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Scholars and Literati at the University of Copenhagen (1475–1800)

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This note is a summary description of the set of scholars and literati who taught at the University of Copenhagen from its inception in 1475 to the eve of the Industrial Revolution (1800).

1 The University

The University of Copenhagen was founded on the initiative of the King of Denmark, but was nevertheless established as an autonomous institution, with ample juridical freedom. The beginning of the university were modest, with little funding and local students only (Stybe 1979). It converted to Lutheranism in 1537 and became a center of Lutheran orthodoxy. During the Scientific Revolution, while still essentially devoted to educating clerks, Copenhagen became important in the fields of medicine, astronomy, physics, cartography, and botany. By the end of the eighteenth century, Latin as a teaching language started to recede, and textbooks written in Danish were increasingly used (Stybe 1979).

2 Sources

Slottved (1978) provides a complete list of the professors at the University of Copenhagen (in Danish). It gives a full history for each chair, complemented by a list of rectors, and a list of *professores designati* who were appointed to give a specific course. More context is given by Slottved and Tamm (2009), including a chapter on dynasties of professors, and some information on key related scholars who did not formally teach at the university. Additional biographical information can be found in the Dansk Biografisk Leksikon, and also on genealogical websites such as Geni or Geneanet. It is surprising to see the extent to which Danish families were encoded on these websites.

3 Some statistics

Table 1 shows some descriptive statistics. There are 329 scholars and literati. The year of birth is known for 88.4% of them. The mean age at appointment is 33.6 years. Longevity is slightly above 60 years on average. In accordance with what we found for the Holy Roman Empire (Stelter, de la Croix, and Myrskylä 2021), longevity improves in the last period. Its high value for the first period can be ignored as it is only based on 5 individuals (25% of 20). The birth place is known for 80.9% of the people, thanks to the genealogical data. The median distance between the place of birth and Copenhagen is 157km, which is quite high. It does not decline over time, suggesting that the University of Copenhagen escaped the tendency to become more local as time passes. Finally, 59.3% of the scholars have a Wikipedia page (in some language), and 80.2% of them have left a footprint in the catalogues of the libraries of the world, Worldcat, either by having published some work, or by having been the subject of published books and articles. In these two indicators, there is a large difference between before and after the Reformation. The professors when the university was Catholic are much more obscure than their Protestant successors.

4 FIELDS

Figure 1 shows the relative importance of fields, broadly defined. The pie chart shows a balanced allocation. The share of theology is quite large in fact, showing that Protestantism did not necessarily go hand in hand with secularization. Compared to Southern European universities, law has a small share and sciences a large one.

Period Start	Period End	nb. obs	% birth year known	mean age at appoint.	mean age at death	exp. age at death
1450	1526	20	25	38.2	64.2	64.3
1527	1617	94	77.7	34	60.2	60.9
1618	1685	71	98.6	32.1	55.9	55.8
1686	1733	41	100	33.4	61.4	59.8
1734	1800	103	99	34.2	64.6	63.8
1000	1800	329	88.4	33.6	60.9	60.6
			% birth place known	median distance birth-institution	% with Wikipedia	% with Worldcat
1450	1526		10	592	25	15
1527	1617		68.1	197	41.5	67
1618	1685		93	40	53.5	90.1
1686	1733		90.2	195	61	87.8
1734	1800		94.2	215	85.4	95.1
1000	1800		80.9	157	59.3	80.2

Table 1: Summary statistics by period

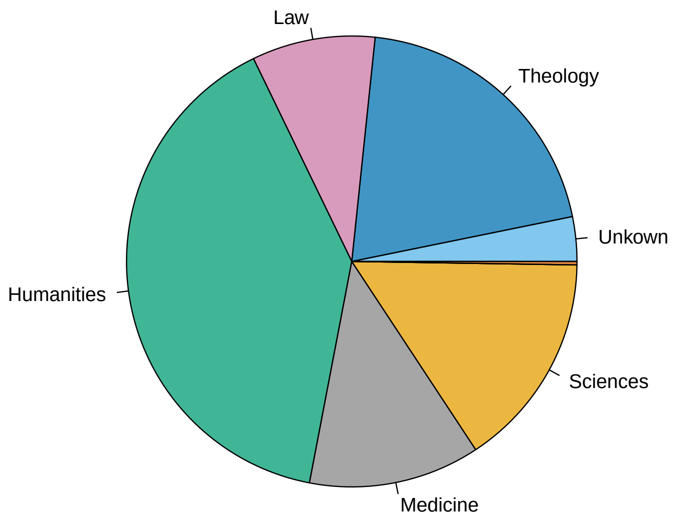

Figure 1: Broad fields at Copenhagen

5 Place of birth

Figure 2 is a plot of the places of birth of all the scholars at the University of Copenhagen, and shows the European nature of this university. Notice the two individuals from Iceland, the numerous Norwegians, and the absence of Swedes.

