

My journey into the topic of relationships began in the late fall of 2006 while working on my paper for 590TR Information Transfer and Collaboration in Science. My paper was a “representative literature review on the topic of mapping different thesauri and the uses of such for the organization of information to meet the needs of interdisciplinary scientists.” As such, some article I read—now lost to me—pointed me to an ARIST article by Khoo and Na (2006) “Semantic relations in information science.”

Many of the articles I was reading on mapping thesauri raised the issue of whether or not inter-concept relationships within a single thesaurus could truly carry over into a multiply-mapped thesauri, especially in the context of multilingual thesauri. I was considering my problem of mapping across scientific domains to be very similar to “true” multilingual mapping, thus, I decided this might be a highly relevant piece to read. I ended up finding this excellent article fascinating! It is also the piece which put me on to Bean & Green and Rebecca Green, period. For that I shall be ever grateful.

This annotated bibliography is an attempt to provide some reflection on the things I have read in the intervening five plus months, to situate them amongst themselves, and perhaps among the larger set(s) of literature on the topic of relationships.

I am grateful for this excursion into this topic as it has gently reminded me that there are, in fact, whole branches of learning of deep relevance to library and information science—even the “little” corner I have made myself comfortable in—with which I am not even qualified for the label of neophyte; e.g., linguistics and grammar. This came at a time when I was beginning to get smug with myself about the lack of fields of direct relevance for me to venture into; not, of course, that there was nothing left for me to learn—I will never reach that hideous point of view, nor state—but more as a defense of my chosen second graduate degree. See, e.g., my blog post “Words.” at <http://marklindner.info/blog/2006/11/11/words/>

The vast majority of these articles, standards, books or book chapters were read between November 2006 and late April 2007. A few were also read for the first or a previous time in the preceding year and a half or so. There are approximately six articles included that I have not yet had a chance to read. These are primarily citations from Beghtol (2001); all are annotated as such. There are also a handful which I am unable to put into my hands for some reason and am thus unable to do a proper annotation. I have attempted in most cases to give a minimal account, even if only to list associated keywords assigned to them in my Zotero database. There are also about a dozen that *are* available to me but which I ran out of time to properly annotate. As unhappy as that makes me I must accept the reality. I have included all of the citations to the above categories because, as inadequate as the annotations are, they reflect my journey through this most interdisciplinary of topics.

I have attempted to give recommendations for specific contexts and individuals in most cases. Dates in brackets are the dates the annotations were written. These are often vastly different from when read, or perhaps first read. The dates I read most of them are available to me in the vast majority of cases. I try to record this information by writing it on any paper copies and recording it in my Zotero database. I also try to record this information in any electronic copies as the Mac makes this extremely simple. This information is probably of little value to anyone except myself, and seeing as I ran out of time to do the task to my own expectations, that information is not recorded here. If someone else were interested in it for some reason they could find it for a large percentage of these items by checking my weekly "things read this week" blog posts that began in January 2007. I have also assigned keywords to each source to provide another kind of access to the concepts covered in each source.

I had hoped to list all of the citations in and amongst these sources, also, but that is another portion that I had to let go. This data is available to me in many cases, as I have been trying to record it for myself. In a few cases I did list these intertextual links here, but the few that I was able to incorporate do not accurately reflect the amount of intertextuality that exists. Seeing as this could be useful information to others I feel worse about this lack of inclusion than I do about the lack of dates read.

All in all, this exploration into the topic of relationships has been a pleasant uphill climb ever since I began, and one I look forward to continuing.

Aitchison, Jean, Alan Gilchrist, and David Bawden. *Thesaurus Construction and Use: A Practical Manual*. London: Aslib IMI, 2000.

A classic manual on the practical aspects of thesaurus construction which aims "to provide a practical, concise and handy guide to the construction of thesauri for use in information retrieval" (xiv). This edition has omitted much of the theoretical material that was present in earlier editions. The authors refer readers desiring a more theoretical approach to Lancaster (1986).

Space limitations also led to a focus on faceted techniques in the section on construction techniques, which is as it should be. Provides good coverage of relationships in thesauri. This edition also predates the updated standards, but there appears to be little substantial change in this regard in the standards. Includes an extensive bibliography.

Recommended as a valuable reference source. Will refrain from recommending it as textbook without having seen Broughton's (2006) *Essential Thesaurus Construction*, but it *should* definitely be in every thesauralist's tool box of references. [30 April 2007]

thesauri, thesaurus construction, reference books

Bean, Carol A. "Mapping Down: Semantic and Structural Relationships in User-Designated Broader-Narrower Term Pairs." *Proceedings of the Sixth International ISKO Conference, 2000*.

Not yet read. Using data from the Large Scale Vocabulary Test (LSVT) conducted by the National Library of Medicine and the Agency for Health Care Policy and Research, investigated the terms that were "mapped down," i.e., mapped from a BT to an NT in "an effort to characterize the ad hoc semantic and structural relationships formed by users" (302). The results are also compared to a previous study (McCay & Browne, 1998) that compared terms that were "mapped up," i.e., from a NT to a BT. [29 April 2007]

semantic relationships, hierarchical relationships, user studies, LSVT

Bean, Carol A, and Rebecca Green. "Improving Subject Retrieval with Frame Representations." *Subject Retrieval in a Networked Environment: Proceedings of the IFLA Satellite Meeting held in Dublin, OH, 14-16 August 2001 and sponsored by the IFLA Classification and Indexing Section, the IFLA Information Technology Section and OCLC, 2003*.

Provides a brief overview of frames, while focusing "on the organizational and structural elements of frames that support the objectives of subject retrieval" (115). Argues that frames would be useful in increasing both recall and precision in subject retrieval. Discusses both frame-based indexing and searching.

Useful for those interested in the subject of frames in information retrieval. [29 April 2007]

frames, indexing, searching, subject retrieval

Bean, Carol A., and Rebecca Green. "Relevance Relationships." In *Relationships in the Organization of Knowledge*, 115-132. Boston: Kluwer Academic Publishers, 2001.

Elucidates some of the factors which can play an inhibitory role and those that can play a contributory role towards the likelihood that a document is relevant to a user's need. Contributory relevance factors are primarily germane to recall, while inhibitory relevance factors are more so for precision. Discusses how content-based components, while serving primarily as contributory factors, can also serve as inhibitory ones. Does a good job pulling apart the often-conflated concepts of topicality and relevance. Considers users and information needs, subject representation, citation relationships, and knowledge synthesis in the context of the relevance relationship. Provides empirical support for their view that non-matching topical relationships can be of any type of relationship—hierarchical, structural, analogical, etc.—and not just a topic-matching relationship.

While this article rehashes much that is covered in Green (1995, *JASIS*) and Green & Bean (1995), it also includes some additional empirical research conducted after those articles.

Recommended. [28 April 2007]

relevance, topicality, precision, recall, content-based relationships, citation relationships, knowledge synthesis, retrieval

Bean, Carol A., and Rebecca Green, eds. *Relationships in the Organization of Knowledge*. Boston: Kluwer Academic Publishers, 2001.

This wonderful book is the first of two volumes whose genesis was the participation of the editors in an ACM/SIGIR workshop, "Beyond Word Relations" in 1997. This volume "examines the role of relationships in knowledge organization theory and practice, with emphasis given to thesaural relationships and integration across systems, languages, cultures, and disciplines" (Green, Bean & Myaeng, 2002). It particularly focuses on relationships in the organization of recorded knowledge and is divided into two parts: (1) Theoretical background and (2) Systems.

The first part is the coherently strongest. Green provides an excellent overview chapter, which by itself ought to be required reading in most any course dealing with the organization and representation of recorded knowledge, particularly at the lower levels of an LIS education. Tillett distills an immense knowledge of bibliographic relationships into a short article. Dextre Clarke discusses thesaural relationships, while Milstead writes about standards for thesauri, and Hudon explicates issues and solutions in multilingual thesauri. Bodenreider and Bean's chapter on vocabulary integration within a subject domain (medicine) may focus on the UMLS, but it is still at a fairly theoretical level and has much wider applicability. Beghtol discusses cultural warrant in bibliographic classifications, and Bean and Green close the first part with a theoretical discussion of relevance relationships.

