A Tale of Two Worlds
Designing controlled vocabularies to meet specific business needs

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Taxonomy Boot Camp London
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About

Heather Hedden

- Senior vocabulary editor, Gale/Cengage, 1996-2004, 2014-present
- Author of *The Accidental Taxonomist* (2010, 2016)
- Online course instructor “Taxonomies & Controlled Vocabularies,” through Hedden Information Management
- American Society for Indexing board member, 2016 – present
- Experienced taxonomy consultant and indexer
1. Introduction
   ▪ Different business needs for Cengage controlled vocabularies

2. Comparisons of taxonomies and thesauri
   ▪ Definitions, examples, and comparisons
   ▪ Comparisons of suitability
   ▪ When it’s a compromise / in-between

3. Cengage’s use of a thesaurus and of taxonomies
   ▪ Views of the thesaurus and taxonomies
   ▪ Why the difference between thesaurus and taxonomies
   ▪ Extent of the difference between thesaurus and taxonomies / compromise
   ▪ Meeting in the middle: links across vocabularies
Introduction
Introduction: Different Business Needs

Various needs for taxonomies or thesauri:

▪ Internal documentation, including market and product research, policies and procedures.
▪ Digital assets for content managers to reuse in publishing content
▪ Product information (ecommerce, product reviews) for customers
▪ Curated, premium content for subscribers
▪ Informational or entertainment content for the public
Introduction: Different Business Needs

Cengage

- Publishing company of educational and reference content
- Formerly Thomson Learning, spun off from Thomson and renamed in 2007
- Two different, but related businesses:

1. **Gale, a Cengage Company** – reference/research content:
   - Library subscription databases of periodical articles, reference book chapters/essays, digital archives, and audio/video files
   - Public web products: Questia, Books & Authors, HighBeam Research, Encyclopedia.com
   - Gale Research reference books, directories, and other book imprints

2. **The rest of Cengage** – educational/textbook/ebook and related software publishing:
   - Former Houghton-Mifflin College Division, Wadsworth, Delmar, Heinle, Schirmer, etc.
   - Imprint brands include: 4LTR Press, Milady, Chilton, etc.
   - Companion course software (MindTap, WebAssign, Aplia, CNow, SAM, etc.)
Introduction: Different Business Needs

1. Controlled Vocabularies for Gale Digital Products
   - **Goal:** Support efficient and effective search and retrieval of items from within content repositories
   - **Design Strategy:** ANSI/NISO Z39.19 thesaurus-compliant vocabularies aimed at Boolean queries & browse navigation
   - **Content:** articles from academic journals, magazines, newspapers, reference books; some multimedia
   - **Users:** Library patrons, students, reference and research librarians,
   - **Purpose:** retrieve sufficient relevant content on a subject

   - Typically, relevancy & precision takes precedence over recall. (Retrieving accurate results, not necessary all results)
Introduction: Different Business Needs

2. Controlled Vocabularies for Higher Education Digital Learning Products

- **Goals:** Wide variety of specifics, but all are focused on supporting software features and functions
- **Design Strategy:** Taxonomies with flexibility to meet specific needs of specific disciplines
- **Content:** text, multimedia, assessments, activities, flashcards, learning objectives/outcomes, etc.
- **Users:** Instructors, students, Cengage internal staff
- **Purpose:** various
  - Linking of content, activities, learning objectives, etc.
  - Building custom courses (by instructors)
  - Exploration of topics in more depth (by students)

➤ Full recall, with more limited content, is desired.
Comparisons of Taxonomies and Thesauri
## Comparison of Taxonomies and Thesauri