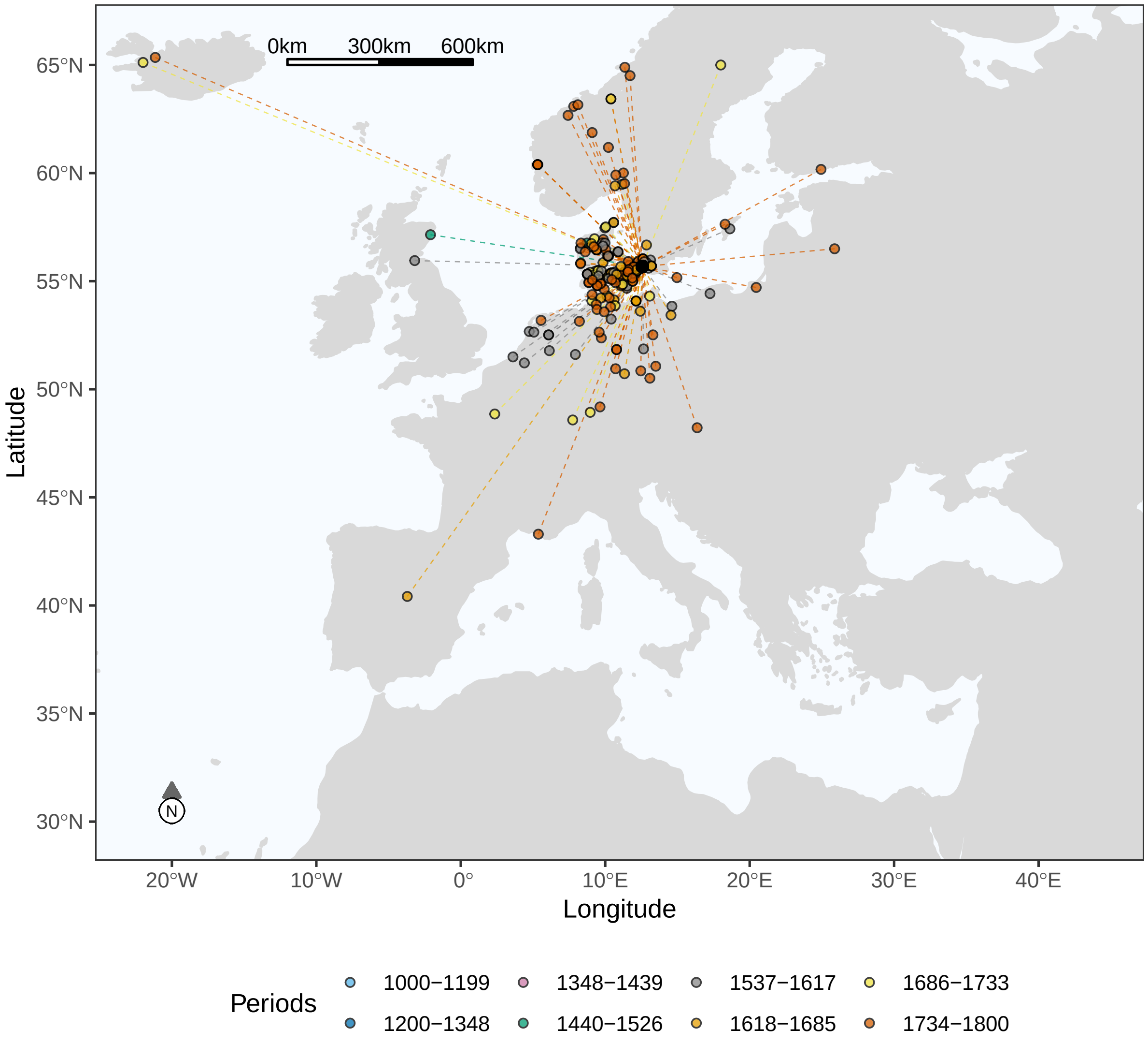

Figure 2: Places of birth of the scholars and literati at the University of Copenhagen

