TU WIEN Informatics

CVAST

interactive music mapping vienna

networks in space and time

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scope - what to expect

interdisciplinary project **i**nteractive **m**usic **m**apping **v**ienna (immv)

based on: *“gone full circle: a radial approach to visualize event-based networks in digital humanities”* [**filipov et al. 2021**]

collaboration between musicologists, historians, and computer scientists

context, results, and experience

ongoing research

definitions

visual **a**nalytics (va): "*.. the science of analytical reasoning facilitated by interactive visual interfaces.*" [**illuminating the path, thomas & cook, 2005**]

network **vis**ualization (netvis): is an abstract way of representing data as objects (nodes) and relationships (links), and can be used to model and visualize problems in a wide range of application domains.

digital **h**umanities (dh): is an area of scholarly activity at the intersection of computing or digital technologies and the disciplines of the humanities.

immv: domain characterization

interdisciplinary project aimed at mapping the history of public festivities 1945 -- present day

goal is to expose narratives that contributed to the construction of the city's musical identity and their connection to historical events

positioned in the **domain of musicology** and is conducted mainly by historians performing critical analysis of events

networks in the humanities

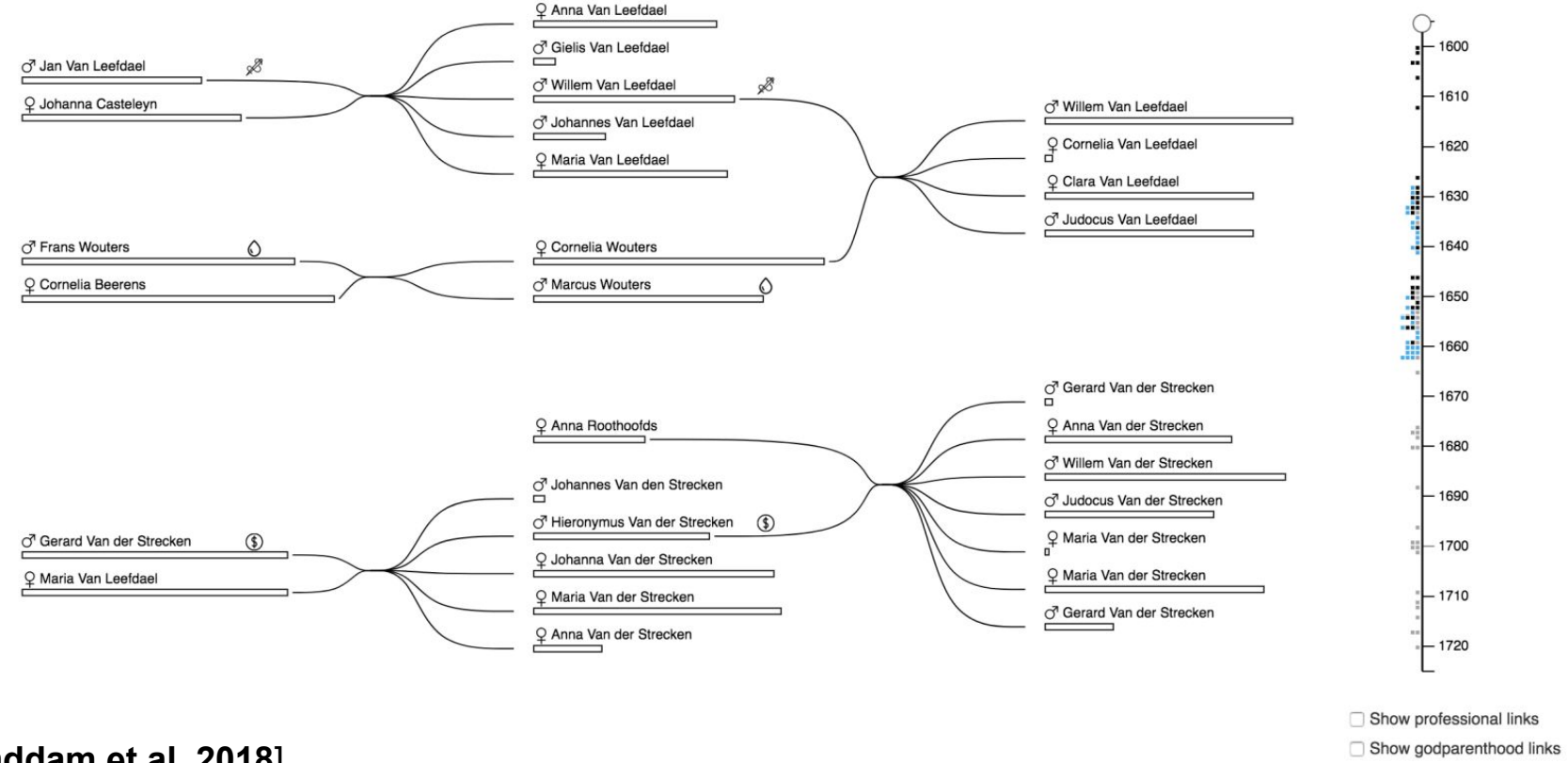
research questions and methods stem from a different epistemological standing [**hinrichs et al. 2017**]

modelling data for historical research is challenging [**börner et al., 2019**]

data is rich and interpretable with many different and complex characteristics [**lamqaddam et al. 2018**]