### Summary of Controlled Vocabulary Types

<table>
<thead>
<tr>
<th>Pick List</th>
<th>Synonym Ring</th>
<th>Authority File</th>
<th>Taxonomy</th>
<th>Thesaurus</th>
<th>Ontology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambiguity control</td>
<td>Synonym control</td>
<td>Ambiguity control</td>
<td>Ambiguity control (Synonym control)</td>
<td>Ambiguity control Synonym control</td>
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<td>Synonym control</td>
<td>Hierarchical relationships</td>
<td>Hierarchical relationship</td>
<td>Semantic relationships</td>
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<td>Associative relationships</td>
<td>Classes</td>
</tr>
</tbody>
</table>

*Less Controlled Vocabularies - Complexity*  
*More*
Comparison of Taxonomies and Thesauri

Definitions – according to ISO 25964-2: 2013 standards

**Taxonomy**

Scheme of categories and subcategories that can be used to sort and otherwise organize items of knowledge or information.

The typical taxonomy is presented as a hierarchical vocabulary, used for classifying or categorizing, organizing, browsing, navigating, searching and/or filtering.

**Thesaurus**

Controlled and structured vocabulary in which concepts are represented by terms, organized so that relationships between concepts are made explicit, and preferred terms are accompanied by lead-in entries for synonyms or quasi-synonyms.

Sections 3 Terms and Definitions, 9.9.1 Taxonomy
Comparison of Taxonomies and Thesauri

Definitions – according to ANSI/NISO Z39.19 standards

**Taxonomy**
A taxonomy is a controlled vocabulary consisting of preferred terms, all of which are connected in a hierarchy or polyhierarchy.

**Thesaurus**
A thesaurus is a controlled vocabulary arranged in a known order and structured so that the various relationships among terms are displayed clearly and identified by standardised relationship indicators.

Its purpose is to promote consistency in the indexing of content objects…

*Sections 4.1 Definitions, 5.4.3 Taxonomy, and 5.4.4 Thesaurus*
Comparison of Taxonomies and Thesauri

Taxonomies

➢ All terms belong to a limited number of major hierarchies (or facets)
➢ May bend standard (ISO or ANSI/NISO) hierarchical rules.
➢ Supports classification, categorisation, concept organisation. (Like Linnaean taxonomy.)
➢ Approach is a top-down navigation.
➢ Especially serving end-users when browsing.

Thesauri

➢ All terms have relationships, but “hierarchies” may be as few as 2 terms.
➢ Standard (ISO or ANSI/NISO) rules are strictly followed.
➢ Supports concept scoping, disambiguation, and relationships with similar concepts. (Like Roget’s.)
➢ Approach is term-centered and what terms are linked to/from it.
➢ Especially serving indexers/ indexing.
Comparison of Taxonomies and Thesauri: Suitability

Taxonomies are for:

➢ Content and terms that naturally can be categorised
➢ A subject area with defined scope and limits
➢ Browse navigations
➢ Non-expert users, who benefit from guidance of hierarchies
➢ Relatively small collections of terms

Thesauri are for:

➢ Terms that are not easily categorised into hierarchies or facets
➢ Multiple, overlapping subject areas or domains with diverse content.
➢ Highly specific terms for detailed indexing
➢ Users who are subject-matter experts and will likely look for specific terms
➢ Vocabulary that is large and/or constantly growing
1. You want features of both taxonomies and thesauri. Such as structured as hierarchies or facets and also associative (related term) relationships.

2. Owners or users prefer to call it one thing, even though the other is needed. Such as users referring to a “taxonomy” for research content that needs a thesaurus: varied and broad in scope and manually indexed.

And “thesaurus management” software is for both/either.
Cengage’s use of a Thesaurus and Taxonomies
1. “Controlled vocabularies”
   For research/library products (Gale), comprising:
   - A single Subject thesaurus, ANSI/NISO standards-compliant.
     Around 60,000 preferred terms and always growing
   - Multiple (11) named entity authority files
     (People, Companies, Organizations, Geos, Works, etc.)
   - Other classification metadata
     (Dates, Languages, Information Types, Genres, NAICS, etc.)