6 Human capital of scholars and literati

For each person in the database we compute a heuristic human capital index, identified by combining information from Worldcat and Wikipedia using a principal component analysis. We also compute the notability of the university at each date by averaging the human capital of the scholars active in Copenhagen 25 years before that date. Details are given in the Appendix. Figure 3 shows the names of all the scholars with a positive human capital index. The orange line plots the notability of the university.

The pattern shows a wealth of active scholars, with a rising notability for the university. Although the books on the history of the university describe a weak institution in terms of teaching, our analysis of the professors, both in terms of variety in their origins and of publications, shows an international faculty of high and increasing quality. Copenhagen was clearly on the map of excellence, at least in terms of research.

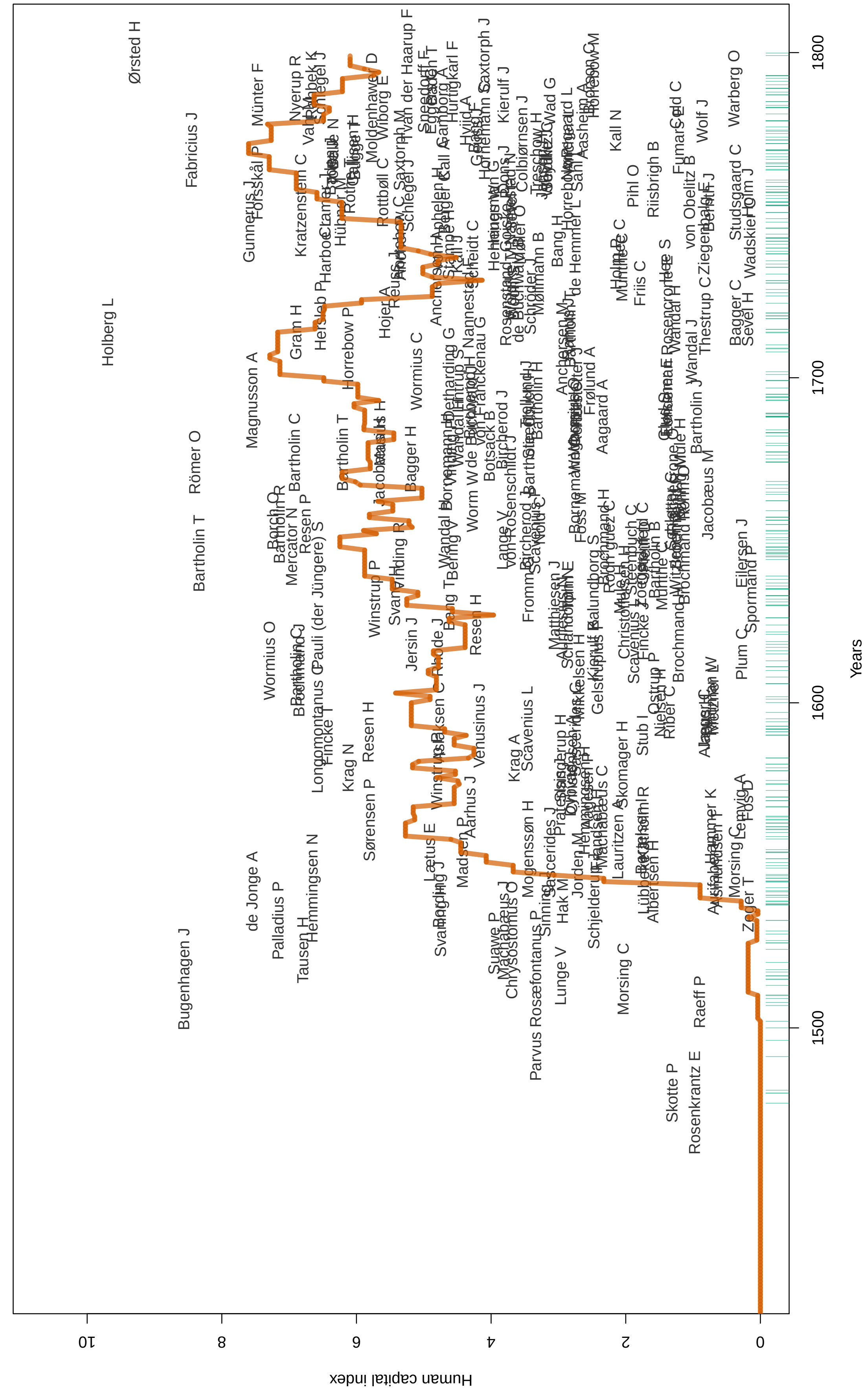

Figure 3: Famous scholars and university notability (orange)

7 Top 5 professors

We now provide a brief overview of the five professors with the highest human capital index.

Ludvig Holberg (Bergen 1684 — Copenhagen 1754) was a teacher at the University of Copenhagen for many years. At the same time, he started a successful career as an author, writing satirical poetry and stage comedies. He also contributed to history and philosophy. Holberg appears at the top of our list as he is considered as the founder of modern Danish literature and his works were published and cited many times. He was also an institution builder, transforming the royal riding academy (Sorø Academy) into a university-level institution to train young men of noble origin.

Hans Christian Ørsted (Rudkøbing 1777 — Copenhagen 1851) appears at the very end of the period covered, as he was appointed in 1800. He fathered Oersted's law, describing how the direction of electric currents and that of magnetic fields are related. This was the first time electricity and magnetism had been connected.

Johannes Bugenhagen (Wollin 1485 – Wittenberg 1558) is known for having been the first to introduce the Protestant Reformation in Denmark in the 16th century. Mostly based in the homeland of Protestantism, the University of Wittenberg, he taught theology from 1535 to 1537 at Copenhagen. He reorganized the university in a Lutheran spirit and laid the foundation for the religious service, schooling, and social issues of the Protestant church.

