mammal), it slithers and has claws (reptile), in addition to spending half of its life in aquatic environments where it hunts and obtains sustenance (amphibian). After much debate, the zoologists arrived at the conclusion that the animal should be regarded as a mammal. They had to make a choice and decided on that taxonomy, although how could they explain, among other things, the matter of the eggs and beak?

Several zoologists, according to Eco, made extravagant comments as regards the platypus, for instance regarding its position in the animal order: mammals with parts of other animals or an exceptional mutation. Recent discoveries show that the platypus belongs to a species that, for millions of years, has been regressing towards its involution. And, in fact, the platypus is not composed of ‘bits’ of other animals, but other animals possess ‘bits’ of the platypus.

Comparing formal Kantian categories with the Peircean concept of thirdness, Eco expounds upon the cultural imperative, how taxonomies are reproduced through mechanisms of recognition, taking the famous example of Marco Polo when, on seeing an Asian rhinoceros for the first time during his journey to the East, classified it as a unicorn because of its resemblance to a known animal that, for another thing, had never existed except in mythological narrative and paintings that Polo himself had had the chance to familiarize himself with in Venice.

George Kleiber (1990) talks about a semantics of prototypes that operates mentally by degrees of analogy, far-removed from the world of scholarship, in ‘ordinary’ people and which can help us to understand analogism at all levels and as regards all issues as a mode of mental configuration of the world. Although this may seem nonsense for zoologists, when a non-specialist talks about mammals, he or she associates them with, for instance, cows or lions, rarely with whales or mice, and never with platypuses, due to their aspect. In the same way as there is a greater concurrence with a prototype, there are also situations or objects that distance themselves. For a zoologist, a whale is not a fish (since it is a mammal), although for ‘ordinary’ people a whale could be regarded as being more a fish than a lion, or even an eel (the latter being taxonomically a fish). However, ‘far less’ a fish than a whale would, for the dominant analogical automatism, always be an otter or a platypus. We are all ignorant and audacious classifiers outside our own territory: a sociologist would succumb to sliding analogies beyond his or her specialization (classifying, for example, plants as edible and inedible), since he or she is only capable of self-monitoring the strict structures of his or her own ‘discipline’; and a botanist would make a mess of the family relationships so cherished by ethnographers.

The degrees of constant analogical adscription of all instances with respect to master categories is a fact that ends up by transforming prototypes into stereotypes (Abril 2013). Stereotypes invade concepts and nullify their reliability, although they promulgate an efficient logic of classification that, inexplicably, reason tends not to reject. In fact, many types of racist behaviour would respond to that stereotype. And the answers would be a resounding ‘yes’ or an outright ‘no’, when on many occasions we would like them to be vague, equivocal: yes-but, no-but or even yes-but-no, yes-and-no.

In the same vein, the notion of encyclopaedia put forward by Eco (2001) acquires relevance. For Eco, an encyclopaedia is a mental place that contains all the possible experiences concerning a given semiotic instance, naturally in the personal and non-transferable place of each subject. So, transmitting or receiving a message about Brazil, London, mice or cars projects the full personal encyclopaedia of a subject which, in some way, would coincide with the anamnestic baggage of another subject. For instance, Brazilians and Londoners, or whoever has had a bad experience with mice or cars, will project those concepts in a very different way than people who have never visited those places, whose knowledge boils down to what they have read or what other people have told them.

Reducing to stereotypes cannot be overcome when the classifying intention enters a transitive meaning shift and is now incapable of remembering the primary meaning or functionality. James Clifford (1997) related that the Portland Art Museum intended to reclassify the Rasmussen Collection of ‘Native’ Art by consulting several Inuit clan representatives from whence the objects came. Far from answering satisfactorily the questions posed by the museum’s curators on the origins, functions or traditions of a mask or harpoon, the Inuits confined themselves to telling stories and singing songs based on the memories evoked by those objects, which for them had no artistic or anthropological value, let alone as collection items. During the three days of meetings, they exchanged memories and as-
serted claims, became depressed and laughed, without contributing any classifying element that served the interests of the exhibition. What perverse logic could possibly lie behind that paternalist strategy in which the classifiers consult their classified individuals?

Several civilizations and cultures, for instance, subcultures that are not necessarily territorial, such as the scientific kind, have specialized in ‘hetero-classification,’ in drawing up lists of clichés with which the classified subjects and objects have to comply, knowing full well that the inclusion of all the subjects and objects in the same category is usually contrived, or that the category ends up by shattering due to internal pressure or because of the dynamics themselves of the restless world that it intends to subordinate.

Epistemological and scientific categories, especially in the social and human sciences, are not prepared to assume constant change from a totalist supra-ordering. In daily life (political, media, community, etc.), analogical reduction, along with the dichotomic and metonymic kind, would be at the origin of numerous conflicts and suppressions.

Together with these three reductions of classifying reason, there operate many other gravitational tendencies that, because of the limited space available, are summarized below:

- Epistemism: this is generated under a dominant paradigm. In the case of scientific reason, its rationality would adapt at all costs to the meta-scientific rules of epistemology, although for Santos, epistemology never applies them to itself (1989).
- Demarcationism: reason that is only capable of constructing knowledge from the disjunctions between cultures, nations, clans, communities, subjectivities or any other kind of ontological demarcation. Essentialism would also be one of those uncontrollable and inexplicable ‘rational pulsations.’
- Aesthetics: reason that yields to protocols, standards, formalisms, stabilities, organizations, processes, and repudiates aesthésias (sensibilities) and algies (sufferings). Normativism is derived from aestheticism that is intruded by and intrudes upon everything else. The same can be said for the contagious mimicry of the new (Groys 2014) that, in few years, makes us see clothes, hairstyles, cars, technology or our own face as ridiculous.
- Coherentism: consistent way of thinking that proscribe its chief enemy: contradiction.

Everything has to fit in a story, forcibly if need be. Nothing is easier to decry than contradiction in the forming of reason. It is sometimes so evident that its denunciation seems indecent. All the eristic masters, from Aristotle to Seneca, from the sophists to the aphorisms of Schopenhauer, took it upon themselves to establish systems keyed to demonstrating this. But the uneasiness provoked by contradiction is generated by the very act of reasoning that wants to, but cannot, free itself of rich impurities and indispensable irrational, emotional and affective genealogies. All these reasons, as can be seen, strengthen, traverse and contradict one another.

