Understanding Differences between Search Requests in XML Element Retrieval

Jaap Kamps, University of Amsterdam

Birger Larsen, Royal School of LIS, Copenhagen

Overview

- What are XML element retrieval "User" expectations?

  ⋆ INEX topic authors as a particular user group
  ⋆ Topic Questionnaire Data

- INEX test suite++

  ⋆ De-anonymizing topic creators
  ⋆ Contextual information

- Discussion

Introduction

- Very little is known about XML element retrieval in action:

  ⋆ What do users expect from an element retrieval system?
  ⋆ What kind of information needs do they have?
  ⋆ What sort of results do they request? Etc.

- An extensive questionnaire was part of the peer topic creation process at INEX 2006

  ⋆ Shows what a special group of "users" wants from an XML element retrieval system...

- In total 195 topics submitted by 81 topic authors (median 2)

  ⋆ Searching wikipedia

Topic Questionnaire

- Topic authors answered 19 questions dealing with:

  ⋆ the topic author's familiarity with the topic;
  ⋆ the type of information requested;
  ⋆ the type of search results expected;
  ⋆ the type of results presentation preferred; and
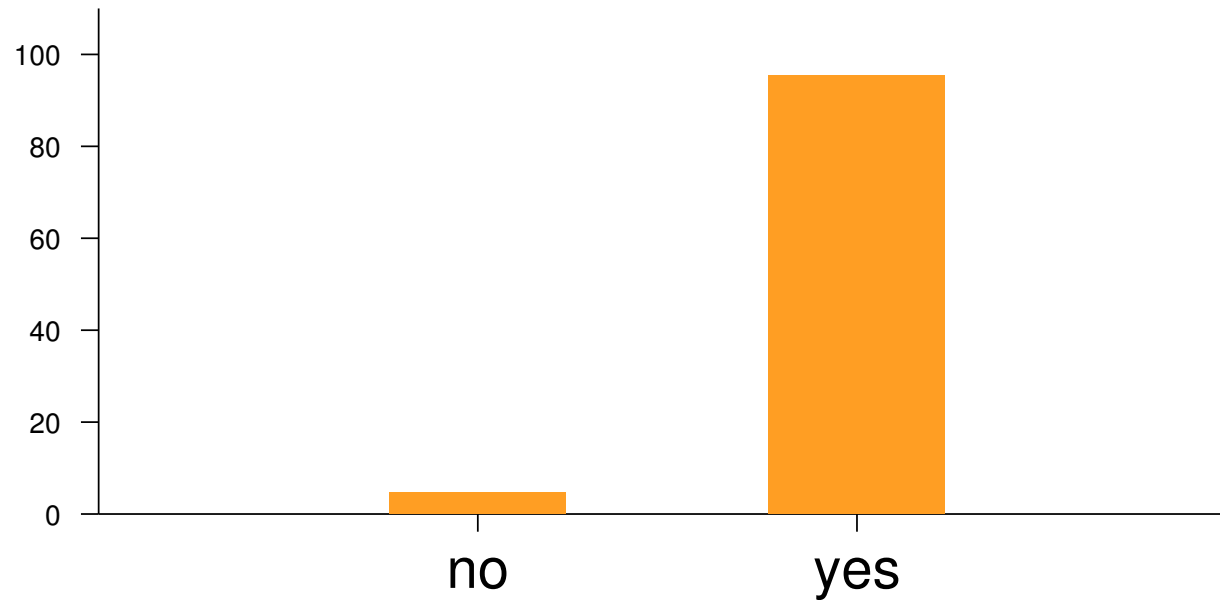 ⋆ the meaning of structured queries.

- Let's go through the responses...

Topic Familiarity (B1)