Johann Christian Fabricius (Tønder 1745 — Kiel 1808) He taught at the University of Copenhagen before accepting a position at the University of Kiel. He was a member of several foreign scientific societies, such as the Leopoldina and the Academy of Torino. He was one of the greatest entomologists of the 18th century, naming about 10,000 species of insects. Fabricius's system remains the basis of insect classification today. He was also a pioneer in pre-Darwinian evolutionary theories, believing that new species could be formed by the hybridization of existing species and from morphological adaptation.

Ole Christensen Rømer (Århus 1644 – Copenhagen 1710) was an astronomer who recorded the first quantitative measurements of the speed of light in 1676. This result was however not recognized as such until later. He was appointed a professor of astronomy at the University of Copenhagen in 1681. He was at the root of several other important inventions: one of the first temperature scales on which the Fahrenheit scale is based, and the first street lights in Copenhagen.

8 Related scholars

Beyond those who taught at the University of Copenhagen, several important individuals are related to the University. They did not occupy an official position, but they were involved in teaching and/or research. Here, we present the two related scholars with the highest human capital index.

Tycho Brahe (Knudstrup 1546 – Prague 1601) was an astronomer, known for his accurate and comprehensive astronomical observations which became an essential part of the Copernican revolution. In 1572-3, he described the appearance of a new star in the Cassiopeia constellation in a small book *De nova stella*. This was a true revolution as it contradicted a fundamental axiom of the Aristotelian world view: celestial immutability. Tycho Brahe is considered as one of the main figures of the Scientific Revolution. He did not occupy an official position at the university, but gave an epoch-making series of lectures announcing his intension to develop a geocentric model of the universe that would surpass the adequacy of Copernicus (Applebaum 2003). A royal astronomer for some time, he ended his career as Imperial Court Astronomer in Prague, being assisted there by Johannes Kepler.

Nicolas Steno (Copenhagen 1638 – Schwerin 1686) was born to a Lutheran family and known for his groundbreaking contributions to anatomy and geology. He developed the idea of geological strata, in which lower sediments are the oldest. In 1664, he unsuccessfully applied for a chair of anatomy at the University of Copenhagen. After traveling across Europe, he settled in Italy in 1666 and converted to Catholicism. Immediately after that, he received an offer from the University of Copenhagen, which he declined. After his conversion, he moved away from the natural sciences to embrace theology. The philosopher Gottfried Leibnitz wrote: “from being a major natural scientist (he) became a mediocre theologian.” (Slottved and Tamm 2009).

