Seed+Expand

aggregating the scientific output of
the Netherlands, 2000-2010

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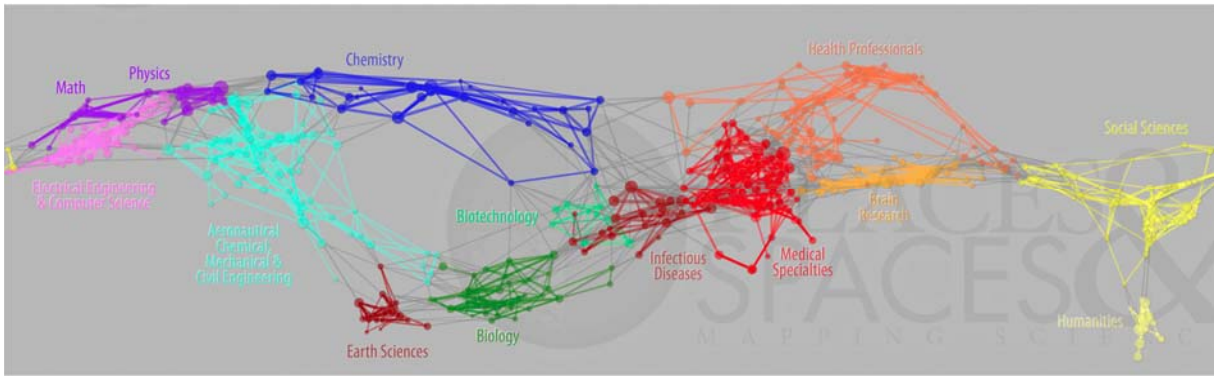
CWTS Meaningful metrics

CNS Cyberinfrastructure for Network Science Center

Data Archiving and Networked Services DANS

goal

to study the dynamics on the output of
Dutch professors (2001-2011)



but, lack of data on
the output of full professors!

the problem

given a Dutch professor in the NARCIS system

find all his/her publications

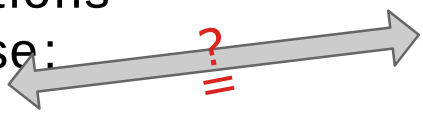
How to connect bibliographic data from CWTS with the NARCIS system?

context

CWTS

Bibliometric publications database:

- author
- author-order
- email (sometimes)
- affiliation (sometimes)
- journal



DANS

NARCIS

dutch scholars:

- name, initials
- DAI affiliations
- organisation
- email

non trivial I

- misspelled names
  - *Van Knienberg* instead *Van Knippenberg*
- different initials / first name
  - *Johannes* and *Hans*
- different formats in the data across sources
  - Prefixes separated in the NARCIS system
    - P.M.P. | van | Bergen en Henegouwen
  - Made initials or concatenated in WoS
    - Henegouwen, PMPVE (Henegouwen, Paul M. P. van Bergen En)

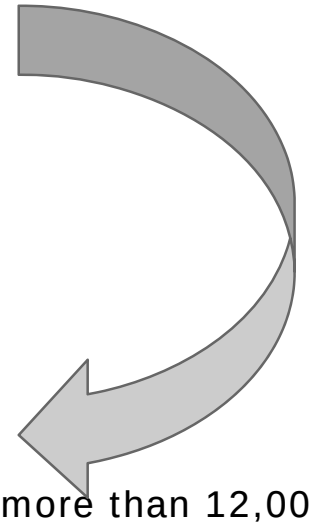
non trivial II

- multiple scholars have the same author name (homonymy)
- the same scholar with multiple author names (synonymy)
  - changes over time, e.g., due to marriage

the raw data

NARCIS database (DANS)

- 8378 Dutch full professors
  - affiliation to dutch organizations
  - name, initials
  - email
  - DAI