3.0 Epistemic obstacles

Emperor Napoleon Bonaparte listened with curiosity to Laplace’s theory of the cosmos, warning him that he had not mentioned the Creator: “Sure,” he replied, “I never had the need of that hypothesis” (Hottois 2002). In the theological sphere, Anselm of Canterbury applied himself to demonstrating the existence of God through his famous ontological argument, while Kant dismantled it with elegant reasoning. Fear of the Inquisition might have been behind the dualism, the clear separation between soul and body, religion and science, in many 16th-18th century thinkers (even Descartes himself ordered the posthumous publishing of several of his works, including Le Monde, and at that time Cartesianism was persecuted). Freer from threat, Kierkegaard (1985), as has been seen, resorted to paradox so as to justify the impossible explanation for faith through reason, and, by the beginning of the 20th century, the neopositivists had already excluded metaphysics from their objectives: that which cannot be verified empirically should not be discussed (Wittgenstein, 1961). In the sphere of pragmatism, William James ([1927] 1995) would declare himself to be a Catholic so as to exclude the problem of religious faith from his epistemological itinerary, and Rorty (1979) took the illusion of philosophy to the established limit lambasting, with good reason, mentalism. With deconstruction, Derrida crossed that limit suspending all origins and all ends, and in The Logic of Sense, for Deleuze (1990) sense had no logic. At a more sectoral level, Gaston Bachelard (1980) proposed the epistemological rupture, ‘eliminating’ the world and demarcating the purified itinerary of science versus daily discourses, while Boaventura Santos (1989), instigating a second rupture, reinstated common sense in a line convergent with that of sociology. Or Jesús Ibáñez (1994) or the ethnmethodology of Garfinkel (1967) who, on the basis of the most radical kind of self-questioning, led Mills (2001) and, above all, Alvin Gouldner (1980) to assert an impossible objectivity in social research. I hope that, with this illustrative background, you will allow me make an omission highly pertinent to Section 4, shedding certain epistemological dead weight: what is involved is suspending Reality and Truth, since
their unproductive presence tends to disrupt the process of declassified inquiry.

3.1 Suspending Reality and Truth

While representativists claim that the mind reflects an objective exterior reality, radical constructivists sustain that such a reality does not exist, since it would be a strict mental production. For declassification, this discussion is unnecessary. Suspending Reality is a strategy for avoiding an ‘Absolute’ of classification that suppresses our conceptual world. We can name Reality (several religions have already done so in their own way), but not talk about it or transmit what it supposedly tells us (something which religions also tend to do with absolute normality). Among other things, this is so because Reality would be a totality from which this world of awareness, at least one, has emerged plausibly from among trillions of other different, convergent or parallel worlds. We will never know whether awareness comes into being in a specific universe, in several universes or in an infinite number of infinite universes by fate, chance or accident, insomuch as to determine this would be akin to encompassing the vast totality or speaking from its exterior.

As it begins to be interfered with by concepts and transferred, communicated and substituted by humans, they gradually stop perceiving Reality. This does not mean to say that Reality does not exist but, simply, that the dimension that its offers to intelligent mammals is vulnerable and increasingly more vague due to our conceptual mediation (and measuring) and practically extinguished by meta-conceptualization, as will be seen further on. From the inaccessibility of the Real only our factual world would be left, a world whose perception would also be confined by the meta-conceptual apparatus of each culture. In exchange for this necessary suspension, I will embrace the hybridist conception of Latour (1993), according to which, and breaking a Cartesian dualism, no evident ontological frontier would exist between people (subjects) and cars or computers (objects), forasmuch as the objects have been designed and made by the subjects, who in turn construct themselves on the basis of the very objects that they handle; that is to say, the objects and we, the subjects, are hybridizations.

Who cares about truth if we live in the normality of its simulacrum? If we take a look at the varied conceptions of truth, the truthful, whose totality is unreachable, is dispensable. The veil of Mýgá, in this case, our conceptual system, makes it unnecessary to operate with the reference of that other absolute. Truth was assumed by the powerful by invoking stars, divinities, curses and catastrophes so as to impose it. The custodians of truth were lords, sorcerers, shamans, clergymen, the guardians who took it upon themselves to destroy all that which threatened dogmatism and its continuity. Later on, its couriers were the intermediate institutions (Durkheimean expression) and especially the educational, scientific, political and media arenas. Truth, therefore, has always been problematic since its mythical beginnings. Its condition of impossibility lies exactly in the need for its conceptual representation.

If we understand by truth the adaptation and correspondence between enunciations and the facts to which they refer, what would settle such a relationship would be other favourable or unfavourable ones, something therefore subject to interpretation, bias. Under this prism, truth would correspond to the most plausible enunciation. Authenticity would, in all cases, be one of the substitutes accepted by declassification in absence of that universal truth.

If we approach truth from another perspective, such as the acceptance of something as truthful, we introduce more relentless interferences: an indeterminate number of people that assume the truth of an enunciation, reaching an agreement that legitimates a position, an incursion of rhetoric so as to demonstrate, through argumentation, an enunciation that does not demonstrate itself or convince the rest of the world. We would now be under the conception of truth as an agreement, another practical vision also assumable for declassified thought. For an enunciation or fact, an occurrence that is not free of enunciation and, therefore, rhetoric, to be true, we would need permanent unanimity, that is, a futile verification. And there will always be a subject or culture, or an objection in a sole subject or culture now or in the future, that will invalidate those pretensions.

In daily life, nobody can be sure of telling the truth. Deception and self-deception are integrated into mental structures and our conception of the world (even animals ‘deceive’ instinctively to seduce, camouflage themselves or intimidate). All generations (also a false concept) have thought about the world on the basis of naïve or deliberate deceit and have constructed the world on these foundations. Lies are motivated by survival, instinct, introversion, jealousy, greed, desire, shameful interests. But the main driver of falsehood is fear; even fear of telling the truth.

The majority of people lie from self-deception; they lie without knowing. A declaration of sincerity can be, as stated by Elster (1988), a perverse way of gaining credence with others. Absolute Truth belongs to classification, and relative, fragmented truth in construction is not absolute Truth. Then what is the point of appealing to it, if only as a simple rhetorical, opportunist or eristic practice? The poet Paul Valéry said rightly: self-deception can reside in the purest sincerity (1960).

And one last word of caution: he that searches for absolute truth (or authenticity or the essence) will only be
able to approach it in absolute untruth. Of untruth, as with offence, we can be sure of its sincerity. Of truth, as with flattery, we should always be in doubt: vituperation and scorn have more possibilities of being sincere. Essentialism will always doubt the genealogical purity. But the sole purity would be that of the hybrid. This being so, truth has more conditions of possibility in what is false.

3.2 On concepts and categories

The history of the world of human understanding is the history of concepts and this incessant colonization. It is for this reason that the approach of the so-called ‘post-colonial studies’ to the field of KO is of enormous interest. It might indeed be true, as Hardt and Negri (2000) have critically affirmed, that the initial originality of the theorists of post-colonialism (Bhabha 1994; Spivak 1999; Mignolo 2000, etc.) has got bogged down in the mangrove swamp of the old colonial categories about which they pretend to caution us and from which they profess to free us with their proposals. In fact, I believe that the opposition of ēmic/etic research methods (or even their ‘complementation’ as a way of achieving ‘objectivity’) is detrimental, insomuch as the outside/inside perspective must be simultaneous. The difficulty and challenge is to obtain a plural and, in any case, hermeneutic perspective. Post-colonialism habitually takes advantage of spaces and cultures usurped by foreign powers, but these powers also colonize inwardly. The post-colonial discourse should be complemented by post-colonial strategies, if only from a now insufficient geopolitical standpoint, even though we do not know how to think outside the conception of frontier, as claimed by Kymlicka (1995).

