

Research evaluation within the new era

New challenges to determine benchmarks and reference values

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Outline

- Who?
- What?
- Why?
- How?

Who?

- Centre for Science and Technology Studies (CWTS);
- Leiden University, Fac Soc Sci;
- Since 2008 special care from Ministry of Science and Education;
- 15 people, and growing;
- Quantitative studies of science;
- Particularly within context of science policy and research management.

What?

- Measuring performance;
- Mapping of science;
- Unraveling the science output structure;
- Defining similarities between entities;
- Exploring borders;
- Creating and using the landscape!

Why?

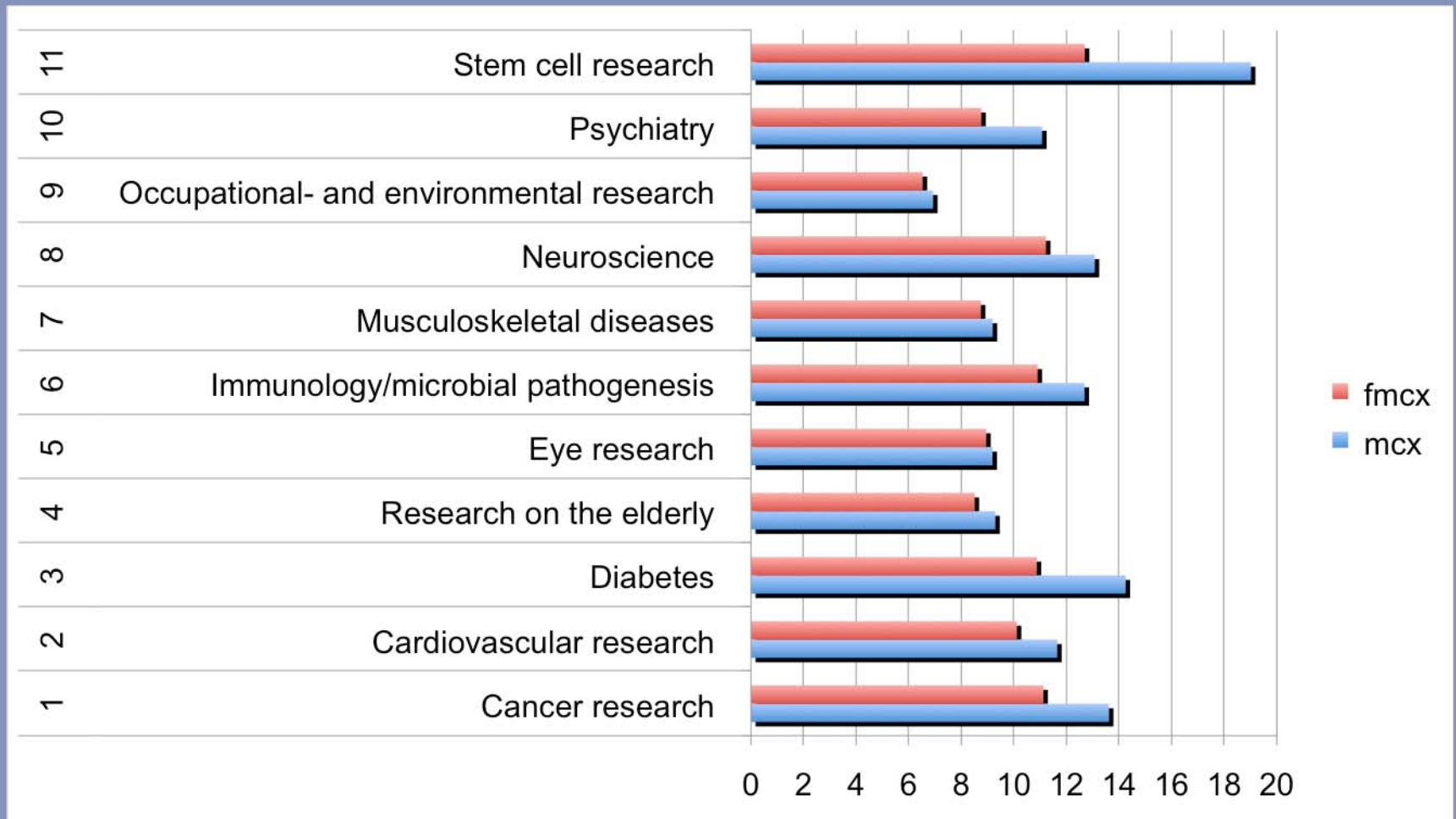
- Evaluate actors;
- Monitor science;
- Monitor developments;
- Delineate science fields;
- Define context
 - Explore environment
 - Define benchmarks;
- Determine one's position.