The second part, which discusses relationships within working systems, is interesting and useful in its own right. The individual articles serve a purpose in describing the roles, strengths and limitations of various relationships within each individual system, while together they provide a good overview of the state of relationships in the major bibliographic systems currently in use. LCSH is covered by El-Hoshy, AAT by Molholt, and MeSH by Nelson, et. al. Neelameghan introduces the thirty lateral relationships (non-hierarchical associative) in the OM Information Service, which "is a multicultural, multilingual information service in the spiritual and religious domains" and "intended to be used globally by peoples of different cultures and faith" (186, 185). Satija describes relationships in the Colon Classification, and Mitchell ends the second part on the Dewey Decimal Classification system.

All in all, this is an excellent book. While, in its entirety, it may not serve well as a text for a specific class, almost every article contained in it would serve a well-defined purpose in a specific context in courses or sections of courses on cataloging, indexing, knowledge organization and representation, ontologies, and even introductory courses.

I feel very comfortable stating that this volume serves as the singularly best introduction to relationships in the service of the organization of recorded knowledge. All of the articles provide a good or better introduction to their specific topics and the bibliographies taken as a whole provide an incredibly broad and deep resource into the literature of relationships in these contexts.

Highly recommended. [29 April 2007]

overview, knowledge organization, bibliographic relationships, intratextual relationships, intertextual relationships, subject relationships, relevance relationships, thesauri, indexing, symmetry, asymmetry, roles, arity, cardinality, transitivity, semantics, open class, closed class, paradigmatic relationships, syntagmatic relationships, citation, hypertext linking, topicality, thesaural relationships, standards, multilingual thesauri, vocabulary integration, UMLS, cultural warrant, universality, LCSH, AAT, MeSH, OMIS, lateral relationships, associative relationships, CC, DDC, equivalence relationships, hierarchical relationships

Beghtol, Clare. "Bibliographic Classification Theory and Text Linguistics: Aboutness Analysis, Intertextuality and the Cognitive Act of Classifying Documents." *Journal of Documentation* 42, no. 2 (June 1986): 84-114.

Distinguishes between a document's aboutness and its meaning and then utilizes the text linguistic theory of T. A. van Dijk to suggest a theory of the cognitive process of classifying documents. Discusses two forms of intertextuality: "that between documents classified in the same class of the same classification system; and that between the classification system as a text in its own right and the documents that are classified by it" (84). Describes an experimental study that could be used to test the model presented. Also comments on the uses of text linguistics for theories of bibliographic classification.

This is a fairly complex article which bears close reading and, in truth, deserves a second reading. I did find, though, that it offers the best explication that I've seen so far as to what it is I am doing when I classify items. Should be required reading in all advanced cataloging classes, and perhaps late in the semester of introductory classes.

The first several sections would also be usefully read in conjunction with Lancaster and Gale (2003), and Bean & Green (2001) or Green (1995, *JASIS*) and Green & Bean (1995) regarding "relevance."

Highly recommended, but deserves some effort. [28 April 2007]

aboutness, meaning, classification, intertextuality, text linguistics, theory, T. A. van Dijk, relevance

———. “Knowledge domains: Multidisciplinarity and Bibliographic Classification Systems.” *Knowledge Organization* 25, no. 1/2 (1998): 1-12.

Not yet read. Cited by Beghtol (2001): “This paper builds on previous research (e.g, Beghtol, 1997b, 1998)” (99).

Deals with the limitations of the major classification schemes of the 20th century for accommodating multidisciplinarity and the perspectives of different discourse communities. [30 April 2007]

multidisciplinarity, bibliographical classification systems, DDC, LCC, UDC, BC2

———. “Relationships in Classificatory Structure and Meaning.” In *Relationships in the Organization of Knowledge*, 99-113. Boston: Kluwer Academic Publishers, 2001.

Beghtol's premise "is that changing knowledge structures and the increased globalization of information exchange require rethinking all aspects of bibliographic classification systems, including the kinds of relationships we habitually include in the systems. ... Its general purpose is to raise questions, identify issues, and suggest potentially useful research areas" (99).

Provides an overview of relevant research, looks at structure and meaning in bibliographic classification systems, and examines the idea of “cultural warrant.”

Parts & wholes, while fairly well established as cultural universals are still "culturally" determined. Beghtol compares and contrasts both halves of the whole-part relationship, taxonomic subdivision (kinds of) and partonomic subdivision (parts of). The interesting thing, as she points out, is that "the formation of "kind of" and "part of" hierarchies is not neutral but is culturally determined" (107). Both different cultures and different purposes will lead to different subdivisions.

Calls for more research into relationships used in bibliographic classifications.

Cited by Beghtol (2000), which interestingly preceding this has the title of Bean & Green (2000) incorrect. That is, as *Relatedly Speaking: The Role of Relationships in Bibliographic Information Retrieval* versus *Relationships in the Organization of Knowledge*.

Recommended. [22 April 2007]

classification systems, indexing languages, whole-part relationship, cultural warrant, classificatory structure

———. “Semantic Validity: Concepts of Warrant in Bibliographic Classification Systems.” *Library Resources & Technical Services* 30, no. 2 (June 1986): 109-125.

Argues "that the semantic axis of bibliographic classification systems can be found in the various warrants that have been used to justify the utility of classification systems" (109). Traces the evolution of literary, scientific/philosophical, educational and cultural warrants in the 20th century. Specifically considers the use that the Classification Research Group made of each of these warrants. E. Wyndham Hulme, credited with coining the term "literary warrant" in his 1911 paper "Principles of Book Classification," also explicitly discussed all of these warrants at some point, except for cultural warrant, which he discussed implicitly in a series of lectures at Cambridge in 1921 and 1922.

Calls for "detailed examination of the interrelationships among various kinds of semantic warrant ... before the underlying semantic theories of bibliographic classification systems can be clearly defined and their effects and advantages exploited with confidence" (122).

Recommended for anyone interested in the concept of warrant, or of the work of members of the Classification Research Group. [27 April 2007]

classification systems, warrant, cultural warrant, educational warrant, scientific/philosophical warrant,

———. “A Whole, Its Kinds, and Its Parts.” *Dynamism and Stability in Knowledge Organization: Proceedings of the Sixth International ISKO Conference, 2000*.

This short paper looks at wholes, parts, and kinds, i.e., hierarchies, theoretically to situate them within a view of bibliographic classification systems as culturally determined and domain specific.

Highly recommended; not many articles this short can cover as much ground as Beghtol does. [1 May 2007]

wholes, parts, kinds, hierarchies, mereology, partonomy, bibliographic classification systems, domain specificity

Bodenreider, Olivier, and Carol A. Bean. “Relationships Among Knowledge Structures: Vocabulary Integration within a Subject Domain.” In *Relationships in the Organization of Knowledge*, 81-98. Boston: Kluwer

Academic Publishers, 2001.

Concentrates on synonymy, hierarchical relationships and explicitly mapped relationships within the Unified Medical Language System (UMLS) of the National Library of Medicine, which "provides a common interface to about 40 existing medical vocabularies..." (82). Within the relationship of synonymy, discusses the loose definition of synonymy used by the UMLS, issues posed by the differing granularity of the constituent vocabularies, implicit contextual knowledge, and evolution of term meanings over time and its effect on synonymy. The UMLS Metathesaurus' multiple inheritance and its breadth and depth of context, partonomic and meronymic relationships, ontological perspective, granularity, redundancy, simplification, implicit knowledge, and circular hierarchical relationships are discussed in relation to the hierarchical relationship. Also considered are explicit mapping relationships, which may be externally mapped (from another vocabulary) or internally mapped.

Recommended for those interested in the UMLS, naturally, but also for those interested in the problems and possible solutions to them of integrating a large number of thesauri into one metathesauri. [27 April 2007]

UMLS, synonymy, hierarchical relationship, explicit mappings

BSI British Standards. *BS 8723-1:200X Structured Vocabularies for Information Retrieval - Guide: Part 1: Definitions, Symbols and Abbreviations (Draft)*. London: BSI British Standards, 2004.