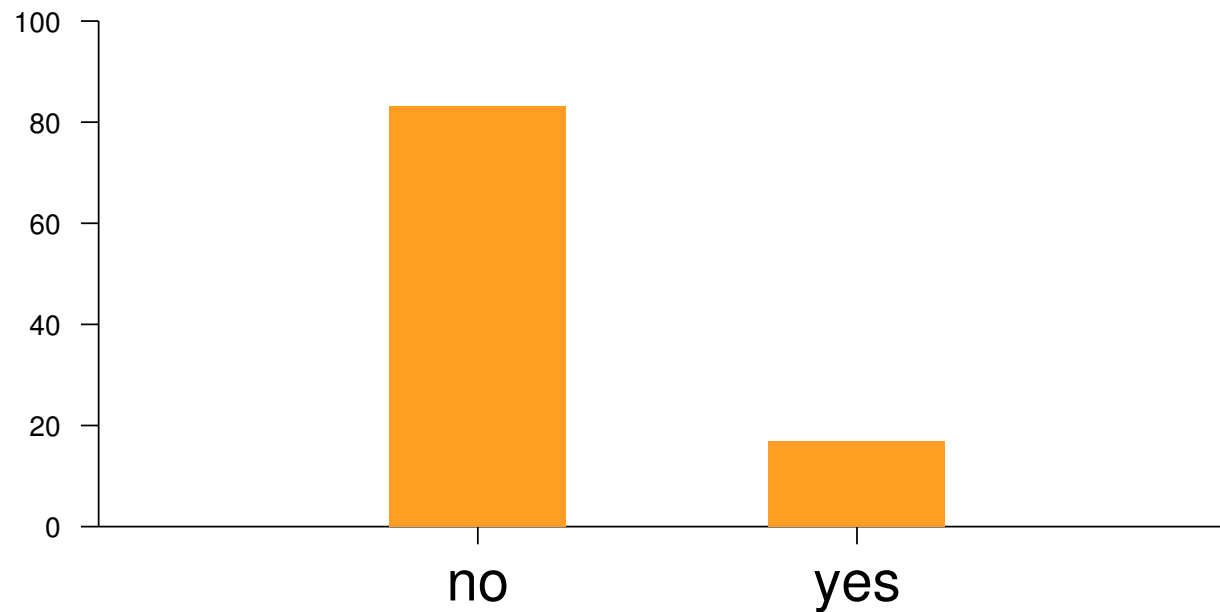*How familiar are you with the subject matter of the topic?*
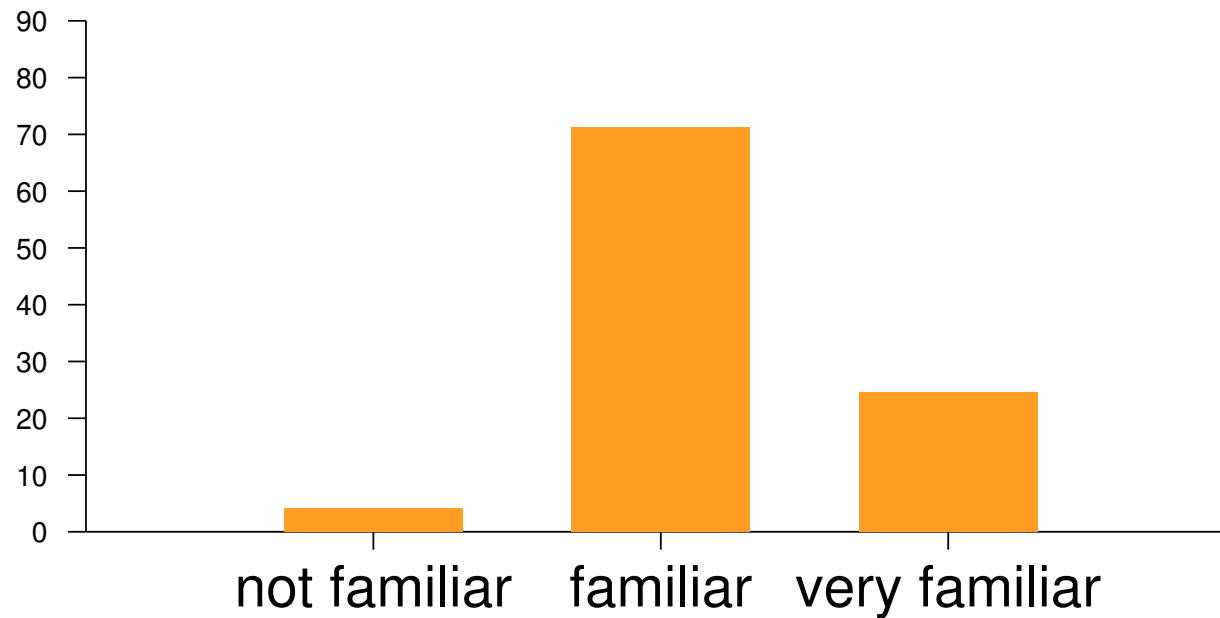
Topic Familiarity (B2)

Would you search for this topic in real-life?

Topic Familiarity (B3)

Does your query differ from what you would type in a web search engine?

- Topics are 'natural'

Type of Information Requested (B4)

Are you looking for very specific information?

- Responses to topic familiarity and specificness are related.
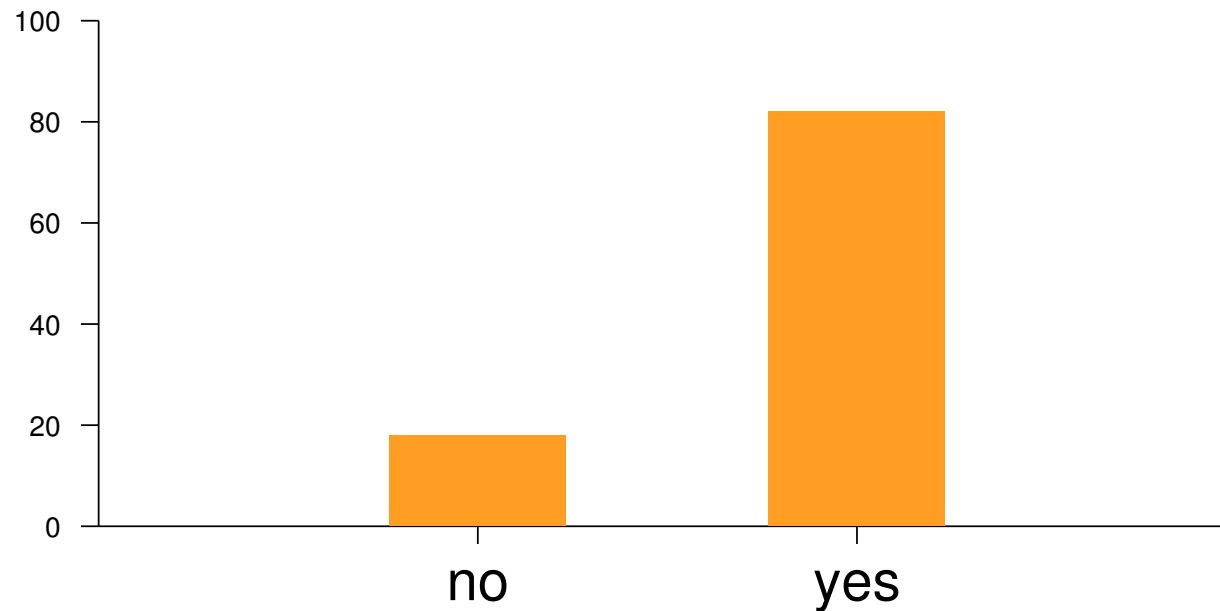
Type of Information Requested (B5)

