

# 64,000 European university professors and academicians: human capital, mobility, families, and religion from 1000 CE to 1800 CE

David de la Croix  
UCLouvain & CEPR

Harvard, Department of Evolutionary Biology, October 2023



## Motivation

- Knowledge creation and diffusion was key for the development of Europe
- Most of it came from Scholars teaching at Medieval and Early Modern Universities or members of Academies
- Data collection on scholars and literati over the period 1000–1800, Europe
- look at the data through the lens of economic models

Team: Mara Vitale, Matthew Curtis, Chiara Zanardello, Filippo Manfredini, and RA's to encode data manually  
+ occasional external collaborators (Fabre, Stelter)

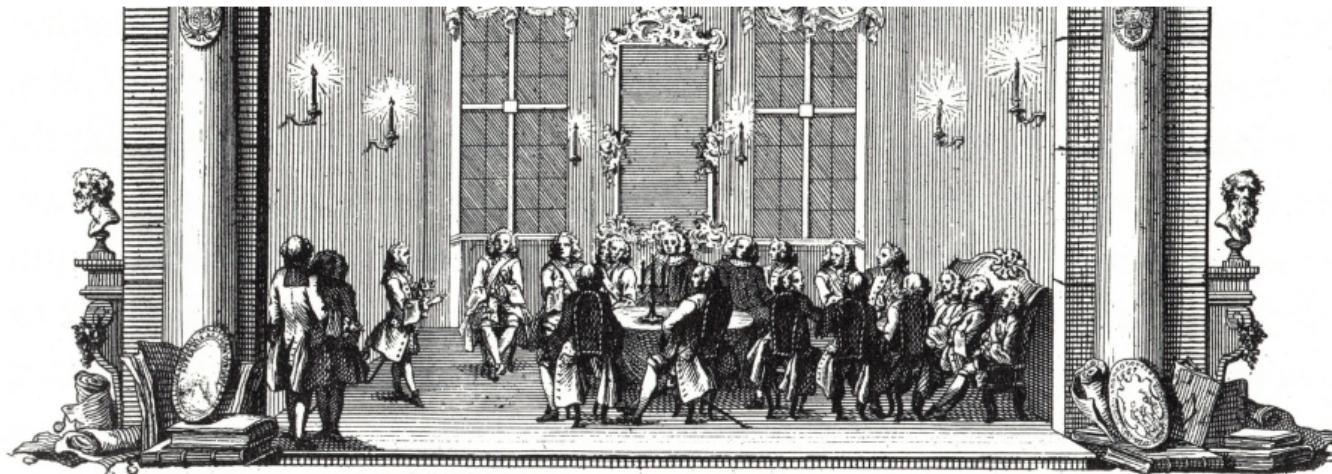
## Academies and Universities

Universities: emergence during the Middle Ages.

Teach Arts (incl. sciences), Theology, Law, Medicine

Academies: informal clubs becoming formal institutions after 1650.

Mostly arts & sciences (+ applied) – Meetings, publications, letters, prizes



First meeting of the  
academy in  
Copenhagen

## Key features of universities

Many are bottom-up. Recognized *ex post* by a charter (e.g. Papal Bull)

Variety of subjects are taught

Diplomas follow exams. Given by institutions (hence by community of masters)

Some dose of meritocracy (*disputatio*, exams)

Very unique feature: they are *persona ficta* (≈ legal persons/corporations)

Origin: Roman law (*universitas, societas*) + Theology (church as *corpus mysticum* of Christ) + Canon law

In corporations, professors act collectively. + one can leave a corporation.

The institution persists beyond the existence of its members (universities more persistent than States)

## Data collection: where we stand

Data collected from 572 secondary sources (example next slide)

<https://shiny-lidam.sipr.ucl.ac.be/scholars/>

- list of relevant institutions: universities (from Frijhoff 1996), scientific academies (McLelland), Italian Renaissance academies (British Library), language academies → 381 institutions
- 64001 Scholars and Literati
- >78000 Activities, each activity representing the presence of a scholar in one institution

Originality of the database

- Teachers, not students
- European scope
- Measure of the quality (human capital) of the scholars from VIAF

## Matching three different types of sources

Secondary source on members of a university/academy → field, dates, type of membership, place of birth

Biographical dictionaries (Treccani, Allgemeine Deutsche Biographie, etc.) → vital dates, places of death/birth

VIAF (Virtual International Authority File) page → publications

ANNALES  
DES  
PROFESSEURS

DE  
ACADEMIES ET UNIVERSITÉS ALSACIENNES  
1628-1871 (Strasburg)  
PAR  
OSCAR BERGER-LEVRAULT



NANCY  
IMPRIMERIE BERGER-LEVRAULT ET C°  
—  
1892

ALUMNI CANTABRIGIENSES  
A BIOGRAPHICAL LIST OF ALL KNOWN STUDENTS, GRADUATES,  
AND HOLDERS OF OFFICE AT THE UNIVERSITY OF CAMBRIDGE,  
FROM THE EARLIEST TIMES TO 1900

COMPILED BY  
JOHN VENN, Sc.D., F.R.S., F.S.A.,  
PROFESSOR OF MATHEMATICS AND  
ECONOMICS OF AGRICULTURE

PART I  
FROM THE EARLIEST TIMES TO 1720  
VOLUME IV  
SAAL-ZEUNGLIUS  
WITH AN APPENDIX  
CONTAINING ADDITIONAL INFORMATION  
RELATIVE TO PREVIOUS VOLUMES

CAMBRIDGE  
AT THE UNIVERSITY PRESS  
1947

TREMELLUS, Emmanuel, Ferrariensis.

Natus 1510.  
Denatus (Sedan.) 9 Octobr. 1580.

Digitized by Springer

244 Académies et Universités alsaciennes.

Hebreæ Lingue Professor, Luccæ, 1511.  
Hebreæ Lingue Professor, 1542-1547.  
Hebreæ Lingue Professor, Cambridge, 1549-1553.  
Hebreæ Lingue Professor in Universitate Heidelbergensi.  
Hebreæ Lingue Professor in Academia Sedanensi.