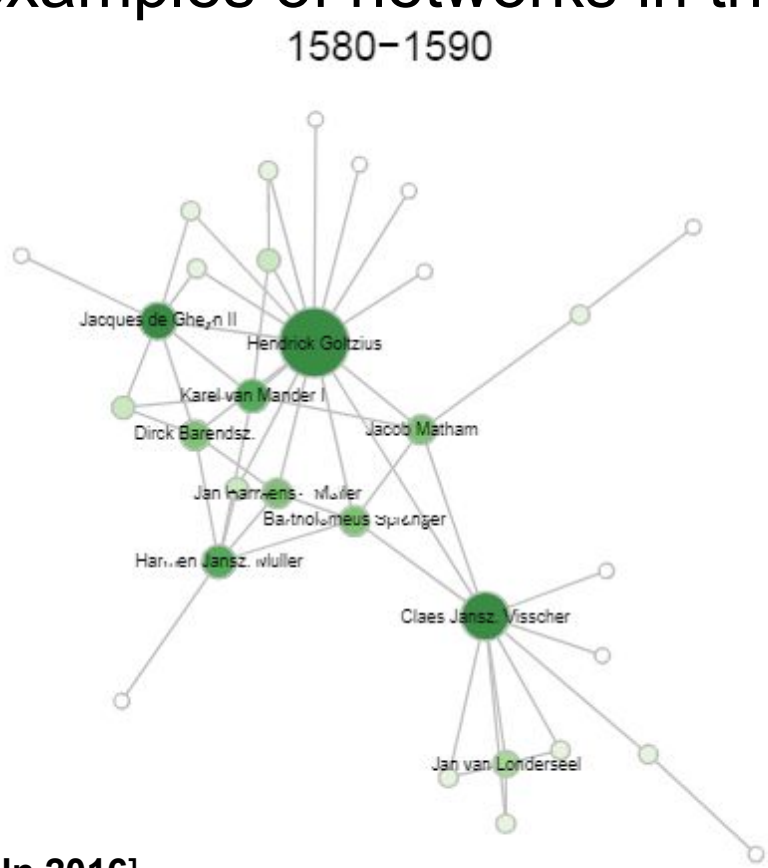
networks are flexible and can model such structures to represent the intricacies and complexity of this type of data [**lincoln, 2016; schetinger et al. 2019**]

examples of networks in the humanities



[**lamqaddam et al. 2018**]

examples of networks in the humanities



[**lincoln 2016**]

problem description

paradigm shift in the way time is represented [**simonetto et al., 2020**]

from time slices and temporal aggregation to event-based data

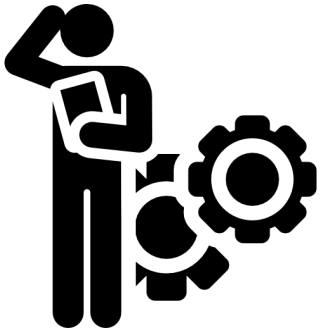
limits of complexity [**yoghourdjian et al., 2018**]

visual scalability concerns with increasing network size and dynamics

simplicity, aesthetics & engagement [**borkin et al., 2013**]

radial visualizations [**draper et al., 2009**]

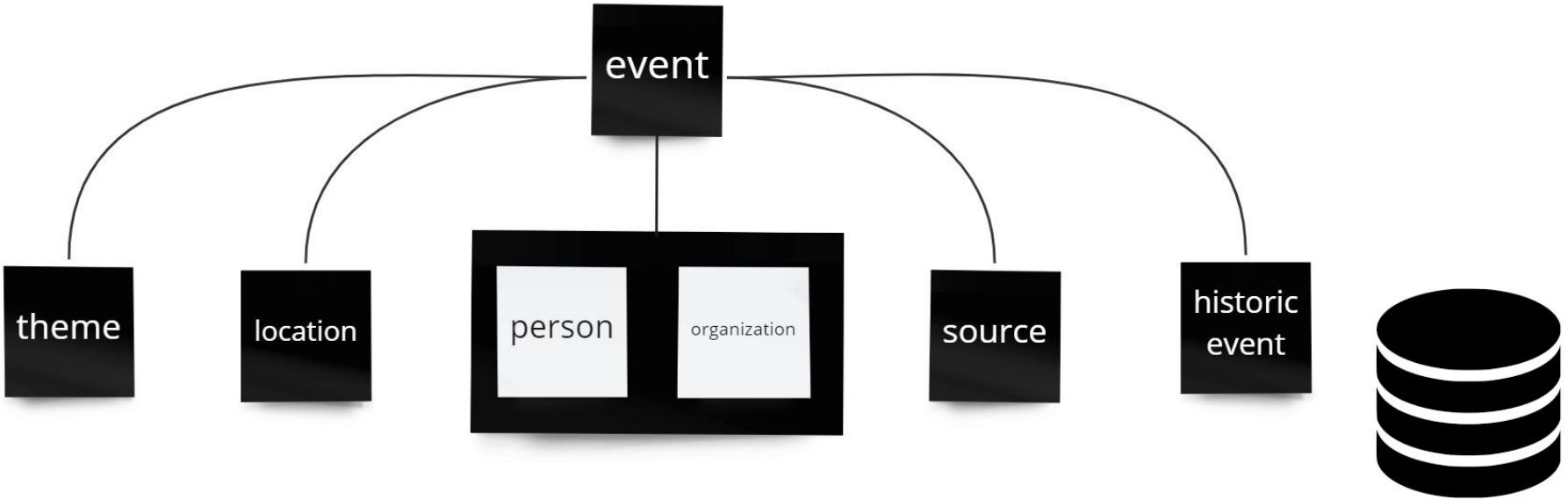
novel network metaphors [**beck et al., 2017**]



problem description: data

network relating disparate entities in spatial and temporal contexts

six different types of entities with events at the center

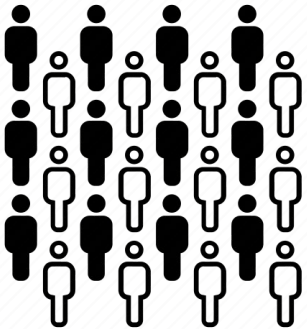


problem description: users

aimed at humanities experts with domain knowledge

to support **exploring historical narratives** on the basis of events

to engage with **discovering and interacting** with viennese musical history



problem description: tasks

goal: support a variety of tasks ranging from high-level to low-level [**brehmer & munzner, 2013**]

present: a straightforward, aesthetic, and engaging interface to gain an overview of the event-based network

