

Old Egypt Kingdom as Sociophysical System

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GAMS

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Program

- 1 Egyptological Background
- 2 Summary of results
- 3 Maths around
- 4 New approach

Obsah

1 Egyptological Background

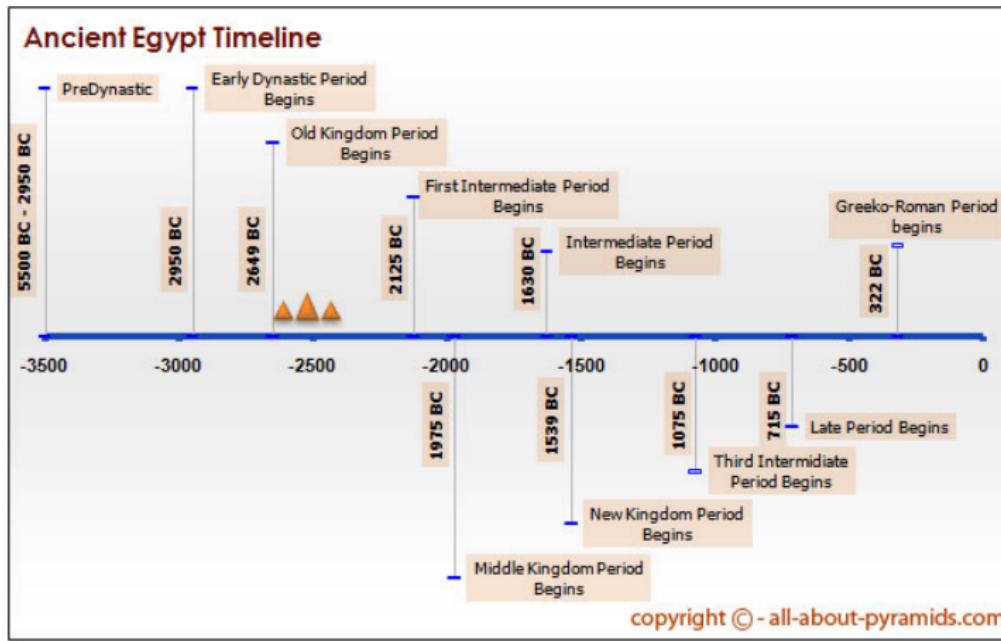
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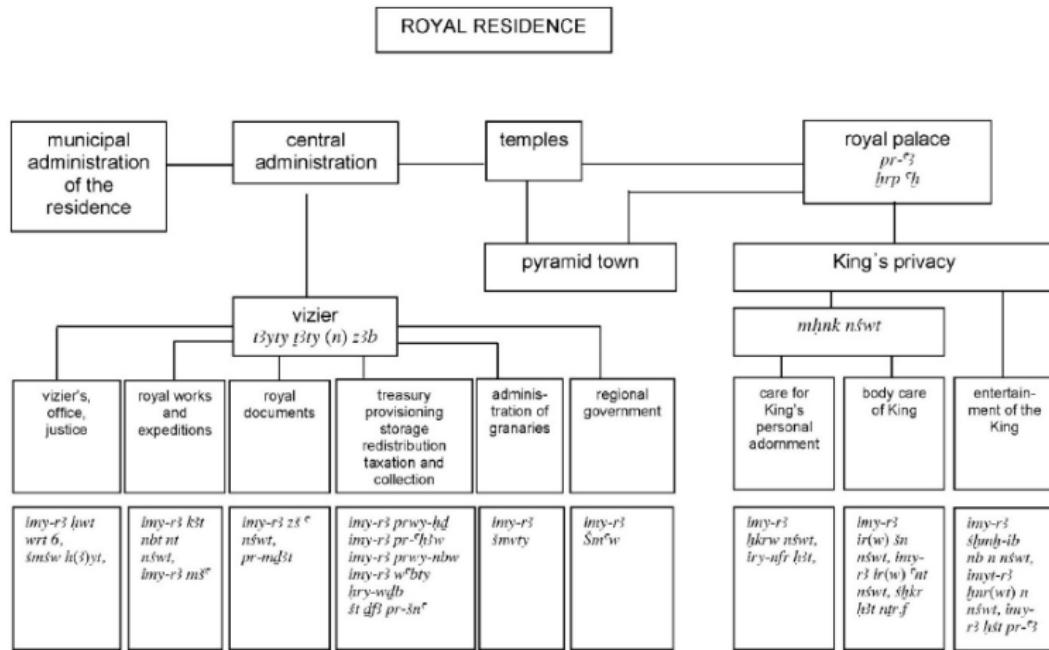
Egypt Kingdoms

