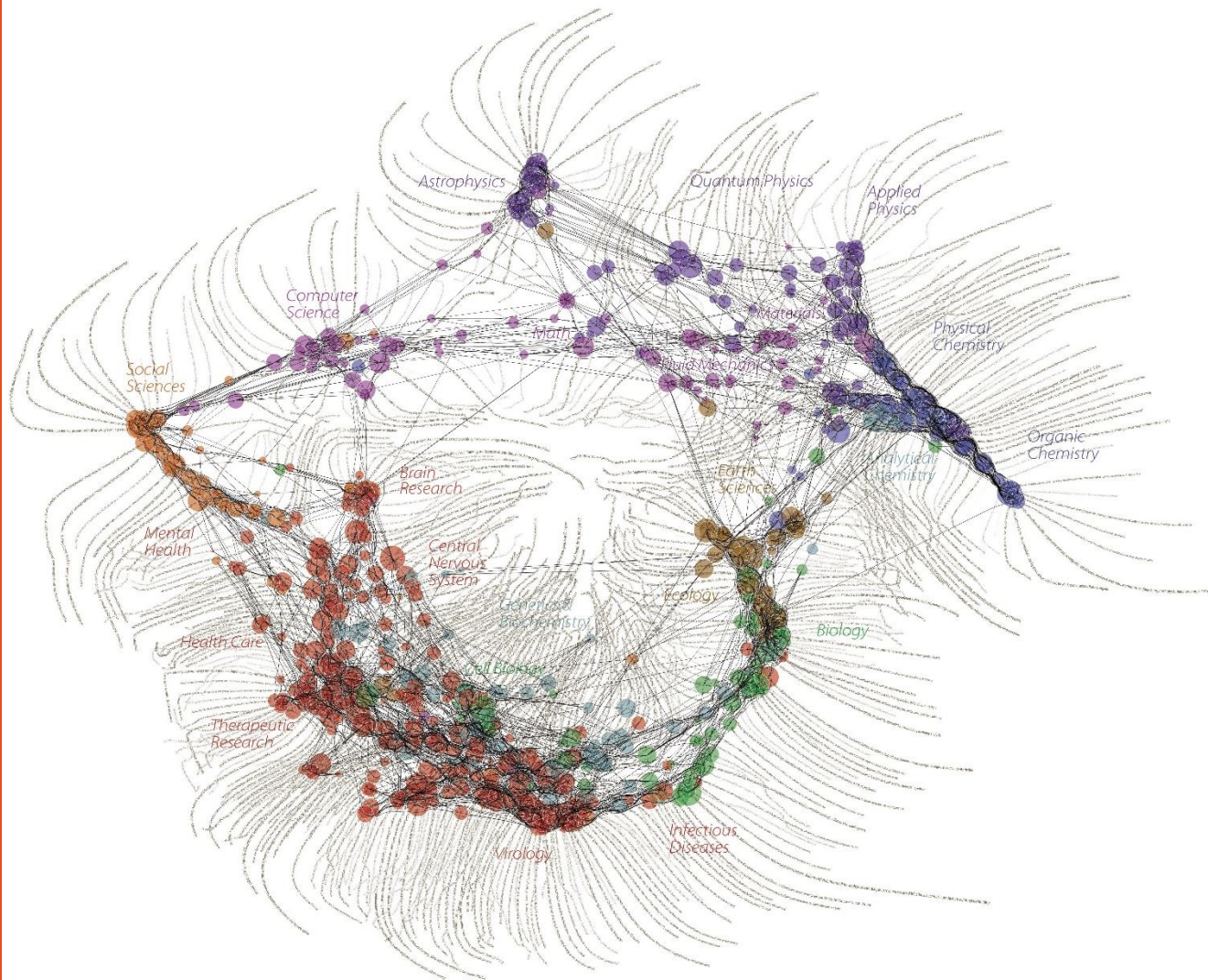


# Disciplines

Scott B. Weingart | <http://www.scottbot.net> | [@scott\\_bot](#)  
Cassidy Sugimoto | <http://ella.slis.indiana.edu/~sugimoto/> | [@csugimoto](#)

