Knowledge Organization 2.0
- A Communicative Paradigm?

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What is Knowledge Organization?

Ingetraut Dahlberg:

… the science of **structuring** and systematically **arranging** of *knowledge units* (concepts) according to their inherent *knowledge elements* (characteristics) and the **application** of concepts and classes of concepts ordered by this way for the assignment of the worthwhile contents of referents (objects/subjects) of all kinds
Subject Area of KO

Dahlberg:

1. epistemological, mathematical, system-theoretical, cognitive scientific and scientific theoretical premises as well as historical background,
2. elements and structures of systems of concepts,
3. methodology of construction, conservation and revision
4. methodology of classification and indexing,
5. existing universals and
6. special taxonomies and systems
7. influential areas: linguistics, terminology;
8. indexing of all types of documents and subjects
9. **periphery**: workplace, individual centers, societies, countries, international areas, education, economy, user, etc.
Dahlberg:

the concept of ‘organization’ … has a **wider range than just ‘order.’** namely ‘planned construction,’ ‘structure,’ ‘forming,’ although this does not apply to some other languages where ‘organization’ is only used for collectivities like associations or unions, so that in such cases, ‘organization’ can only be related to people, not to objects
Historical Notes

• ... we were looking for a name that did not include 'classification'. So we thought of a translation for 'Wissensordnung' according to the title of my book of 1974, but that did not sound well in its English translation. So I proposed to use the words from the titles of earlier Bliss publications of the thirties (Organization of knowledge) in its reverse order: Knowledge Organization...

Ingetraut Dahlberg

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• ... the concept as indicated by the very similar phrase "organizing knowledge" certainly goes back a long way, at least to the 1960s when it was used in the title of Christopher Needham's book Organizing knowledge in libraries (1964)...

Martin van der Walt

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• ...the term "knowledge organization" goes back to Bliss' work at least (see for instance 'The Organization of Knowledge and the System of the Science' from 1929)...

Jens-Erik Mai

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• ...you make a difference between the phrases “organization of knowledge” and “knowledge organization” ... the term appears in the following work from 1910: “Principles of the Science of Organisation as applied by the Knowledge Organisation Bureau, Limited, in its Bureau Encyclopedias” (Found in the catalog of the British Library)...

Birger Hjøerland
### The Natural Order Paradigm

<table>
<thead>
<tr>
<th>480 Sports/games</th>
<th>500 Humanities/social studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>470 Human needs</td>
<td>510 History/related sciences</td>
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<tr>
<td>460 Education</td>
<td>520 Area studies</td>
</tr>
<tr>
<td>450 Psychology</td>
<td>527 Society</td>
</tr>
<tr>
<td>445 Behavioural sciences</td>
<td>Social sciences 530</td>
</tr>
<tr>
<td>420 Medicine</td>
<td>535 Sociology</td>
</tr>
<tr>
<td>410 Biomedical sciences</td>
<td>Demography 537</td>
</tr>
<tr>
<td>390 Environment</td>
<td>540 Politics</td>
</tr>
<tr>
<td>380 Wildlife exploitation</td>
<td>Public administration 550</td>
</tr>
<tr>
<td>370 Forestry</td>
<td>560 Law</td>
</tr>
<tr>
<td>366 Animal husbandry</td>
<td>570 Social welfare</td>
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<tr>
<td>360 Agriculture</td>
<td>580 Economics</td>
</tr>
<tr>
<td>359 Applications of life sciences</td>
<td>Enterprise management 588</td>
</tr>
<tr>
<td>340 Zoology</td>
<td>590 Technology</td>
</tr>
<tr>
<td>330 Botany</td>
<td>600 Materials handling</td>
</tr>
<tr>
<td>320 Microbiology</td>
<td>610 Production technology</td>
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<tr>
<td>310 Biological sciences</td>
<td>Packaging/storage 627</td>
</tr>
<tr>
<td>300 Life sciences</td>
<td>620 Energy technology</td>
</tr>
<tr>
<td>290 Geography</td>
<td>630 Materials technology</td>
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<tr>
<td>270 Geology</td>
<td>635 Nuclear technology</td>
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<tr>
<td>260 Earth sciences</td>
<td>640 Electrotechnology</td>
</tr>
<tr>
<td>250 Space and earth sciences</td>
<td>Thermal engineering 670</td>
</tr>
<tr>
<td>230 Chemistry</td>
<td>650 Mechanical engineering</td>
</tr>
<tr>
<td>228 Crystallography</td>
<td>660 Construction technology</td>
</tr>
<tr>
<td>210 Physics</td>
<td>670 Environmental technology</td>
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<tr>
<td>205 Physical sciences</td>
<td>680 Transport technology</td>
</tr>
<tr>
<td>203 Natural sciences</td>
<td>710 Military sci./technology</td>
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<tr>
<td>200 Science and technology</td>
<td>720 Mining</td>
</tr>
<tr>
<td>188 Metrology</td>
<td>780 Process industries</td>
</tr>
<tr>
<td>186 Testing and trials</td>
<td>800 Metal technology</td>
</tr>
<tr>
<td>182 Research</td>
<td>860 Wood/pulp/paper technology</td>
</tr>
<tr>
<td>166 Standardisation</td>
<td>877 Textiles technology</td>
</tr>
<tr>
<td>165 Management</td>
<td>871,95 Particular products manf.</td>
</tr>
<tr>
<td>160 Systemology/cybernetics</td>
<td>910 Language/literature</td>
</tr>
<tr>
<td>150 Communication sciences</td>
<td>940 Art</td>
</tr>
<tr>
<td>140 Information sciences</td>
<td>970 Religion/atheism</td>
</tr>
<tr>
<td>120 Mathematics</td>
<td>992 Esoteric practices</td>
</tr>
<tr>
<td>118 Logic**</td>
<td>112 Philosophy</td>
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</tbody>
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**BSO**
Cognitive Paradigm