Are you interested in reading a lot of relevant information on the topic?

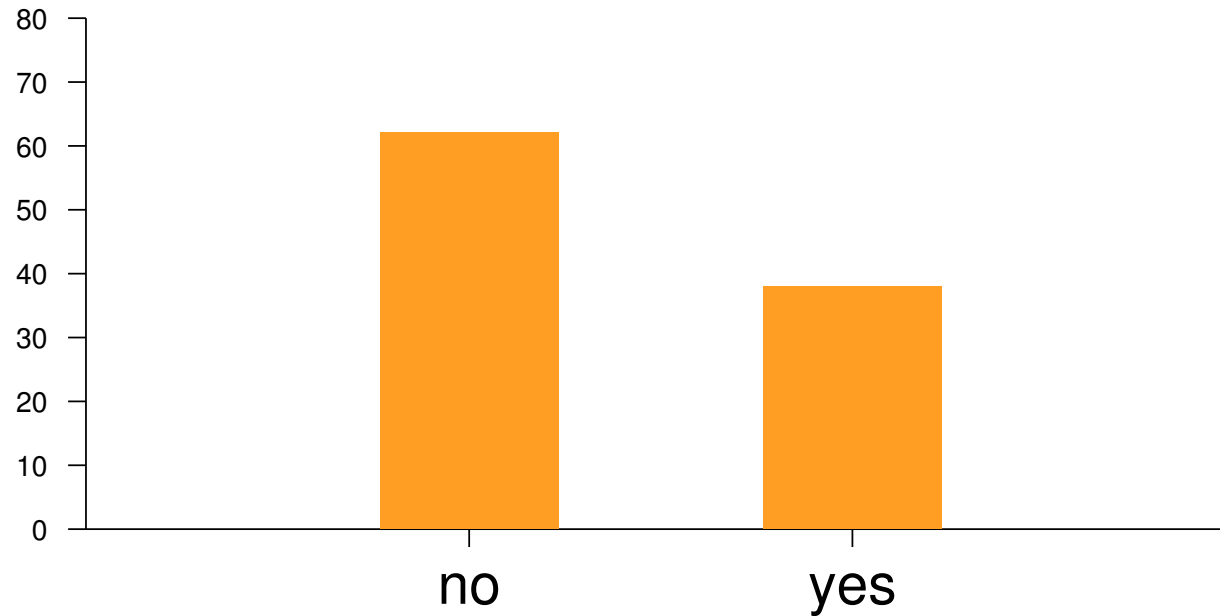- Topic specificness and 'reading a lot' are inversely related.

Type of Information Requested (B6)

Could the topic be satisfied by combining the information in different (parts of) documents?
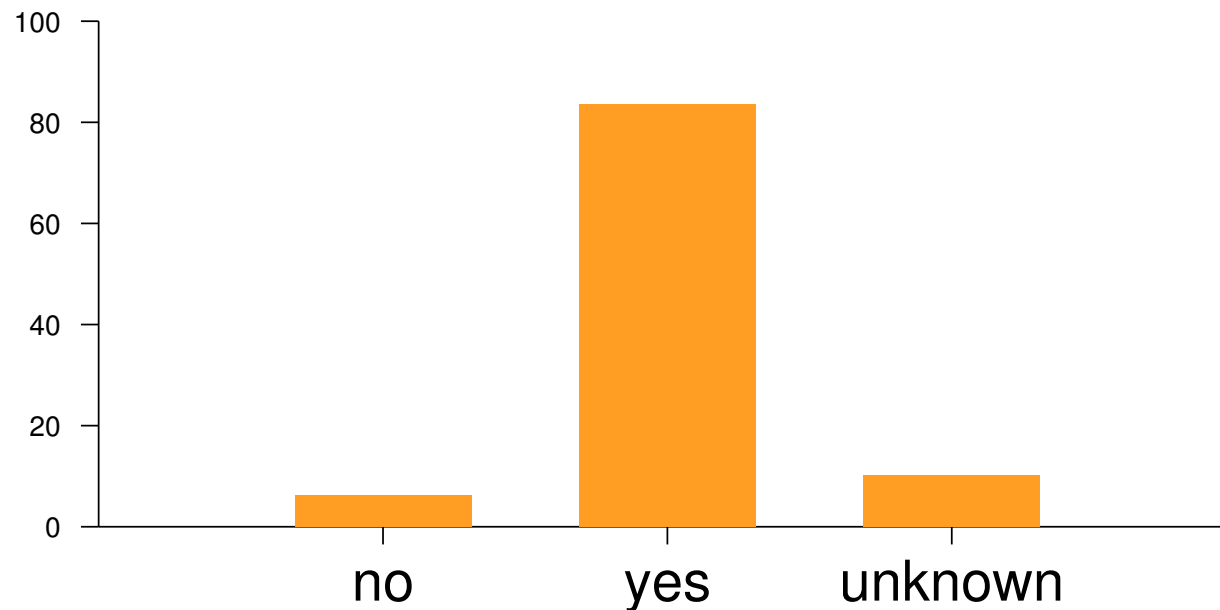
Type of Information Requested (B7)

Is the topic based on a seen relevant (part of a) document?