- Extremely long history
- Periods of prosperity changed by decadent times
- Focusing on Old kingdom



Egypt society

- Public affairs similar to modern society
- High importance of religion



Archeologic insight

- Hundreds tombs uncovered
- Up to decades people visualized in false portal
 - the owner of the tomb
 - his closest family
 - his servants
- Visualization of names and titles
- Scaling and positioning



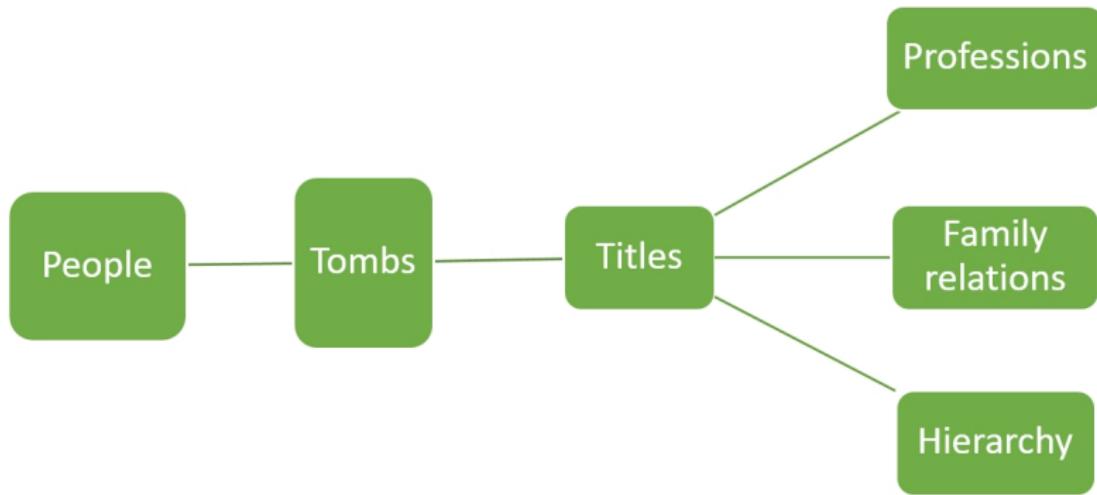
Czech Egyptology

50 years of Egyptologic research in Czech

- 1976 uncovering of pyramid complex of queen Chentkaus
- 1982 research of pyramid complex of Pharaoh Raneferef
- 1995 research of tomb complex of visier Kar and his sons
- 1999 uncovering of tomb complex of priest Hetepi
- 1999 uncovering of tomb complex of priest Hetepi
- 2003 high resolution satellite recording of pyramid areas in Abu-sir, Sakkara and Dah-sur
- ...
- 2016 open cooperation between UK and CTU
- 2017 FNSPE joined the project

Data model

- 2000 titles (64 tags)
- 4000 persons
- 500 tombs
- high level of incompleteness and noise