See *BS 8723-2:200X* below for comments.

BSI British Standards. *BS 8723-2:200X Structured Vocabularies for Information Retrieval - Guide: Part 2: Thesauri (Draft)*. London: BSI British Standards, 2004.

While I believe that these parts of the new British standard have been formally accepted, they are the only versions I have access to currently. Part 1 is extremely short and rather weak on definitions. The only definitions relating to relationships are for "paradigmatic relationship" and "syntagmatic relationship." Table 1 – Symbols and abbreviations is of value as a key to the rest of the standard.

Part 2: Thesauri is highly similar to the American standard, NISO Z39.19-2005, although significantly shorter; even if one includes Part 1. Perhaps some of the material will be covered in the remaining parts still under revision.

Chapter 8, "Relationships between terms, chapter 9, "Facet analysis," and chapter 10, "Presentation and layout," are of the most relevance to relationships. The section on facet analysis is particularly disappointing. It is barely over two pages, and is significantly less if one considers that one page (Figure 4, p. 42) is an

example.

Once the complete five-part standard is issued it will be easier to judge its coverage, depth, and relevance. One major strike against it, though, is the prohibitive—one might say exorbitant—cost.

Recommendation withheld.

thesauri, monolingual thesauri, standards, BSI, reference works

Byrne, Christopher C., and Stephen A. McCracken. "An Adaptive Thesaurus Employing Semantic Distance, Relational Inheritance and Nominal Compound Interpretation for Linguistic Support of Information Retrieval." *Journal of Information Science* 25, no. 2 (1999): 113-131.

Not yet read. Cite by Beghtol (2001) as breaking "down the usual hierarchical, equivalence and associative relations found in thesaural systems into various subtypes, and added the capability of "relational inheritance" in order to increase retrieval precision. Four relations could be inherited: has_semantic_role, has_measurement, has_subject_category, and has_component" (100).

Demonstrated in pilot projects; sounds intriguing. [30 April 2007]

thesauri, semantic distance, semantic relationships, relational inheritance, information retrieval

Coates, E. J. "Classification in Information Retrieval: The Twenty Years Following Dorking." *Journal of Documentation* 34, no. 4 (December 1978): 288-299.

Traces the developments in both classification theory and practice in the approximately twenty-year period since the 1957 International Study Conference on Classification for Information Retrieval held at Dorking. Considers developments in both syntactic and semantic issues, along with implementation.

Two overarching trends are: (1) the lack of progress in classification theory at a fundamental level compared to earlier work by Ranganathan, and (2) an amazing output of new, and updating of previous, classifications, and indexing tools. Progress on the theoretical side included a refinement of the concept of facet analysis, and, more importantly, "the realization that facets are themselves essentially the functions or superficial manifestations of relations between concepts belonging to different facet categories" (290).

Relational indexing schemes, such as those by Farradane, SYNTOL, Kergèvant, and Perreault are discussed. The work of the Classification Research Group on a

new general classification that was abandoned, but eventually led to PRECIS is discussed.

Impressive developments in practice that were finally catching up to theory are brought out. Bliss Bibliographical Classification (BC2) is hailed as a major success on that head. One major disaster in classification is also discussed; that of the British National Bibliography (BNB) highly supplemented and faceted version of DDC 14 being replaced by an unsupplemented DDC 18. PRECIS, UDC, and BSO are also discussed; BSO primarily in the context of a switching language and for its accord with current theory.

A very interesting discussion, perhaps of serious import today, is a discussion of the initial impact of computerization on classification. The final topic is "Classification under fire," which takes on suggestions of the day that "classification for information retrieval is obsolete or of dubious utility" (298).

Although this article is rapidly approaching 30 years of age, it is of extreme relevance today. In many ways, it points to the lack of further progress on the practical, implementation side of indexing languages writ large. It is also instructive in its final sections of the mistaken calls for classifications obsolescence in the face of full-text indexing and keyword indexing.

Highly recommended for both its succinct historical overview and for its applicability towards issues of the day in 2007. Should be required reading in indexing and advanced cataloging classes. [28 April 2007]

classification theory, indexing, faceted classification, relational indexing, Farradane, Perreault, SYNTOL, PRECIS, CRG, BNB, BSO, BC2, UDC

Cruse, D. A. "Hyponymy and Its Varieties." In *The Semantics of Relationships: An Interdisciplinary Perspective*, 3-21. Dordrecht: Kluwer Academic Publishers, 2002.

Hyponymy is the most pervasive structuring relationship, occurring "across the widest range of grammatical categories and content domains" (3). The article provides several definitions of a logical, collocational, and componential nature while working towards a prototype-theoretical characterization, with the result being that, so far, there exists no "fully satisfactory characterization of hyponymy" (12).

Simple hyponymy (is-A) is differentiated from the more discriminating form (is-a-kind-of), called taxonomy by Cruse. Three modes of subdividing categories are also explicated: the natural kind mode, the nominal kind mode, and the functional mode.

I found this article fairly difficult. It is written by "a lexical semanticist with a 'cognitive linguistic' bias" (3), and seems to assume a fair amount of prior knowledge. It is accessible, but may require a bit of work.

Recommended. [14 April 2007]

hyponymy, nouns, semantics, taxonomy, taxonymy

Dextre Clarke, Stella G. "Thesaural Relationships." In *Relationships in the Organization of Knowledge*, 37-52. Boston: Kluwer Academic Publishers, 2001.

Provides a good overview of the standard thesaural relationships of equivalence (including partial equivalence and dialectical forms), hierarchy (generic, whole-part, and instantial hierarchical relationships, policy differences among different thesauri, and complex hierarchies) and association (subcategories and rules for identifying). Also discusses relationships that may be present such as a class code or notation, top terms, and links to other coding schemes (e.g., Chemical Abstracts Registry Numbers).

Points out that the "assumptions, techniques, and conventions" of thesaural relationships were developed in the 1960s and codified into standards in the 1970s (50). While these are still generally valid in many applications, they "begin to break down where processes are automated and/or multiple databases are to be searched simultaneously" (50). Thus, calls for greater relational explication for automated uses.

Includes a useful reference list listing the various thesauri standards (now out-of-date), the top thesaural construction guides, and most, if not all, of the prominent thesauri and their predecessors. [29 April 2007]

thesauri, equivalence relationships, hierarchical relationships, associative relationships

Efthimiadis, Efthimis N. "Query Expansion." In *Annual review of information science and technology*, 121-187. Medford, N.J.: Information Today, 1996.

While this literature review is not about relationships *per se* in any strong sense, this document does have some relevance to the topic. Cited by Tudhope, et. al. ("Query expansion...", 2006): "An extensive review of Query expansion in general is provided by Efthimiadis (1996) (510).

Query expansion in information retrieval is the process of supplementing an original query with additional terms. Various techniques may be employed ranging from fully manual through interactive to fully automated, from all effort on the part of the user to shared effort to all effort on the part of the automated system.

Provides a brief overview before looking at manual, automated, and interactive means of query expansion separately. Under the heading of manual query expansion are discussed: Search strategy; search tactics, heuristics, moves; models and applications; and studies. Before proceeding to the topics of automatic and interactive query expansion, the paper discusses "Some general considerations in query reformulation and query expansion" (133). These are: Relevance feedback, query terms, methods for obtaining relevance feedback, and ranking algorithms and term selection.

Both sections on automatic query expansion and interactive query expansion look at their topics through the lens of being based on three factors: search results, collection-dependent knowledge structures, and collection-independent knowledge structures. A final section provides a conclusion and proposal for future research. A twenty-one-page bibliography is included.

Recommended only for those with a need or interest in the topic. [1 May 2007]

query expansion, information retrieval, automatic query expansion, search strategy search tactics, heuristics, moves, relevance feedback, query terms, ranking algorithms, term selection, knowledge structure

El-Hoshy, Lynn M. "Relationships in Library of Congress Subject Headings." In *Relationships in the Organization of Knowledge*, 135-152. Boston: Kluwer Academic Publishers, 2001.