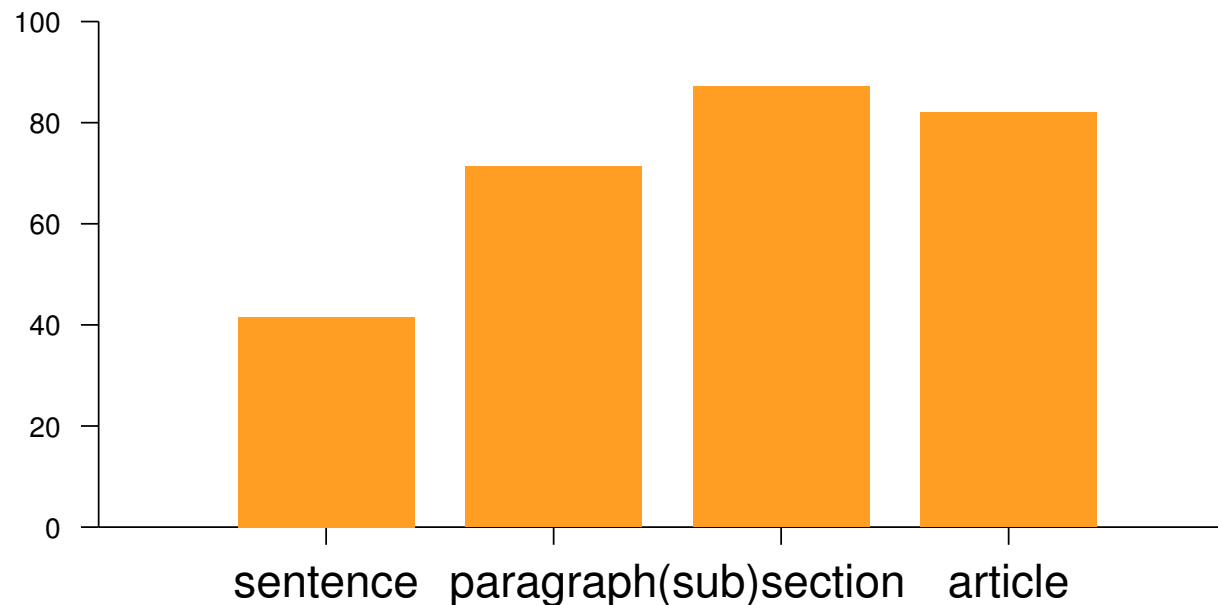# Type of Information Requested (B8)

Can information of equal relevance to the topic be found in several documents?

- Topics are informational (not known-item)
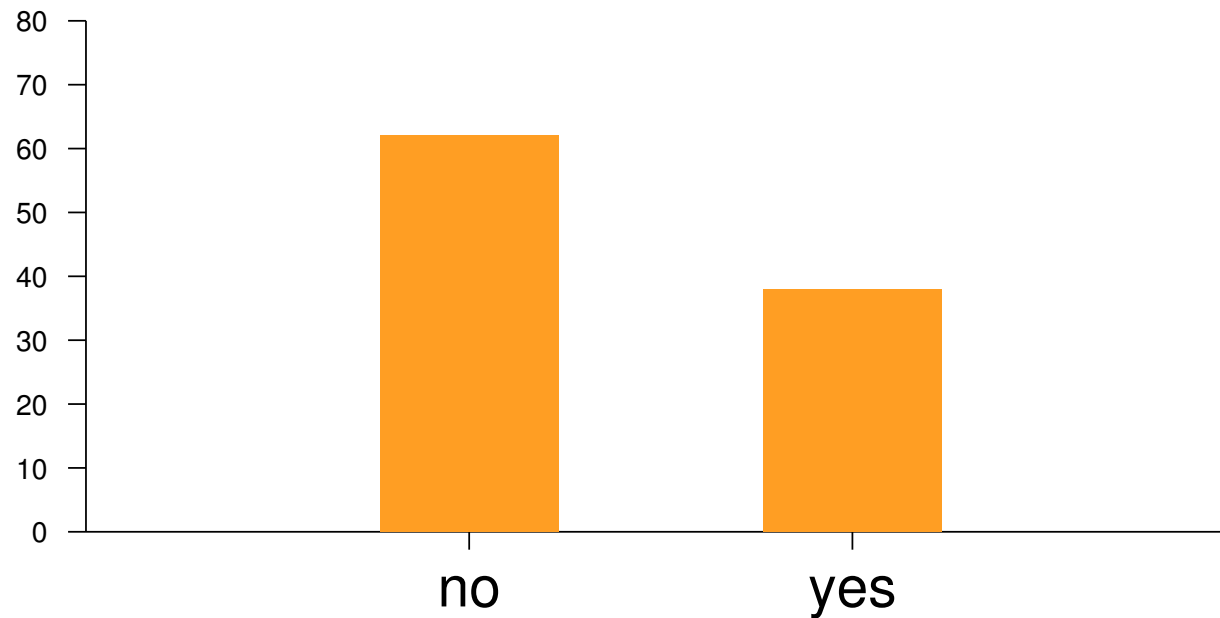
Type of Results Expected (B11)

Could a relevant result be (check all that apply): a single sentence; a single paragraph; a single (sub)section; a whole article.