TREMILLUS OR TREMYLL, — (senior). Pens. at PETERHOUSE, in 1581. Probably Richard, s. and h. of Richard, of Bedfordshire. Of Wrawby, Lincs. Married Helen, dau. of William Thorley, of Northamptonshire. Probably brother of Henry (1580) and of James (above). *(Essex Pedigrees, 608.)*

TREMELLUS, JOHN EMMANUEL. Hebrew lecturer, 1550-3. A Jew. D. at Ferrara, 1510. Studied at Padua between 1530 and 1540. Converted to Christianity by Cardinal Pole, his godfather, 1540. Teacher of Hebrew at Lucca, where he imbibed the opinions of the reformers chiefly through the influence of Peter Martyr. Came to England; resided with Archbishop Cranmer at Lambeth Palace, 1547. Preb. of Carlisle, 1552. Left England on the accession of Queen Mary, 1553. Head of the gymnasium at Hornbach, 1559. Imprisoned for his Calvinistic views; released, 1560. Professor of Old Testament studies at Heidelberg, 1561. D.D. (Heidelberg), 1561. Sent to England as Envoy of the Elector; resided with Archbishop Parker, c. 1565. Expelled from Heidelberg, 1576. Appointed teacher of Hebrew at Sedan. Translated the Bible from Hebrew and Syriac into Latin. Author, miscellaneous. Died at Sedan, Oct. 9, 1580. (Cooper, I. 425; D.N.B.)

TREMLETT, GEORGE. Adm. sizar (age 17) at SIDNEY, Dec. 21,

Dagmar Drüll

HEIDELBERGER  
GELEHRTELEXIKON  
1386-1651



LA FRANCE  
PROTESTANTE

VIES DES PROTESTANTS FRANÇAIS  
QUI SE SONT FAIT EN NOTRE DOXE L'HISTOIRE  
SOUS LES PRINCIPAUX CRÉDS DE LA REFORMATION  
JUSQU'À LA MÉMOIRE DE CEUX QUI SE SONT FAITS  
POUR L'COMMUNIÉ PROTESTANTE  
NOTRE DOXE  
D'UNE NOTICE HISTORIQUE SUR LE PROTESTANTISME EN FRANCE  
SUITE DE NOTRE HISTOIRE  
DU RÉGNE DES CHARTREUX DE SAINT-JEAN-PAUL RICHARD  
MM. EUG. ET EM. HAIG  
TOILE IX.  
PARIS  
JOEL CHEBULIEZ LIBRAIRE-ÉDITEUR  
NO. 102 DE LA RUE MARIE, 19  
GENÈVE, MÈRE MAISON  
1559

Tremellius (Tremmel), Immanuel

1561-1577 Theol. Fak.

1561-1577 Altes Testament; 1561-1575 Hebräische Sprache

- \* 1510 Ferrara (im Ghetto)
- † 9. Okt. 1580 Sedan  
mosaisch, seit 1540 kath., seit 1541 ref.
- 1544 Elisabeth N.N., Witwe
- K 1 T, 1 Stief-T, 1 S: Immanuel T., s. Toepek  
2 (1886) S. 26, Hundsnurscher (1996)  
S. 45

18 — TRÉ

de Jean Troussay et d'Aude Stevon.  
TRÉMELLUS (EMMANUEL) Ferrarien,  
Ferrare, vers 1510, et mort à Sedan,  
le 9 oct. 1580.

Tremellius quitta la religion juive dans laquelle il était né, pour embrasser la religion catholique, et celle-ci pour se faire protestant. Après sa conversion, il se retira à Lucques, où il enseigna quelque temps la langue hébraïque, mais la crainte de l'inquisition finit par le chasser d'Italie, ainsi que Pierre Martyr et d'autres italiens, partisans secrets de la Réforme. Il s'établit d'abord à Strasbourg, où il donna des leçons d'hébreu. Plus tard, il passa en Angleterre et y resta jusqu'à la mort d'Edouard. Chassé de nouveau par Marie la sanginaire, il retourna en Allemagne en 1553, et fut placé comme professeur d'hébreu dans l'école de Hornbach. Quelque temps après, l'électeur palatin Frédéric III l'appela à Heidelberg. En 1560, nous le trouvons à Metz, où il s'était marié pendant un premier séjour qu'il avait fait dans cette ville avant de se rendre à Strasbourg. S'il est vrai qu'il y fut arrêté par ordre du maréchal de Vielleville sous le règne de François II, sa détention fut de courte durée, puisqu'il fut un des députés (1) que les Protestants de Metz envoyèrent en Cour, aussi tôt après la mort de ce prince, pour demander à la reine régnante la liberté du culte, le rappel des bannis et la délivrance de Guillaume Palisseau, prisonnier à Auxerre. Les deux dernières demandes furent accordées; quant à la première, il fut répondu que les protestants Réformés n'auraient ni temple ni lieu d'exercice quelconque à Metz, qu'ils n'y tiendraient aucune assemblée sous peine de mort, mais que Senneffier leur assignerait un lieu hors de la ville pour y faire leurs prêches. Il est probable que Tremellius ne tarda pas à renoncer à Heidelberg, d'où, quelques années plus tard, il fut appelé à Sens par le duc de Bouillon pour y remplir une chaire d'hébreu qu'il occupa jus-

L'autre se nommait Didier Jacob.

# Measuring Publications from VIAF

**VIAF**  
Virtual International Authority File

## Search

Select Field:

Select Index:

Search Terms:

Trémellius, Emmanuel, 1510-1580

Tremellius, Immanuel, 1510-1580.

Tremellius, Immanuel

Immanuel Tremellius italienischer Exulant und reformierter Theologe

טראמליוס, עמנואל

Tremellius, Immanuel (1510-1581).

Tremellio, Emanuele, 1510-1580

Emmanuel Tremellius

VIAF ID: 56619788 ( Personal )

Permalink: <http://viaf.org/viaf/56619788>

Preferred Forms

4xx's: Alternate Name Forms (63)

5xx's: Related Names (29)

Works

Biblia sacra des Oudē ende Nieuwē Testamēts ofte De gantsche Heylige Schrift vervattende het beschrevene woort Godes:



Biblia sacra, sive Testamentum Vetus, ab Im. Tremellio et Fr. Junio ex Hebræo Latinè redditum, et Testamentum Novum, à Theod. Beza è Græco in Latinum versum



Bibliorum pars secunda, id est libri historici



Bijbel.



Catéchisme de l'Eglise de Genève.



Christianæ Katechesis Hebraicis literis mandata / Emanuel Tremelius. - Londini, [1820].



Jesu Christi domini nostri Novum Testamentum



Libri Apocryphi



Nieuwe Testament. Ofte, het Nieuwe verbondt onses Heeren Jesu Christi



Praelectiones doctiss. in Epistolam D. P. ad Ephesios... D. Martini Buceri, habitæ Cantabrigiae... anno MDL et LI, ex ore preelegentis collectae et nunc primum in lucem editæ diligentia Immanuelis Tremelii,....