CWTS bibiometric data system

- close to 23 million publications in more than 12,000 journals
- no unique author identifier for all authors

the Gold Standard

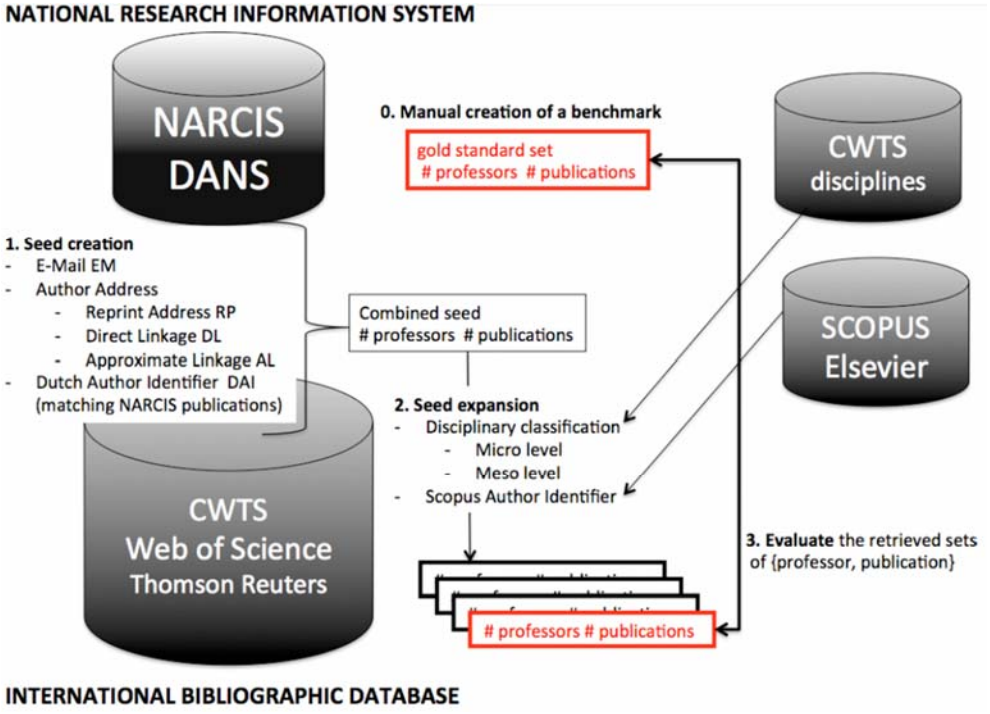
we already know the complete *oeuvre* of 1400 Dutch full professors, due to manually verified publication lists by CWTS

USEFUL TO VALIDATE OUR METHODOLOGY

the 1400 of the 8376 (17%) full professors who already appear in this list:

the Gold Standard

the sources & main overview



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1 @linda: need better image
tjreijnhoudt,

2 I think so!
Rodrigo Costas,

Seed+Expand main concept

- seed creation, precision
  - given a full professor, {initials, name, email, affiliations}
  - find one or more publications that are **most likely** authored by this professor
- seed expansion, recall
  - given these 'seed' publications,
  - find publications by the **same author**
    1. publication-based classifications
    2. Scopus Author Identifier

seed creation

1. Email seed (EM)
2. Author Address approaches (*)
   a. Reprint Author (RP)
   b. Direct linkage author-addresses (DL)
   c. Approximate linkage author addresses (AL)
3. Digital Author Identifier seed (DAI)