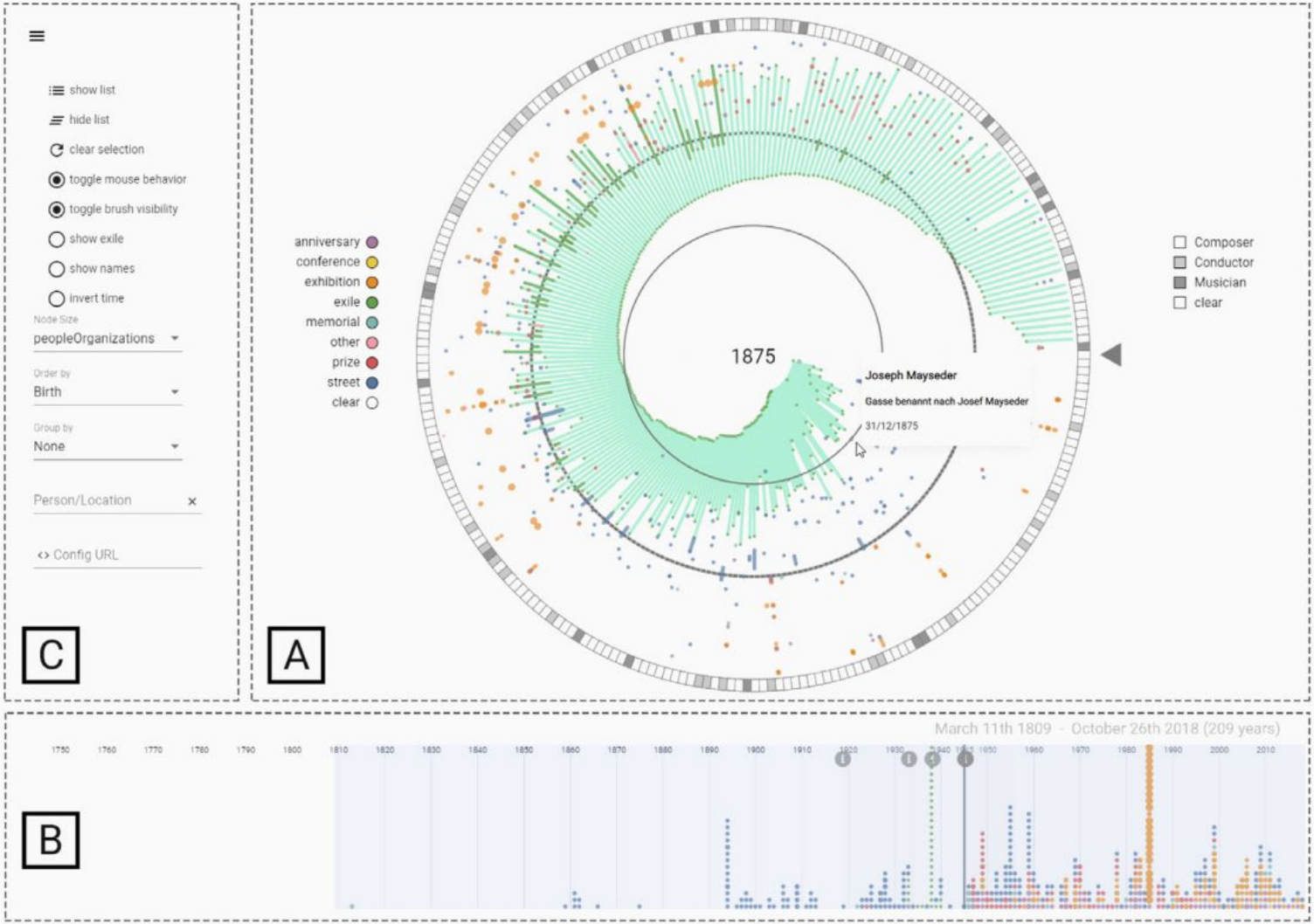
compare: entities or groups of entities that exhibit similar characteristics to observe their development over time

