A Network Framework for Cultural History

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What is this paper about?

- Cultural history tracked via birth and death locations of notable people.
- “Notable” = people in the dataset
- 3 datasets
  - Freebase.com (FB)
  - General Artist Lexicon (AKL)
  - Getty Union List of Artist Names (ULAN)
- Long term data set, different than mobile phone records
  - eg: Limits of Human Mobility
Data Context and Biases

➤ Spans 0 CE to Present Day
   ➤ Data is sparse before 1500 CE

➤ Data Sources cover Europe and North America well
   ➤ Does not cover Asia or Africa well
   ➤ Does not cover individuals moving into Europe or North America well
Size of datasets over time
Births Vs Deaths

The graph illustrates a comparison between the number of births and deaths across various locations, with a focus on cities such as NYC, London, Paris, Rome, Hollywood, Munich, Chicago, Philadelphia, Brooklyn, Sarasota, Bethesda, Auschwitz, Burbank, and others. The data points are plotted on a logarithmic scale, indicating a power law distribution.
Flow of Antiquarians
Fig. S7. Birth to death migration in AKL, cumulated over all time to 2012 CE.
Fig. 2 Birth-death networks provide historical evidence for global patterns and local instabilities in human mobility dynamics. (A) The number $N(t)$ of individuals as a function of the number $S(t)$ of locations, where $\alpha = 0.9$ (compare fig. 2).
Fig. 3 The visualization of birth-death network dynamics offers a meta-narrative of cultural history. (A) A sequence of frames, based on movie S1, exemplifies the FB narrative for Europe from Roman times to the present.

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North America Migration

Year: 1620 CE
Fig. 4 Temporal death rate patterns in cultural centers reveal midterm trends that are hard to extract from other sources.

(A) English Google Ngram trajectory for the pattern “Paris in {year}” from 1500 to 1995 CE. Dark spikes point to outstanding historical events in the city, labeled semiautomatically using Web searches, such as “Paris in 1763” returning “Treaty of Paris.”

(B) Paris death rate trajectories for FB total and AKL total indicate deviations from the nearly constant fitness \( \eta_{iD}(t) \) (compare fig. 2).

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