Obsah

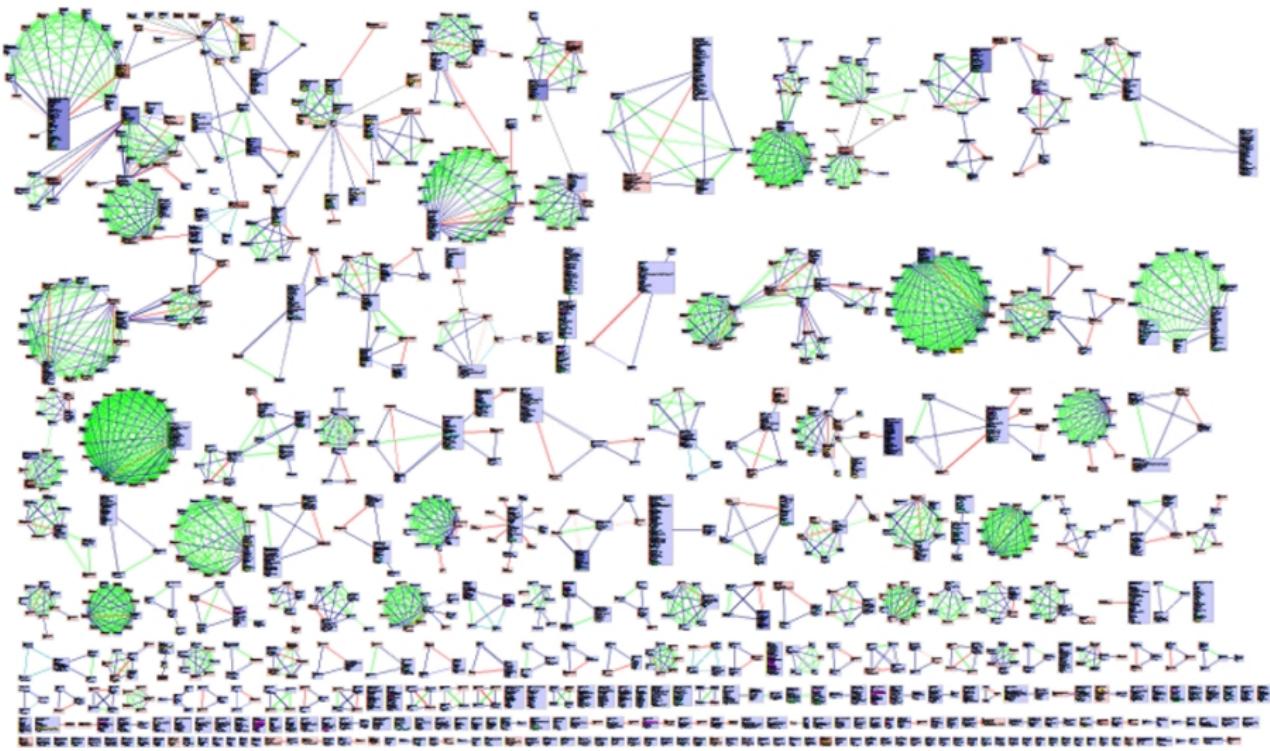
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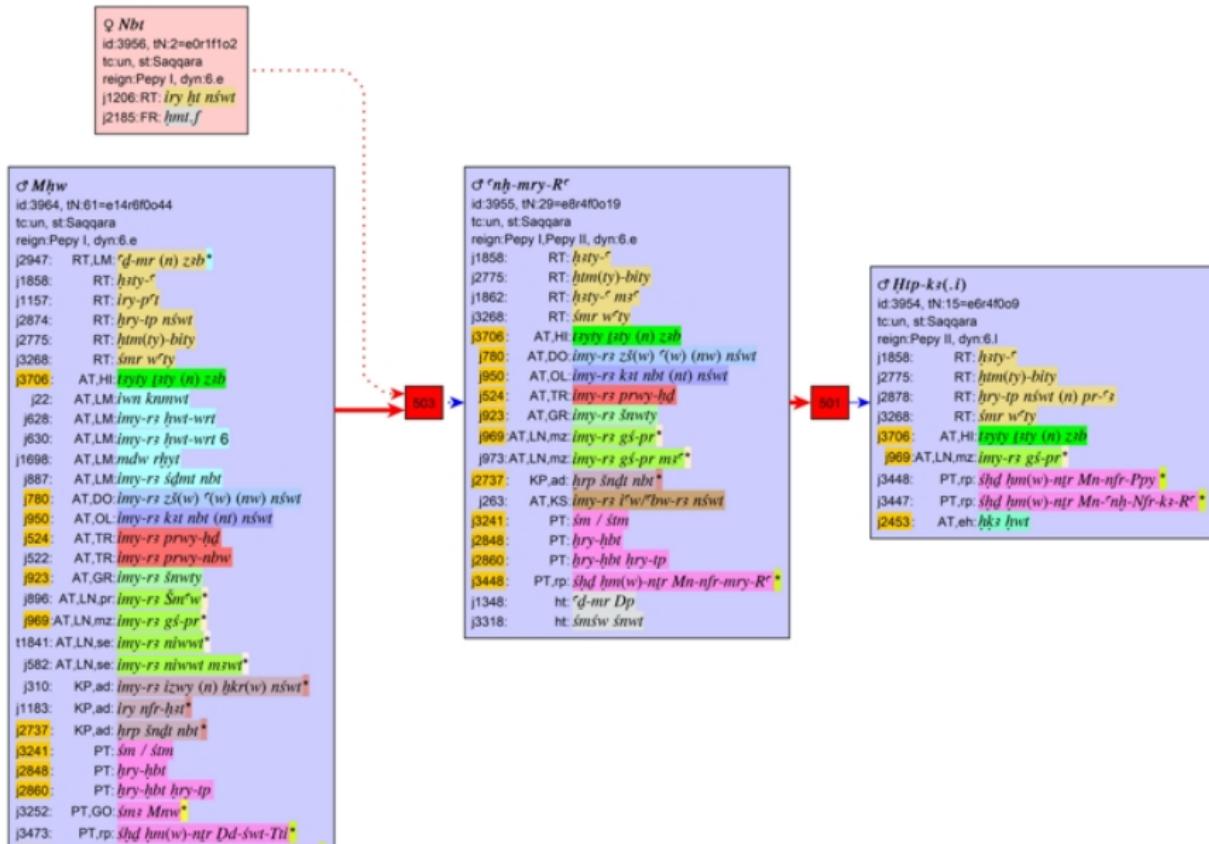