Colonial processes neither start nor end in mere territorial or cultural invasions. Both the biophysical world and the universe of knowledge are products of unlimited recolonizations, be they deliberate or fortuitous. No living organism manages to eradicate bacteria because if it did indeed rid itself of some of them, others would take their place and, if it managed to rid itself of all of them, it would have transformed itself into a post-organic organism, since bacteria themselves are a condition and symptom of biosystems. The same happens with immaterial instances, such as knowledge or thought, which cannot avoid exterior colonization or contamination, because this forms a part of their inexorable evolution. What is important, when all is said and done, is that a dominant colonial knowledge policy, as in the case at hand, never quite manages to substitute or even eradicate knowledge practices regarded as peripheral, nor does it violate the epistemological limits of the very production of knowledge.

Culture, identity, memory, rationality, information, knowledge and its classification would be colonized instances that disseminate colonization. The structures that, for Bataille or Althusser, always speak for themselves penetrate particularly what and how we know, what we classify and organize. Here is one of the basic theoretical challenges of declassified thought: the production of an open, esthesic, compassionate, heeding knowledge, a self- and hetero-decolonizing knowledge.

We know through concepts that are not exempt, such as that of the aforementioned bacteria, through unexplored yearnings for colonization. We colonize by knowing, stating and organizing knowledge by means of concepts. Through closed, resemanticized and updated concepts, we supposedly narrate open and remote stories. By dint of rigid concepts, we predict flexible futures. By virtue of static concepts, we discover flows and changes. It is known concepts that take the unknown hostage.

Hence, a decolonizing conscience, with which the theory of KO cannot afford to dispense, would have to oversee any inevitably colonizing movement, above all if it is involutive. This would be an expressible teleological paradox with the peerless strength of an oxymoron: declassifying as a decolonizing re-colonizing project.

The world’s instances intertwine like rhizomes, with spontaneous ruptures, unimaginable and hazardous absences and alliances, and it is the logos that makes them harmonic, determinist and self-referential by closing ranks with concepts whose abysmal interstices and flows of their porosities are concealed by grammars, contexts and pragmatic uses. If we say a thousand million, a hundred million or even a hundred people, our mind simulates a conceptual image which it is essential to evade immediately so as not to be overwhelmed by an unending brevity, an unlimited laconism. We operate with deliberately vague images, even for something so supposedly specific, but topically unapproachable, as a two-digit figure.

We cannot even have a Cartesian, precise, clear and distinct idea of the open, intertwined and vast world represented by 10 miles or just a hamlet. We are incapable of simultaneously grasping the totality or density of our own home, workplace or specialization. We shift linearly, precariously and discontinuously through those closed concepts with pretentions of totality, but when we catch hold of a small part, the rest escapes us as does totality itself, which would never be equal to the sum of its parts, also totalities, and not even to the totality that was or could be at an instant or from another perspective.

With surprising naturalness, we are capable of applying ourselves to using concepts that speak of possible instances only because they dare to invoke them. Protected by these objections, we cannot even adhere to the old and comfortable nominalist dilemma. For nominalism, universals do not exist: woman, humanity, slavery, etc., but rather there exist specific entities: women, people, slaves,
although what are these now reckonable entities if not still inconceivable instances (and all this without taking into account the quantum universe)? The problem of universals would not lie then in the impossible idea that leads us to a general concept, but in the impossibility of any specific concept that pretends to close the world to which it refers. What coincidence would there be between two casual interlocutors with different experiences of the conception of Rio de Janeiro; or one of its districts, streets or palaces, or a modest family living in a favela? Would it be possible to grasp in one word, phrase, book, or library the complexity of all the historical intersections, magnitudes or complex associations comprising Rio or any of its subcomponents in space or time? What diverse and apprehensible world represents the concept of Carioca, Brazilian or Latin American, beyond a figure of closing and classifying concepts? By means of rough and anaesthetic brushstrokes, classification resolves what for declassified thinking is an unstoppable flow and perceptible sensitive vocation. The taxonomies that we elaborate are, in reality, metaphysical taxidermies.

The problem does not lie then in the impossibility of universals, as claimed by the nominalists, but in the impossibility of the concepts themselves as closed entities submissive to closed structures. Limits, although we possess many of them, are not mental but epistemological. The human mind has proven over and over again to transgress the closed conception of the world in revolutions, heuristics, art, and even in the pragmatic resolution of daily dilemmas.

The world that we perceive is made up of a number of materials to which we give names (Olson 2002). These materials do not have a hierarchy. Only names and concepts happen and are organized in a hierarchy in that huge and unquestionable legacy which is culture. The materials from which the world is built, and to which we give names, are not made of themselves, but of other materials to which, at some moment and scale of composition, we now cannot give names, but, notwithstanding, they do not cease to determine the nature of the former, even more so than accessible and named materials.

Unnameable or unnamed materials participate and are participated by named materials. But they belong to other worlds and, on many occasions, other dimensions. An ape would never be able to explain to itself what the virus responsible for its extinction was like. A virus would never have access to the world of the ape, although it is responsible for its death. But a virus is also alien to the materials that give or deprive it of life. And those materials, of whose biocondition we will soon lose the notion, would be fuel for the unknown instances that harass, condition, and suspend them.

Wholes and parts never simultaneously cease being parts and wholes, as causes and effects never cease being effects and causes that flow in all dimensions and directions, destroying and reconstructing meaning. If it managed to escape from all pretense of subordinating meaning and start accompanying it with uncertainty and para-consistency, the main obstacle for classification would thus be overcome. But then we would not be practicing classification but declassified thinking.

While concepts are notions, instances that allow us to interact mentally and directly with the world, categories would be concepts that organize other concepts, namely, metaconcepts, notions that supra-organize, subordinate, and associate concepts. Under our prism, a category would not be merely formal or neutral, but full and involved.

When we insert a supra-ordering metacognitive practice in the conception of the world to which we refer, to wit, an intentional perspective over our perspective, a word over our word, a conception over another conception, we are categorizing. We will call metaconcepts several concepts whose primary functionality of understanding the world transmutes into a secondary, although directive, functionality of understanding other concepts. Such an action, unnoticed in daily life, would be decisive for cognitive development, the loss of Reality, and the domination of the planet.

With the liberation and dissemination of meta-resources, on the basis of the metalogos, humans dedicated their time to dominating their own cognitive tool, taking an enormous leap forward in the opposite direction to Reality, but accompanying this with propitious expeditions and conquests in their own world. In Western culture, science is the high priest and custodian of the metalogos, the production of categories, and now metacategories, resources ‘meta,’ which increasingly widen the divide.

3.3 Deepness and concretion

To know more; to know it all. We are approaching with obscene slowness the far beyond and the here and now:
But how deeply will we quench our thirst? A complicated dilemma: Valéry also stated, to our disappointment (1960, 215): “la profondeur est dans la peau.”