9 Families of scholars

Among the professors included in our data, we counted 47 father-son pairs. Figure 5 shows the root of the genealogical tree of the Bartholin family (data from Geneanet), and highlights those who taught at Copenhagen. The full tree, including the descendants of the Bartholin daughters who married professors, shown in (Slottved and Tamm 2009), is even more impressive. For example, Anna Marie married Ole Christensen Rømer of the top 5. Søster married Jens Jacobsen Bircherod, a professor of theology.

The first generations of Bartholin are excellent scholars. Many appear on Figure 3. The last generation is weaker, which might indicate some degree of favoritism in the appointments (De la Croix and Goñi 2020).

10 Intersections with the nearby Academy

Figure 4 shows that many members of the Royal Danish Science Society, founded in 1742, were also professors at the university. This is worth noting, as scientific academies were not always so closely linked to local universities, and it stresses again the markedly scientific nature of the University of Copenhagen.

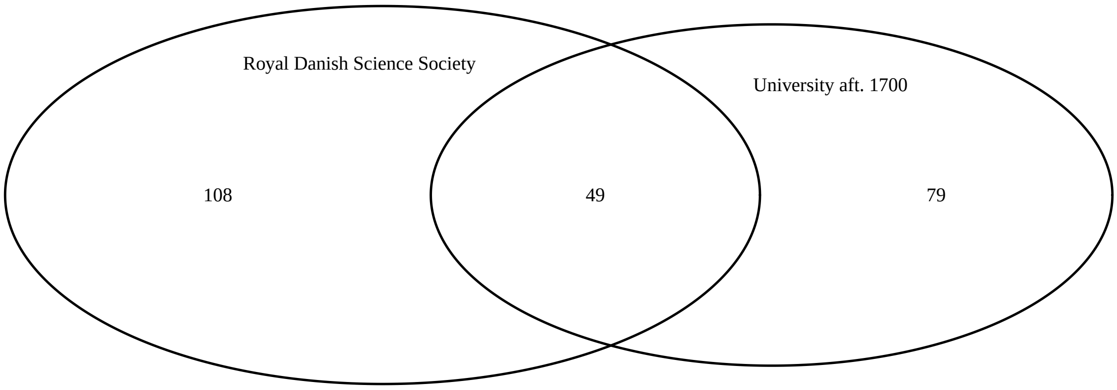

Figure 4: Intersections of the lists of scholars between the University and the Royal Danish Science Society