Provides a brief history of, and a good introduction to, relationships and reference structures within Library of Congress Subject Headings (LCSH), which became far more explicit in the 1980s. Covers reference notation, equivalence, hierarchical, and associative relationships. Also considers scope notes and the Library of Congress Classification (LCC) within the context of reference structures in LCSH. Discusses many of the criticisms and suggestions for the improvement of relationships and reference structures within LCSH, both historically and more contemporary.

Recommended for those seeking a better understanding of LCSH. [29 April 2007]

LCSH, equivalence relationships, hierarchical relationships, associative relationships, scope notes, LCC, subject headings

Farradane, J. "Relational Indexing." *The Indexer: Journal of the Society of Indexers* 2, no. 4 (Autumn 1961): 127-133.

One of the earliest detailed analyses of the nature of inter-term relations. This is a classic and widely cited article. In Farradane's own words, "Relational indexing is in fact a formalized exact method of representing the inner logic of

our thinking, or a scientific symbolic language" (133). Provides one of the sources for Perreault's synthesis of inter-term relationships.

Cited by Broughton, V. in "Structural, linguistic, and mathematical elements in indexing languages and search engines"

Should be read, particularly in indexing and knowledge organization and representation courses. [12 April 2007]

indexing, relational indexing, faceted classification

———. "Relational Indexing. Part I." *Journal of Information Science: Principles and Practice* 1, no. 5 (January 1980): 267-276.

Have not had a chance to read. Provides the most comprehensive exposition of Farradane's relation indexing to date, covering principles, examples and computerization. Incorporates feedback from students and colleagues on practical issues. In two parts.

Recommended by Beghtol (2001). [30 April 2007]

indexing, relational indexing

———. "Relational Indexing. Part II." *Journal of Information Science: Principles and Practice* 1, no. 6 (March 1980): 313-324.

Have not had a chance to read. Provides the most comprehensive exposition of Farradane's relation indexing to date, covering principles, examples and computerization. Incorporates feedback from students and colleagues on practical issues. In two parts.

Recommended by Beghtol (2001). [30 April 2007]

indexing, relational indexing, subject analysis, retrieval techniques, computerization

Fellbaum, Christiane. "On the Semantics of Troponymy." In *The Semantics of Relationships: An Interdisciplinary Perspective*, 23-34. Dordrecht: Kluwer Academic Publishers, 2002.

Provides an interesting and very accessible look at the hyponymy relation amongst verbs, known as troponymy. Demonstrates why while related this is a different relationship than simply being hyponymy, and that it is not a semantically homogeneous relationship. Differentiates three kinds of troponymy: manner, function, and result.

Definitely recommend. [14 April 2007]

troponymy, verbs, semantics

Gilchrist, Alan. "Thesauri, Taxonomies and Ontologies – An Etymological Note." *Journal of Documentation* 59, no. 1 (2003): 7-18.
<http://www.emeraldinsight.com.proxy2.library.uiuc.edu/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/2780590101.html> (accessed April 8, 2007).

Short article which reflects on the etymology of "thesaurus," "taxonomy" and "ontology" along with looking at their use to determine their meaning. While not directly on the topic of relationships, it does a good introductory job discussing the types and roles of relationships within these three information organization entities.

Recommended for more introductory courses or, perhaps, early in a course on either of the three concepts or one on knowledge organization. [30 April 2007]

thesauri, taxonomies, ontologies, etymology

Green, Rebecca. "Automated Identification of Frame Semantic Relational Structures." *Proceedings of the Sixth International ISKO Conference*, 2000.

Not yet read. Reports on successful "preliminary attempts to identify semantic frames and their internal structure automatically" (193). [29 April 2007]

semantic relationships, frames

———. "The Expression of Conceptual Syntagmatic Relationships: A Comparative Survey." *Journal of Documentation* 51, no. 4 (December 1995): 315-338.

Read 5 Jan 2007, but unable to put my hands on this article at the moment. Cited by Khoo and Na (2006). One of the early articles which piqued my interest in relationships. [1 May 2007]

indexing, index languages, syntagmatic relationships

———. "Internally-Structured Conceptual Models in Cognitive Semantics." In *The Semantics of Relationships: An Interdisciplinary Perspective*, 73-89. Dordrecht: Kluwer Academic Publishers, 2002.

Delivers a highly readable account of the basic cognitive semantic phenomena within cognitive semantics and establishes the prevalence of internal

structure at all conceptual levels. Image schemata, basic level concepts, and frames are lucidly explained before moving on to mappings between these phenomena—metonymy, metaphor and blended spaces.

Highly recommended. [21 April 2007]

cognitive semantics, basic level concepts, image schemata, frames, metonymy, metaphor, blended spaces

———. “Relationships in the Organization of Knowledge: An Overview.” In *Relationships in the Organization of Knowledge*, 3-18. Boston: Kluwer Academic Publishers, 2001.

This introductory article to Bean & Green (2001) is the best short overview of the topic of relationships in the organization of recorded knowledge. Khoo and Na (2006) is equally good, but is much longer. While these two articles have much overlap, they also each cover topics that the other does not. Together, they comprise as good an introduction to a topic as any I have ever come across.

Green covers the basic properties and nature of relationships, and the major entities of concern in the organization of recorded knowledge, prior to presenting the editors' (non-mutually exclusive) taxonomy of relationships:

1. Bibliographic relationships between units of recorded knowledge
2. Intratextual and intertextual relationships, including those based on text structure, citation relationships, and hypertext links
3. Subject relationships in thesauri and other classificatory structures
4. Relevance relationships (vii)

After laying out the taxonomy of relationship types, the author proceeds to give a good theoretical overview of each of them. The coverage of intra- and intertextual relationships here is of particular note, as it is the only type *not* covered by a later chapter. And while the other three types are adequately covered in one or more chapters, Green provides an additional view of these types, which is valuable.

This chapter is an *absolute must* read. I recommend it for all librarians to remind them of some of the context in which they practice as professionals. All LIS students should read it early in their education. It is most appropriate for introductory courses, and any course dealing with the organization and representation of recorded knowledge, be it cataloging, classification, indexing, thesaurus construction, ontologies, or any other related topic. [1 May 2007]

bibliographic relationships, intratextual relationships, intertextual relationships, subject relationships, relevance relationships, thesauri, indexing, symmetry, asymmetry, roles, arity, cardinality, transitivity, semantics, open class, closed

One boy's journey into relationships, or the Good, the Bad, and the Ugly
LIS590RO Spring 2007 Mark R. Lindner

class, paradigmatic relationships, syntagmatic relationships, citation, hypertext linking, topicality

———. “Syntagmatic Relationships in Index Languages: A Reassessment.” *Library Quarterly* 65, no. 4 (October 1995): 365-385. (accessed December 29, 2006).

Read 31 Dec 2996, but unable to put my hands on this article at the moment. Cited by Khoo and Na (2006). One of the early articles which piqued my interest in relationships. [1 May 2007]

indexing, index languages, syntagmatic relationships

———. “Topical Relevance Relationships: Why Topic Matching Fails.” *Journal of the American Society for Information Science* 46 (1995): 646-653.

Have read, but currently unable to put my hands on this and its companion article. This article and its companion piece [see immediately below] provide an excellent introduction into the concepts of topicality and relevance. Much of the content of these articles is synthesized in Bean & Green (2001), which also includes some further empirical work. Nonetheless, I consider these an excellent introduction.

Highly recommended. [1 May 2007]

topicality, relevance

Green, Rebecca, and Carol A Bean. “Topical Relevance Relationships: An Exploratory Study And Preliminary Typology.” *Journal of the American Society for Information Science* 46 (1995): 654-662.

Have read, but currently unable to put my hands on this and its companion article. This article and its companion piece [see immediately above] provide an excellent introduction into the concepts of topicality and relevance. Much of the content of these articles is synthesized in Bean & Green (2001), which also includes some further empirical work. Nonetheless, I consider these an excellent introduction.