Deepness would then be more than an optical effect of a situated psychism. Deepness would be a metaphor and a relative measurement: as a metaphor of the physical world, it is associated with notions of height or abyss. As a relative measurement, the degree of deepness depends on the physical position of the observer. To generalize is to make a statement of universal value (woman), although to specify is also to make a generalization but with a local value (this woman). The languages that we use never hesitate to promote generalization as a default value of their structures. It would be impossible to say what is to generalize or to specify without generalizing. The concretion ‘this woman’ also contains and paradigmatically opens up to a generic universe, but syntagmatically (at the hub of its associations) it houses other universes that complicate matters, as does “this American woman, Californian, New Yorker … even ‘this Jane.’”

On the basis of the impossibility of specifying, the system leaves us the generalizing algorithm for any other circumstance. And we see that, effectively, generalization works and redeems us. Generalization is analgesic, anaesthetic, amnesic (for that reason some inconveniences and memories can be tolerated by individuals).

Such a generalizing logic glides through the confines of thought, legitimizing itself in practice to such an extent that the most specific would simultaneously be the most general. And, in our eyes, the most profound would be the most superficial. Consequently, an explanation makes such an abusive use of generalization that has difficulty escaping from contradiction. The thicker the brushstroke is, the smaller the chance we will apparently have of erring. However, this is precisely when we err most.

4.0 Declassification

The following paragraphs will cover a number of declassifying tools of a different nature stationed on the abandoned frontiers and peripheries of our cognitive and post-cultural matrix, fundamentally in pluralistic, paraconsistent and ontologically hybrid places. Declassification, with its indirect and fragile resources, would not only allow for an alternative re-description of voracious transculture, but would also provide individuals and communities tools for resisting, appropriating and reclassifying within it.

4.1 Some post-epistemological resources

Conventional classification is based on an underlying dichotomic logic from which spring hierarchizations anchored to a particular vision indifferent to cultural, ideological and cognitive pluralism. Dichotomy would therefore be a front open to declassifying action. Several control and dichotomic reversion strategies will be briefly covered below, while, in the two following sections, a more in-depth look will be taken at strategies that contain dialogical and paraconsistent procedures. As regards the declassification of dichotomies, there are several available options:

– Edgar Morin, on the basis of his complex methodology (2008), suggests conciliating oppositions, regarding them as necessary collaborators. So, rather than the opposite of disorder, order would be its inevitable complement: there is no order without disorder, no light without darkness, no one side of a coin without its flip-side. Even allowing for evident cognitive developments and the usefulness, in some cases, of conciliating oppositions, this balanced solution sometimes would not go beyond the good intentions of salvaging a couple that does not now work or should never have existed.

– Boaventura Santos advocates for “considering the terms of dichotomies outside the articulations and relationships of power that unite them, as a first step towards freeing them from the said relationships and revealing other alternative ones that have been obscured by hegemonic dichotomies. To consider the South as if the North did not exist, to consider women as if men did not exist, to consider the slave as if the slave owner did not exist” (Santos 2005, 160). In this relevant proposition, it should be noted that a radical extirpation of oppositions, without due precautions, could lead to cognitive reductions or distensions: in many cases, maybe ‘thinking without’ is no improvement on ‘thinking against.’

– From the deconstruction of dichotomies, a reconstruction processus of oxymora and hyperbatic oxymora (inversions) has been developed (García Gutiérrez 2007), inducing the cooperation of the elements of many automatic oppositions, such as centre/periphery, so as to transform them into two efficient epistemological and heuristic resources: central periphery (Bangalore or São Paulo, for instance) and peripheral centre (be it the Bronx or the poorest districts of L.A.). The calculated construction of oxymora is a powerful metacognitive tool of declassifying thought in certain cases.

– Finally, multivalency, ambiguity or polysemy can be generated in each concept in such a way that dichotomy is always overwhelmed or annulled in a controlled fashion. The multiplicity of meaning of a concept implies a clause of immediate rupture with its possible dichotomies. For instance, in the North/South dichotomy, it should be considered that neither absolute North nor absolute South exists. Even from the per-
spective of industrial development, there is North in South and South in North. All concepts generalize and, at a certain semic threshold, lapse necessarily into self-denial (see 4.3). For declassification, this conscience of conceptual precariousness is exceedingly relevant.

4.2 Pluralist and dialectic strategies

In this section, which is more applied to and focused on sectors related to political, social and cultural stances, I am going to describe two types of operators that, hypothetically, would help to break with unilateral and homogenizing schemas of dependence, whose presence is both massive and disturbing. In any case, what is involved is a theoretical proposal of cross-operators that, in a declassifying fashion, organize worlds spanned by constructions of history and memory, many fields of the liberal arts and sciences or media discourses. Such theoretical operators would have to be incorporated either by forcing or replacing and eliminating the hierarchical or reductive functions of the traditional operators of classifications, thesauri and ontologies.

What is understood here as an operator is a logical-semantic transversal tool (and, it should not be forgotten, of a necessarily ethical and political nature), whose pristordial function involves establishing relationships between registers and serving as a link between these and the participants in a network. For instance, the hierarchical tools BT, NT and associative RT, belonging to conventional thesauri, are operators of organization that satisfy precise, unequivocal and symmetric epistemological criteria.

The basic difference of these types of closed and univalent operators, with respect to this proposal, lies in the logics on which they are based. Declassifying operators are precisely resources of intervention and facilitation whose aim is to guarantee decolonizing thought and the complex operator is not designed to intervene in or control visions and meanings as regards an issue (see García Gutiérrez 2008, 2011a, 2011c).

Furthermore, an anti-relativist operator would act in a compensatory fashion, that is, it would side against injustices and inequalities established in the exomemory, intervene in the conflicts of interest between local positions and inter-ideological agreements, establish conditions for dialogue keyed to consensus, and apply the results of the latter. Transcultural operator V, as a result of an inter-cultural or inter-ideological agreement, would be responsible for those functions (see García Gutiérrez 2007, 2008, 2011a, 2011c).

Let us look at several clarifying issues touching on the shared and different aspects in both operators, operators that do not oppose each other, but intersect, supervise and complement each other. Complex operator Λ, whose most notable function would be to detect confrontations, contradictions, oppositions, dichotomies and antonymies in pursuit of their coexistence, includes all the possible meanings of an issue or the meaning of unshared issues, specifying them so that all participations or searches in the network are recognized by the shared subjectivities of a community or culture or by individual subjectivities. It is therefore an operator closer to ‘de facto multiculturality’ (Olivé 1999), to an initial co-presence of positions in equal conditions and with the same chance of visibility.

With regard to transcultural operator V, it is the synthetic product of a permanently open, democratic dia-
dialogue between representations of diverse positions (political, cultural, discursive, etc.) that negotiate the homologation and integration of certain issues that affect them from argument premises (and not mere arguments) or topoi. Therefore, this operator V implies the reaching of an agreement with respect to an issue and its formalization as a category transversal to the positions as a trans-category, constituting, from such a sanction, an ethical world norm that could interfere in the local registers that infringe it, not invalidating or censoring them, since they would always enjoy the protection offered by the complex operator, but warning the participating citizens about their content.