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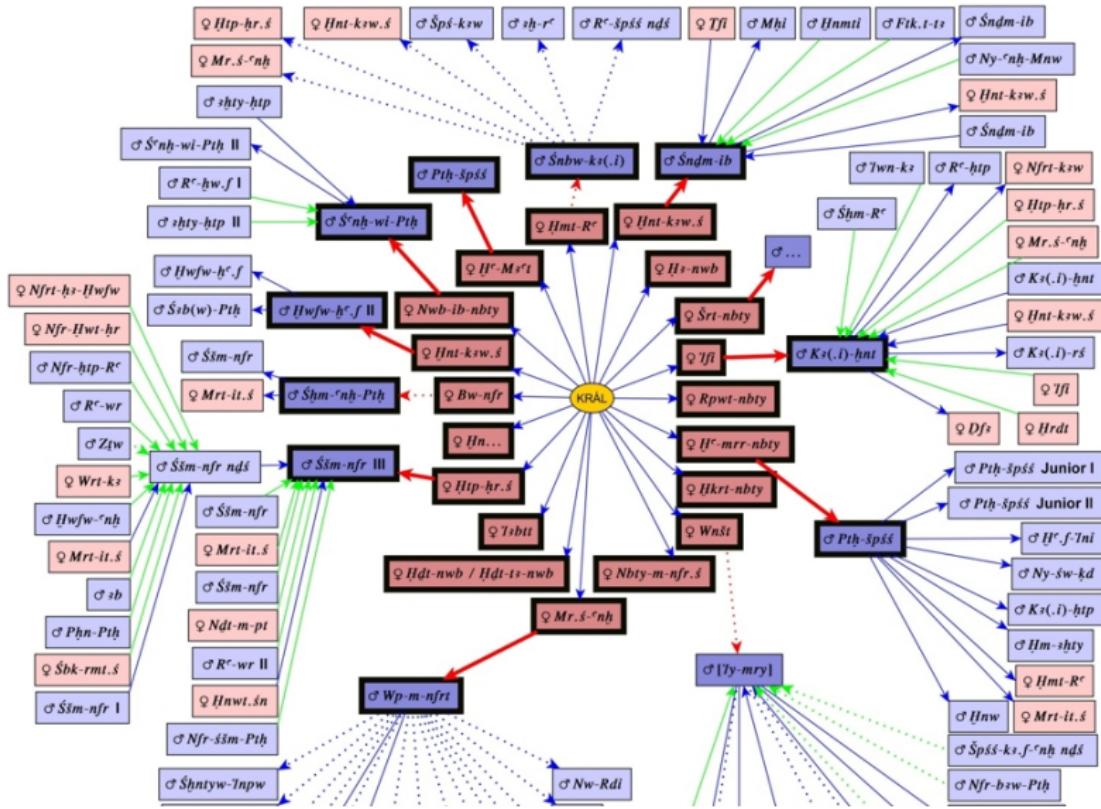
Society reconstruction