- inspired by cognitive psychology
- cognitive processes are determined by internal factors in the organism
- psychological study of "human information processing" as model for information storage and retrieval (e.g. AI)
- critique: neglecting social and cultural factors
Sociology of Knowledge

- Social constructivism / Phänomenology:
  knowledge is constructed and traditioned by interactions in groups
- Structuralism:
  *Social field* and *personal habitus* determine our behavior
Knowledge Organization as a Counterpart of Society

- knowledge used in work: conscious and accessible to ensure survival
- extended genetic code
- differing needs in knowledge and knowledge technology according to work environment
- built on the shoulders of giants
  - phylogenetically (biological)
  - ontogenetically (individual)
Scholarly Discussion Rounds
Peer to Peer
Wikis

Collaboration → Content → Collaboration

Content
Social Software

Structure of Social Software

- Collaborative Writing
- Virtual Classroom
- Chat / IRC
- Newsgroups/Communities
- Multiplayer Games
- Video/Audio Sharing
- Wiki
- Experts portal
- User-generated Content
- Instant Messaging
- Social Networking Websites
- Learning and education
- Blog
- Content Sharing
- Social exchange
- Web discovery service
- Podcast
- AJAX
- RSS-Feed
- Learncasts
- Music/Video-„Mash-Ups“
- Announcement of information
- Collecting and systematising information
- Entertainment
Collective Tagging

- Collaborative … Tagging
- Democratic … Indexing
- Ethno…classification
- Folks…onomies
– Web
– many-to-many
– **Web 2.0**
  – Platform for services and communication styles, …
– **Web 3.0** (Semantic web ; "The Data Web")
– Web Ontology Language,
– SKOS: model for expressing the basic structure and content of **concept schemes**
eScience
Metadata and *(shared)* ontologies

classes of
types (e.g. text)
characteristics
relations

flexible with respect to content!
Interoperability

6 Levels of Interoperability

- Level 6: Conceptual Interoperability
- Level 5: Dynamic Interoperability
- Level 4: Pragmatic Interoperability
- Level 3: Semantic Interoperability
- Level 2: Syntactic Interoperability
- Level 1: Technical Interoperability
- Level 0: No Interoperability

Increasing Capability for Interoperation

Our interest lies here

3 Kinds of Integration

- Syntactic
- Structural
- Semantic

Interoperability Scale

Data

Object

Component

System

Enterprise

Community

0%
100%
FRBR
Functional Requirements for Bibliographic Records

• conceptual entity-relationship model developed by IFLA
• retrieval and access in online library catalogues and bibliographic databases from a user’s perspective
• provide links to navigate through the hierarchy of relationships
• separate from specific cataloguing standards

Group 1 entities: Work, Expression, Manifestation, Item (products of intellectual or artistic endeavour)
Group 2 entities: person, corporate body (custodianship of intellectual endeavour)
Group 3 entities: concepts, objects, events, places (subjects of intellectual endeavour)
NKOS
Networked Knowledge Organization Systems/Services

- NKOS is devoted to the discussion of the functional and data model for enabling knowledge organization systems (KOS), such as classification systems, thesauri, gazetteers, and ontologies, as networked interactive information services to support the description and retrieval of diverse information resources through the Internet.

NKOS Listserv
send to: nkos-l@oclc.org
Set of *classes* and *properties* to describe concept schemes

to improve search facilities and reuse:
- Concept-based search instead of text-based search
- Reuse each other’s concept definitions
- Search across (institution) boundaries
Treatment of Heterogeneity

- Cross concordances
- Quantitative statistical procedures
- Deductive procedures

Meta Data Creation by Algorithmic
Lessons from ‘Scientific Communication’ 2007 Jülich

- mainstream knowledge vs. ingenious knowledge creation
- carefully select data.
- librarians: document management on a high level
- science of the future: collaborative communication techniques
- leading research: individual efforts
- in general: diversity of knowledge and communication styles + public training in organization tools and communication techniques
2008+

- many persons
- heterogeneous
- new objects
- multi-disciplinary
- user-oriented
- knowledge organization literacy
Lessons from the past

supplementary, not substitution

- detailed vs. general
- recall vs. precision
- input vs. output
- durability vs. flexibility
- profit vs. sustainablility
The End (…is not the end)
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