Proverbiorvm Solomonis regis Israel, liber carmine elegiaco redditus:



Psalmi Davidis



Rudimenta Hebraicae linguae : accurata methodo et brevitate conscripta : eorundem rudimentorum praxis quae vivæ vocis loco esse possit



Señer hinnuč behirē yah



Testamenti Veteris Biblia Sacra, sive Libri canonici priscae Judæorum ecclesiae a Deo traditi



Testamentvm Novvm



Biblia sacra, sive Testamentum Vetus, ab Im. Tremellio et Fr. Junio ex Hebræo Latinè redditum, et Testamentum Novum, à Theod. Beza è Græco in Latinum versum



Bibliorum pars secunda, id est libri historici



Bijbel.



Catéchisme de l'Eglise de Genève.



Showing 1 to 10 of 25 entries

Previous 1 2 3 Next

Selected Co-authors

Countries and Regions of Publication (8)

Publication Statistics

Selected Publishers (13)

About

Record Views

History of VIAF ID:56619788 (35)



© 2010-2021 OCLC

[Privacy policy](#)

[Cookie Notice](#)

[Hosted by OCLC](#)

[About the dataset](#)

[Send us a comment.](#)

[About VIAF](#)

## Human capital index $q_i$

No. characters of Wikipedia page	0.358
No. languages Wikipedia	0.367
No. of alternative names in VIAF	0.413
No. of countries in VIAF	0.438
No. of publishers in VIAF	0.425
No. of titles in VIAF	0.440
No. Eigenvalues > 1	1
% variance explained by 1st PC	70.6%

Table: First principal component of the human capital of scholars

Normalization: no VIAF, no WIKI  $\rightarrow q_i = 0$

## Human capital index

Seen from the point of view of today

Includes both output and citations

Measurement errors

Bias: printed press, non academic works

## Ranking of top scholars

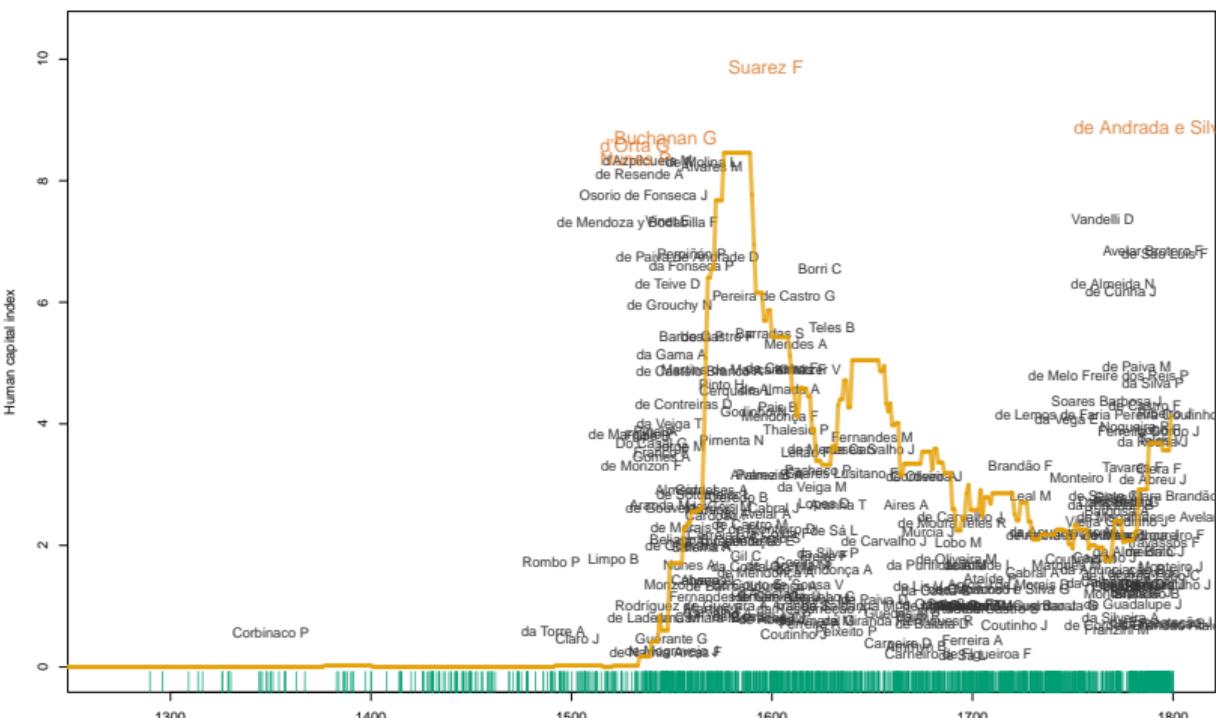
Scholar	Index ( $q_i$ )
François-Marie Arouet de Voltaire (many academies)	11.45
Martin Luther (U. Wittenberg)	11.37
Thomas Aquinas (U. Paris)	11.32
Jean-Jacques Rousseau (A. Lyon)	11.02
Immanuel Kant (U. Königsberg)	10.91
JC Friedrich von Schiller (U. Jena)	10.90
Desiderius Erasmus (U. Cambridge, Louvain)	10.81
Niccolo Machiavelli (A. Plato, U. Firenze)	10.67
Gottfried Wilhelm von Leibniz (many academies)	10.66
Carl Linnaeus (U. Uppsala, academies)	10.61
Jean Calvin (U. Strasbourg, Geneva)	10.56