explore: navigate the network and dive into more details

identify: (dis-)continuities of themes and historical developments

verify: validate the data

approach


show list
hide list
clear selection
toggle mouse behavior
toggle brush visibility
show exile
show names
invert time
Node Size
peopleOrganizations
Order by
Birth
Group by
None
Person/Location
Config URL
C
anniversary
conference
exhibition
exile
memorial
other
prize
street
clear
1875
Joseph Mayseder
Gasse benannt nach Josef Mayseder
31/12/1875
Composer
Conductor
Musician
clear
A
March 11th 1809 - October 26th 2018 (209 years)
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
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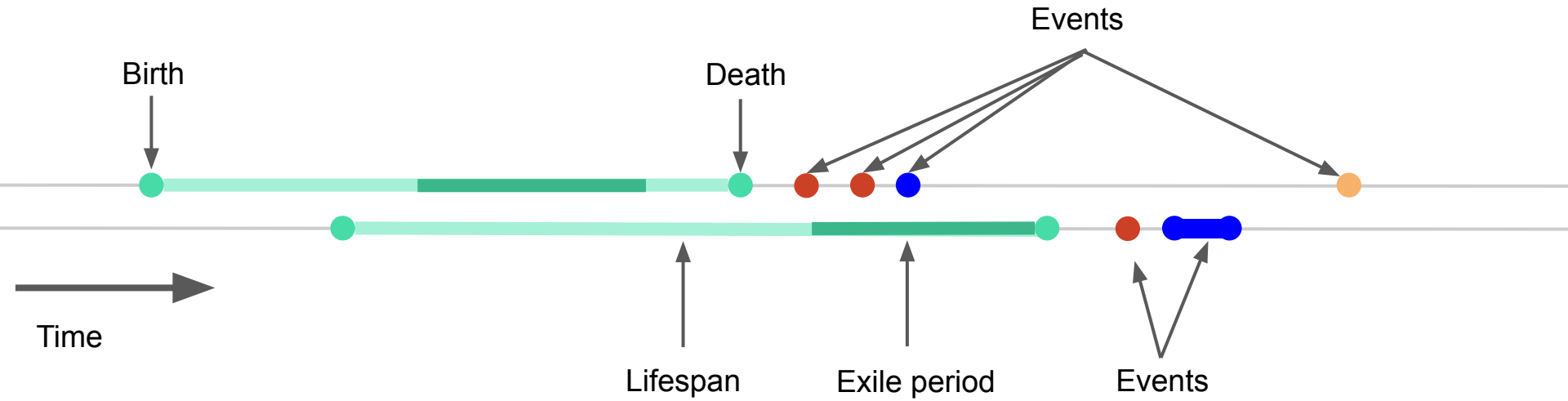
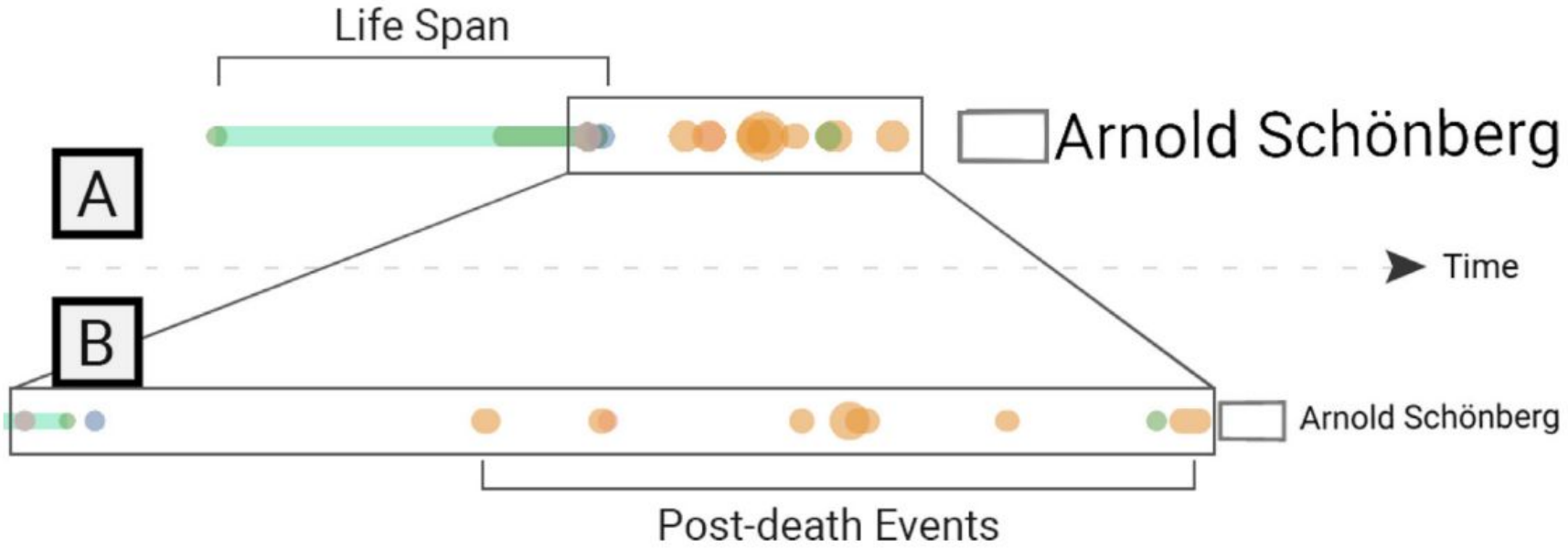
B