Why? challenges

- Present (traditional classification) structure has its flaws;
- The era of open access is 'chaos';
- Journals may not remain the primary medium;

- Enhance data cleaning;
- Author – researcher matching;
- Oeuvre determination.

Mesh delineation vs. journal-classification



How? – mapping entities

- Identify entities
 - Publications < author oeuvres < group oeuvres < fields
 - Publications < themes;
- Linking entities (explicit and implicit).

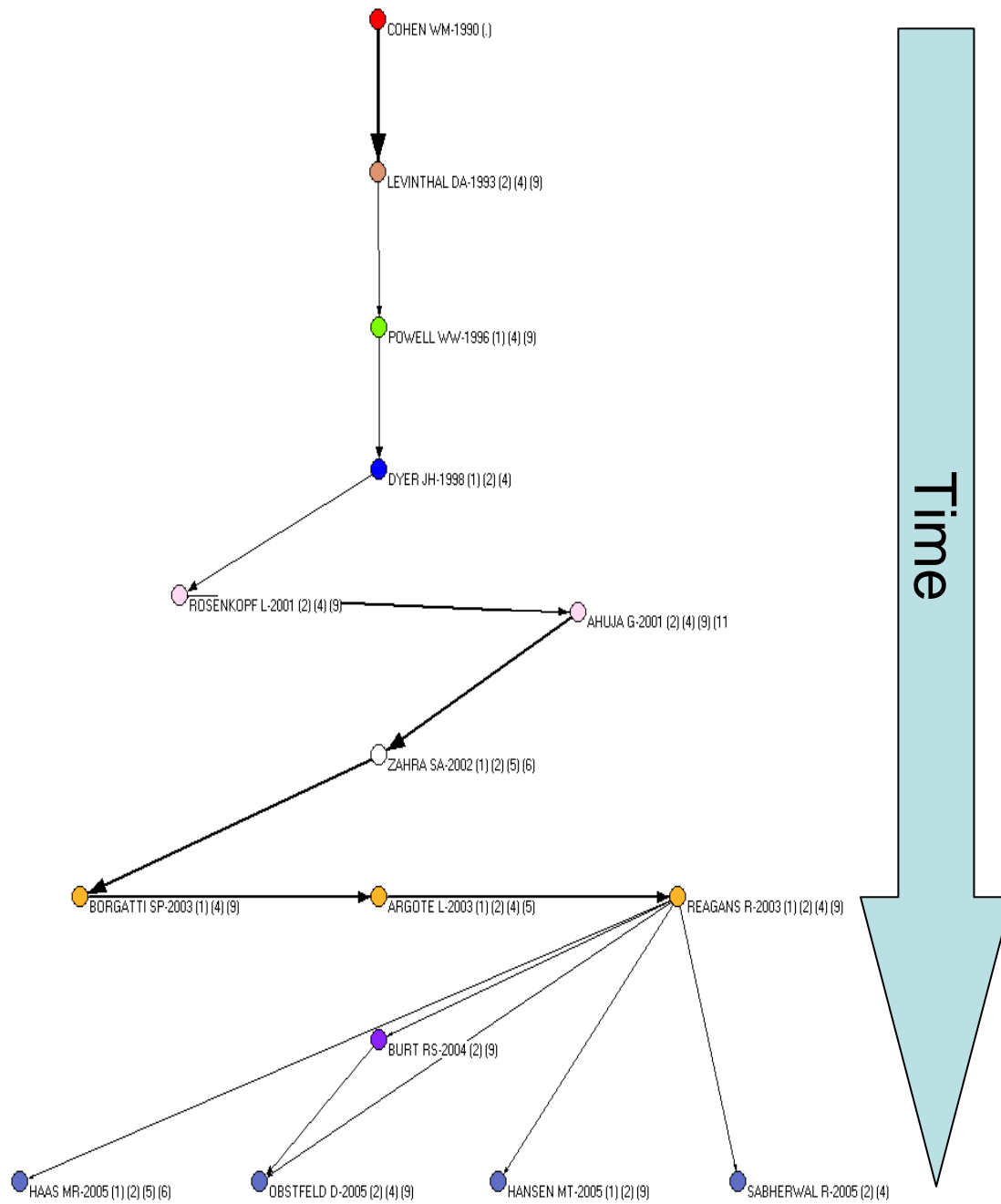
How? – identify entities

- One publication = one publication;
- One name = one person;
- One phrase = one topic;
