Research Plan

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1 Research questions

In my master's thesis I am applying a network analysis on the family ties between the members of the Swedish Council of the Realm[1] from 1523 to 1680. The main focus of this study is to assess the adequacy of the network analysis on the study of pre-modern history, however, the wider scope is on the general discussion of the methodology of digital humanities.

My research questions are:

1. Can network analysis reveal some new or unseen patterns in the affiliations between Swedish Councilors of the Realm?

2. What are the potential difficulties and pitfalls in the implementation and interpretation of network analysis in the field of history?

The methods of digital humanities have hit the mainstream of Finnish historical research during the last few decades. In the 2010's textbooks and monographs of the methods and theories of digital humanities strated to emerge, for example, a textbook about methods useful for the study and analysis of the internet *Otteita verkosta: verkon ja sosiaalisen median tutkimusmenetelmät* in 2013, or a more general approach to the methods of digital humanities in the field of history *Digitaalinen humanismi ja historiatieteet* in 2016. At this point in time the methods of digital humanities are met with a certain excitement of novelty, however, many of the methods in use

[1]Fin: valtaneuvosto, Swe: riksrådet

are actually built on the basic concepts of statistics e.g. corpus analysis, clustering and the familiar network analysis. To critically use those methods needs a conceptual understanding on the presumptions and premises of the methods, such as underlying expectations of distributions or null hypothesis testing. In my master's thesis I will be considering these themes through performing the network analysis on the historical data.

2 Methods and sources

In my research I am using *Swedish Councilors of the Realm, 1523-1680* dataset which is found in JYX Digital Repository under the license CC BY 4.0. The dataset is collected by Marko Hakanen and Ulla Koskinen.

The dataset consists of 257 Swedish councilors of the realm[2]. Each councilor has the following feature attributes: Id number, date of birth, year of death, year of appointment, date of appointment, age of appointment, noble rank, family members in the council of the realm and spouse(s) / father's spouse with the date of marriage. In the process of building the network, my focus is in the individual's family members in the council of the realm.

Jukka Huhtamäki and Olli Parviainen describe the process of network analysis as following: 1) deciding whether or not the network analysis is feasible 2) collecting the data 3) preparing and processing the data 4) implementing the network analysis 5) choosing the right layout for the network.[3] In this case the dataset is already chosen, and the family links between the members of the council of the realm can be interpreted as a network, the next step is the preparation and processing of the data. I am using Python programming language to extract the data in the right format. For applying the network analysis and choosing the layout I will be using software package called Gephi. The Python script and settings in the Gephi environment will be available in GitHub for the purpose of allowing subsequent replication.

Network analysis can be understood as an umbrella term for methods which are developed to survey and model dependencies between different

[2]Fin: valtaneuvos, Swe: riksråd

[3]Huhtamäki and Parviainen 2013, p. 258 - 264.

kind of entities. As a method it is not a new one either, its roots can be traced back to the mid 18th century in the mathematical *graph theory*, and it has been utilized in the study of social networks for decades now. Modern network analysis combines elements from the fields of social sciences, statistics and mathematics.[4] Internationally historical network research has its own scientific community and journal.[5]

In practice I will be performing the network analysis by entering the data on the software and visualizing the graph, calculating certain statistics and testing different permutations of the edges[6] of the graph. Later I will be assessing the results in the context of the previous historical research.

3 Disposition

Preliminary disposition for the master's thesis.

1. Introduction
    - What I am doing?
    - Research questions
    - Why I study network analysis and some further discussion on the hype around digital humanities
    - Sources / Dataset (source criticism)
2. Method: network analysis
    - Where does network analysis come from?
    - How does network analysis work, what are it requirements for the data?
    - tools: Gephi: its algorithms and statistical tools and Python programming language

[4]Huhtamäki and Parviainen 2013, p. 246 - 247.
[5]HistoricalNetworkResearch 2021.
[6]Links between the nodes on the graph. In this case the family ties between the councilors.

3. Analysis:
    - Implementation of the network analysis
    - Problem solving: which layout algorithm to choose, which connections to include in the network etc.
    - Statistical description of the network
4. Conclusion

4 Literature

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