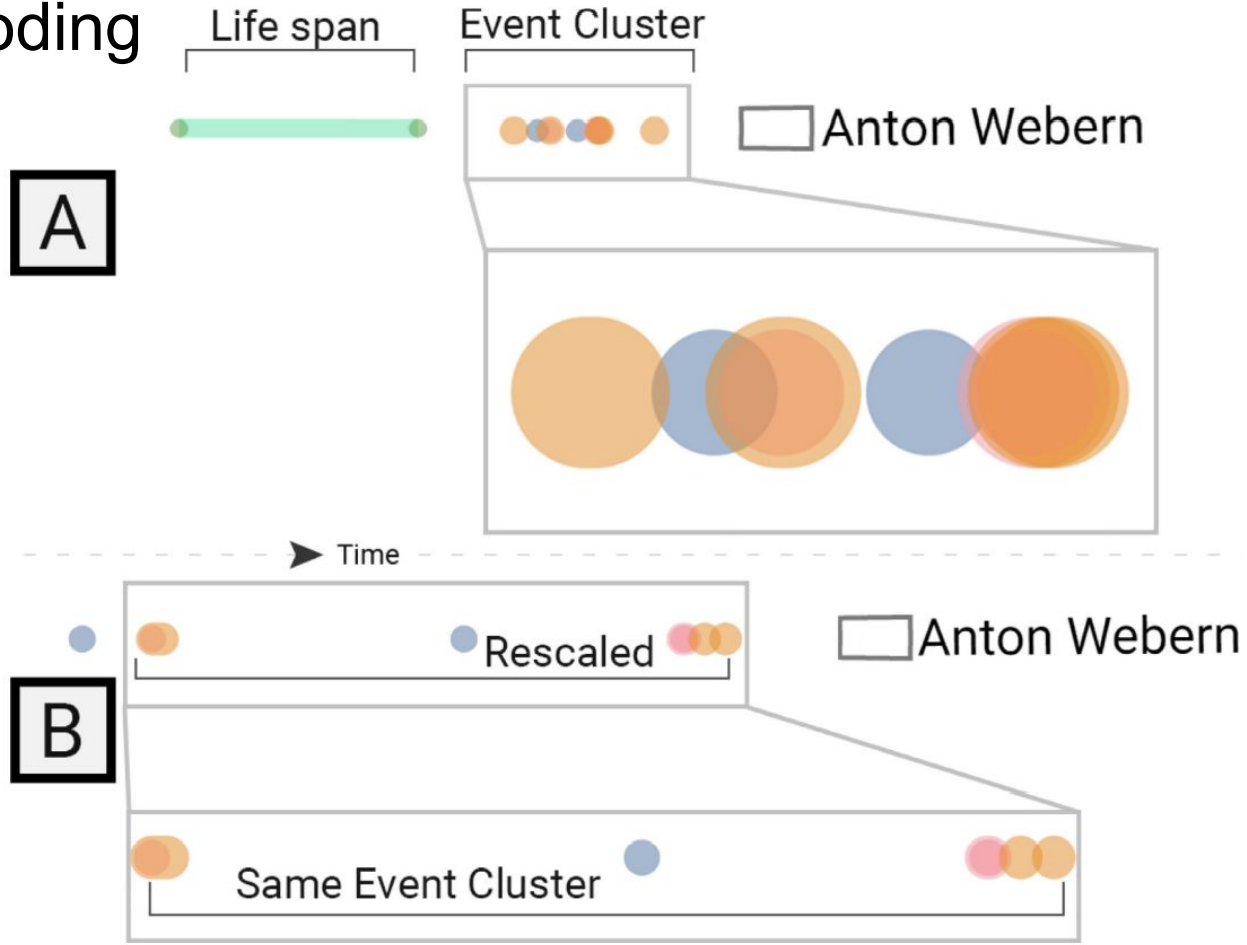
visual encoding



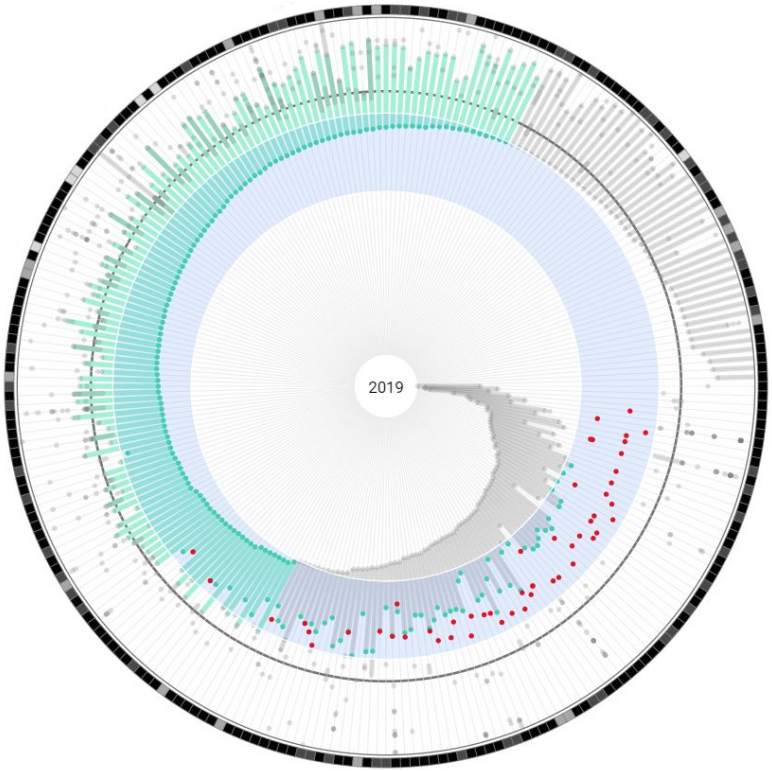
visual encoding

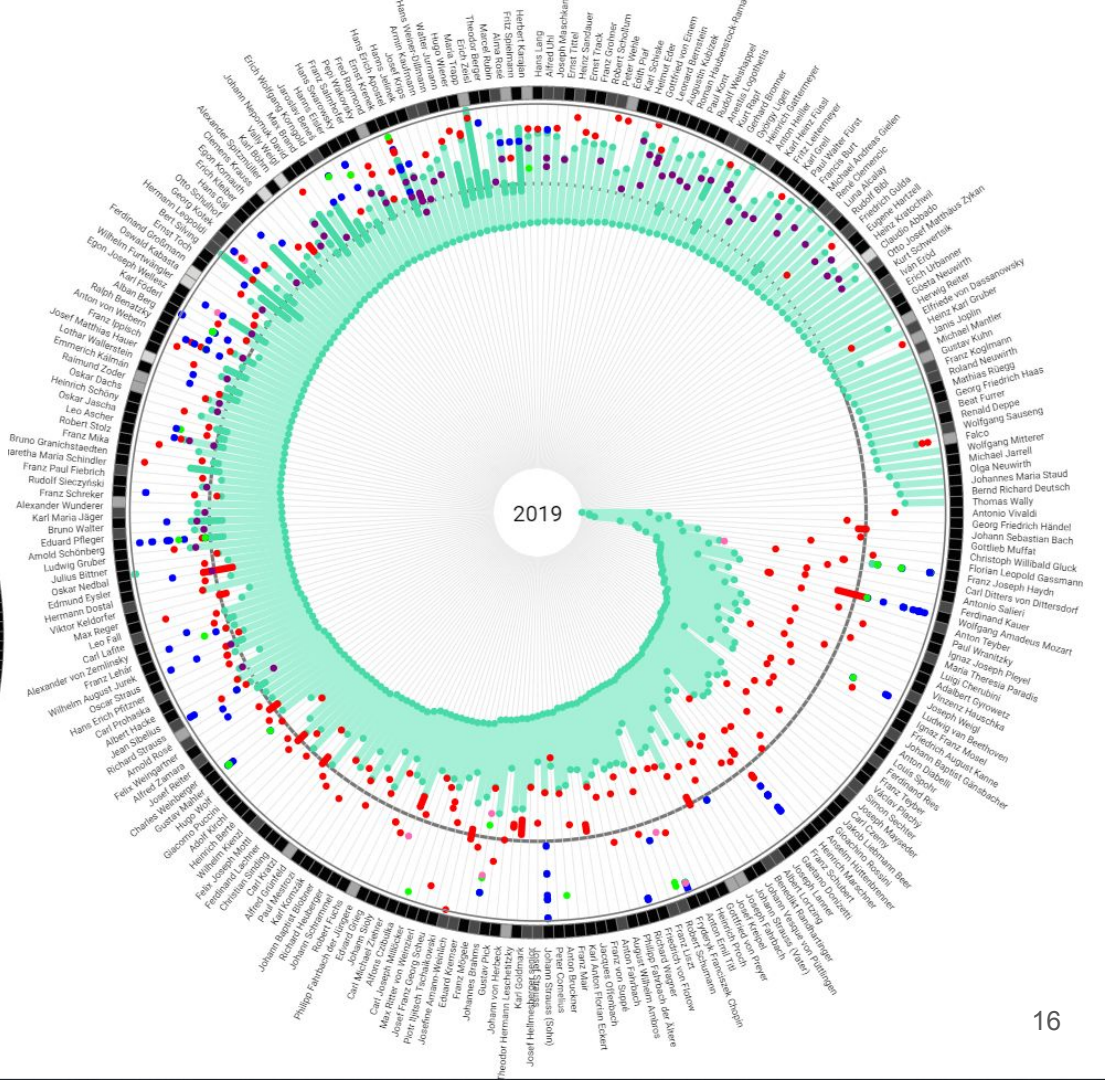


visual encoding



visual encoding