Both operators are profoundly democratic, since when \( \Lambda \) is supported by the specification of all the positions and worldviews, without exclusion, as itineraries of representation and localization of the registers, namely, guaranteeing the representativeness on an equal footing of all the initial positions with respect to an issue, V is essentially regulative and executive, that is, it balances the possible unjust treatment of some or other position in the network, even respecting the presence of such registers accommodating the prior principle of emancipation, in terms of a interculturally accepted categorical scale in such a way that abuses in the network do not go unpunished if the transcultural community can avoid it with alerts, warnings and recriminations. As a result, the transcultural operator is as fully democratic as the complex operator, since its application would only be authorized by democratic decision (transcultural synthesis) endorsed by the majority of the positions, a consensus that can be widened and must be revised periodically.

While the transcultural operator is the antidote to the relativism of which the complex operator could be accused, which does not determine the moral or cultural merits of a register, concept or position, the complex operator likewise involves the democratic and hermeneutic balance of a transcultural operator accused of lack of support or sufficient legitimization. If the complex operator leads all the positions and perspectives to mutual friction from which emerge third itineraries, spontaneous and deliberate new conivances, the transcultural operator is substance of a dialogical rationality in pursuit of convergence.

The complex operator is linked at a systemic level, that is, to an epistemography (García Gutiérrez 1998) as a concept network or open system. The complete visibility of the democratic function of this operator only appears at the system level, and not in each particular register. As to transcultural operator V, even performing at a systemic level as well, its complete realization is only achieved when it is specifically assigned to a register affecting the provided analytic description by means of other resources used by the position and local interest. However, its efficiency lies in a constant activism by intercultural dialogues and the adequate use to which it is put by culturally and socially committed mediators.

In his discourse ethics, Otto Apel (1996) put forward a set of six conditions for free and open dialogue, the first restriction being the only one inspired by moral concerns and the other five being rational:

- All parties should mutually regard each other as their equal and the same consideration should be given to the positions of all of the participants.
- The absence of direct restrictions and indirect institutional or structural pressures.
- The only admissible form of persuasion should be rational argument.
- No proposition should be exempt from questioning.
- Propositions are only accepted if all of the parties are in agreement.
- Dialogue is open and no authority shall be able to declare that a conclusion is foregone forevermore.

However, Apelian discourse ethics depend on the goodwill of the parties who, in the case of exomemory organization, have something more to defend than their own personal interests, the interests of a plural memory, and they have to be aware of the unlimited manipulation that totalitarian propaganda of the dominant power in each culture has tended to apply to language—to which must be added the fact of the difficulty of making decisions on issues linked to emotions. That would be sufficient reason to adopt anti-eristic measures (see Shopenhauer 2013; García Gutiérrez 2011c).

The interlocutors-translators in KÖ yet another part of global cultural production, should have at hand a mechanism that guarantees confidence, beyond ethical claims, based on the following table summarizing the acknowledgements and rights that must be accepted by all of the parties involved in the dialogic activity, after being thoroughly trained in transcultural dialectics (see García Gutiérrez 2005):

- Acknowledging the possible existence of other outlooks on an issue.
- Acknowledging the possibility of conversing about any issue.
- Acknowledging the possibility of being in the wrong.
- Acknowledging the possibility of changing positions (in the face of the most convincing argument).

These principles, however, do not prevent the following demands being made through loyalty to the position or representation of each interlocutor:
– The right that all positions be acknowledged.
– The right to defend any position through dialogue.
– The right of each interlocutor to change position.

The interlocutors represent emotionally, but above all rationally, a collective position and, by virtue of that rationality which has to prevail for dialogue and consensus to be possible, should be capable of undertaking the symbolically flexible tasks listed below in order of increasing difficulty:

– Simulating a self-critical and reflexive attitude towards all cultural positions.
– Identifying each position (with respect to a controversial issue, for example) in a hermeneutic range whose poles are occupied by the initially most conflicting positions.
– Self- and alter-classifying in the same schema, analyzing the discordance between possible variations of place.
– Identifying potential common ground and premises of arguments, a point that will be further addressed below.
– Identifying the degree to which the parties are willing to make concessions in the first and following instances.
– Possessing in-depth knowledge of contrary positions, which should be sufficiently solid and extensive so as to convincingly rebuff the other interlocutors’ arguments.
– Being able to simulate a contrary position versus their own (thinking from the ‘other side’ of the frontier) should they possess in-depth knowledge of the diverging position.
– Simulating third-party, intermediate and eclectic positions as possible common ground or for aligning positions initially far-removed. In the absence of dialogue, simulating hyper-national, hypo-national and anational, believer and agnostic, oppressor and oppressed, traditional and rebellious perspectives on the same issue, like for example violence, abortion, the veil, feminism, nationalism, culture, military intervention, education.

Self-monitoring the replies given on hundreds of political issues from all possible dichotomies so as to then dismantle the same dichotomies and occupy interstital positions. Declassifying mediators should be trained for any type of simulation in the changing environment of global transculture.

– Modifying the perspectives of positions on a polemic subject: for instance, if subthemes of the subject are negotiated, surpassing that level by introducing a discussion on other more abstract or general categories. Non-distractive versatility and transversality define an essential quality of transcultural interlocutors.

– Rotating positions in defence and demolition of abstract categories constructed in relation to a theme.

The test of alterization pretends in some way to achieve the same objectives of social justice that John Rawls (1971) searched for with his theoretical conception of ‘original position’. Once this hurdle has been overcome, transcultural interlocutors will be trained to defend general principles and rights with the same vigour as their own particular positions.

Establishing dialogue, however, will not be possible without the following determinations and conditions:

– Recognizing imbalances, injustices, the cloaking and silencing of issues, categories or positions on issues by several qualified interlocutors. In this regard, the intervention of the interlocutors should be proprio motu, as well as including rational claims of discrimination that could affect positions.

– Recognizing the unquestionable need to arrive at agreements on an issue after thorough deliberation that includes consulting other representatives of the positions themselves and other non-represented positions. After building a consensus, all possible representations would have to be involved, including leeway for those that do not yet exist or have yet to be expressed, by virtue of the transcultural operator’s openness to the future.

– Recognizing the tópoi of each position and creating an inventory of tópoi that facilitates subsequent transcultural translation.

In his diatopic hermeneutics, Boaventura Santos (2005) does indeed restore the ancient concept of tópoi to which he attributed a powerful practical dimension. Historians, anthropologists, social researchers in general, and knowledge organizers in this instance, are prone to carrying out drastic reductions of the world and, especially, the ‘world of others’. In this sense, customs, systems, cultures and even complete civilizations are consumed by implacable metonymic reductions. In the case of contemporary cultures, the reduction of the other to the ‘common Western place’ is habitually practised with astonishing naturalness, but, in spite of the damage done to its material and symbolic universe, that ‘other’ is present and could also be capable of defending itself. Reduction, however, would be irreversible and unavoidable if it were practised on cultures, practices or knowledge of another time, even if these correspond to the life experiences of our own now absent ancestors.