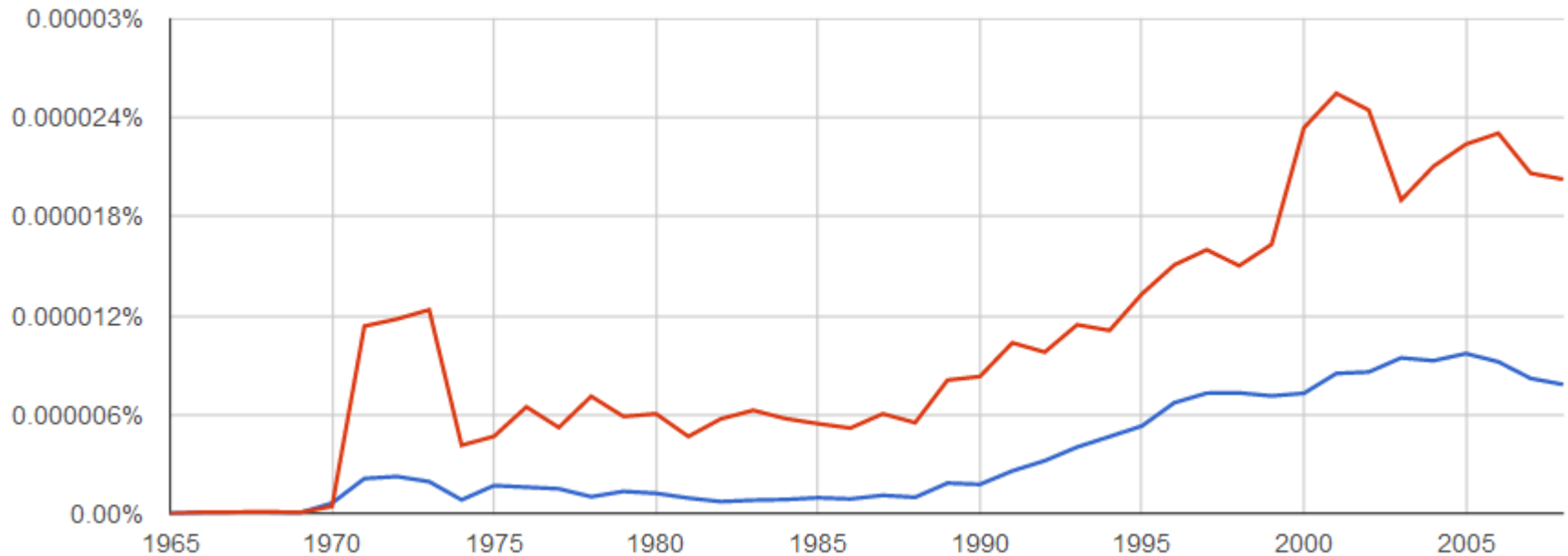
KNOWeSCAPE | The Hague | National Library Room B/C  
Wednesday, October 23, 2013 | 09:45-10:15



# Disciplinarity and Interdisciplinarity

As they pertain to data mining, knowledge orders, and academia

■ disciplinarity ■ interdisciplinarity



# Disciplinarity and Interdisciplinarity

Google Ngrams, ISI Web of Science, JSTOR Data for Research

## Conceptualization

Social

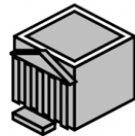
Communicative

Cognitive

Methodological

Institutional

Educational



## Entities



# Defining Disciplines

Qualitative Approaches

## Conceptualization

The hierarchy of the sciences? Cole, 1983

Social

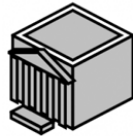
Communicative

Cognitive

Methodological

Institutional

Educational



## Entities



# Defining Disciplines

Cole, 1983

## Conceptualization

The Virtues of Disciplinary, Hunt, 1994

Social

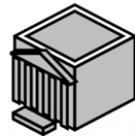
Communicative

Cognitive

Methodological

Institutional

Educational



## Entities



# Defining Disciplines

Hunt, 1994

# Conceptualization

Specialization and recombination of specialties in the social sciences, *Dogan, 2001*