Highly recommended. [1 May 2007]

topicality, relevance

Green, Rebecca, Carol A Bean, and Sung Hyon Myaeng, eds. *The Semantics of Relationships: An Interdisciplinary Perspective*. Dordrecht: Kluwer Academic Publishers, 2002.

This is the companion volume to Bean & Green (2001), and although it

“examines relationships in a broader array of contexts”, “[t]he two volumes should be seen as companions, each informing the other” (vii).

It is divided into three parts: Types of Relationships, Relationships in Knowledge Representation and Reasoning, and Applications of Relationships. Part I covers hyponymy, troponymy, meronymy, and cause-effect relationships. Part II internally-structured conceptual models in cognitive semantics, comparing relationships in ontologies, identity and subsumption, and the logic of relationships. Part III covers thesaural relationships, identification of semantic relations in text for information retrieval and information extraction purposes, a conceptual domain for biomedicine (UMLS, Metathesaurus, and the Semantic Network), and visual analysis and exploration of relationships.

This is an excellent companion to *Relationships in the Organization of Knowledge*. While broadening the scope in a fairly significant way, it does not do so unnecessarily as all of the topics discussed, in the first two parts at least, are included in the concepts discussed in the first volume.

Having paid over \$215 for copies of both of these volumes, I can state that, although not inexpensive, I am quite satisfied with the value I have received.

All in all, this is an excellent book. While, in its entirety, it may not serve well as a text for a specific class, almost every article contained in it would serve a well-defined purpose in a specific context in courses or sections of courses on cataloging, indexing, knowledge organization and representation, ontologies, and even introductory courses.

Highly recommended. [1 May 2007]

hyponymy, troponymy, meronymy, cause-effect relationships, conceptual models, cognitive semantics, comparison, ontologies, identity, subsumption, logic, thesaural relationships, semantic relationships, information retrieval, information extraction, biomedicine, UMLS, Metathesaurus, Semantic Network, visual analysis, visual exploration

Guarino, Nicola, and Christopher Welty. “Identity and Subsumption.” In *The Semantics of Relationships: An Interdisciplinary Perspective*, 111-126. Dordrecht: Kluwer Academic Publishers, 2002.

This is an interesting but difficult article, heavy on logic. Builds on the philosophical notions of identity, unity, and essence and the constraints they impose on the subsumption relationship (so-called is-a relationship) in the service of building “simpler, cleaner, and ultimately more reusable taxonomies” (124).

Recommended for courses in ontologies and knowledge representation, and perhaps for advanced discussions in topics in thesaurus construction. [15 April 2007]

logic, identity, subsumption, unity, essence, Classical Extensional Mereology

Hovy, Eduard. "Comparing Sets of Semantic Relations in Ontologies." In *The Semantics of Relationships: An Interdisciplinary Perspective*, 91-110. Dordrecht: Kluwer Academic Publishers, 2002.

Is an attempt to develop a method for comparing ontologies, both at a general level and at the level of terms and relationships. Discusses the need for characterizing ontologies and proposes a method to do so based on top-level divisions separating form, content and usage.

Describes an experiment using several automatic techniques to identify potentially equivalent concepts or relations, which would significantly narrow the amount of intellectual human work that would need to be done to compare two ontologies.

Results of this empirical work have pointed to certain "subsumptive ambiguities" which "has spurred some recent work on what can be called 'concept sense differentiation'" (107). This work in philosophy of knowledge representation and computational lexicography is used to distinguish different perspectives or "interpretations one can bring to bear on objects" (107).

Having a model of ontology characterization that allows for the possibility of comparing them allows for modelers to more easily recognize outright errors, to explore why certain differences exist between two ontologies, and as a means to "motivate or justify their modeling decisions" (107).

Recommended for classes in ontologies, for anyone wanting a deeper conceptual understanding of ontologies in practice, and for those who actually need to compare and/or contrast ontologies. [29 April 2007]

ontologies, comparison, standardization

Hudon, Michèle. "Relationships in Multilingual Thesauri." In *Relationships in the Organization of Knowledge*, 67-80. Boston: Kluwer Academic Publishers, 2001.

Provides a succinct introduction into issues of thesaural relationships in a multilingual context. Asks two primary questions, "Are all types of thesaural relations transferable from one language to another? and Are two members of a valid relation in a source language always the same in the target language(s)?" (67).

Differentiates between “strong” and “weak” compatibility, i.e., compatibility between both concepts and relations across languages or just compatibility of concepts across languages.

Highly recommended as an entry into the topic of multilingual thesauri. [24 April 2007]

multilingual thesauri, thesauri, indexing languages, compatibility, equivalence relationship, hierarchical relationship, associative relationships

IFLA Study Group on the Functional Requirements for Bibliographic Records. “Functional Requirements for Bibliographic Records - Final Report.” <http://www.ifla.org/VII/s13/frbr/frbr.htm> (accessed April 22, 2007).

Functional Requirements for Bibliographic Relationships (FRBR) is an attempt to describe “the functions performed by bibliographic records,” what they are “aim[ing] to provide information about, and what it is that” they are expected “to achieve in terms of answering user needs,” all in clear terms (2).

The model is based on entity-relationship modeling and, thus, has a deep connection to the issues of relationships in the bibliographic universe, particularly bibliographic relationships *ala* Tillett. Chapter 5, “Relationships,” is the most directly applicable. The focus in this report remains *primarily* with the Group 1 entities (work, expression, manifestation, and item). Chapter 5 provides a quick overview of relationships between the Group 1 entities, and a very short introduction to relationships of Group 1 entities to persons and corporate bodies, before covering assorted relationships between Group 1 entities in more depth. Relationships covered are: work-to-work, whole/part relationships at the work level, expression-to-expression, whole/part relationships at the expression level, expression-to-work, manifestation-to-manifestation, whole/part manifestation-to-manifestation, manifestation-to-item, item-to-item, and whole/part item-to-item.

Chapter 6 focuses on mapping attributes and relationships to user tasks, while chapter 7 does much the same towards recommending basic data, including relationships, to be required in a national bibliographic record. These two chapters, in essence, reflect the practical aspect of the underlying model’s “theory.”

While it is rapidly approaching ten years since FRBR was first released, it has not made much headway as an implemented model. This is probably primarily due to the other portions of the model, e. g., functional requirements and numbering of authority records, not to mention a further explication of Group 2 and Group 3 entities in a non-authority mode, not being available. A *draft of Functional Requirements for Authority Data*, a portion of the proposed *Functional Requirements And Numbering Of Authority Records*, has just been released.

This lengthy lapse between the appearance of portions of the completed model cannot have had anything but a detrimental effect on the uptake of the model.

Nonetheless, whether or not FRBR is implemented, or on what scale, current and future librarians need to be far more familiar with entity-relationship modeling. FRBR is the best place to start for several reasons: (1) It is the closest thing to a complete model of the bibliographic universe currently extant; (2) there has been plenty of critique of the model; (3) there have been quite a few attempts at explicating it; (4) both of which add up to a significant secondary literature on the topic; and (5) the FRBR documents themselves are generally clear and well written.

Recommended for most librarians and all LIS students. Different classes may wish to focus on different aspects or portions, but by the time a student graduates they should have read and discussed every portion of the model as they become available. [30 April 2007]

entity-relationship models, IFLA, work, expression, manifestation, item, entities, attributes, relationships, user tasks, catalog

IFLA Working Group on Functional Requirements and Numbering of Authority Records (FRANAR). *Functional Requirements For Authority Data: A Conceptual Model (Draft)*. IFLA, n.d.
<http://www.ifla.org/VII/d4/FRANAR-ConceptualModel-2ndReview.pdf>.

Functional Requirements for Authority Data (FRAD) is now out in a draft dated 1 April 2007. It is only a portion of the work required to present a complete model of the portions of the bibliographic universe represented by authority records. What is not covered is record numbering and subject authorities. Thus, this draft covers *bibliographic entities* being “known by” *names and/or identifiers* which serve as a “basis for” *controlled access points*. FRAD follows the same entity-relationship modeling process as FRBR.