## Notability index $Q_k$

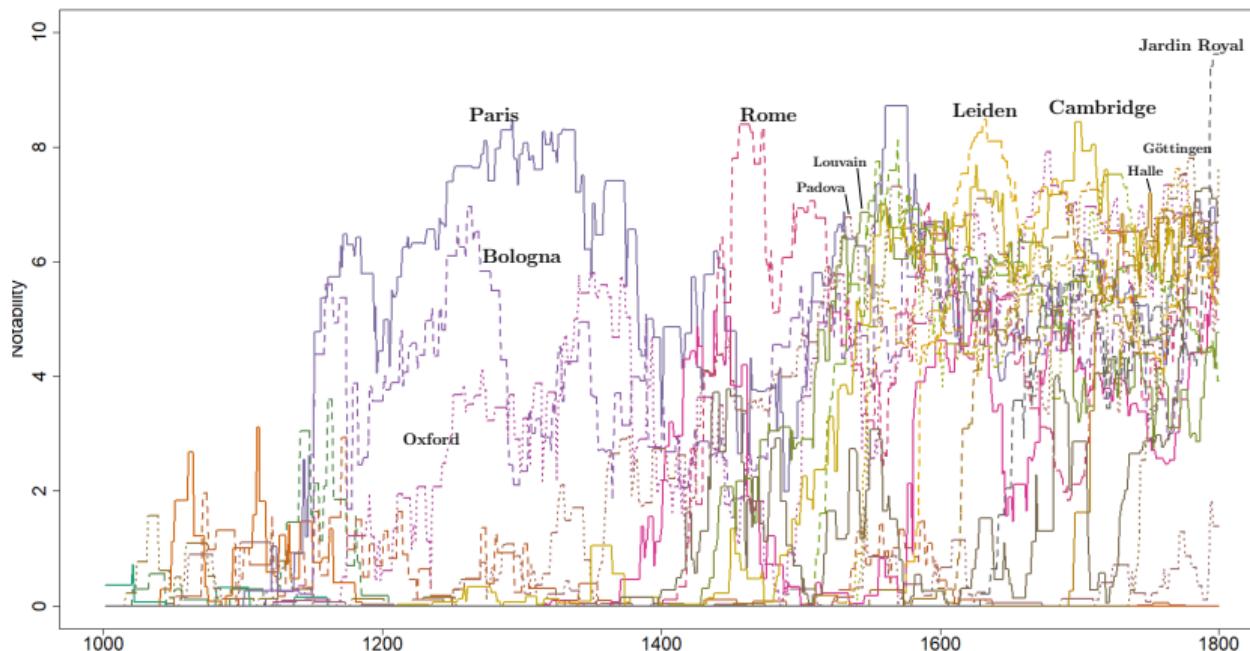
At time  $t$ , the notability  $Q_{kt}$  of a university  $k$  aggregates the  $q_i$  of the top 5 persons who were active at any point  $\in [t - 25, t[$  using the following formula:

$$Q_{kt} = \sqrt{\sum_{i=1}^5 \frac{1}{5} (q_i)^2}$$

## Notability index $Q_k$ for Coimbra



# Notability index $Q_k$



# Descriptive papers

When data collection completed for one institution we produce a data sheet

Last one (nb 72): Scholars and Literati at the Academy of Georgofili (1753 – 1800) by Blandine Clément and Chiara Zanardello

The screenshot shows a digital publication page for 'Repertorium Eruditorum'. At the top left is the logo 'Repertorium Eruditorum Totius Europae'. On the right is the 'UCLouvain' logo. Below the header are navigation links: Home, Current, and Past issues. The main content area has a breadcrumb trail: Home / Archives / Vol 2 (2021). A sidebar on the left lists categories: Articles, Books, Theses, and Maps. The 'Articles' section displays four entries, each with a thumbnail image, the title, author(s), page range, and a PDF download link.

Article Title	Authors	Page Range
Scholars and Literati at the University of Pont-à-Mousson (1572–1768)	David de la Croix, Soraya Karoun	1-6
Scholars and Literati at the "Mersenne" Academy (1635–1648)	David de la Croix, Julie Duchêne	7-12
Scholars and Literati at the University of Valence (1452–1793)	David de la Croix, Alice Fabre	13-20
Scholars and Literati at the University of Copenhagen (1475–1800)	David de la Croix	21-29

## Integrated market

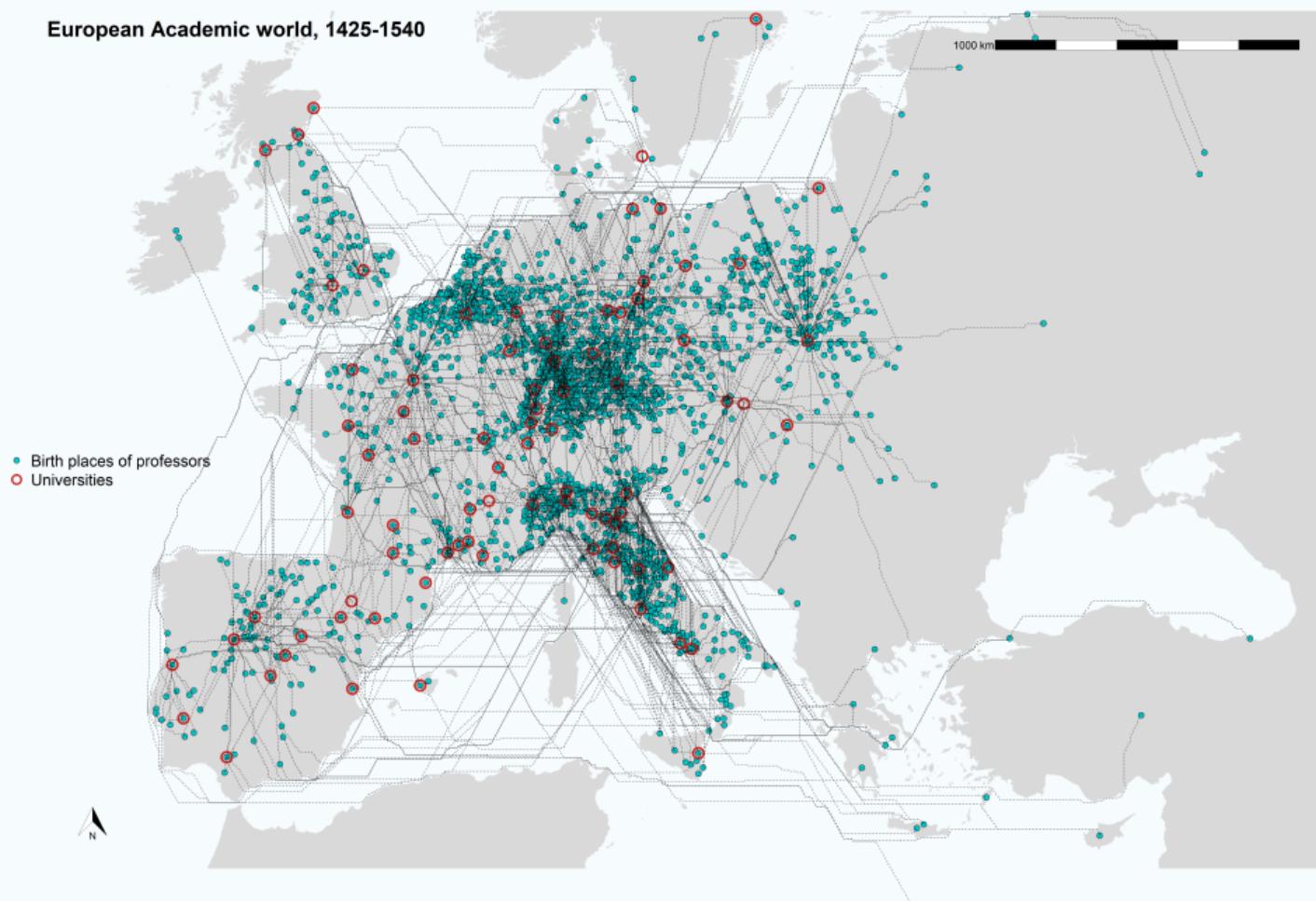
Was there an **integrated** academic market since the Middle Ages? Did it matter ?