2. Multiple (42) “Taxonomies”
   For educational/curriculum products:
   - One for each academic discipline
   - Ranging from 400 – 4500 preferred terms in each
Comparison of Taxonomies and Thesauri

Academic Journals (201)

Search Terms: Subject Guide Search (Hijab (Custom))

Sort by: Newest

Full-text: ARTICLE
Army now allows soldiers to wear turbans, beards, and headscarves
Adelle M. Banks.
The Christian Century.
New army regulations will allow Sikh and Muslim soldiers to wear turbans, beards, and hijabs—the headscarves worn by some Muslim women—under most circumstances. *Based on the successful examples of soldiers currently...

Link to CDL Materials Catalog  ILL  My Library OpenURL Link

Full-text: ARTICLE
Chancellor Angela Merkel of Germany calls for a ban of burqas as election nears
David Iaconangelo.
The Christian Century.
In accepting her party’s nomination for a fourth term in office, German chancellor Angela Merkel delivered a speech that took aim at conservative critics of her liberal asylum policies, yet also embraced a proposal to...

Link to CDL Materials Catalog  ILL  My Library OpenURL Link

Abstract: REPORT
On: The couch and the chador

Limit Search by:
- Full Text
- Peer Reviewed Journals
- Contains Images

Publication Dates:
- Past Week
- Past Month
- Past Year
- Custom Date Range

Subjects
- Hijab (Custom) (201)
- Islamic clothing (54)
- Muslim women (50)
The nervous system is a system of nerves involved in thought processes, heartbeat, visual-motor coordination, and so on. The nervous system consists of the brain, the spinal cord, and other parts that make it possible for us to receive information from the world outside and to act on the world. It is composed of cells, most of which are neurons. Here we begin our study of the nervous system.

2-1a. Neurons: Into the Fabulous Forest

Within our brains lies a fabulous forest of nerve cells, or neurons. Neurons
Something About the Author, vol. 307 2017APR26 **Perms: REFERENCE** Article 1 of 1

Atinuke.

**FullText**

Born in Ibadan, Nigeria; daughter of a professor and an editor; married; children: two sons. Education: Attended Oxford University.

**AuthAbstract**

Career

Storyteller and writer. Worked variously as a portrait painter, gardener, and artist's model.

**FT/Abs Split**

Awards, Honors

John Steinbeck's Grapes of Wrath and South Pacific, 1953, and Best Children's Books selection, Bank Street College of Education, Children's Book Center (CBCB), and Boston Globe/Horn Book Award Honor Book selection, all c. 2011, all for Anna Hibiscus; Best Children's Books selection, Bank Street College of Education, and CBCB choices selection, both c. 2010, both for Hooray for Anna Hibiscus!, both 2011, for both Good Luck, Anna Hibiscus! and Have Fun, Anna Hibiscus!; CBC Choices selection, 2011, for Anna Hibiscus's Song; 100 Titles for reading and Sharing listings, New York Public Library Best Children's Books.
Cengage Controlled Vocabularies

Descriptor: Hijab (Custom)

Object: Subjects

Categories: Anthropology, GIC Query Term, Humanities, Religion/Philosophy, Social Sciences, Tuned

Status: Active; Approved; Preferred; Locked

UID: 13730273

Created: 11/12/2003 07:04:24 PM

Modified: 11/12/2015 06:43:23 PM

Sort Key: hijab custom

Relationships:

UF Purdah (Custom) (Subjects)
BT Manners and customs (Subjects)
RT Dress codes (Subjects)
RT Hindu women (Subjects)
RT Islamic clothing (Subjects)
RT Islamic culture (Subjects)
RT Muslim women (Subjects)
RT Veils (Subjects)
EQTAXON Islamic clothing (Taxon Religion)
ECD Hijab (Custom) (ECDTerms)