Many portions of FRAD are applicable to relationships, but chapter 5 “Relationships” is the main focus. Four “broad categories of relationships” are discussed (30). First is those that obtain between the bibliographic entities, names and identifiers; that is, the “known by,” and “assigned” relationships. Second, are the relationships between persons, families, corporate bodies, and works. These include relationships between an entity of one type and another of the same type, and those between entities of different types. Some of these are pseudonymous, attributive, collaborative, sibling, parent/child, membership, genealogical, hierarchical, sequential, and shared characteristic relationships. Third are relationships between names and specific instances of persons, families, corporate bodies, and works, in other words, “known by” relationships. The last category includes relationships between controlled access points.

As in FRBR, chapter 6 attempts to map attributes and relationships to the four user tasks, which again implies a relevance to the topic at hand.

FRAD is an important document, which further extends the model that IFLA is promoting. While this is an important step forward, we are still missing important aspects of the model, specifically authority numbering and subject authorities. Considering the range of concepts, and entities already described within FRBR and FRAD, there is bound to be a large set of complex relationships between subjects themselves and between subjects and other entities.

Recommended for all librarians and LIS students for the same reasons as FRBR.
[1 May 2007]

entity-relationship models, IFLA, work, expression, manifestation, item, entities, attributes, relationships, user tasks, catalog, person, family, corporate body, name, identifier, controlled access point, rules, agency

International Organization for Standardization. *ISO 2788-1986 Documentation - Guidelines for the Establishment and Development of Monolingual Thesauri*. Switzerland: International Organization for Standardization, 1986.

This is the current international standard until the British Standards Group finish updating the British standard, at which point ISO is slated to adopt it as the new ISO standard, as I understand it.

Primarily useful as a reference document nowadays. Not a lot of detail on relationships, but could be useful if one does not have access to the updated NISO standard or to the earlier or currently updating British standard. [30 April 2007]

thesauri, standards, ISO, reference books

Khoo, Christopher S. G., and Jin-Cheon Na. "Semantic Relations in Information Science." In *Annual Review of Information Science and Technology*, 157-228. Medford, N.J.: Information Today, 2006.

This is an excellent article that first sent me down this road of exploring relationships. My initial encounter with is described in the entry essay to this bibliography.

It is a fairly wide-ranging literature review that covers what semantic relations are, types of semantic relations, six selected semantic relations, semantic relations in knowledge structures, automatic identification of semantic relations, and semantic relations in information retrieval. Included are approximately twenty pages of references.

I highly recommend this piece to all and sundry. Since it is a lit review you could certainly skip over the parts you aren't so interested in, although I seriously recommend the entire piece. [23 April 2007]

semantic relations, lexical semantic-relations, case relations, hyponymy, hyperonymy, meronymy, holonymy, synonymy, antonymy, cause-effect relationship, thesauri, indexing languages, ontologies, pattern matching, automatic identification, extraction patterns, text mining, case frames, query expansion, term association, question-answering, automatic text summarization

Khoo, Christopher S. G., Syin Chan, and Yun Niu. "The Many Facets of the Cause-Effect Relation." In *The Semantics of Relationships: An Interdisciplinary Perspective*, 51-70. Dordrecht: Kluwer Academic Publishers, 2002.

Provides an overview of the cause-effect relation from the perspectives of philosophy, psychology and linguistics. Focuses on causal inference in text comprehension by looking at explicit expressions of causation (causal links, causative verbs, resultative constructions, conditionals, and causative adverbs, adjectives and prepositions), and implicit causal attribution of verbs. Also considers types of causation and roles in causal situations.

Recommended. [18 April 2007]

cause-effect, causation, conditionals, inference

Lancaster, F. Wilfrid. *Vocabulary Control for Information Retrieval*. 2nd ed. Arlington, Va: Information Resources Press, 1986.

While this classic text is now a bit "long in the tooth," it still deserves much respect and can serve as an introduction "to the thesaurus or to thesaurus-like aids to natural language searching" (vii).

All of the standards (US, British, and international) have been or are being updated since the publication of this book, while computer processing and techniques have advanced significantly. The text focuses primarily on theory and needs to be supplemented with a practical source. It is also weak on the theory of facet analysis and should definitely be supplemented on that topic. Someone new to the topic would, perhaps, be better served by reading the standards and Aitchison, et. al. (2000)—itself a bit dated now—but this text is recommended for someone wanting a comprehensive coverage of the topic of thesauri in information retrieval. Certainly most, if not all, of the topics covered by Lancaster are covered in other sources, but many of us need, or prefer, multiple approaches to learning a topic, and some of us do, in fact, enjoy theory.

Broughton's 2006 *Essential Thesaurus Construction* is probably the most up-to-date text currently. But I have not had a chance to look it over so am unable to comment on its quality.

Recommended as a classic text on thesauri for those who want a deeper appreciation of the subject. [30 April 2007]

thesauri, vocabulary control, information retrieval

Lancaster, F. Wilfrid, and Virginia Gale. "Pertinence and Relevance."
Encyclopedia of Library and Information Science, 2003. DOI: 10.1081/E-
ELIS 120009001.

Does a good job disambiguating the differences between pertinence and relevance and their applicability to information retrieval. Differentiates the following components of an information retrieval request and their interrelationships: Information need, Recognized need, Request statement (expressed need), Search strategy, Documents, and Representations of documents. Covers some of the literature on relevance (and pertinence). While the article goes to pains to point out the transience of pertinence decisions, it fails to cover many of the variables that affect these decisions. For a better explication of such see Green (2001) and Bean & Green (2001).

Recommended. [27 April 2007]

relevance, pertinence, information need, search strategy

Leazer, Gregory H. "Recent Research on the Sequential Bibliographic Relationship and Its Implications for Standards and the Library Catalog: An Examination of Serials." *Cataloging and Classification Quarterly* 21, no. 3/4 (1996): 205-220.

Read late January 2007, but am unable to put my hands on it currently. Cite in Green (2001) in relation to investigations of individual bibliographic relationships.

serials, sequential bibliographic relationship, catalogs

Maniez, Jacques. "Relationships in Thesauri: Some Critical Remarks."
International classification 15, no. 3 (1988): 133-138.

Read in late January 2007, but am unable to put my hands on my photocopy at the moment. [30 April 2007]

thesauri, thesaural relationships, critique

Milstead, Jessica L. "Standards for Relationships Between Subject Indexing Terms." In *Relationships in the Organization of Knowledge*, 53-66. Boston: Kluwer Academic Publishers, 2001.

Provides a good overview of thesaural standards and the standards development process, although the article is now based on outdated standards. Does a good job distinguishing and describing the three typical relationships of equivalence, hierarchy and association. Discusses the value of the relationship types and then questions the value of distinguishing them, but calls for further research. "...we should be thinking both about what kinds of relationships can be useful at all, and to whom or what they will be useful" (64). Also calls for research into display issues, particularly in light of recent improvements in technology.

Recommended as a good introduction to the relationship types typically present in thesauri and indexes. [27 April 2007]

indexing languages, thesauri, indexes, subject relationships, equivalence relationship, hierarchical relationship, associative relationships

Mitchell, Joan S. "Relationships in the Dewey Decimal Classification System." In *Relationships in the Organization of Knowledge*, 211-226. Boston: Kluwer Academic Publishers, 2001.

Provides a good overview of the various types of relationships to be found in the DDC and the wide variety of places that they manifest themselves. There are six major sections on where these relationships are found: In the schedules and tables, the relative index, in the manual, in synthesized notation, intra- and interdisciplinary relationships, and in flexible structures.

The largest group of relationships is found in the schedules and tables. These include hierarchical relationships (notational hierarchy; structural hierarchy; generic, whole-part, and instance relationships; and polyhierarchical relationships), equivalence, and associative relationships. Flexible structures include derived relationships and mapped relationships.

This article is useful to all catalogers (and students) learning or using DDC to classify materials. It certainly caused me to think of DDC in a deeper way.