Should help to sustain a market:

- Political fragmentation of Europe preventing strong control from the top.
- Intellectual unity (use of latin).
- *licentia ubique docendi*, right to teach anywhere with a doctoral degree

Would allow to harness together universities and UTHC (upper tail human capital)

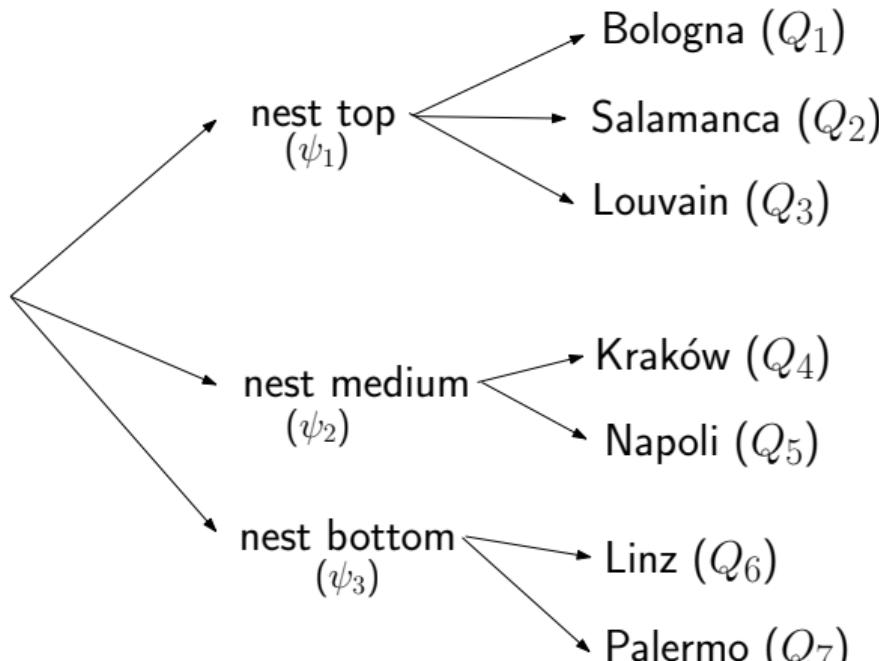
European Academic world, 1425-1540



## Methodology: nested multinomial logit



scholar with  $q_i$



## Results

The probability for a scholar to go to university  $k$  decreases with

- distance from birth

increases with

- notability of  $k$  ( $Q_k$ )

- interaction  $q_i \times Q_k \rightarrow$  positive sorting

high quality scholars are attracted by notable places and agglomerate there

▷ More in: de la Croix, Docquier, Fabre, Stelter, The Academic Market and the Rise of Universities in Medieval and Early Modern Europe (1000-1800), *Journal of the European Economic Association*, forthcoming

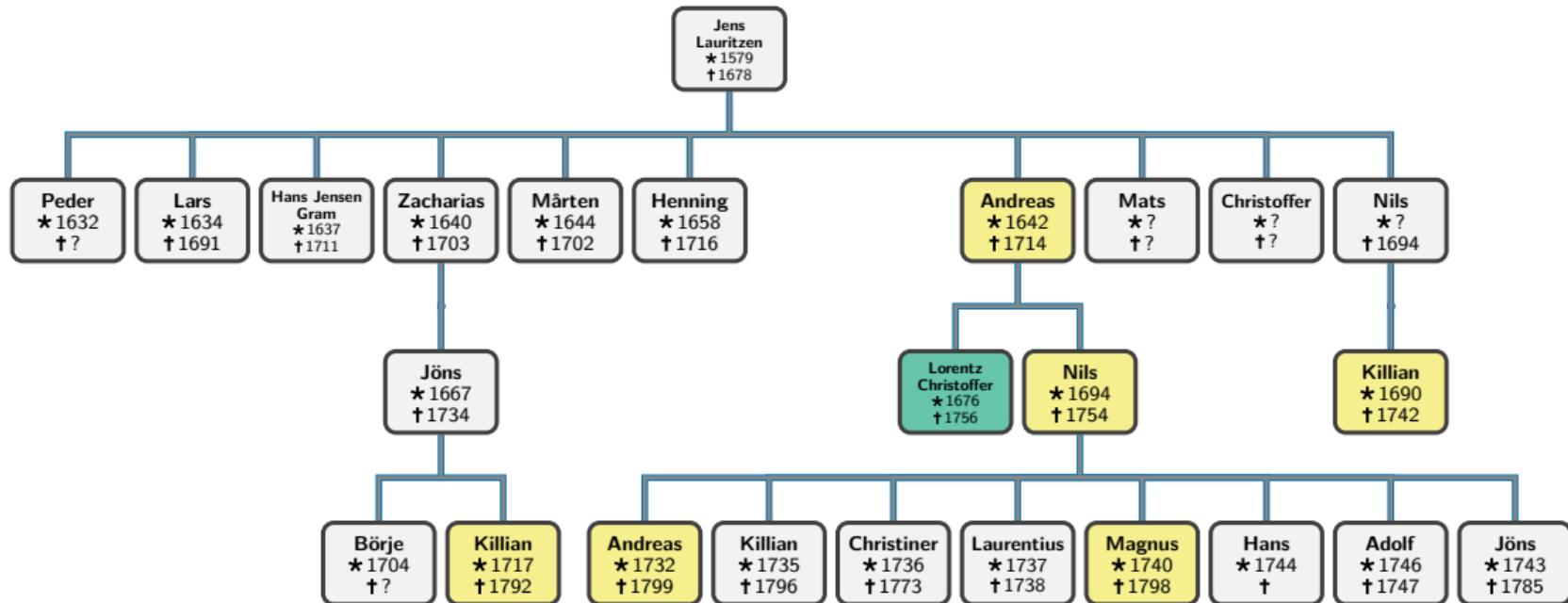
## Nepotism vs Intergenerational transmission of human capital

Father-son pairs – common in academia: Bernoullis, Eulers, Cassinis, Bartholin

**Question:** Did fathers secure jobs for their son ahead of better qualified candidates (nepotism) ?

or talent was scarce and scholars' sons inherited big endowments of human capital ?

