

Mapping-Chains for studying Concept Shift in Political Ontologies

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Outline

- What is concept-shift
- Why is it interesting to study this ?
 - An application in communication science
- How do we study it ?
 - Instance-based ontology mapping
- Experiments and methodological remarks
- Conclusions

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Underlying Research Questions

- What are suitable structures for representing mapping chains?
- Can instance-based ontology mapping provide useful mapping-chains expressing concept shift, and
- how can we evaluate those chains?

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Women's role in society?



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The city of Berlin



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The Phone



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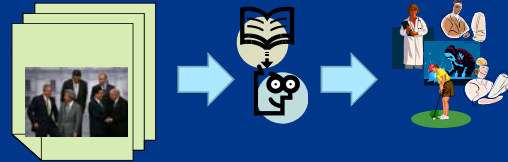
Politics is Networking



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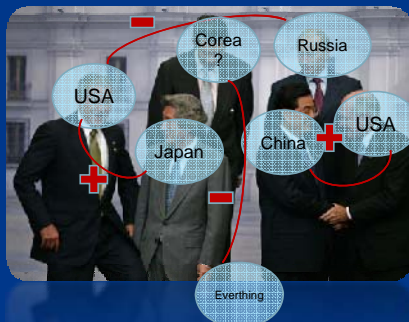
Politics is perceived via media



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NET Analysis



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Media study by Semantic Network Analysis

Communication Scientists at the VU study influence of media on the political opinion

Eg. Election campaigns

- Thousands of newspaper articles
- Party manifests

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Example studies and findings

- Election campaign study:
 - Who is determining the subjects...
 - Who is teaming up ...
 - Who is more credibility ...
 - Is there internal dispute within parties

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Concept shift matters

- Suffragettes said that *women's role in society is unacceptable*
- Pope says that *women's role in society is unacceptable*



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Outline

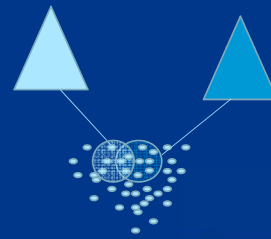
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IBOM

- Instance- Based Ontology Matching

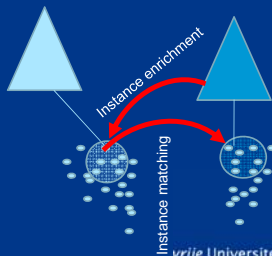


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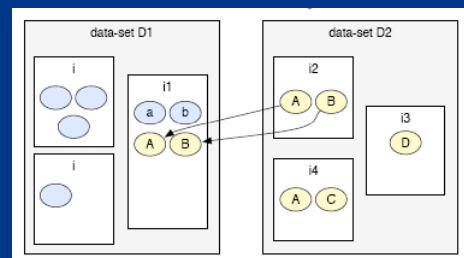
- Instance-Based Ontology Matching by Instance Enrichment



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Instance enrichment



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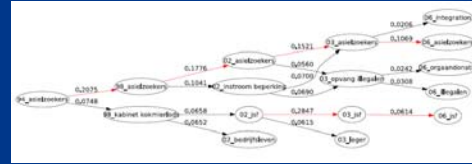


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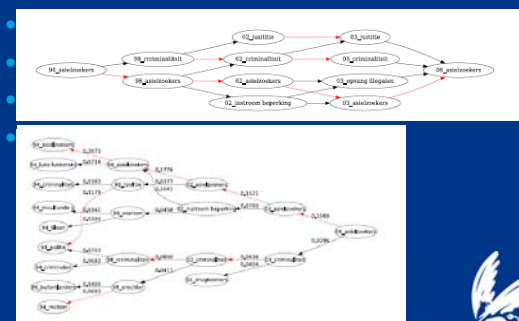
Once we have a (fake) doubly annotated corpus, we calculate similarity between concepts (eg. using Jaccard similarity).



Mapping chains



Representing concept shift



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Experimental Data: Elections in NL

Year	Articles	Concepts used	Concept manually mapped to	
			existing concepts	added news concepts
1994	1502	101	54	37
1998	5635	312	154	135
2002	6323	370	201	110
2003	5053	299	190	89
2006	5126	580		

+ Thousands of new **SKOS** per articles annotated per election campaign

+ Goldstandard (wrt 2006) **RDF**

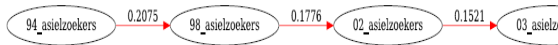


Base Experiments

Year	manually matched	Concepts matched	MRR
1998	154	102	0.47
2003	201	136	0.58



1st example



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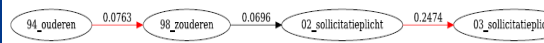
1st discussion

- Top 1 chains depend uniquely on confidence values, which are rather dubious at best.
- Top 1 chains are more interesting objects of study when more drastic shifts occur.

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2nd example & discussion

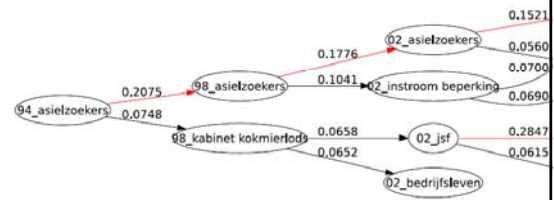


- Association versus similarity in extensional methods ?

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3rd & 4th example



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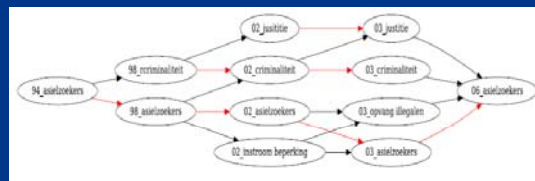
3rd and 4th discussion

- Communication scientists find this useful
- Once a chain has gone wrong, it is useless

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Final example: kites



- Restricts false chains
- Branching factor matters

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Conclusion

- “Anecdotal” evidence that:
 - Concept-shift matters
 - Ontology Matching can capture that shift at least partially
 - Mapping chains are useful structures
- Open question
 - Association versus similarity
 - Evaluation methodology