- One pub set = one group's oeuvre.

How? – linking entities

- Explicitly
 - A cites B;
- Implicitly
 - A is related to B because ...;
- Exploring boundaries (setting thresholds)
 - Where does this field end, and
 - Where does another begin?

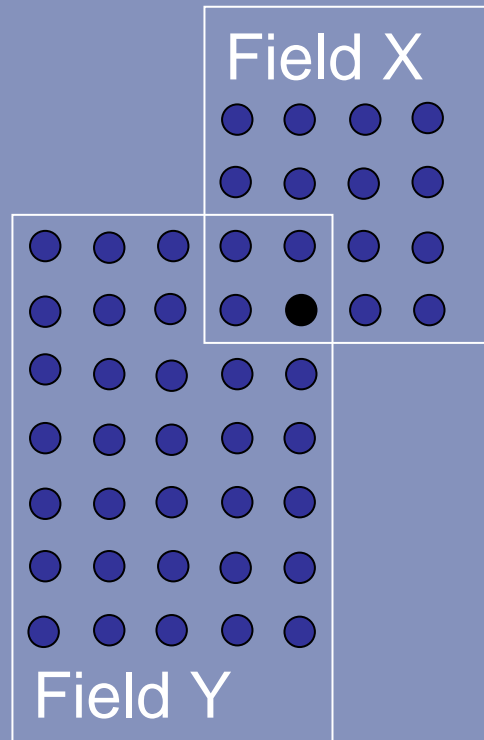
Key Papers



How? – implicit pub linking

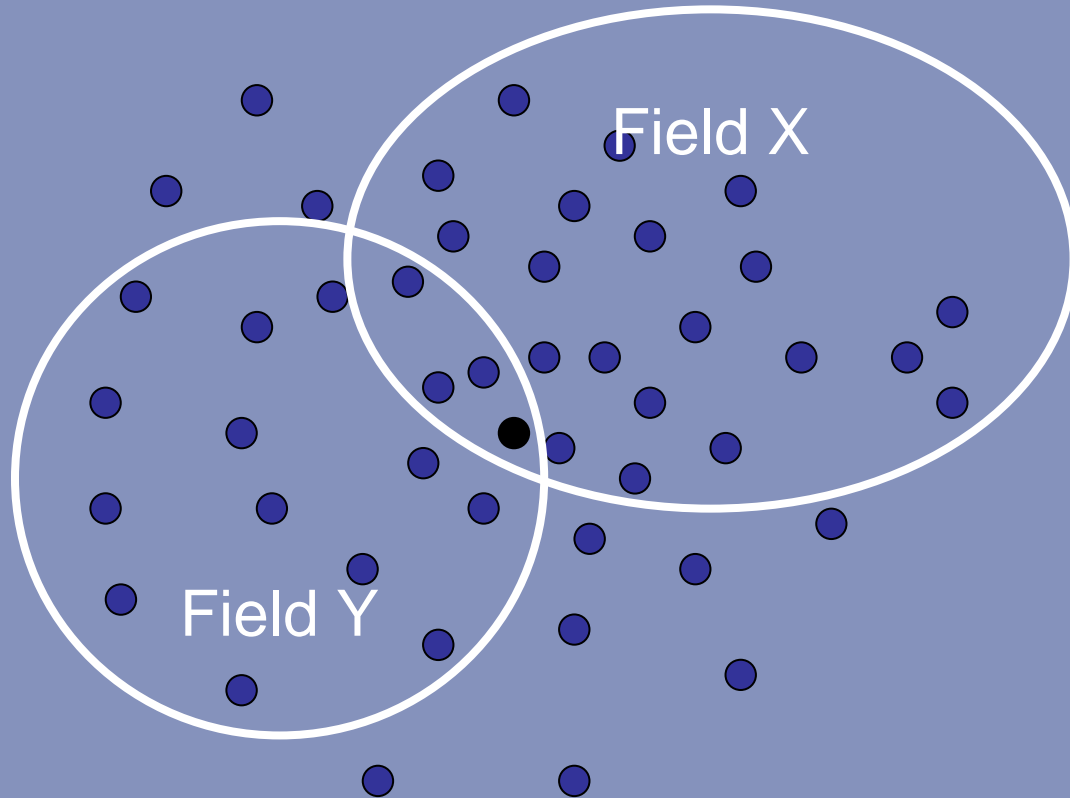
- Publication A is related to publication B;
- Based on:
 - Shared authors
 - Shared addresses
 - Shared cited references
 - Shared topics
 - ...;
- To identify:
 - Author oeuvres
 - Group oeuvres
 - Field delineations
 - Thematic areas
 - ...