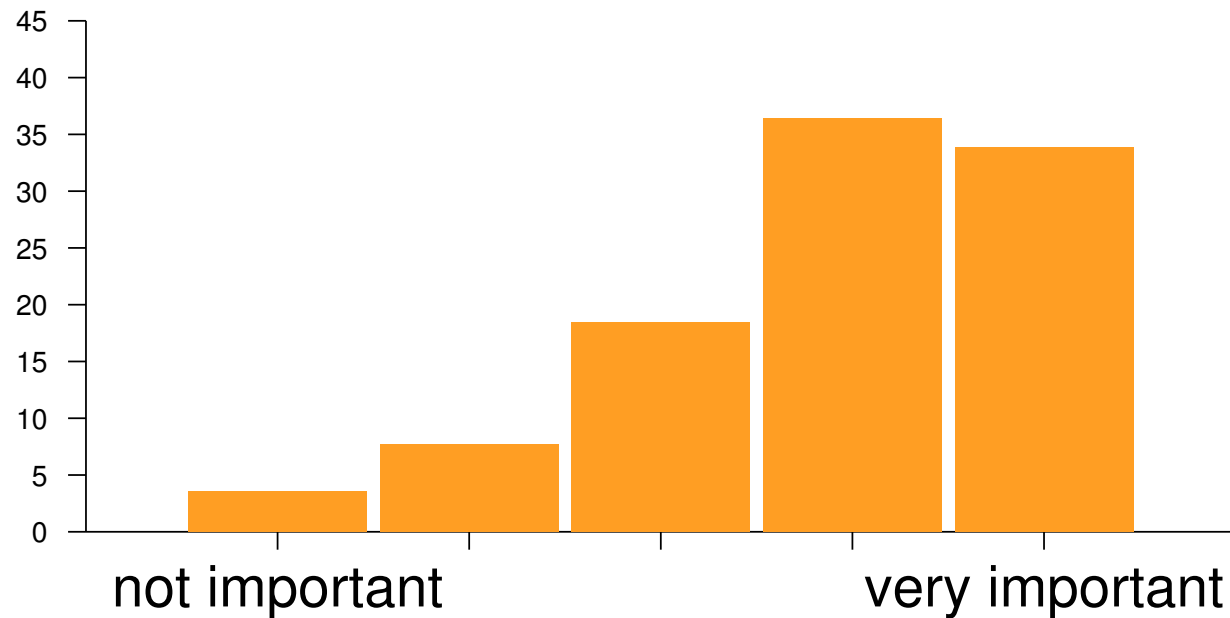- Related responses: sentence/paragraph; paragraph/section; section/article

Type of Results Expected (B12)

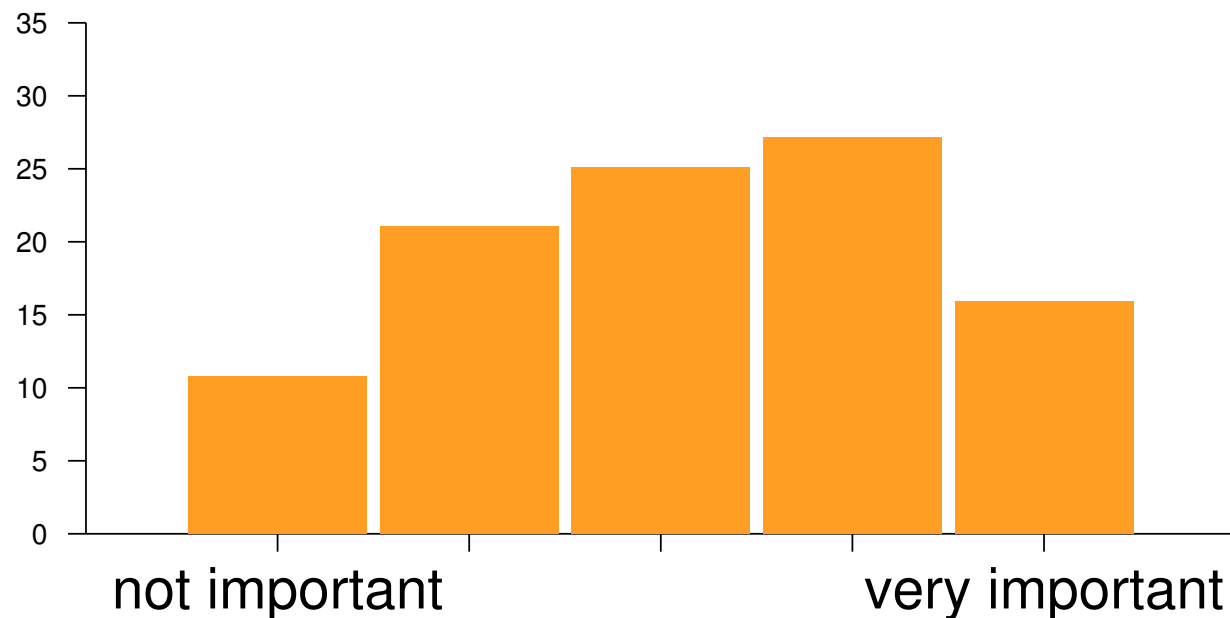*Can the topic be completely satisfied by a single relevant result?*

Type of Results Expected (B13)

Is there additional value in reading several relevant results?