Diatopic hermeneutics advocates for the construction of nuanced premises or tópoi (plural of tópos), prior to the construction of the arguments themselves of a dialogue (since, in reality, the analysis of other cultures or, by extension, sensibilities should be based on dialogic criteria), both for that of contemporary cultures and those that have al-
ready disappeared. The *tópos* would be agreed (or agreed in a simulated way) pre-dialogic places on the basis of which it were possible to establish arguments and, therefore, guarantees of dialogue and an approximation to equal opportunities. What would not be involved, then, is the lineal translation of the other, as colonial anthropology did, but to give it a voice that makes an authentic cultural translation possible (see Santos 2005, Ch. 5). The opportunities for research and practice of this procedure open up promising and innovative possibilities for democratic KO.

### 4.3 Paraconsistent strategies

The dichotomic wellspring is inexhaustible and we are assuming that behind each dichotomy (of all thought, then) there is a contradiction. The universe of available contradictions is immense and, nevertheless, insufficient for the objectives of this offensive: contradiction does not exist in nature (or maybe it does, although we will always be in the dark), but is a merely epistemological issue. It is us humans of a specific cultural axiology, possibly, at this very moment, all humans are yoked to transculture, who see contradiction in all that surrounds us, in others and in ourselves. The contradiction that emanates from an opposition can be as artificial as the opposition itself, although it could provide an unexplored post-epistemological space.

Setting for demonstrating contradictions in discourse or third-party actions is a fairly unproductive exercise: however much Marx scientifically demonstrated the demise of capitalism, based on its internal contradictions, he seems to have got his predictions wrong. It is possible that the end of capitalism can only be verified together with the extinction of the human race on a devastated planet. Declassification would not, therefore, waste time censuring contradictions: one of its procedures would consist in using them to discover the world, acknowledging their undeniable constitutive role.

Let us now have a look at three theoretical strategies of declassification (see García Gutiérrez 2011b, 2013) as a mode of paraconsistent knowledge, going beyond the limits of the three principles of conventional logic that govern us and restoring a calculated contradiction as a post-epistemological resource:

#### 4.3.1 Strategy 1

Every instance possesses an open regime and can be as well as another or multiple instance, beyond the possibilities of poly-hierarchies. An infinite number of notional interweavings stalk instances, configuring and reconfiguring propositions in a syntagmatic axis (that of grammatical combinations, for structuralism) which devours paradigmatic verticality. No property is essential for a concept, nor does it have to be favoured over the rest. Specifically, William James warned ([1927] 1995, II: 333, 335): “There is no property absolutely essential to any one thing.... The essence of a thing is that one of its properties which is so important for my interests that in comparison with it I may neglect the rest.”

When we make allusions using an automatism of the parts, classes, properties or functions of a house or car, of an institution, city, computer or citizens, we are classifying the world in an essentialist way. The verb to be connects, explicitly or tacitly, the part with its whole, the class with its species: the wheel (is) of the car, the screen (is) of the computer, the kitchen (is) of the house, the house is a dwelling, sardines are fish, the computer is technology, Jim is a lawyer, etc. These essentialist operations involve organizing the world on the basis of a unicum and reducing logic, since it asserts by denying or concealing the possible worlds that modal logic invokes and, above all, the factual worlds. That practical logic is a resource of conventional classification.

Therefore, the declassified formula would be as follows: an instance not only is (itself), it also always is (another instance). We will call this first synthesized formula: strategy of ontological extension. On extending the limits of the essence, this strategy deletes them, depurifies, hybridizes, contaminates imaginary essences, opens and devaluates hierarchies. Its aim is to contest the sacred principle of identity: A=A and the abolition of conceptual submission to assumed supra-conceptual instances. Here are several declassifying arguments: A is never equal to itself, inasmuch as the logic of change impedes the permanence of a state. The representation of A would be equal to itself outside time, but outside temporality there is neither a conception of A nor any conception at all. A would be a representation of something outside A which is not A. It is still A but simultaneously it is not A anymore. Hierarchy is a conventional ordering of concepts and, therefore, responds to an epistemological order, given that it is not ‘natural’ and not even interculturally-shared.

#### 4.3.2 Strategy 2

What will be addressed now is a second formula derived from the first: if an instance not only is (itself), but also always is (another instance), then it is also plausible that it is not in other possible worlds and, in at least one of them, it would necessarily not be. The possibilities of not-to-be flow through the possibilities of to be, and I put special emphasis on the plural: possibilities of not-to-be. It is common knowledge that there exist numerous manifestations of to be, introduced by is also, perchance as many possibilities as enunciative situations and, nevertheless, it is for being unaware of the domain of not-to-
be that we can credit the not-to-be with only one absolute possibility: simply not-to-be. Not-to-be is a product of the insufficiency or the perceptive reductionism of the essentialist conscience and, therefore, very likely as volatile, elastic and reversible as the fact of to be and with many other ineffable properties that cannot be said or said yet (such as emptiness or nothingness, a world that begins to be ‘said’ by subatomic physics). And all without prejudice to the possibility that the denied (by the not-to-be) might be much more complex than the asserted world (by the to-be).

By deconditioning and making the counterfactual mode implicit (Lewis 1973), we deduce from the argument

if an instance not only is, but also always is, then it would not necessarily be in at least one possible world

the second synthetic formula: an instance that also always is (another instance), also is not (itself) in at least a possible world. We will call this second hypothesis: strategy of necessary contradiction. The aim of this strategy is to refute and force the transgression, overcoming the last contrary epistemic resistance, of the classic principle of contradiction. Let us now analyze this using some previous examples: the centre is also not the centre; the periphery is also not the periphery; the North is also not the North; the South is also not the South; the beautiful is also not beautiful; the ugly is also not ugly; the faithful is also not faithful, the unfaithful is also not unfaithful, etc.

4.3.3 Strategy 3

Lastly, we will call a third declassifying formula a strategy of dissolutive superposition, which acts upon cases that permit a simultaneous vision of the two poles of dichotomy: To be or not to be, is now not the question, rather it would be: to be and not to be. An: either is or is not instance, the principle of excluded third, introduces a dualist rift in the very foundations of thought. To propose—and enforce—that an instance could be and not be at the same time, on multiple occasions, repairs it.

We would then be simultaneously rational and irrational (without complementarily opposing or conceiving such instances), judges and the judged, educators and the educated, predators and the preyed on (however much positivist training stubbornly holds the opposite, the flood of meaning inundates everything). Yet we would be much more by applying hyperbatic inversion: observers observed and not just observed observers; dominators dominated and not only dominated dominators. This circumstance would not exclusively affect human roles, but also physical qualities or any other instance or property that could be susceptible to paraconsistency: attractive and ugly; tall and short; generous and egoist. The surface is deep and deepness superficial: abyssal creatures are exactly where they should be—at what inverse depth would a boat be for them? The North is always South and the West is also the East. On the planet, in outer space, and especially in the quantum world, to go up, to go down, to be or not to be, is only a matter of narrative, of enunciators and addressee. Bifurcations and biases are products of perspective and situations. An instance does not have any more value than that which its ‘instant’ ascribes it, or any more meaning than that which an immovable perspective, and therefore dogmatic, closed, impossible (and contradictory) in itself, endows it.