Field normalization for Pub A (journal classification based)

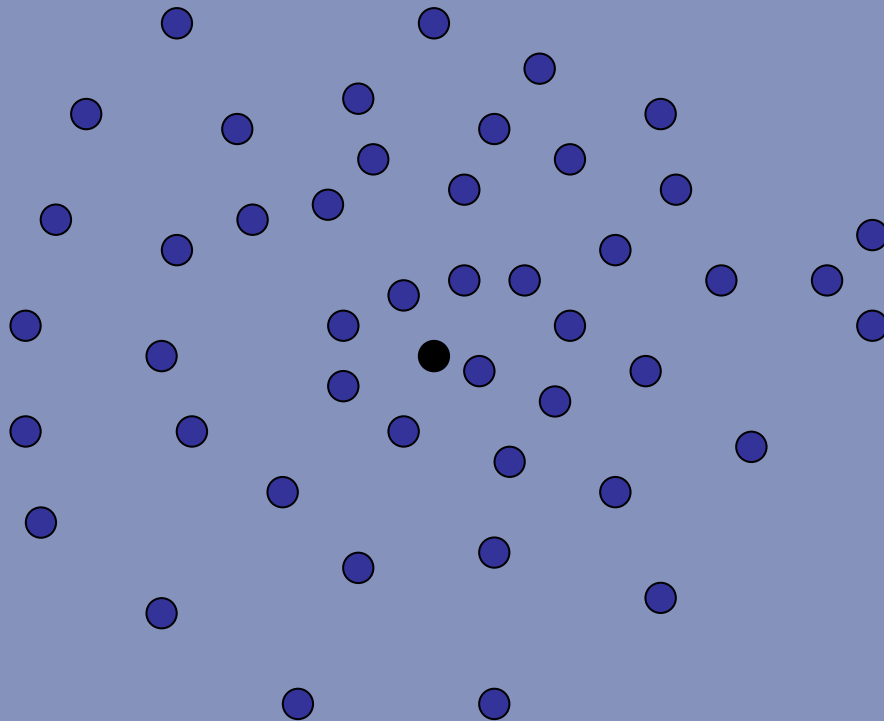


- Context of pub A is:
 - Field X
 - Field Y
 - Both
 - The interface;