Social

Communicative

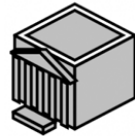
Cognitive

Methodological

Institutional

Educational

## Entities



# Defining Disciplines

Dogan, 2001

# What makes a discipline a discipline?

- Textbooks, Exemplars, and Defining Scholars
  - Cole 1983; Schummer, 2004
- Authors, Papers, Journals, or Research Projects
  - Hargens and Felmlee, 1984; Bordons et al., 1999; Besselaar and Heimeriks, 2001; Gmur, 2003; Schummer, 2004; Carayol and Thi, 2005; Porter and Rafols, 2009; Porter and Chubin, 1984; Carayol and Thi, 2005; Rafols and Meyers, 2010; Morillo et al., 2003; Rafols and Meyers, 2010; Leydesdorff and Rafols, 2010; van Leeuwen and Tijssen, 2000
- Cognitive, Methodological, or Theory-Based
  - Klein, 1990; Hunt, 1994; Schummer, 2004; Bordons, 2005; Zitt, 2005; Feller, 2006; Lamont et al., 2006; Rafols and Meyer, 2006; Holland, 2008; Krishnan, 2008; Dogan, 2001; Gmur, 2003; Besselaar and Heimeriks, 2001
- Institutions, Training, Self-Policing, or Departments
  - Hunt, 1994; Bordons et al., 1999; Dogan, 2001; Besselaar and Heimeriks, 2001; Schummer, 2004; Feller, 2006; Rafols and Meyer, 2006; Porter et al., 2007; Krishnan, 2008; Porter et al., 2008
- Community Structure
  - Besselaar and Leydesdorff, 1996; Gmur, 2003

# Word Soup

- Field = Discipline
  - Garfield, 1979; Cole, 1983; Hargens and Felmlee, 1984; Bordons et al., 1999, Dogan, 2001, Bordons et al., 2005; Porter et al., 2007
- Field = Undefined
  - Besselaar and Heimeriks, 2001; Bordons et al., 2005; Rafols and Meyers, 2006; Rafols and Meyers, 2010
- Field = Subdiscipline
  - Carayol and Thi, 2005
- Specialty = Discipline
  - Garfield, 1979; Hargens and Felmlee, 1984; Leydesdorff and Rafols, 2010
- Specialty = Subdisciplines
  - Dogan, 2001; Rafols and Meyer, 2010
- Research Area = Unrelated
  - Morillo, 2003
- Research Area > Discipline
  - Besselaar and Heimeriks, 2001
- Scientific Domain = Discipline
  - Carayol and Thi, 2005; Leydesdorff and Rafols, 2010
- Scientific Domain  $\neq$  Discipline
  - Porter et al., 2007; Rafols and Meyers, 2010

# Conceptualization

Specialization and recombination of specialties in the social sciences, *Dogan, 2001*

Social

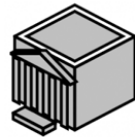
Communicative

Cognitive

Methodological

Institutional

Educational



## Entities



# Quantitative Analyses

## Conceptualization

Social

Communicative

Cognitive

Methodological

Institutional

Educational

## Trace

University Website	labs/centers, faculty, syllabi, locations, course lists, research interests
Pub. Index (journal, ISI SC, conf. proceeding, etc.)	list of publications, authors, date
Listserv	university affiliations, email texts, subscribers, dates
Association Index (lab, professional, etc.)	disciplinary identity / mission statement, member list
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Syllabus	references, instructors, full text
Report (Grant, etc.)	authors/collaborators, text descriptions, titles, budget, locations, publications, patents
Thesis / Dissertation	title, abstract, full text, author, advisor / committee members
Publication	references/citations, authors, abstract, date, full text, title, location, acknowledgements
Patent	references/citations, full text, inventors, dates
Discipline	faculty, degrees, publications, ideas, journals, departments

## Analysis

Content

Word/Language

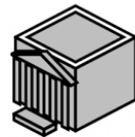
Citation

Mentorship

Collaboration

Weblink

Associative



## Entities



# The Bridge from Concept to Analysis

## Conceptualization

Measuring interdisciplinary collaboration within a university: the effects of the multidisciplinary research programme. *Bordons, Zulueta, Romero, & Barrigon, 1999*

Communicative

Cognitive

Methodological

Institutional

Educational

Social

## Trace

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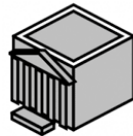
Mentorship

Collaboration

Weblink

Associative

## Entities



Bordons et al. 1999

## Conceptualization

Why do Academic Scientists Engage in Interdisciplinary Research?  
Carayol & Thi, 2004

Social  
Communicative  
Cognitive  
Methodological  
Institutional  
Educational

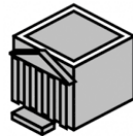
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## Analysis

Content  
Word/Language  
Citation  
Mentorship  
Collaboration  
Weblink  
Associative

## Entities



Carayol & Thi, 2005

## Conceptualization

Betweenness Centrality as an Indicator of the Interdisciplinarity of Scientific Journals.  
Leydesdorff, 2007

Social

Communicative

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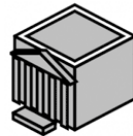
Citation

Mentorship

Collaboration

Weblink

Associative



## Entities



Leydesdorff, 2007

## Conceptualization

Social

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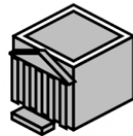
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Mentorship

Collaboration

Weblink

Associative



## Entities



# Thank you.

@scott\_bot | <http://www.scottbot.net>