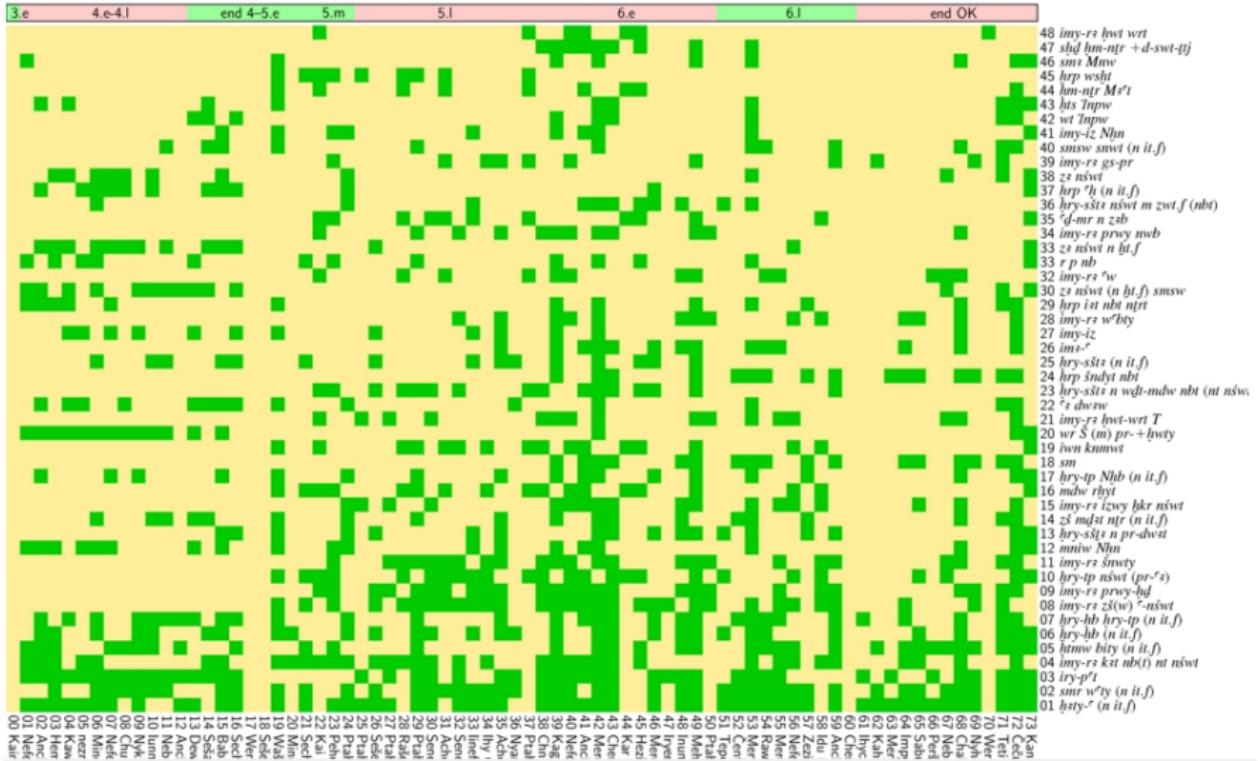
Nepotism



Politics and Family



Viziers identification



Obsah

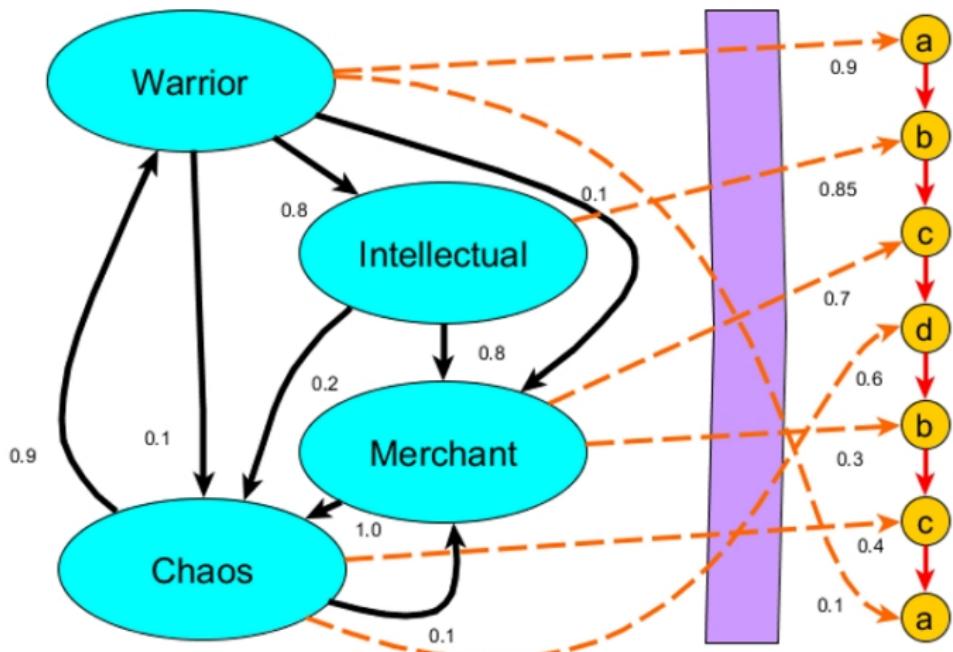