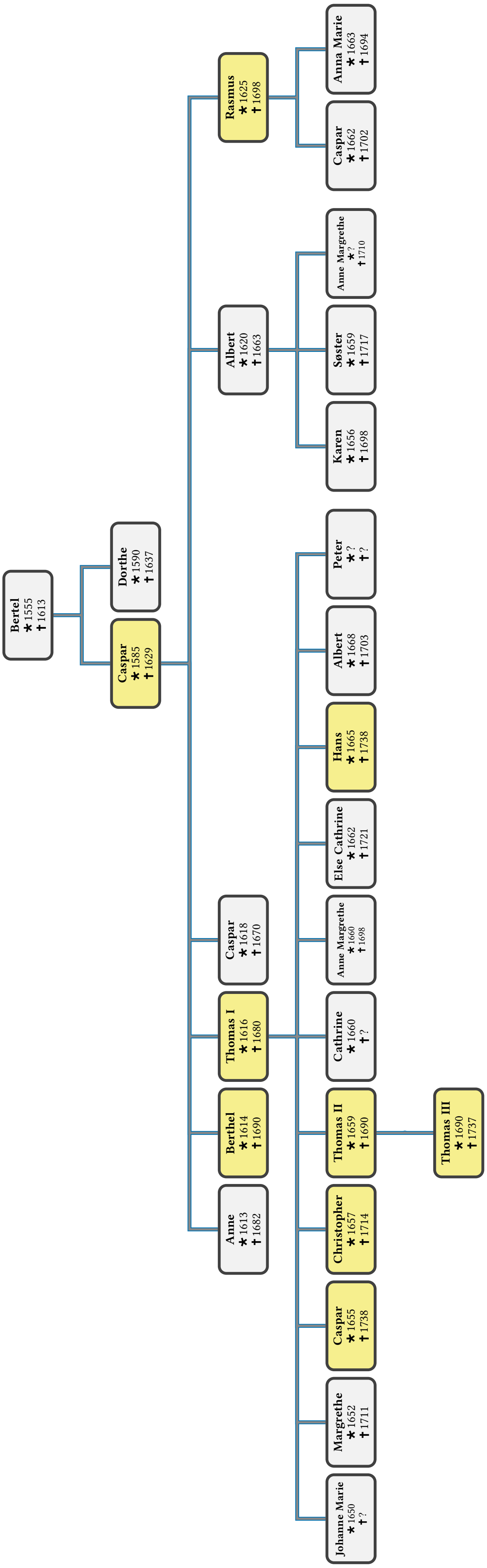

Figure 5: The Bartholin family. Professors at Copenhagen in yellow squares

11 UNIVERSITY NETWORK

Here we assume that when a professor occupied a position at more than one university over his/her life, this established a link between those universities. The universities with which Copenhagen is linked are displayed in Figure 6.

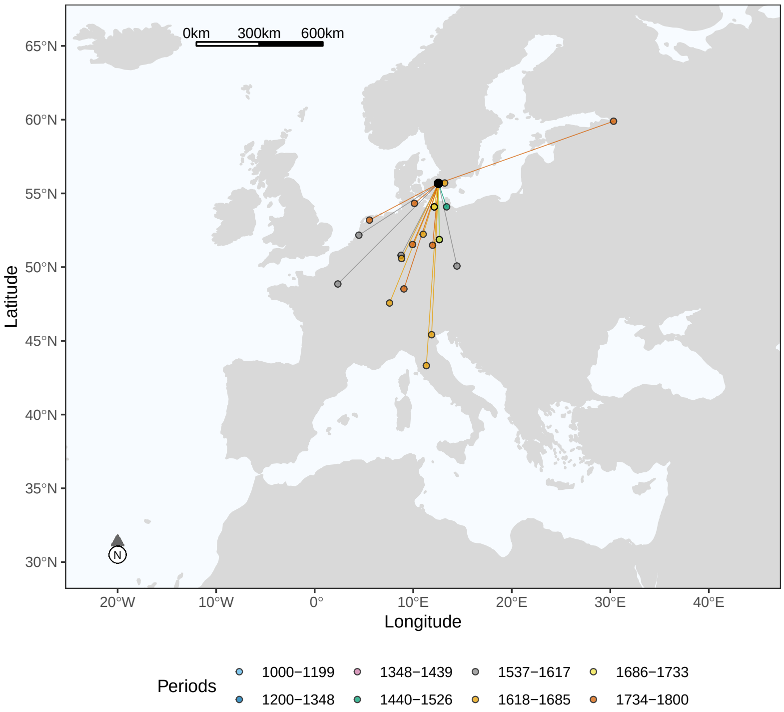

Figure 6: Links between Copenhagen and other universities through scholars' mobility, by period

APPENDIX

The individual human capital index q_i of an individual i is given by:

$$\begin{aligned} q_i \quad = \quad & -1.76 + 0.43\ln(\text{nb. characters of the longest Wikipedia page}) \\ & +0.40\ln(\text{nb. wikipedia pages in different languages}) + 0.47\ln(\text{nb. works in Worldcat}) \\ & +0.46\ln(\text{nb. publication languages in Worldcat}) + 0.47\ln(\text{nb. library holdings in Worldcat}) \end{aligned}$$

We assume that having no Wikipedia page is similar to having one page with a length of 60 characters and that having no Worldcat page is similar to having a page with one work in one language held by one library. The constant −1.76 normalizes q_i at 0 when there is neither a Wikipedia page, nor a Worldcat page. The weights (0.43, 0.40, etc) are obtained from the first principal component of the five indicators (De la Croix et al. 2020).

The notability Q of a university aggregates the q of the top 5 persons who were active in the preceding 25 years using the following formula:

$$Q = \sqrt{\sum_{i=1}^{5} \frac{1}{5} \left(\frac{q_i}{s_i}\right)^2}$$

where s_i is the number of universities in which i had an appointment.

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