# The Stobaeus family. Professors at Lund in yellow squares. Member of Academy in Stockholm in green



## A structural model

Children's human capital:  $h_t = \beta h_{t-1} + u_t$ ,

where  $\beta$ : intergenerational elasticity of human capital.

Consider the universe of families  $i \in \mathbb{I}$ .

Selection into being a scholar depends of human capital:  $h_{t-1} > \tau$

Nepotism: selection criterion is weaker for the sons of scholars:  $h_t > \tau - \nu$

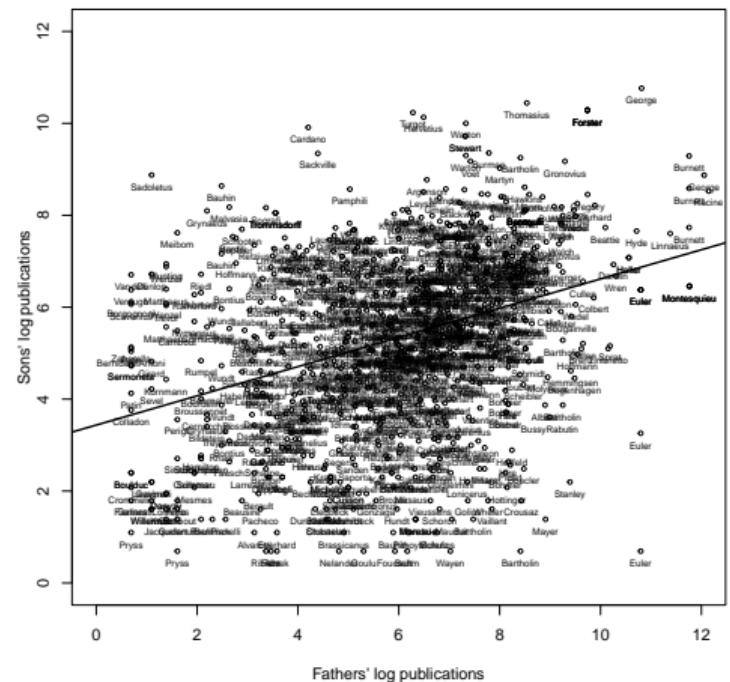
The set  $\mathbb{P}$  of scholar lineages (father and son are scholars):

$$\mathbb{P} = \{i \mid h_{t-1} > \tau, h_t > \tau - \nu\} \subset \mathbb{I}$$

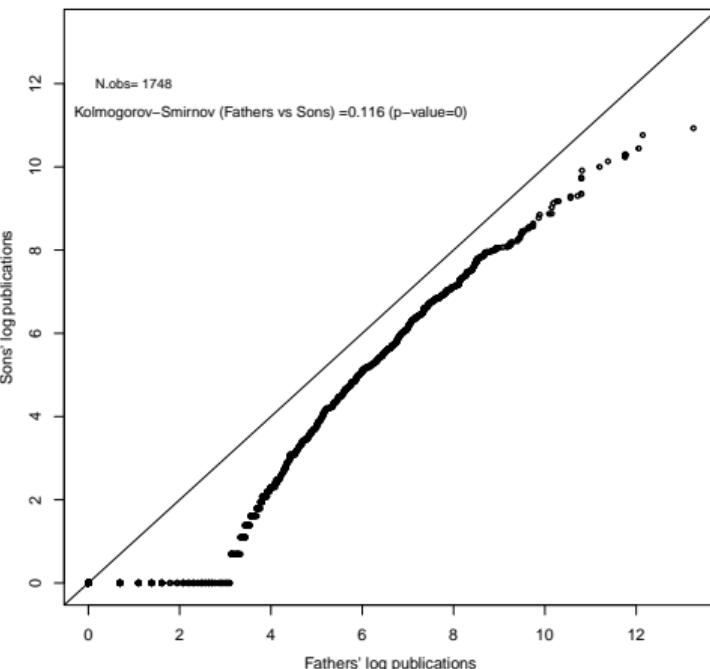
Share of nepotic sons:  $\gamma = F_h(\tau \mid h_{i,t+1} \geq \tau - \nu)$

# Parameters are identified by SMM, fitting a series of key moments

## Father-son correlation



## Parent-child distributional differences



## Main results

- High rate of transmission of human capital ( $\approx 0.63$ )
  - 18.8% scholars' sons are nepotic scholars.
  - Nepotism decreases during Scientific Revolution and Enlightenment.
  - Nepotism more prevalent in Catholic universities.
  - Nepotism less prevalent in new universities, and in Science.
- ▷ More in de la Croix and Goñi, Nepotism vs. Intergenerational Transmission of Human Capital in Academia (1088-1800), CEPR Discussion Paper 15159

## Network of universities and Religion

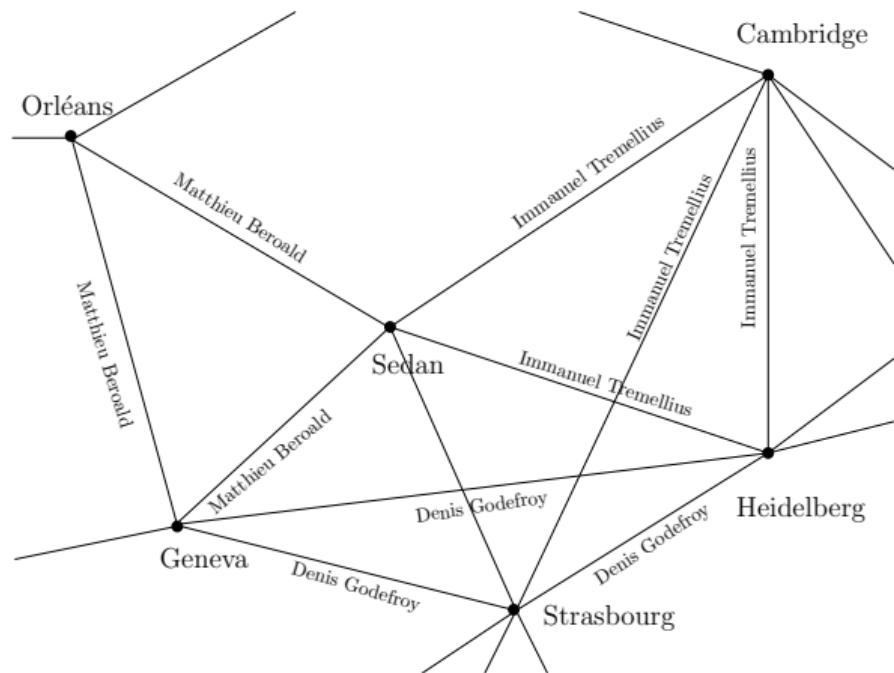
**Look at the data through the lens of graph theory**

Let  $N = \{1, 2, \dots, n\}$  be the set of universities in the network  $g$  (nodes, exogenous).