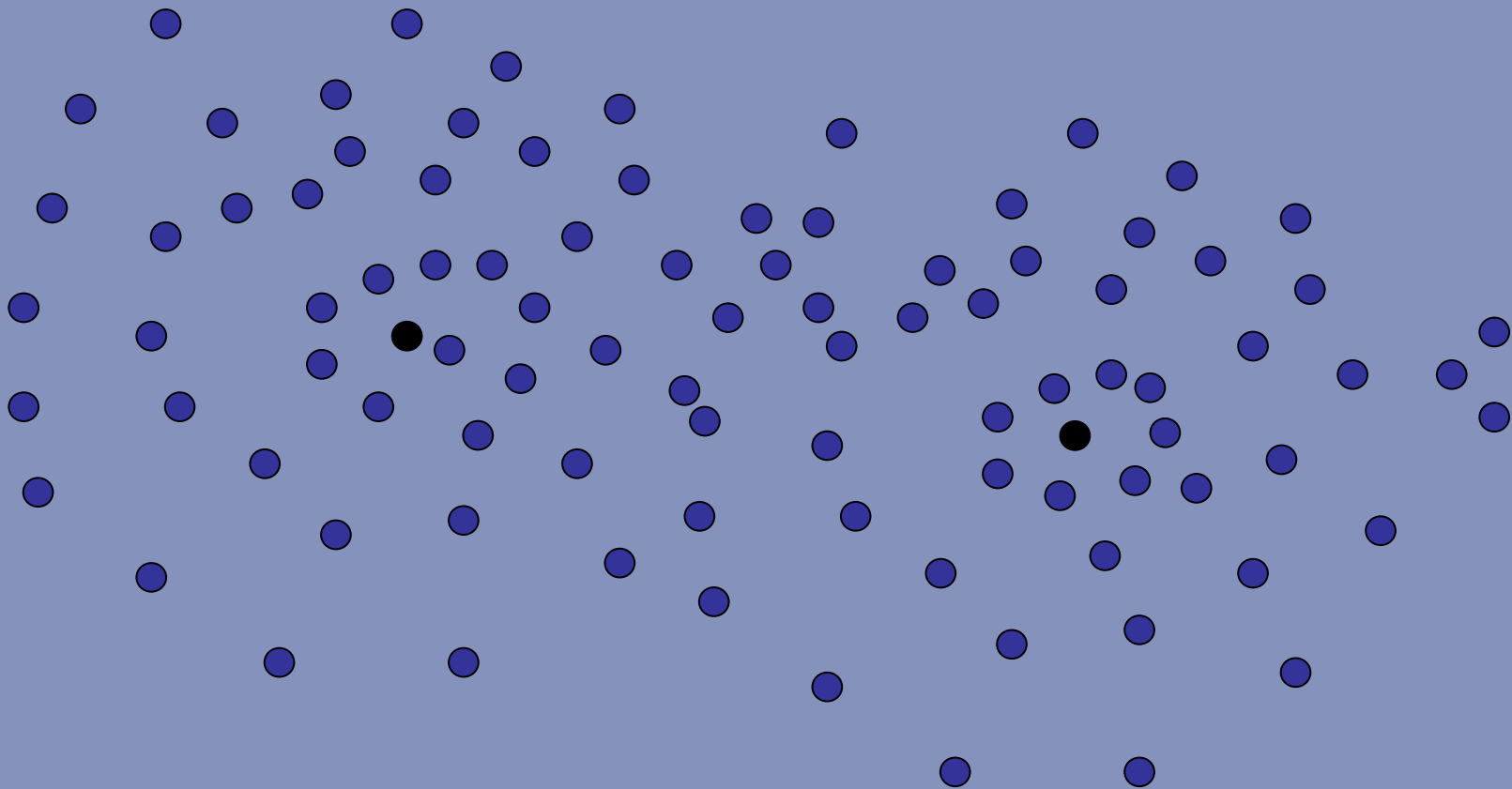
Field normalization (2)



Field normalization (3)



Field normalization (4)



