The miracle of full-text searching: myth or reality?

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Outline

- How do we measure retrieval performance?
- Library/information science literature
- Archival literature
- Conclusions
  - Search interfaces/system design
  - Further research
  - Options for controlled vocabulary
How do we measure retrieval performance?

- Most established – recall and precision
- Comparing systems/strategies – overlap rates
- Other suggested techniques, e.g. failure analysis (qualitative), user-centred measures
How do we measure retrieval performance?

Problems/debates

- “Real” users vs. subject specialists or information professionals
- What is “relevance”?
- Interactive searching vs. batch searching
- Controlled conditions vs. “real world”
Recall and precision

Recall

(\# \text{ of relevant documents retrieved})

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(\# \text{ total of relevant documents})
Recall and precision

Precision

\[
\text{Precision} = \frac{\text{(# of relevant documents retrieved)}}{\text{(# of documents retrieved)}}
\]
Recall and precision

Relationship?

- Controlled vocabulary increases precision
- Free text/full text: increases recall but decreases precision (false drops)
- Adding access points: decreases precision
- Controlled vocabulary: groups like items but not comprehensive
- Inverse relationship often found
Library/information science literature

- Finding aids = full text; Fonds-level descriptions = abstracts ???
- Vast literature; increasing number of articles re full text, especially commercial databases
- Most studies show full-text gives higher recall, lower precision
Library/information science literature

- Hard to compare studies – do the numbers have meaning independently?
- Some studies use test-bed of documents (laboratory conditions)
- Conclusion of lit review by Rowley: combination of controlled vocabulary and free text needed
Library/information science literature

- Analysis of why searches fail: differences in terminology between searcher and author
- Research into user needs, information-seeking behaviour
  - Difficulty of using subject headings
  - Frustration with long hit lists
Archival literature

- Avra Michelson, “Description and reference in the age of automation” (AA, Spring 1987)
Archival literature

- Fernanda Ribeiro, “Subject indexing and authority control in archives: the need for subject indexing in archives and for an indexing policy using controlled language” (Journal of the Society of Archivists, 1996)

- Tim Hutchinson, “Strategies for searching online finding aids: a retrieval experiment” (Archivaria, Fall 1997)
What kind of controlled vocabulary?

- Topical subjects often assumed, but also:
  - Function
  - Occupation
  - Form/genre
  - Geographic

- Enhanced authority files; improved provenance-based access

- Philosophical and practical difficulties of assigning subject headings to archival material
Search environments

- Remote users vs. mediated access
- Search techniques in automated system
  - Keyword in multiple fields
  - Context searching
  - Easier to pearl grow
- How do users search?
  - Build into system design?
Further research

- Archival finding aids/databases need to be studied separately (library literature not enough)
- User needs/behaviour (e.g. UofT/FIS)
- Multi-level description – interactive searching quite different than for library databases
  - Somewhat analogous to web/hypertext
  - How do users navigate?
  - How is success measured?
Conclusions

- Combination of controlled and uncontrolled vocabulary
- Need good search interfaces and system design to take advantage of controlled access points
- Flexibility, flexibility, flexibility
- Structured text
Conclusions cont’d

- Effectiveness of system depends on user requirements
- Approach to take for CAIN/Canadian archives?