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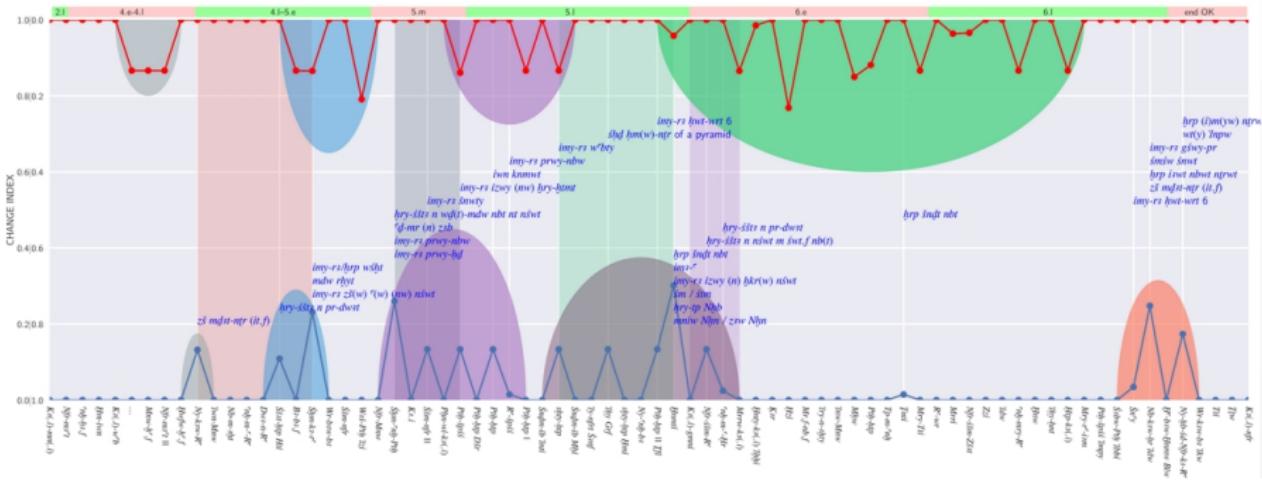
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Hidden Markov Models