For two universities  $(i, j) \in N$ , we define  $g_{ij} \in \{0, 1\}$  as the *link* (edge) between them:

$g_{ij} = 1$  if at least one same scholar has taught in both universities,  $g_{ij} = 0$  otherwise.

# Network: connecting scholars at the time of Immanuel Tremellius



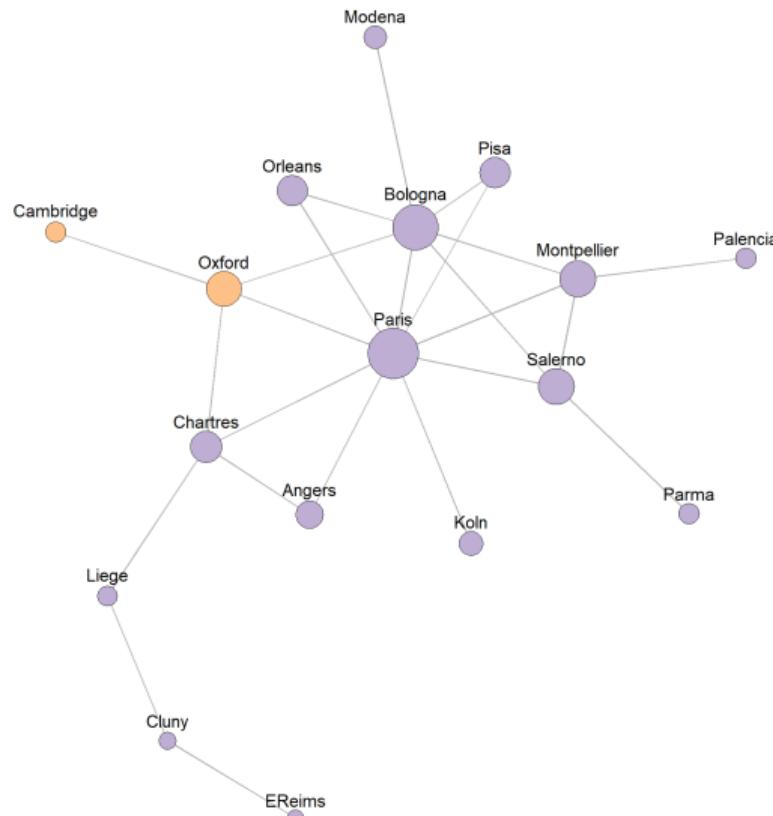
Positioning of  
universities determined  
by  
Fruchterman-Reingold  
force-directed algorithm.

Groups universities more  
closely together when  
they are linked to each  
other.

Only show big  
component.

Size of circle  
proportional to  
eigenvector centrality.

Figure: Network 1000-1199



# Figure: Network 1200-1347

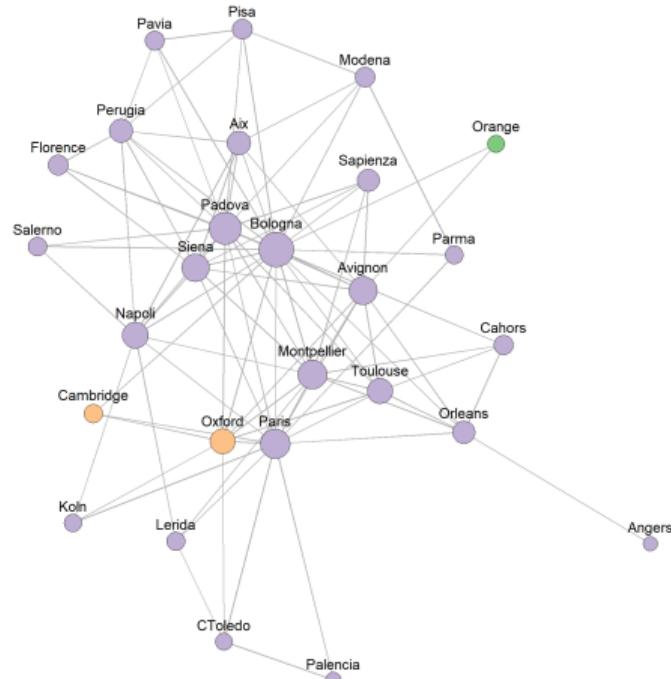
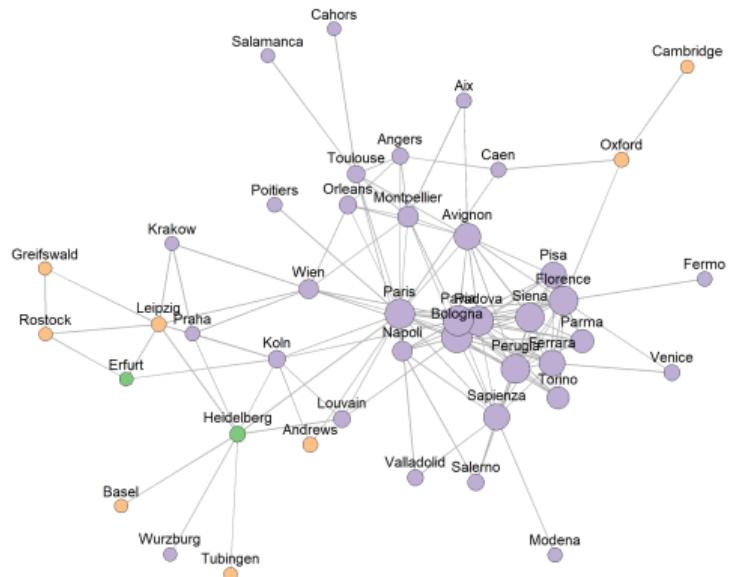
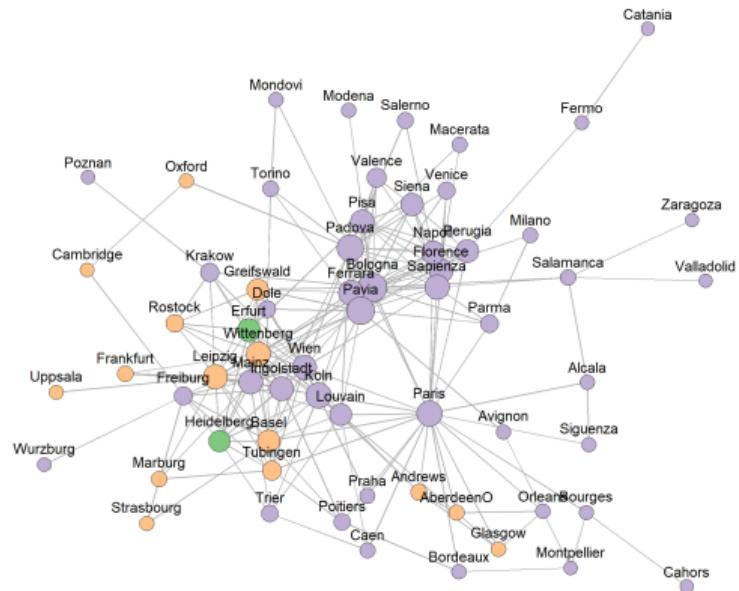