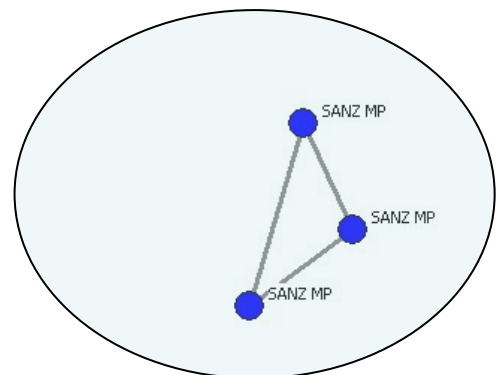
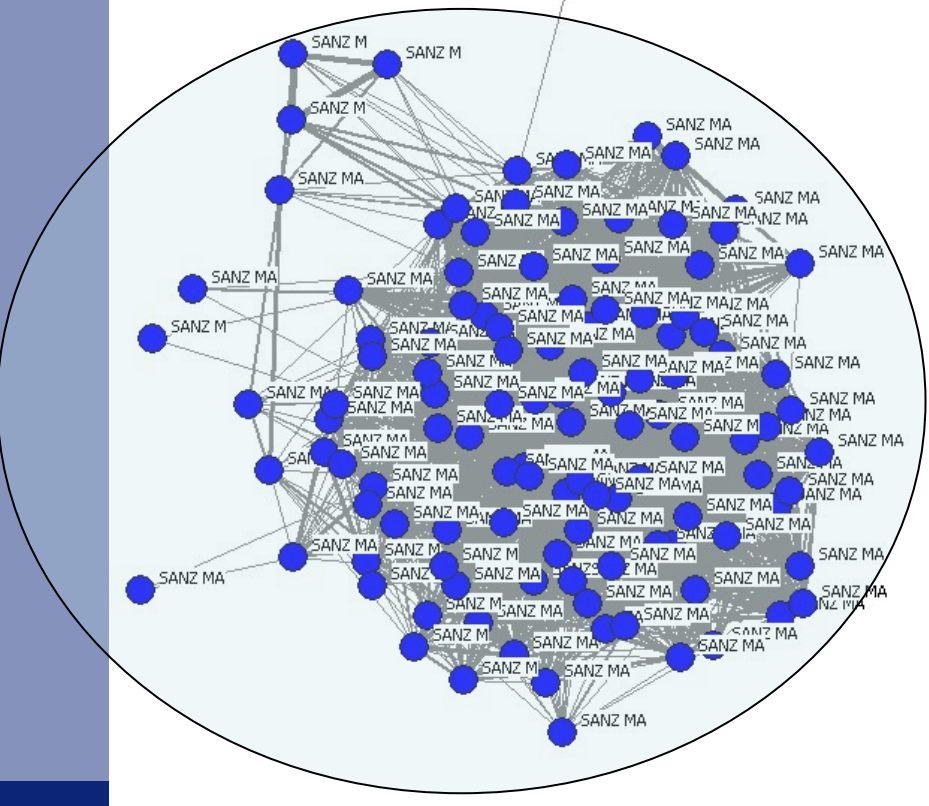
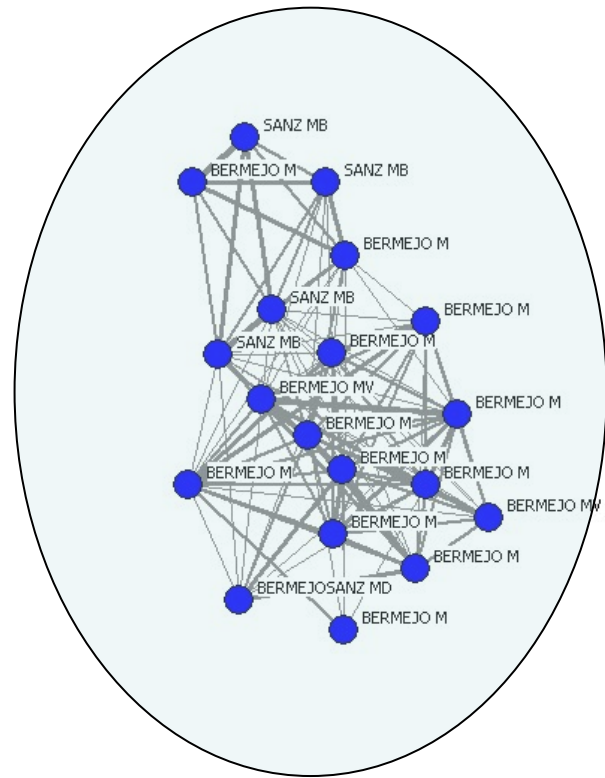
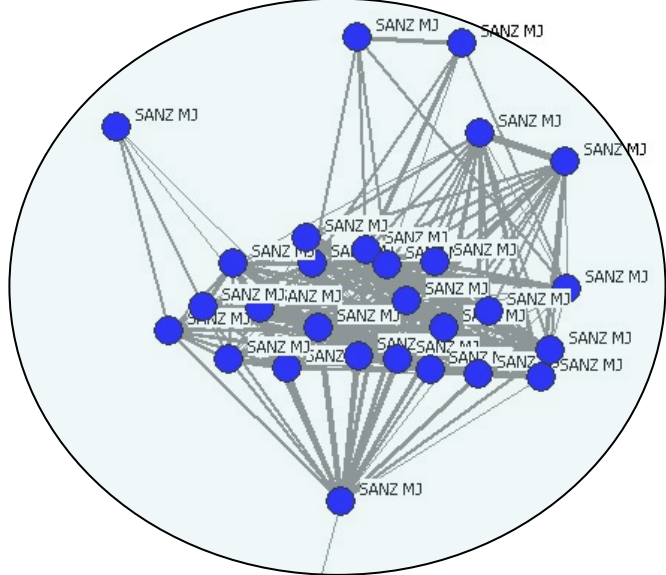
Steps