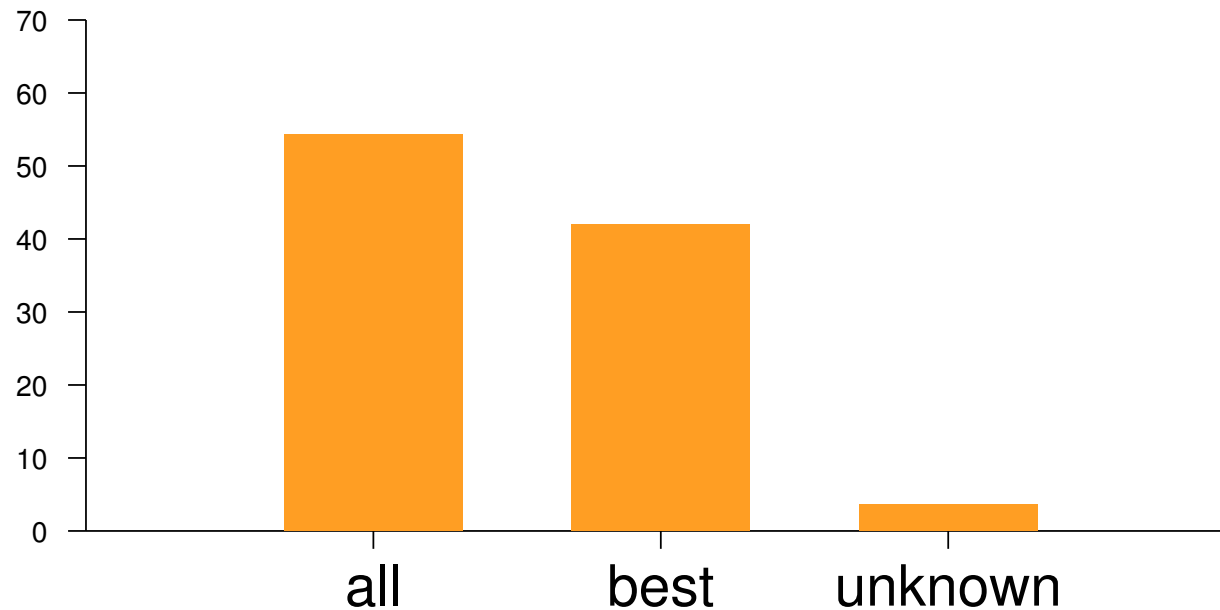# Type of Results Expected (B14)

Is there additional value in knowing all relevant results?

- Recall matters for the majority of topics

Result Presentation (B15)

Would you prefer seeing: only the best results; all relevant results; don't know

Result Presentation (B16)

Would you prefer seeing: isolated document parts; the article's context; don't know
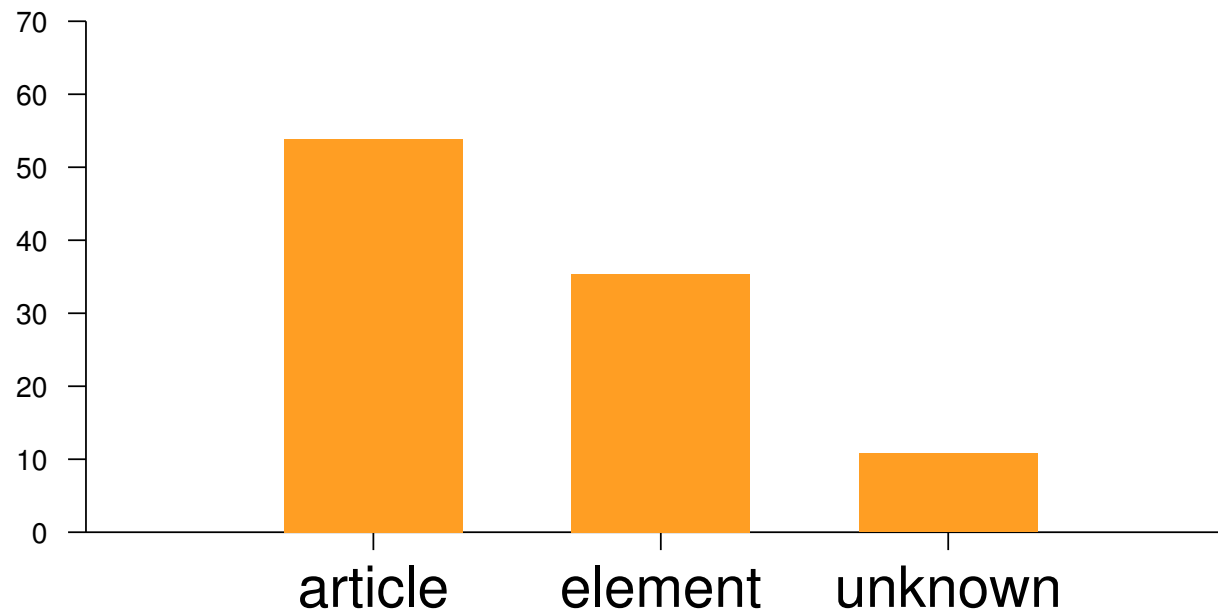
- Mixed preferences on presentation