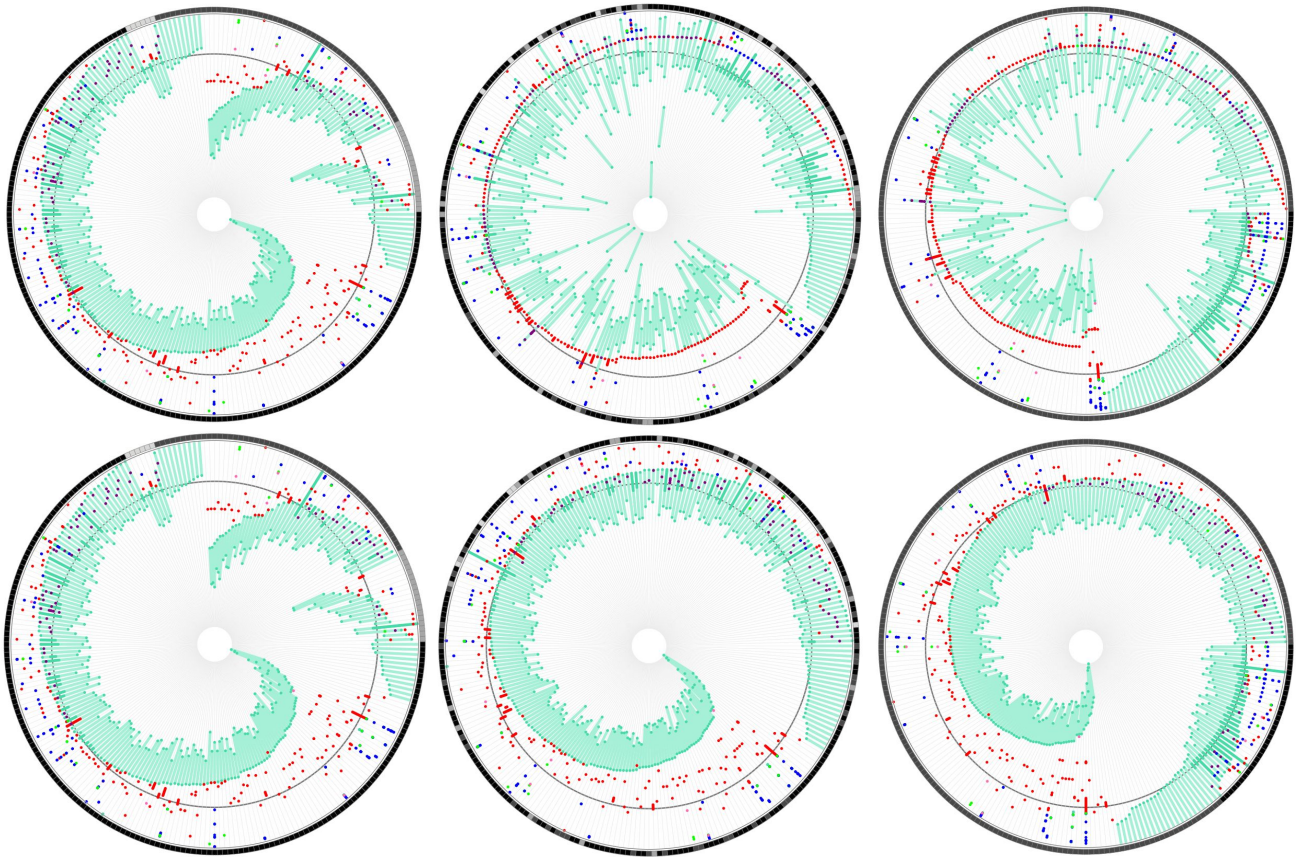
visual encoding

grouping by:

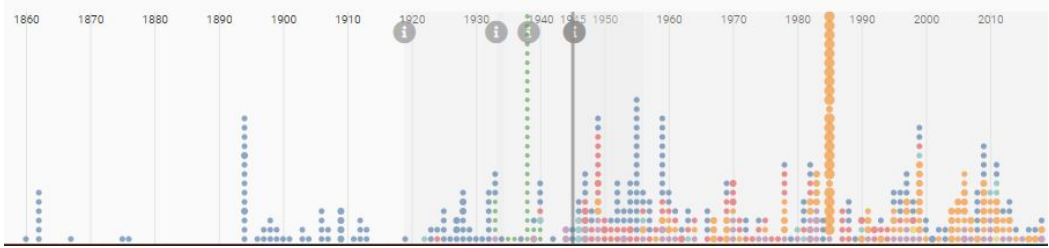
- ❏ role
- ❏ exile status
- ❏ born after 1945
- ❏ died before 1938