As to hierarchy, the main logical (and political) architecture of the conventional classification of the world, with its opposing base, declassification would break with all/part and species/gender on regarding them as a variety of asymmetric dichotomy. And the same would happen with the submission of adjectives and properties to nouns and other assumed cognitive foundations. In declassified thought, all essences would be exchangeable and soluble, all concepts precarious and negotiable.

A red car would not only be essentially a car, but also essentially red. Nouns would have to lose their secular privileges over quality: the red car is a good representative of the field of vehicles, but also of redness and many implicit properties and extensions in the red car notion: of the parts, components and functions of all cars and also the genealogy that has led it to be what it is and what the subjective term encyclopaedia represents: an example of modernity, development, pollution, etc. We might only pay attention to a car due to the intensity of its colour, because it is metallic, noisy or goes fast, something that would devalue, from that perspective, the paradigmatic status of the concept of car itself, while at the same time it would syntagmatically enrich it with perspectives, qualities and nuances from our particular encyclopaedia of associations. Commonly, nouns have occupied a centrality that cloaks adjective, peripheral thought. Hence, one of the priorities of declassification is to restore all that ‘secondary’ apparatus of language.

5.0 Protrepticus of declassification

It is the obligation of a determined vanguard of KO, without complexes, opportunisms or fears, to address (de)classification, whatever its field of action, with the same objective borrowed from Holloway (2010): to change the world without taking power.
Notes

1. A seemingly contradictory central Hegelian concept that simultaneously means to uplift, abolish, cancel or suspend (Hegel 2009) and which forms the basis of Hegel's dialectic method.

2. Although the word aesthetics originally stems from aisthesis—the art of sensitivity—it was soon used specifically to refer to the study of forms and the beautiful, ending up subjecting and anesthetizing its initial purpose.

3. Hierarchy of credibility is an expression introduced by Howard S. Becker (1967). Those at the top of organizations or societies are seen to be more credible than those at the bottom.

4. In our contemporary civilization, we tend to have no qualms about making decisions affecting our grandchildren, but we do not accept that our grandparents have previously decided for us.

5. How can language resist inhumanity, brutality? If literature, philosophy, the liberal arts… are powerless to detain barbarity, why then educate? (Mélitch 1998, 171-189); to which I naturally add: Why then research or think?

6. Namely, the enunciation privileged by the modal logic of possible worlds and which we adopt here, for example (if it were, if it rained, there would be, it would be, etc).

References


Brief Communication: The Czech System of Evaluation of Science Research Handicaps Interdisciplinary Science

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Abstract: The system of evaluation of scientific outputs in the Czech Republic has been established by viewing all outputs which are registered in the database called Information Register of R&D results. Every output gets some points which are allocated to individual authors and institutions. The procedure is established in the material called Methodology of Evaluation of Research Organizations and Evaluation of Finished Programmes (valid for an actual year or years). This article shows how one changeover in that algorithm which was carried out between the years 2009 and 2010 handicaps interdisciplinary science. As an example, the data about publications from Charles University in Prague, Faculty of Science are used. The data from more or less interdisciplinary disciplines are compared using the algorithm from different versions of methodology. The results show that the changeover handicap interdisciplinary and mainly publications in prestigious journals.

Keywords: journals, RIV-points, methodology,

The system of evaluation of scientific outputs in the Czech Republic has been established by viewing all outputs which are registered in the database called Information Register of R&D results (further only “RIV”). Every output gets some points (further only RIV-points) which are allocated to individual authors and institutions. They are done according to a procedure which is appointed in the material called Methodology of Evaluation of Research Organizations and Evaluation of Finished Programmes (valid for an actual year or years) (further only Methodology). According to obtained RIV-points, the money for science is distributed from the state budget to the institutions. More points are given to the articles published in the journals with the highest impact factor. These points are given according to the mathematical algorithm which is appointed for the actual year. This article would like to show how one changeover in that algorithm which was carried out between years 2009 and 2010 handicap interdisciplinary science.

The algorithm is

$$\text{RIV-points} = 10 + 295^*\left(\frac{1-N}{1+(N/0.057)}\right)$$

where $N$ is the normalized ranking of the periodical, and

$$N = \frac{P-1}{P_{\text{max}}-1}$$

where $P$ is the periodical’s ranking according to the Journal Citation Report in a series sorted in the descending order by IF and $P_{\text{max}}$ is total number of periodicals in the given field according to Journal Citation Reports (Research, Development and Innovation Council 2009; (Research, Development and Innovation Council 2010).

The difference in situation is shown when a single journal is rated in more than one series. The older version of Methodology (Research, Development and Innovation Council 2009) and the older ones say, that “if the peri-
odical is registered for several fields, that field will be used for evaluation, in which the periodical achieves better order in a relation to total number of periodicals in the field.” Methodology (Research, Development and Innovation Council 2010) and the newer versions say, that “if the periodical is registered for several fields, the normalized ranking of the periodical N will be calculated as the arithmetic average of the normalized rankings of the periodical in all fields where it is registered.”

For an illustration, let’s take all the publications which were produced in nine biological departments of the Faculty of Science, Charles University in Prague during the year 2013 (summarized in the OBD database) and calculate how many RIV-points these publications would get according to Methodology (2009) and Methodology (2010). (See Table 1 and Figure 1).

<table>
<thead>
<tr>
<th>Departments</th>
<th>Abbreviation</th>
<th>RIV-points (Methodology 2009)</th>
<th>RIV-points (Methodology 2010)</th>
<th>Difference</th>
<th>Difference towards to RIV-points (Methodology 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology and Human Genetics</td>
<td>DAHG</td>
<td>1147,11</td>
<td>648,47</td>
<td>-498,64</td>
<td>0,7689</td>
</tr>
<tr>
<td>Botany</td>
<td>DBOT</td>
<td>5931,86</td>
<td>5078,09</td>
<td>-853,77</td>
<td>0,1681</td>
</tr>
<tr>
<td>Cell Biology</td>
<td>DCEB</td>
<td>2300,81</td>
<td>1973,91</td>
<td>-326,90</td>
<td>0,1656</td>
</tr>
<tr>
<td>Ecology</td>
<td>DECO</td>
<td>4493,81</td>
<td>3921,51</td>
<td>-572,30</td>
<td>0,1459</td>
</tr>
<tr>
<td>Experimental Plant Biology</td>
<td>DEPB</td>
<td>2040,51</td>
<td>1987,37</td>
<td>-53,14</td>
<td>0,0267</td>
</tr>
<tr>
<td>Physiology</td>
<td>DPHY</td>
<td>651,34</td>
<td>628,09</td>
<td>-23,25</td>
<td>0,0370</td>
</tr>
<tr>
<td>Genetics and Microbiology</td>
<td>DGEM</td>
<td>1622,70</td>
<td>1485,19</td>
<td>-137,51</td>
<td>0,0926</td>
</tr>
<tr>
<td>Parasitology</td>
<td>DPAR</td>
<td>3311,40</td>
<td>2710,42</td>
<td>-600,98</td>
<td>0,2217</td>
</tr>
<tr>
<td>Zoology</td>
<td>DZOO</td>
<td>7181,47</td>
<td>6058,06</td>
<td>-1123,41</td>
<td>0,1854</td>
</tr>
<tr>
<td>altogether</td>
<td>ALL</td>
<td>28681,01</td>
<td>24491,11</td>
<td>-4189,90</td>
<td>0,1711</td>
</tr>
</tbody>
</table>

Table 1. Overview of RIV-points for publications which given departments participate on.