Structured Queries (B17)

Do you assume perfect knowledge of the DTD?
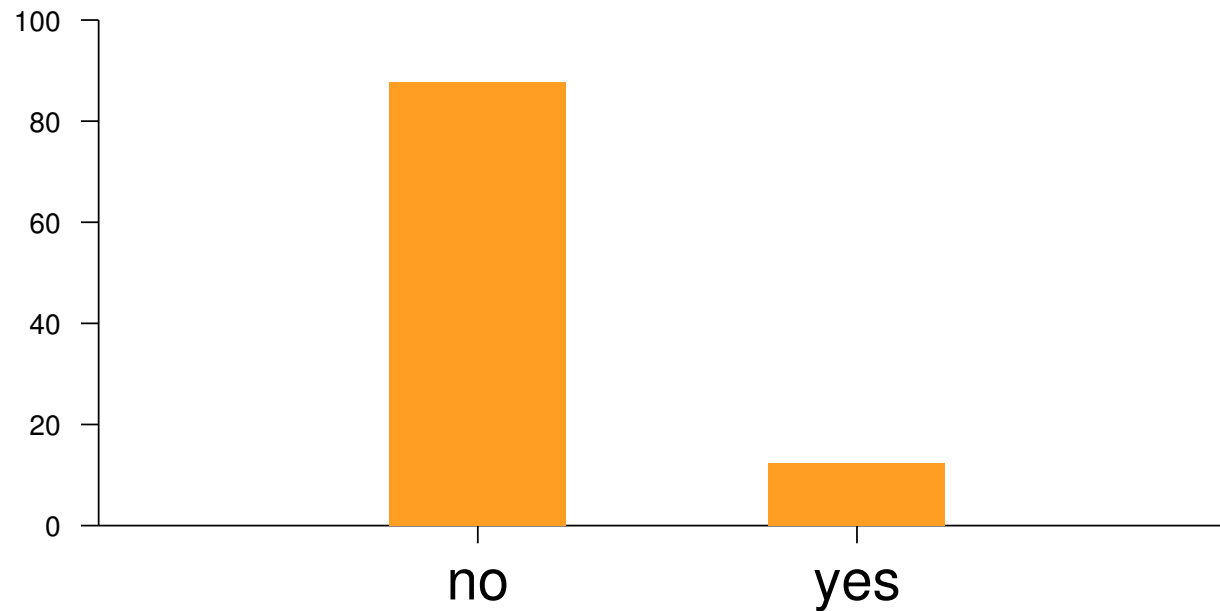
Structured Queries (B18)

Do you assume that the structure of at least one relevant result is known?

Structured Queries (B19)

Do you assume that references to the document structure are vague and imprecise?
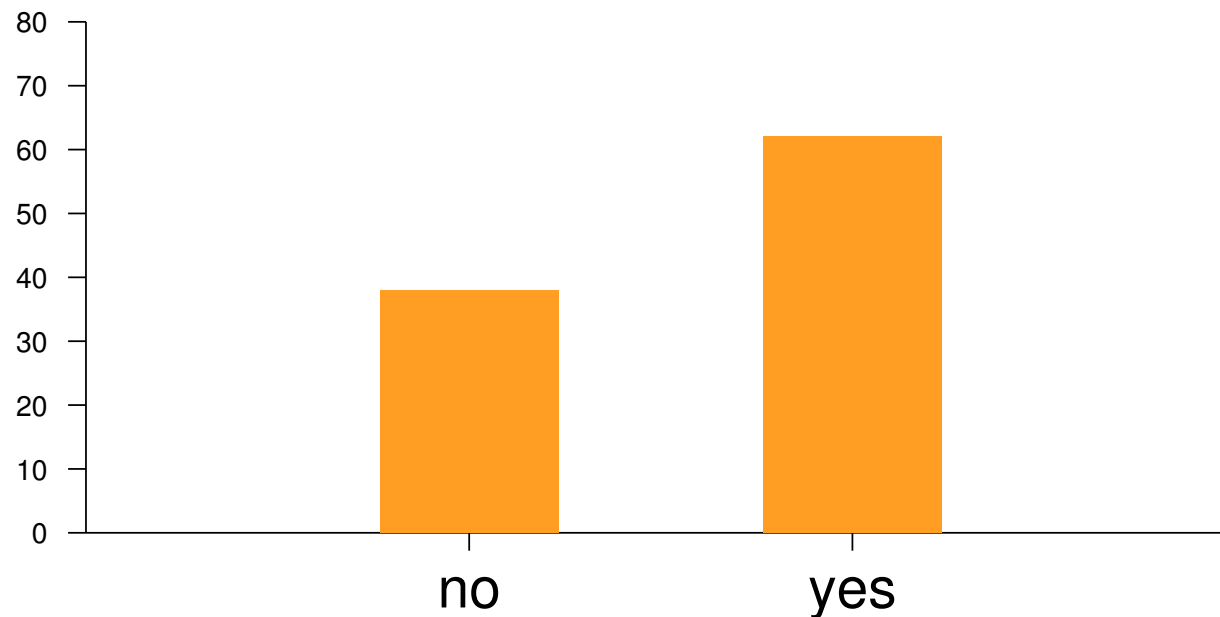
- Majority of CAS is vague, but sizable fraction strict