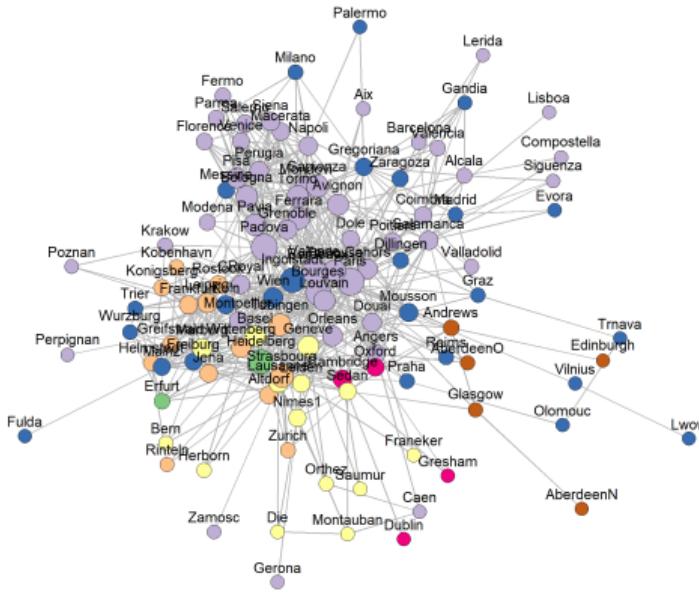
Figure: Network 1348-1449



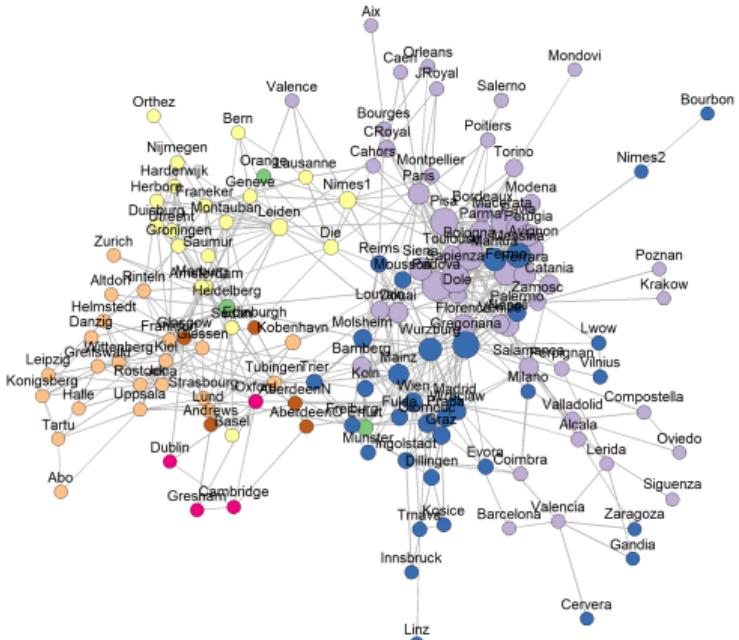
# Figure: Network 1450-1522



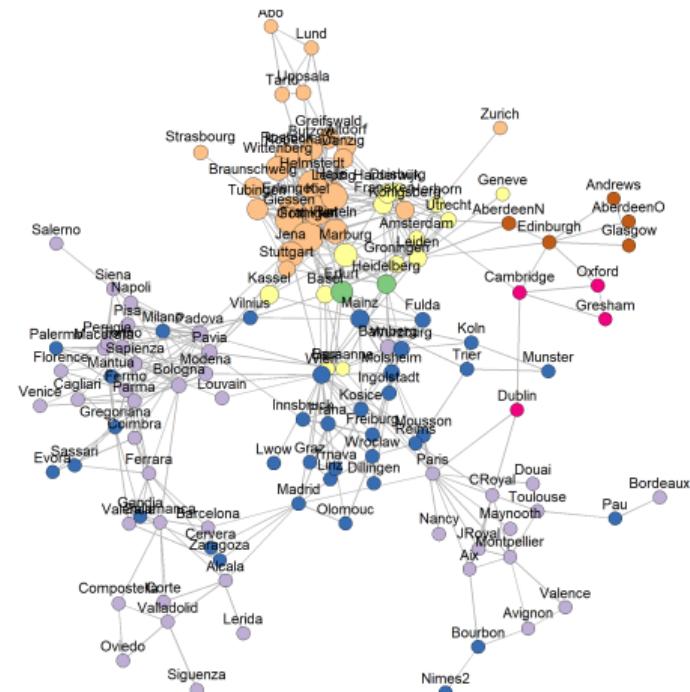
# Figure: Network 1523-1597



# Figure: Network 1598-1684



# Figure: Network 1685-1793



## Main Results

The Protestant Reformation deeply affected the shape of the network of universities.

- Religion became a strong determinant of network structure, even when controlling for geography
- Sharp clear-cut divide between Protestant and Catholic univ
- The Reformation impacted positively the publications in Protestant Universities, partly by improving their relative position in the network

▷ More in de la Croix and Morault, Winners and Losers from the Protestant Reformation: An Analysis of the Network of European Universities IRES Discussion Paper 2020-029

## More on religion

- ▷ de la Croix and Vitale, Women in European Academia before 1800 - Religion, Marriage, and Human Capital, *European Review of Economic History*, 2023
- ▷ Blasutto and de la Croix, Catholic Censorship and the Demise of Knowledge Production in Early Modern Italy, *The Economic Journal*, 2023
- ▷ Curtis and de la Croix, Seeds of Knowledge: Premodern Scholarship, Academic Fields, and European Growth, CEPR Working Paper 18321