Recommended. [1 May 2007]

DDC, schedules, tables, relative index, manual, synthesized notation, notation, interdisciplinary, hierarchical relationships, notational hierarchy, structural hierarchy, generic, whole-part hierarchical relationships, instance relationships, polyhierarchical relationships, equivalence relationships, associative relationships, flexible structures, derived relationships, mapped relationships

Molholt, Pat. "The Art and Architecture Thesaurus: Controlling Relationships Through Rules and Structures." In *Relationships in the Organization of Knowledge*, 153-170. Boston: Kluwer Academic Publishers, 2001.

The Art and Architecture Thesaurus (AAT) is immensely interesting for many reasons, including the process used to develop it, the strict rules used to govern relationships, and its “rational scheme for the deployment of associative, non-hierarchical relationships into a complex, large-scale thesaurus” (154).

Provides a brief overview of the history and vocabulary structure of the AAT, along with the rise of the need for associative relationships. Explicates the process used to determine the rules to be used for associative relationships, including the group editorial process used, a false start made with whole-part relationships, and the role of scope notes. Scope notes are especially extensive in the AAT, reflecting its research basis.

The next several sections cover the twenty links used within the AAT to reflect the relationships between terms. Topics discussed are the effect of links on vocabulary structure, link formalism, whether or not there is a core set of links, effect of guide terms (“node labels”), alternative BT/NT relationships, the whole-part relationship and non-physical entities, and necessary vs. sufficient links. A final section discusses benefits to users.

Highly recommended for anyone using the AAT. Also recommended for anyone undertaking the construction or revision of a complex thesaurus. Would be of value in a class or course section on thesaurus construction, both theoretically and reflecting actual practice. [29 April 2007]

AAT, indexing, thesauri, associative relationships, scope notes, whole-part relationships, thesaurus construction, guide terms

———. “Standardizing and Codifying Related Term Links for Improved Information Retrieval.” *Proceedings 1st International ISKO-Conference*, 1990.

Presents a brief literature review of lexical-semantic relationships in information science, linguistics and computer science. Discusses three findings from this review: (1) over 100 relationships have been identified, (2) applications research has demonstrated the need for finer distinction and labeling of relationships, particularly in the context of machine-based reasoning, and (3) all of these relationships, except for the antonym relationship, has been demonstrated to be of value in information retrieval. These findings are considered in the author's proposed research on the structure of related terms in the Art & Architecture Thesaurus.

Results of this work can be read about in Molholt (2001).

related terms, associative relationships, AAT, machine-based reasoning, information retrieval

Myaeng, Sung Hyon, and Michael McHale. “Towards a Relation Hierarchy for

One boy's journey into relationships, or the Good, the Bad, and the Ugly
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Information Retrieval." *Advances in Classification Research: Proceedings of the 2nd ASIS SIG/CR Classification Research Workshop*, 1991.

Not yet read. Cited by Green (2001) as reviewing the results of additional efforts to put together a comprehensive inventory of relationships types (11). [29 April 2007]

Neelameghan, Stuart J. "Lateral Relationships in Multicultural, Multilingual Databases in the Spiritual and Religious Domains: The OM Information Service." In *Relationships in the Organization of Knowledge*, 185-198. Boston: Kluwer Academic Publishers, 2001.

Discusses thirty-one lateral (non-hierarchical associative) relationships designed for use in multicultural, multilingual databases in the domain of religion and spirituality, known as the OM Information Service.

Recommended for those interested in explicit identification of associative relationships, and/or multilingual thesauri. [1 May 2007]

databases, information retrieval, thesauri, multilingual thesauri, associative relationships, lateral relationships, inter-concept relationships

Nelson, Stuart J., W. Douglas Johnston, and Betsy L. Humphreys. "Relationships in Medical Subject Headings (MeSH)." In *Relationships in the Organization of Knowledge*, 171-184. Boston: Kluwer Academic Publishers, 2001.

Discusses the then recent transition of MeSH "from a term-based structure to a concept-oriented structure" and how that "has shed some light on important relationships within a thesaurus" (183).

Good article, particularly for those working with, or interested in, MeSH. [1 May 2007]

MeSH, thesauri, explicit relationships, implicit relationships, concepts, descriptors, thesaural relationships

National Information Standards Organization. *ANSI/NISO Z39.19-2005 Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*. Bethesda, MD: NISO Press, 2005.

The current American standard for monolingual controlled vocabularies. Chapter 8, "Relationships," is the primary chapter of interest, while chapter 9 provides some valuable information on the display of relationships. Covered are semantic linking, and the equivalence, hierarchical, and associative relationships.

Should be one of the first stops for any practical work on monolingual controlled vocabularies in the United States —although for multilingual vocabularies much would be of value, also. Unlike the international and British standards, this document is available for the price of a click on a hyperlink:

<http://www.niso.org/standards/resources/Z39-19-2005.pdf>

Recommended for all American-based thesauralists, courses in thesaurus construction, and perhaps sections in specific contexts within classes on indexing, knowledge organization, and introductory courses. [30 April 2007]

thesauri, monolingual thesauri, standards, ANSI/NISO, reference works

Perreault, Jean. "Categories and Relators: A New Schema." *Knowledge Organization* 21, no. 4 (1994): 189-198.

A classic article, widely reprinted, that attempted to provide a means of specifying relationships types within the Universal Decimal Classification (UDC) by replacing the non-significant relation symbol, the colon, with a series of letters. Perrault's analysis of multiple systems of specifying relationships ranges from Aristotle to Farradane. His triadic divisions resulted in 120 different relationships to be used in classification and indexing for information retrieval.

Cited by Broughton, V. in "Structural, linguistic, and mathematical elements in indexing languages and search engines"

A must-read. [12 April 2007]

indexing, faceted classification

Pribbenow, Simone. "Meronymic Relationships: From Classical Mereology to Complex Part-Whole Relations." In *The Semantics of Relationships: An Interdisciplinary Perspective*, 35-50. Dordrecht: Kluwer Academic Publishers, 2002.

Looks at partonomic relations, particularly in human conceptual and perceptual domains. Discusses the formal theory of mereology and its extensions, focusing on where it fails to capture our common sense notion of parts. Finishes with a discussion of the Constructive Classification of Gerstl and Pribbenow, looking in detail at three kinds of relations in conceptual part-whole relations.

While there is a small amount of logic in it, the article is pretty understandable without it.

Recommended, especially as a critique of Classical Extensional Mereology and its (serious) limitations. [14 April 2007]

partonomies, parts, wholes, logic, Classical Extensional Mereology

Satija, M. P. "Relationships in Ranganathans' Colon Classification." In *Relationships in the Organization of Knowledge*, 199-210. Boston: Kluwer Academic Publishers, 2001.

Discusses the "multiplicity of complex relations" found in the Colon Classification (CC) (199). Cover subjects and their kinds (basic, compound, complex), Modes of formation of subjects (specialization, interdisciplinary, multidisciplinary), sequence of basic subjects, facet analysis (facet formula, syntax, principle of inversion, absolute syntax, phase relations), and the APUPA pattern.

I read this article seven weeks ago and am having a hard time believing that it really helped elucidate Ranganathan's system for me. Perhaps it is not the fault of a short article covering this range of topics; but is that of the complexity of the system is attempting to explain.

I don't feel qualified to recommend it one way or the other until I have more exposure to CC and its secondary literature. [1 May 2007]

CC, facet analysis, subject formation, interdisciplinary, multidisciplinary

Schmitz-Esser, Winfried. "Thesaurus and Beyond: An Advanced Formula for Linguistic Engineering and Information Retrieval." *Knowledge Organization* 26, no. 1 (1999): 10-22.

Not yet read. Cited by Beghtol (2001) in two instances: "The relationship [part-whole] has been studied in numerous disciplines, and has been recognized for subject access and analysis systems (e.g. Dahlberg, 1995; Schmitz-Esser, 1999)" (106); and "We need to be able to incorporate point of view in the systems. Suggestions for these kinds of devices for thesauri were made by Schmitz-Esser (1999)" (109). Also cited by Beghtol (2000) for the second of these reasons. [30 April 2007]

thesauri, information retrieval, thesaurus construction, multilingual thesauri

Svenonius, Elaine. "Design of Controlled Vocabularies in the Context of Emerging Technologies." *Library science with a slant to documentation and information studies* 25, no. 4 (December 1988): 215-227.