Wrap Up Questionnaire

- There is great variety in responses

  ⋆ No consensus on a single "XML retrieval task"?
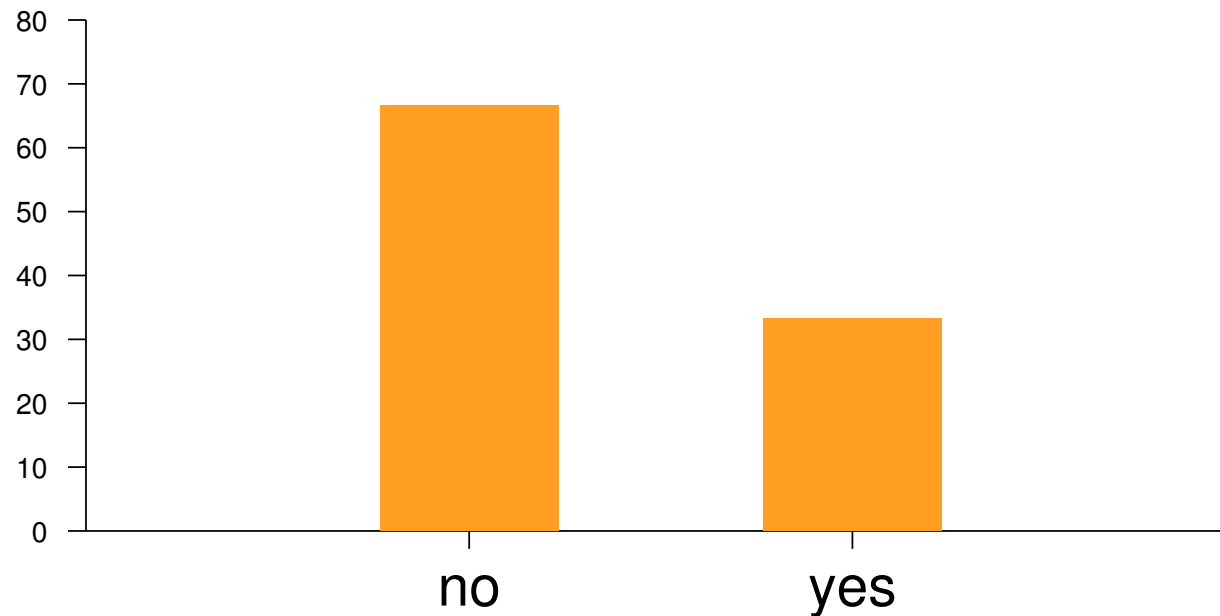 ⋆ Broad support for the INEX retrieval task diversity

- Questionnaire suggests (at least) three distinct topic categories:

  ⋆ Specific: emphasis on precision, mono-faceted, satisfied by a single result
  ⋆ General: emphasis on recall, multiple-facets, read a lot
  ⋆ Serious Structure

But: More fun to come...

- So far, we used the data as a 'survey' amongst topic authors

  ⋆ which are a particular group of 'users'

- There are 125 topics selected for INEX 2006

  ⋆ Same distribution as before (slight increase in familiarity and aficionados of structure)
  ⋆ Relevance assessment is ongoing...

- The questionnaire becomes part of the INEX 2006 test suite

  ⋆ provide contextual data on search requests and topic authors

Test Suite++

- Enriched test suite will have unique features

  - ★ Allow meaningful breakdown of topic set
  - ★ Zooming in on categories may help explain mixed results
  - ★ Reveal importance of a range of variables for INEX tasks
  - ★ Help understand fundamental differences between the tasks

- In short: boosts value of the test suite and its future reuse

  - ★ E.g., someone interested in topics with properties X and Y.

Contextualization

- Trend toward more complex IR tasks

- XML retrieval is more complex than standard doc retrieval:

  ⋆ complex document structure
  ⋆ fine-grained assessments
  ⋆ lack of consensus on the precise retrieval task

- Individual differences matter more for complex tasks

  ⋆ Contextualizing search request is of increasing importance

Related Thoughts

K. Sparck Jones. What's the value of TREC – is there a gap to jump or a chasm to bridge? *SIGIR Forum*, 40:10–20, 2006:

> *TREC needs to engage, more positively and fully, with context and the nature of the whole setup information-seeking task T rather than just the experimental task X. . . . I believe that it is important for TREC's system-building participants to be encouraged to work forward from a fuller knowledge of the context, rather than limiting their attention to the attenuated form of the context that the D * Q * R environment normally embodies, and recovering what may be distinctive about this - and hence somewhat indicative of significant features of the larger context - by working backwards from system results.*

Final Questions...

- **Question 1:** Is there a need to understand differences between search request/users?

- **Question 2:** Can suitable 'topic questionnaires' help us bring context and individual differences within the Cranfield paradigm?

- **Question 3:** Will this reduce or actually increase re-usability of the test suites?

Thanks!

Thank you to INEX candidate topic authors, Mounia Lalmas, and Saadia Maalik.