- Determine relevant information (cited refs, co-authors co-addresses, keywords, ...);
- Determine factors for different information;
- Measure distance between individual publications;
- Define reference value per publication based on distances.

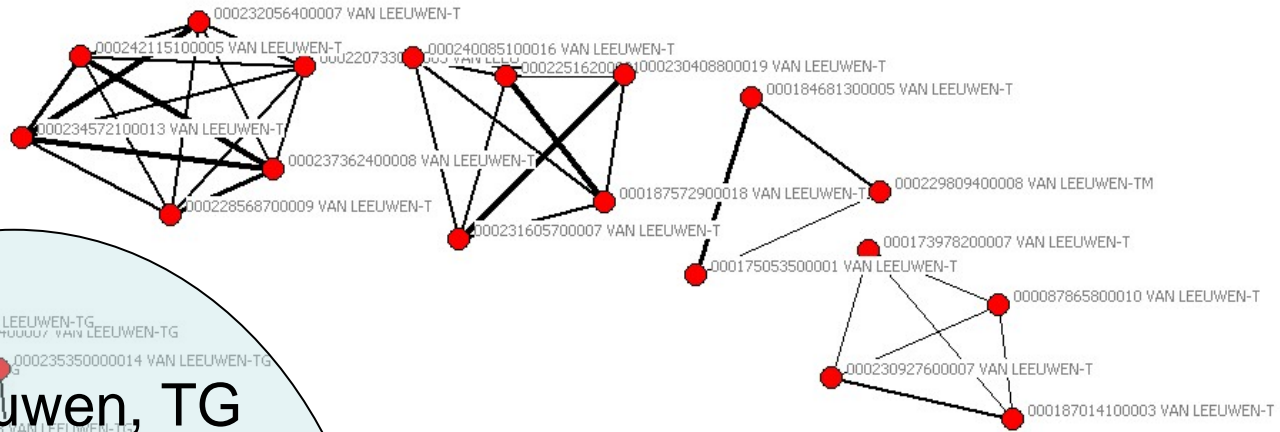
Applications

- Publication registration;
- Data cleaning;
- Field delineation;
- Improve traditional journal classification;
- New field normalization.