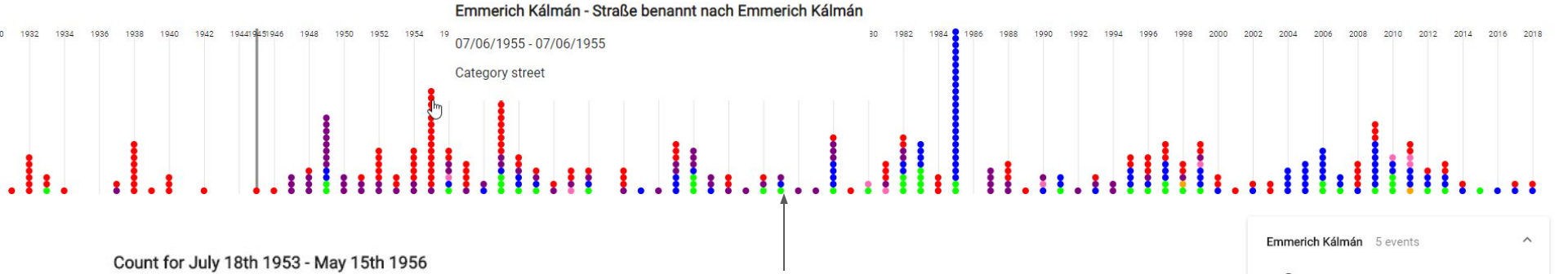
ordering by:

- ❏ birth
- ❏ death
- ❏ first postdeath event



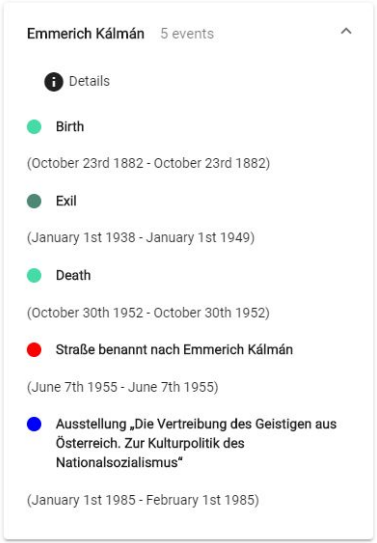
visual encoding

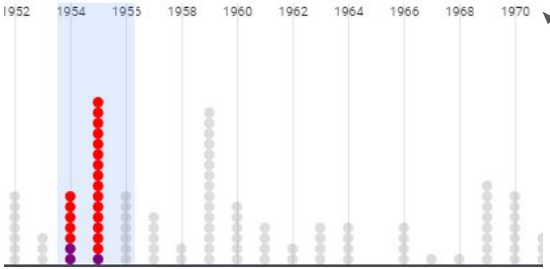




Timeline illustrating events

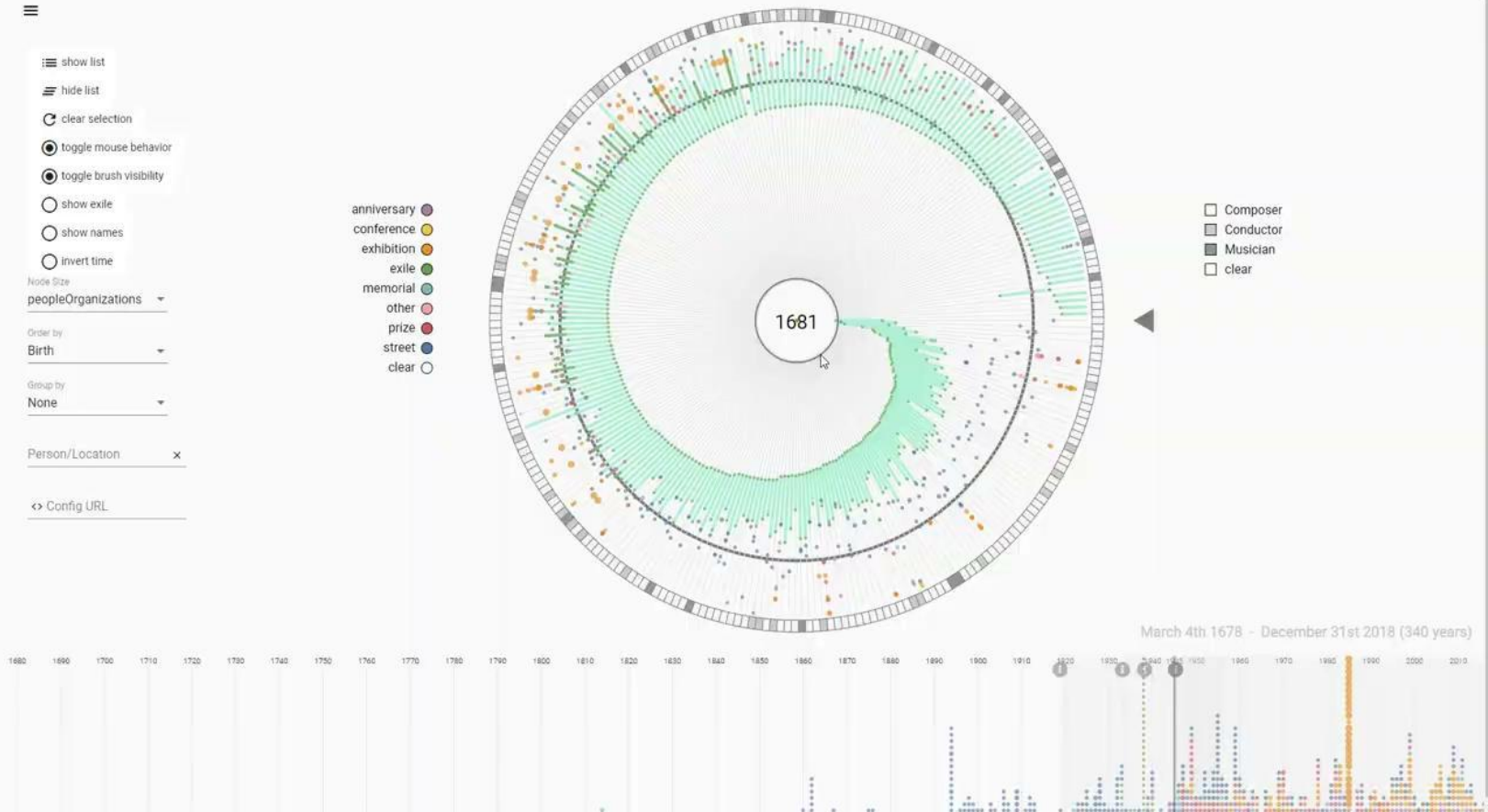
Details of a person's life



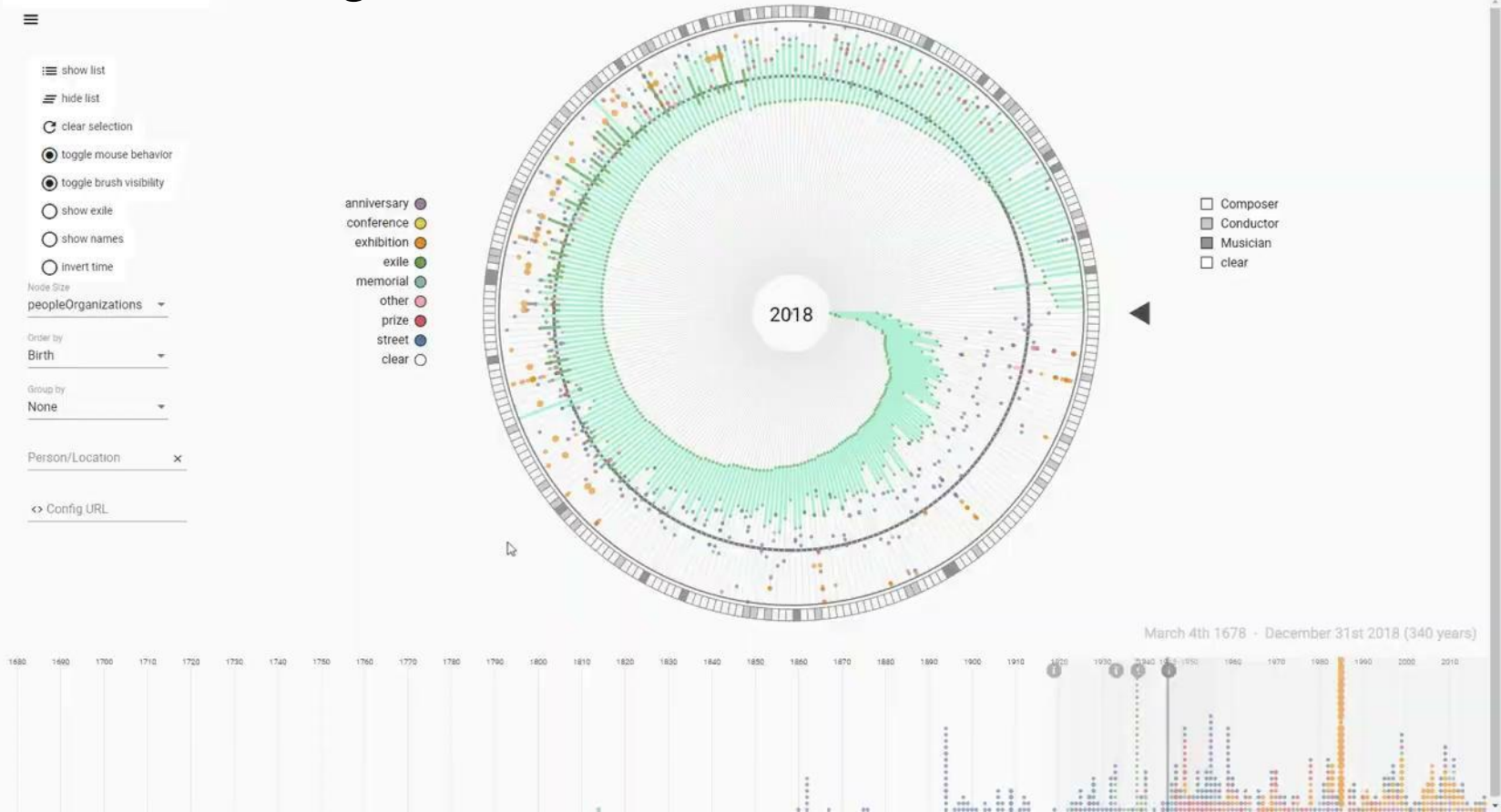


Selecting a time period &
count of each event type

interactions: mouseover



interactions: filtering



interactions: ordering & grouping

interactions: zooming

interactions: selection & details

evaluation/feedback

domain and **visualization experts** participating in a study

interesting approach to explore linked historical data

radial component was considered **aesthetic**ally pleasing, **compact**, and interesting

interactions **engaged** the participants and enabled to explore more details and new information

participants kept exploring some interesting parts even after concluding the study

limitations

learning curve required explaining of the encoding and interactions

no guidance to point / suggest interesting points in history

usability issues & feature requests

- navigating back and forth between different selections
- no ability to lock in the selection of the period of time
- some issues with hiding sections of the interface

ongoing/current research

networks in digital art history -- fwf project ‘artvis’ (P35767)

goal: better understanding of how the components of the art system (persons, objects, places, institutions, and events) interact with each other and how these interactions vary over time by leveraging *dynamic network visualization*

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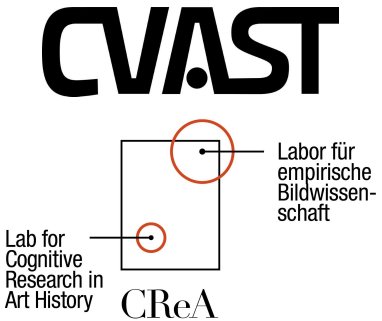
uni wien: raphael rosenberg, teresa kamencek



thank you

q&a?

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