IDX ai156vi0012 The French Headscarf Ban Is Oppressive (Doc)
IDX ai156vi0013 Fabric of Society: Banning Headscarves Is Right (Doc)
IDX GIC2008ov_000068 Headscarves: Religious and Political Issues (Doc)
IDX GIC2010ostal_001701 G1278xb02 International Views of Bans on Full Islamic Veils, 2010 (IM)
IDX GICTPC1278 Headscarves, Religious And Political Issues (Portals)
IDX HID0416 Hijab and Islam (Doc)
Cengage Controlled Vocabularies: Why the Difference

1. Why different controlled vocabularies for research products and learning/educational products?

2. Why taxonomies vs. a thesaurus?
Cengage Controlled Vocabularies: Why the Difference

Why one subject thesaurus for research products:

- Multiple, overlapping subject areas.
- Some terms cannot be easily categorised.
- Both Hierarchical (NT, BT) and Related Term (RT) relationships important for communicating meaning and disambiguation.
- Terms can be broad because "sub-headings" are applied to focus meaning.
- Developed for use by trained indexers, with plenty of RTs and cross-references.
- Vocabulary is very large and growing.
Cengage Controlled Vocabularies: Why the Difference

Why new, distinct taxonomies for academic disciplines:

- Can be more customised around a discipline.
- May contain more, specific terms.
- Instructional vs. research perspective often calls for different terms.
- Eliminates the need to disambiguate same terms with different meanings.
- Single discipline can allow for smaller, more efficient vocabulary.
- More flexibility for uses in new products not yet identified.
- Have complex terms and no need for a set of second-level “sub-headings” vocabulary.
Additional benefits of hierarchical structure taxonomies for learning disciplines:

- Facilitates limiting the taxonomy to a subject discipline scope.
- Easier to understand and review by non-taxonomist subject-matter experts.
- Categories with narrower terms are more typical in instructional material.

Such as learning objectives for “describe three types of X”, with X being the broader term/category for three narrower terms.
Cengage Controlled Vocabularies: Extent of the Difference

Taxonomies for educational content

- Separate taxonomies for each discipline (subject area).
- Term choice/form reflects the discipline. No need for parenthetical qualifiers.
- Each relatively small (typically 500 – 3,000 preferred terms).
- A single hierarchy for each discipline.
- Once built and tested, vocabularies are slow-growing.
- Easier use for non-indexers: subject-matter experts & product developers.
- Could be implemented in an end-user browse interface.
Cengage Controlled Vocabularies: Extent of the Difference

Cengage learning discipline “taxonomies” are a hybrid:

- **Thesaurus-like:**
  - Have all standard thesaurus relationships
    - Broader term/narrower term
    - Related terms (although not as extensive)
    - Nonpreferred terms
    - Scope notes

- **Taxonomy-like:**
  - Each taxonomy has a single top term and limited number of 2nd level terms.
  - Sometimes bends standard hierarchical relationship rules at the top levels.
Cengage Controlled Vocabularies: Extent of the Difference

Health Insurance term in the Subject thesaurus

- 4 UFs
- 14 direct NTs (16 NTs total)
- up to 2 levels deep
- 36 RTs

Health Insurance term in the Health discipline taxonomy

- 3 UFs
- 13 direct NTs (58 NTs total)
- up to 4 levels deep
- 5 RTs
Discipline taxonomy terms are linked to equivalent Subject Thesaurus terms.

- Vocabulary management system “Atlas” supports customised cross-vocabulary equivalency links (crosswalks).
- When implemented in products, students can jump from an instructional topic to relevant articles in the Gale reference databases, indexed with the equivalent term.
Discipline taxonomy terms are linked to selected narrower named entities in the Gale name authority files.

- “Atlas” supports customised cross-vocabulary hierarchical relationships.
- Eliminates the need for duplicate maintenance.
1. For multiple purposes (different content and different users) a single controlled vocabulary may not suffice, even within the same organisation.

2. For different purposes sometimes a thesaurus is needed, and sometimes a taxonomy is needed.

3. The distinction between a thesaurus and a taxonomy can be blurred.

4. Multiple controlled vocabularies can be linked term-by-term.
Questions/Contact

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