- BERMEJO M
- SANZ MP
- SANZ ML
- SANZ MJ

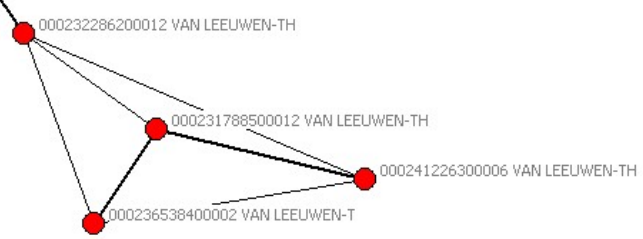
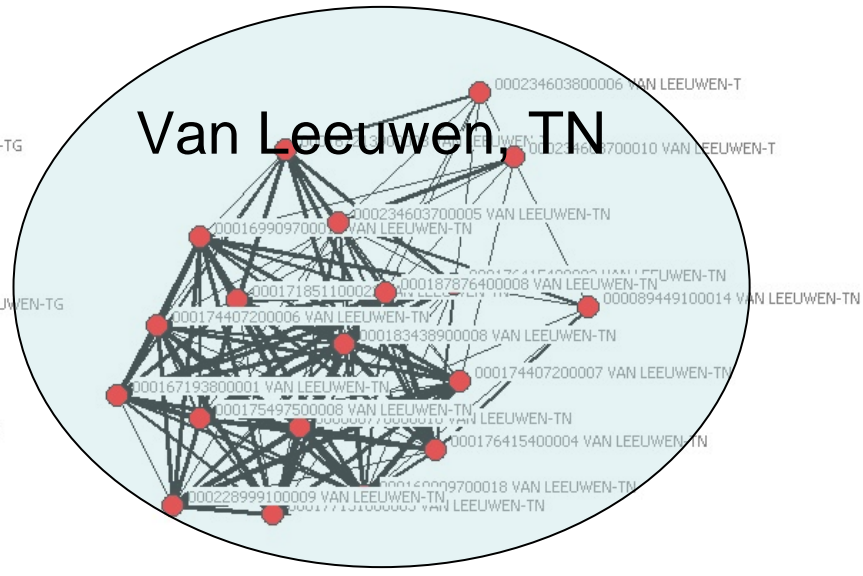
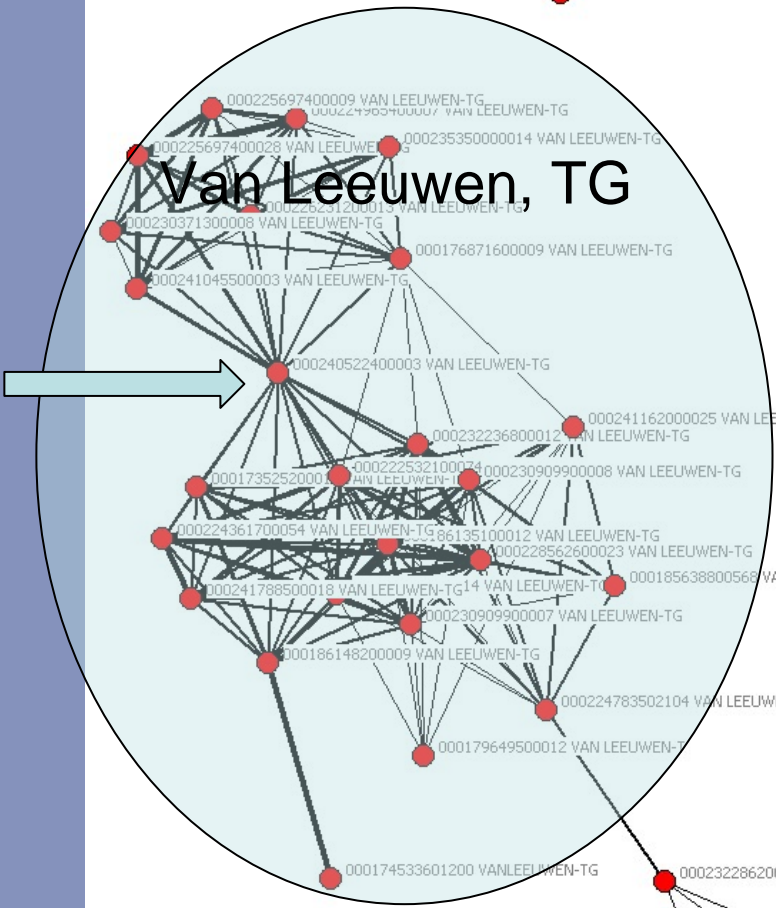


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- 000179829900010 VAN LEEUWEN-TM
- 000228827100031 VAN LEEUWEN-TC



Van Leeuwen, TG

Van Leeuwen, TN



Conclusions and discussion

- We need a more sophisticated way of defining context of scientific activity;
- This more sophisticated way should not be journal-based;
- A methodology based on implicit linkages between individual publications looks promising;
- We encounter the challenge to define dynamic normalization.