(*) For these seeds, very common names have been excluded

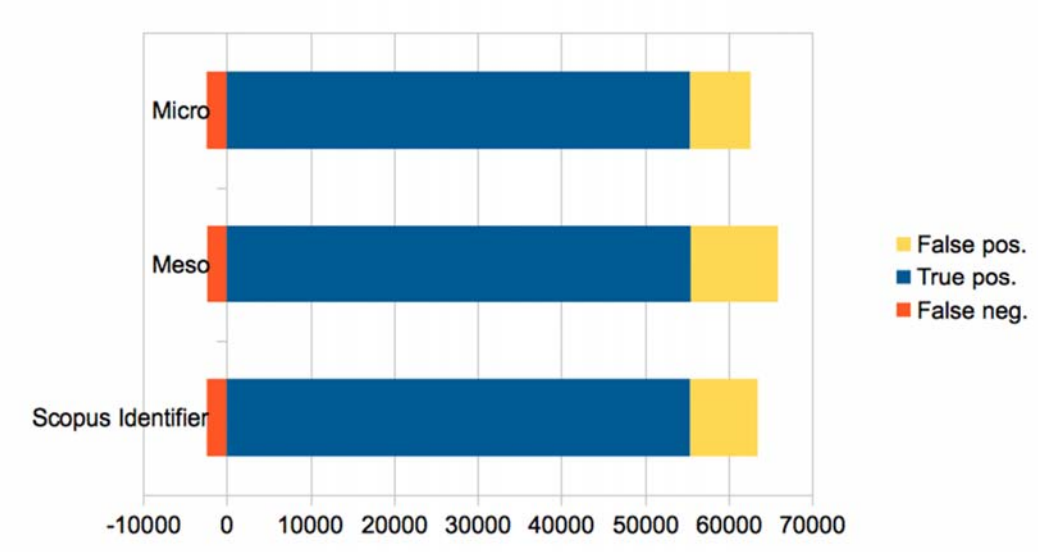
seed expansion

1. CWTS Paper-Based Classification (2001-2011)
   - based on citation relationships of publications
   - 672 meso, over 20K micro disciplines
   - micro: +23% unique papers over seed
   - meso: +34% unique papers over seed

1. Scopus Author Identifier Approach (1996-2011)
   - +69% unique papers over seed

evaluation

Gold standard: *2001-2010*



Results

- 80% of Dutch professors detected
- Micro-disciplines: highest precision (88.5)
- Scopus Author id & micro disciplines: same recall (95.9)
- This methodology can be applied to other sets and author identity schemes (ORCID, VIVO, etc.)
- Further research on disciplinary differences and improvements

General Discussion

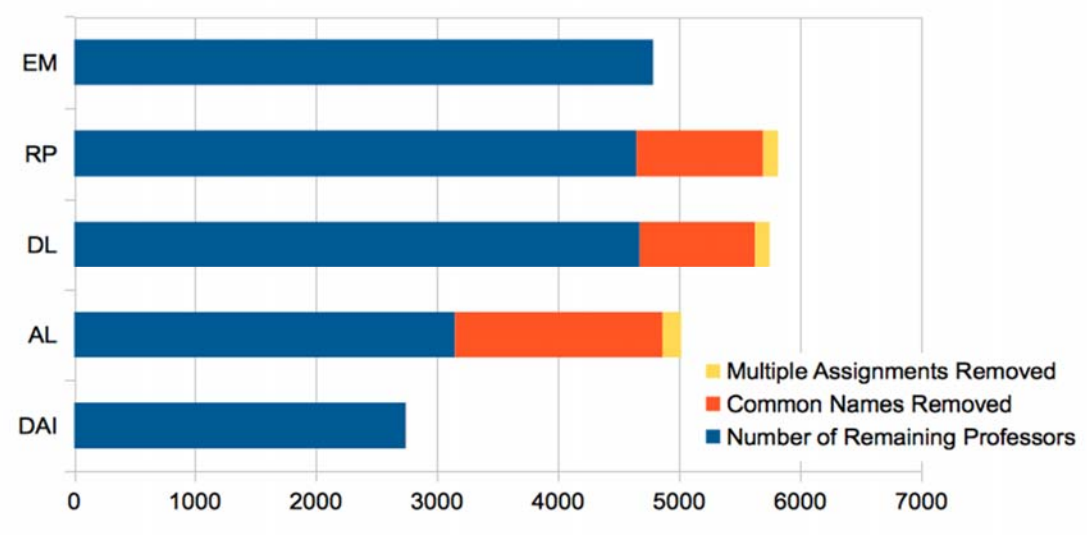
- increasing bibliographic data sources but still lacking author disambiguated data!!
- lack of research on how to connect databases
  - repositories
  - bibliographic databases (WoS, Scopus, etc.)
  - altmetrics
- e-mail data and DAI/ORCID-like identifiers are powerful linking elements across systems

the end ...

Thank you very much for your attention!
Questions?
Comments?

five seeds

combined: 6753 of 8376 full professors found



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1 Don't you want to include this slide?
Rodrigo Costas,