Figure 1. The sum of RIV-points according to Methodology 2009 compared with sum of RIV-points according to Methodology 2010.
We can notice quite a big dissimilarity in the relative difference between the Department of Anthropology and Human Genetics (76.89 %) and the other departments (from 2.67 % to 22.17 %) (see Figure 2). How does it take place? The reason is that anthropology is a very interdisciplinary discipline and anthropologists publish their articles in journals which are rated in several fields of Journal Citation Reports. This is where the problem takes place, because each field has a different “culture of citation.” This means that the same journal which is on the top in one series can be average in another series because of different contexts—hardly any journal rates between the top ones in several fields of Journal Citation Reports.

In the case of publishing in journals which are more specialized and which rate in only one field, the top journals stay the top ones. The changeover in Methodology does not affect them (the best N value and the average N value are the same thing). But in case of publishing in journals with a larger spectrum of interest which rate in more fields, the situation is different. Even the journal which is the best one in one field is a little bit worse in another field or fields, so the changeover in Methodology affects them quite a lot (the best N value and the average N value could be quite different). Because of the algorithm, the effect of the changeover involves mainly the best journals—even a small change of N value inside the interval (0; 0.25) can markedly change the RIV-points in the range (50; 305). Journals which are at the bottom of the series are almost not involved (e.g. the journals, whose N value is inside the interval (0.75; 1), get a number of RIV-points from range (10; 15) (see Figure 3).

As an example, let’s take the periodicals *American Journal of Physical Anthropology* and *Journal of Human Evolution*, two of the most prestigious anthropological journals. Table 2 contains the comparison. We can see that because of the changeover of the algorithm, the number of RIV-points was reduced on around 1/3 in case of both journals.

Finally, we can observe that this element in the algorithm (which stays in the Methodology until today) handicaps the interdisciplinary science and these disciplines which are predisposed to connecting with other disciplines and to viewing the world in a wider context.

References


Figure 3. The curve of dependency of RIV-points on the N value.

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>American Journal of Physical Anthropology</td>
<td>2,481</td>
<td>7th from 83</td>
<td>25th from 47</td>
<td>0,07317</td>
<td>0,29746</td>
<td>129,72</td>
<td>43,33</td>
<td>-86,39</td>
<td>1,9938</td>
</tr>
<tr>
<td>Journal of Human Evolution</td>
<td>4,094</td>
<td>2nd from 83</td>
<td>14th from 47</td>
<td>0,01220</td>
<td>0,14740</td>
<td>250,04</td>
<td>80,14</td>
<td>-169,90</td>
<td>2,1200</td>
</tr>
</tbody>
</table>

Table 2. Characteristics of two concrete journals.
Books Recently Published


Publisher

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Criteria for acceptance will be appropriateness to the field of the journal (see Scope and Aims), taking into account the merit of the contents and presentation. The manuscript should be concise and should conform as much as possible to professional standards of English usage and grammar. Manuscripts are received with the understanding that they have not been previously published, are not being submitted for publication elsewhere, and that if the work received official sponsorship, it has been duly released for publication. Submissions are refereed, and authors will usually be notified within 6 to 10 weeks.

The text should be structured by numbered subheadings. It should contain an introduction, giving an overview and stating the purpose, a main body, describing in sufficient detail the materials or methods used and the results or systems developed, and a conclusion or summary.

Footnotes are accepted only in rare cases and should be limited in number; all narration should be included in the text of the article. Paragraphs should include a topic sentence and some developed narrative; a typical paragraph has several sentences. Italics may not be used for emphasis. Em-dashes should not be used as substitutes for commas.

Reference citations within the text should have the following form: (Author year). For example, (Jones 1990). Specific page numbers are required for quoted material, e.g. (Jones 1990, 100). A citation with two authors would read (Jones and Smith, 1990); three or more authors would be: (Jones et al., 1990). When the author is mentioned in the text, only the date and optional page number should appear in parenthesis – e.g. According to Jones (1990), …

References should be listed alphabetically by author at the end of the article. Author names should be given as found in the sources (not abbreviated). Journal titles should not be abbreviated. Multiple citations to works by the same author should be listed chronologically and should each include the author's name. Articles appearing in the same year should have the following format: “Jones 2005a, Jones 2005b, etc.” Issue numbers are given only when a journal volume is not through-pагinated.

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KNOWLEDGE ORGANIZATION

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International Journal devoted to Concept Theory, Classification, Indexing and Knowledge Representation

Scope

The more scientific data is generated in the impetuous present times, the more ordering energy needs to be expended to control these data in a retrievable fashion. With the abundance of knowledge now available the questions of new solutions to the ordering problem and thus of improved classification systems, methods and procedures have acquired unforeseen significance. For many years now they have been the focus of interest of information scientists the world over.

Until recently, the special literature relevant to classification was published in piecemeal fashion, scattered over the numerous technical journals serving the experts of the various fields such as:

- philosophy and science of science
- science policy and science organization
- mathematics, statistics and computer science
- library and information science
- archivistics and museology
- journalism and communication science
- industrial products and commodity science
- terminology, lexicography and linguistics

Beginning in 1974, KNOWLEDGE ORGANIZATION (formerly INTERNATIONAL CLASSIFICATION) has been serving as a common platform for the discussion of both theoretical background questions and practical application problems in many areas of concern. In each issue experts from many countries comment on questions of an adequate structuring and construction of ordering systems and on the problems of their use in opening the information contents of new literature, of data collections and survey, of tabular works and of other objects of scientific interest. Their contributions have been concerned with

1. clarifying the theoretical foundations (general ordering theory/ science, theoretical bases of classification, data analysis and reduction)
2. describing practical operations connected with indexing/classification, as well as applications of classification systems and thesauri, manual and machine indexing
3. tracing the history of classification knowledge and methodology
4. discussing questions of education and training in classification
5. concerning themselves with the problems of terminology in general and with respect to special fields.

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The contents of the journal are indexed and abstracted in Social Sciences Citation Index, Web of Science, Information Science Abstracts, INSPEC, Library and Information Science Abstracts (LISA), Library, Information Science & Technology Abstracts (EBSCO), Library Literature and Information Science (Wilson), PASCAL, Referativny Zhurnal Informatika, and Sociological Abstracts.