Read 22 January 20007, but unable to locate. Cited by Dextre Clarke (2001) in the context of supporting using "co-occurrence data in identifying associatively linked terms" (49).

Cannot comment on its wider applicability at this time, but it is Svenonius.

associative relationships, thesauri, controlled vocabularies, co-occurrence

Tillett, Barbara B. "Bibliographic Relationships." In *Relationships in the Organization of Knowledge*, 19-35. Boston: Kluwer Academic Publishers, 2001.

Reviews her previous work including her taxonomy of seven bibliographic relationships, which are the situated within the context of the *Functional Requirements for Bibliographic Records* (FRBR). Discusses primary relationships, content relationships (equivalence, derivative, and descriptive), whole-part and part-to-part relationships (sequential and accompanying), and shared characteristic relationships. Briefly mentions linking devices before moving into a discussion of recommendations and future agenda, in which she calls for an expanded and more explicit use of bibliographic relationships via rule changes and use of technological means.

Probably the best, short introduction to bibliographic relationships that I have yet seen.

Required reading, particularly at an introductory-level. Would make a useful addition to LIS501 and introductory cataloging classes. [29 April 2007]

bibliographic relationships, FRBR, content relationships, accompanying relationships, derivative relationships, descriptive relationships, equivalence relationships, shared characteristic relationships, whole-part relationships

———. "A Taxonomy of Bibliographic Relationships." *Library Resources & Technical Services* 35, no. 2 (April 1991): 150-158.

Unable to put my hands on it, and also unsure of whether I actually read it. Cited by both Green (2001) and Tillett (2001).

bibliographic relationships

Tudhope, Douglas, Harith Alani, and Christopher Jones. "Augmenting Thesaurus Relationships: Possibilities for Retrieval." *Journal of Digital Information* 1, no. 8 (February 5, 2001).
<http://jodi.tamu.edu/Articles/v01/i08/Tudhope/> (accessed January 8, 2007).

Read 8 January 2007 after given to me by Kathryn La Barre. Unable to put my hands on my printed copy of this article.

As the question "Whether it is possible to extend the core set of relationships in thesauri in light of new technologies?" Discusses a case study (OASIS) that examined the possibility of augmenting the hierarchical geographic containment and associative relationships in the Art & Architecture Thesaurus (AAT) and the Thesaurus of Geographic Names (TGN).

This is a fascinating proposition that considers extending some of the thesaural relationship types while maintaining compatibility with standard thesauri.

Recommended for thesaurus construction courses. [1 May 2007]

thesauri, thesaural relationships, hierarchical geographic containment, associative relationships, AAT, TGN

Tudhope, Douglas, Ceri Binding, Dorothee Blocks, and Daniel Cunliffe. "Query Expansion Via Conceptual Distance in Thesaurus Indexed Collections." *Journal of Documentation* 62, no. 4 (2006): 509-533.

Intriguing article describing the FACET project, "which investigated the potential of semantic query expansion techniques with a faceted thesaurus (the AAT) and indexed dataset (the Science Museum's collections database)" (511). What I found interesting was the concept, primarily, and that, although, it was algorithmically based I could understand the process.

As an online friend pointed out, though, the user studies are abysmal, thus, putting the findings into a lesser light. Nonetheless, I found their concepts of conceptual distance and semantic expansion as a browsing tool quite intriguing, and their semantic closeness algorithm and query matching function understandable.

Recommended for those interested in techniques to improve thesauri and in query expansion in information retrieval. [1 May 2007]

thesauri, semantic relationships, semantic closeness, query expansion, FACET project, AAT

Vellucci, Sherry L. "Bibliographic Relationships." *The Principles and Future of AACR: Proceedings of the International Conference on the Principles and Future Development of AACR*, Toronto, Ontario, Canada, October 23-25, 1997. Ottawa: Canadian Library Association, 1988: 105-146.

An excellent article that looks at the history and current status of thought on bibliographic relationships, both theoretical and empirical. The first section—Introduction; Background and Context—provides a short, but excellent, historical summary from Panizzi to Svenonius. The second section provides assorted breakdowns of types of bibliographic relationships. In this section, the author covers the three seminal works on bibliographic relationships—Tillett's 1987 dissertation, Smiraglia's 1992 dissertation, and Vellucci's 1997 *Bibliographic relationships in music catalogs*—amongst others. The third section, entitled User Needs: Navigating the Relationship Universe, is perhaps the widest ranging. It covers the dual function provided by linkages of relationships in the catalog, past and current linkage systems, link types and associated relationships,

relationships of importance to users, user studies, the IFLA FRBR study, and the relationships important to authority record users. The fourth section covers methods for improving the expression of bibliographic relationships in an online environment. This section looks at both MARC and newer catalog environments, and considers the local versus global bibliographic universe. The final section is a one-page statement of "General Principles for Bibliographic Relationships in Catalogs."

Throughout this article, Vellucci consistently points out the impact of, and the interlocked nature of, the descriptive cataloging rules and the structure and design of the catalog.

Cited by Tillett (2001) as: "For a complete historical background on research in bibliographic relationships see Vellucci (1998)" (33). I cannot think of much higher praise than this simple statement.

A *must* read. Especially well suited for advanced cataloging and knowledge organization and representation classes. [12 April 2007]

bibliographic relationships, principles, catalogs

Veltman, Kim H. "Towards a Semantic Web for Culture." *Journal of Digital Information* 4, no. 4 (2004): Article No. 255, 2004-03-15.
<http://jodi.tamu.edu/Articles/v04/i04/Veltman/> (accessed March 10, 2007).

Excellent article that points up many of the issues in knowledge organization not addressed by the Semantic Web vision, much less most of our current KO structures.

Traces the meaning of meaning, the definition of definition, classes of relationships, etc. over the last 2500 years and shows why the Semantic Web, AI, E-R diagram types, etc. have a very impoverished understanding of what it is that they are attempting to do.

Recommended for anyone interested in meaning, relationships, culture, the Semantic Web, databases, and/or KO. [24 March 2007]

concepts, culture, knowledge, knowledge representation, Semantic Web, World Wide Web

Vickery, Brian. "Conceptual Relations in Information Systems (Letter to the Editor)." *Journal of Documentation* 52, no. 2 (June 1996): 198-200.

Unable to put my hands on this at the moment. I had already read this—perhaps cited by Khoo and Na (2006)—but is cited by Green (2001) as: "Vickery (1996) briefly summarizes the history of expressing associative relationships in

information retrieval; in doing so, he provides a concentrated set of references to related literature from several fields and over several decades" (11).

This is a perfect summation of this short letter to the editor written in response to what Vickery saw as an oversight by an author of an article published in the journal. It is a rich source and an incredible feat. If more LIS authors could include so much distilled knowledge and references in their writings our field would be much better for it.

Highly recommended as a rich source of cross-disciplinary references on associative relationships, and as an example of concise knowledge distillation and expert writing. [1 May 2007]

associative relationships

Vickery, Brian C. "Knowledge Representation: A Brief Review." *Journal of Documentation* 42, no. 3 (September 1986): 145-159.

This excellent article covers a wide range of issues surrounding relationships, both explicitly and implicitly, from the disciplines of information science, artificial intelligence, psychology and linguistics. It quickly moves from symbols and symbols structures to the semantic structure of simple sentences, onward to roles, categories and relations in subject statements. From there we move to thesaural relations, semantic primitives, connection and relations between simple statements on to knowledge representation for reasoning. Predicate logic, frames, semantic nets and retrieval using categories, classes, frames and production rules close out the article. While this is a mighty quick romp in fourteen pages, Vickery covers it all clearly, if not exactly in depth.

Highly recommended for knowledge representation and organization courses or topics within broader courses. [1 May 2007]

information science, psychology, linguistics, artificial intelligence, symbols, semantic structure, roles, categories, subject relationships, thesaural relationships, semantic primitives, knowledge representation, reasoning, predicate logic, frames, semantic nets, information retrieval, classes, production rules