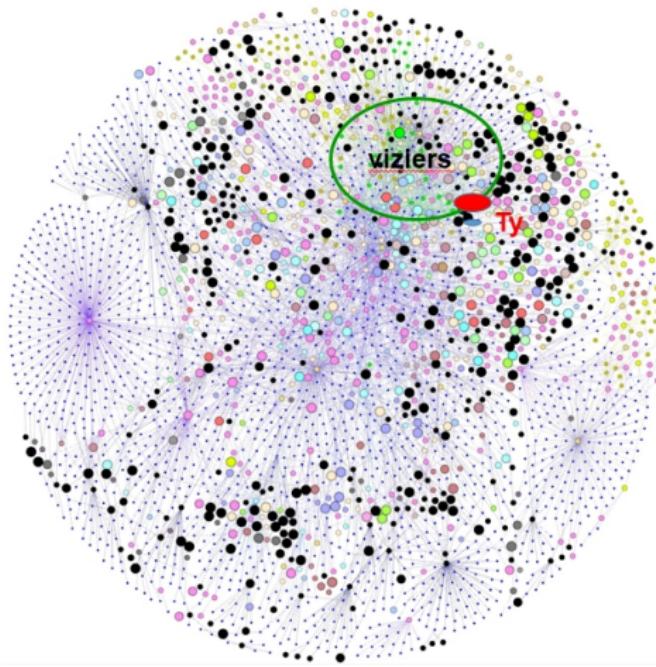


Hidden Markov Models

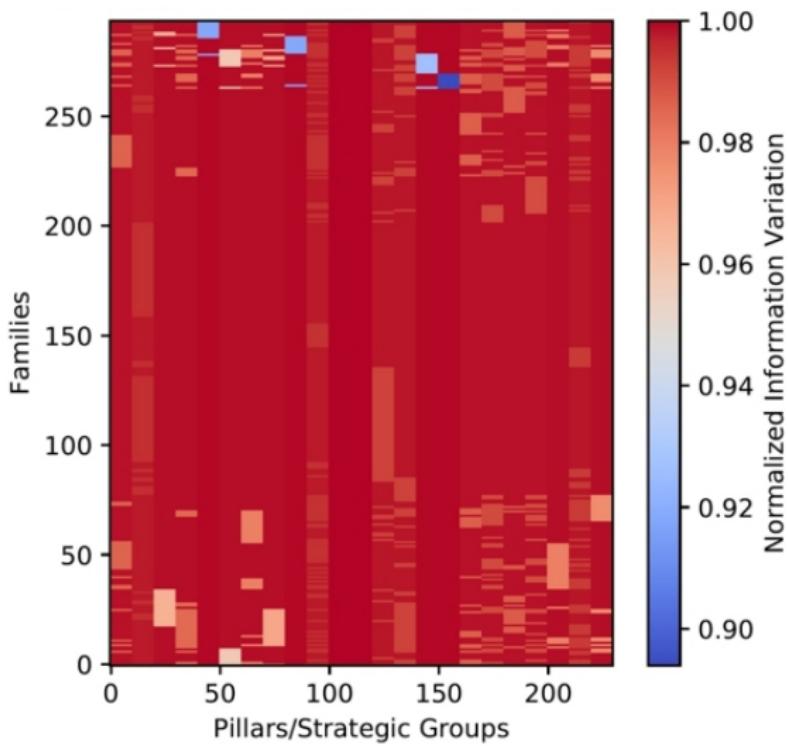


Clustering of titles

- Fruchterman – Reingold algorithm
- Driven force defined by the similarity of persons



Theory of Information



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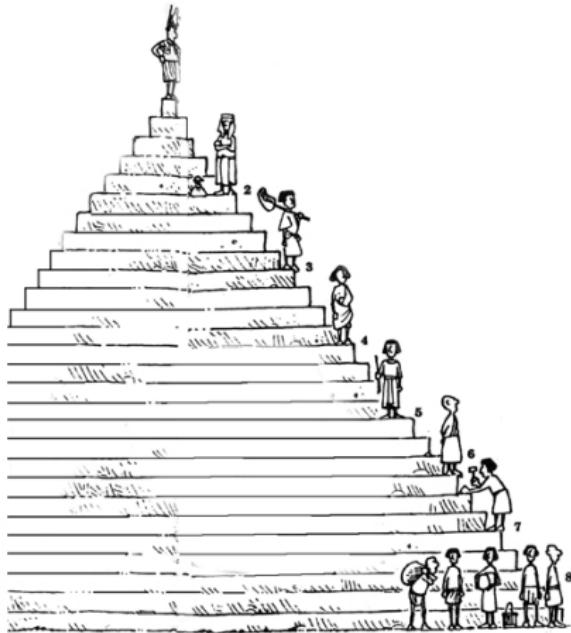
Tag distance

- Adjacent matrix of tag similarity
 - based on titles
 - based on people
- Band matrix heuristic algorithm

	kategorie 1	kategorie 2	kategorie 3	kategorie 4	kategorie 5
kategorie 1	15	0	0	7	1
kategorie 2	0	40	0	0	0
kategorie 3	0	0	10	2	0
kategorie 4	7	0	2	0	5
kategorie 5	1	0	0	5	32

Zadání

- Seznamte se s historickým pozadím egyptologických dat.
- Proveďte rešerši vhodných statistických nástrojů.
- Seznamte se s vyvinutými metodami skupiny GAMS a dalšími dosavadními výstupy.
- Korelační analýzou identifikujte příbuzné tituly a tím verifikujte schéma navržené týmem Univerzity Karlovy.
- Navrhnete vhodné metriky pro měření sociální vzdálenosti a ty vyzkoušejte. Diskutujte smysluplnost dosažených výsledků.



**Thank you for your
attention!**

