The Making of Jewish Heritage in the Digital Age: The Trials and Transmissions of German Refugee Rabbis after 1933

Part II: Technology
With data Science to History –
Challenges of a data-driven approach

Christian Riepl, LMU
(March 6, 2025)

Digital research portal: mira.geschichte.lmu.de

What's new?

How do we work with digital data?

Database design, acquisition and structuring of data

Data analytics, data visualisation, data computation

Digital Humanities / Data-driven approach

Sustainability of research software and data

Value and benefits of digital / computational methods

Webportal mira.geschichte.lmu.de

Persons

Community Sourcing

Discussion Group
(12 members)

Digital Prosopographical Handbook of Flight and Migration of German Rabbis after 1933
(MIGRA)

MIRA Digital Collection
(Cooperation with UB LMU)

Database, visualization, computation

Relational database
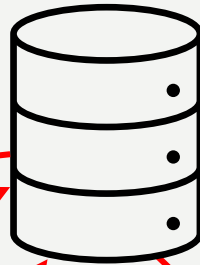
Path

Maps

Timeline

Computational data
(Diagrams, tables)

Graphs

Family tree

Relational Data Model
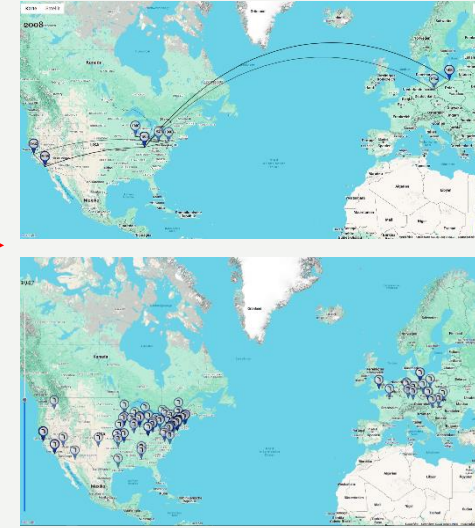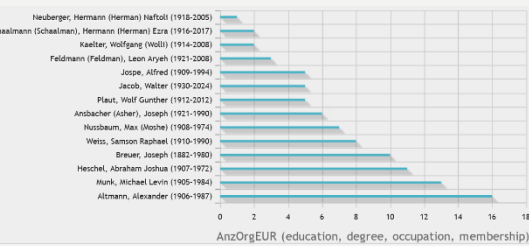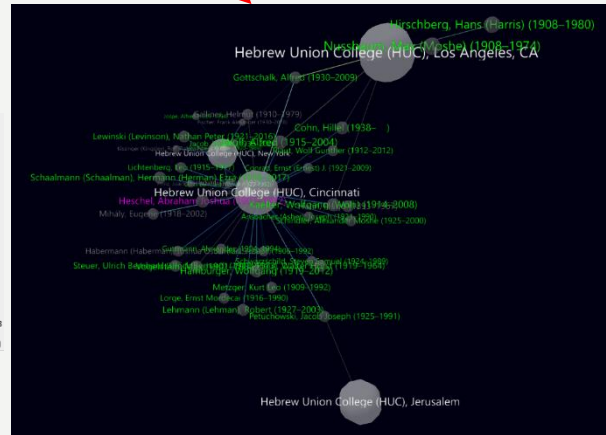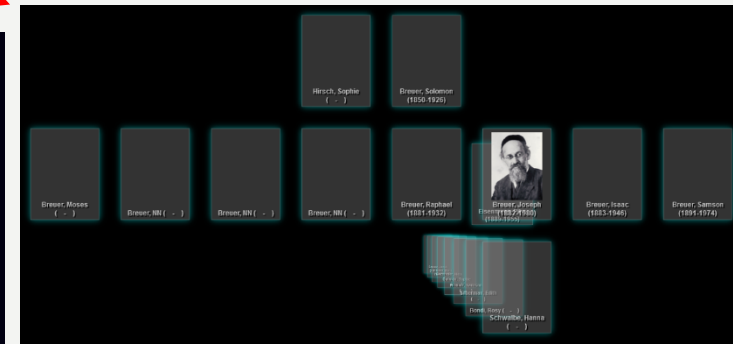(dynamic process)

Relationships (~2600)

Persons

mira **beziehung**
- F41X : smallint(5) unsigned
- Art : tinyint(1)
- F41Y : smallint(5) unsigned
- Text : varchar(10)   Date

mira **literatur**
- Literatur : smallint(5) unsigned
- Jahr : smallint(4) unsigned
- Titelaufnahme : text
- Signatur : varchar(96)
- Credits : varchar(100)
- URL : varchar(255)
- K : char(1)

(~900)

mira **nachweis**
- F41 : smallint(5) unsigned
- Ereignis : mediumint(8)
- Literatur : smallint(5) unsigned
- Seiten : varchar(20)
- Kommentar : varchar(255)
- Publik : tinyint(1) unsigned

(~1200)

mira **person**
- F41 : smallint(5) unsigned
- ZLabel : varchar(120)
- Nachname : varchar(60)
- Vorname : varchar(60)
- F24 : enum('m','w','d')
- F13 : varchar(10)   Date
- F15 : varchar(60)
- F14 : varchar(10)   Date
- F16 : varchar(60)
- Extern : text
- Intern : text
- Region : varchar(9)
- Kategorie : set('Rabbi','Scholar','Functionary')
- Privat : tinyint(1) unsigned   0=public
- EditNotiz : varchar(3)
- changed_on : timestamp
- changed_by : varchar(16)

mira **bild**
- F41 : smallint(5) unsigned
- Sort : tinyint(1) unsigned
- Credits : varchar(200)
- Link : varchar(255)
- Art : enum('S','P','F','M')
- Cache : tinyint(1) unsigned
- Source : varchar(255)

mira **konkordanz**
- F41 : smallint(5) unsigned
- Referenz : varchar(6)
- F45 : varchar(90)
- Status : char(1)

Standard data (GND)   (~2200)

Events (~5700)

Memberships

Dates

mira **ereignis**
- Ereignis : mediumint(8) unsigned
- F41 : smallint(5) unsigned
- Kategorie : varchar(20)
- Bezeichnung : varchar(60)
- Beginn : varchar(10)
- Erwaehnung : varchar(10)
- Ende : varchar(10)
- Organisation : varchar(120)
- Ort : varchar(80)
- Destination : varchar(80)
- Extern : text
- Intern : text

mira **organisation**
- OU : smallint(5) unsigned
- Organisation : varchar(120)
- RS : char(1)
- Intern : varchar(200)
- Q : int(10) unsigned   (~1400)

Places (~1200)

mira **ort**
- B : decimal(7,4)
- L : decimal(7,4)
- Ort : varchar(80)
- Q : int(10) unsigned

~2100 persons: ~250 rabbis with
parents, spouses, children and siblings

Data sets in table person

F41 person ID, where >10000=Rabbis; >11000=Parents; >13000=Spouse; >15000=Children; >17000=Siblings; >25000=Others.	ZLabel automatically generated from last name, first name, F13, F14	Nachname last name	Vorname first name	F24 gender	F13 date of birth	F15 place of birth	F14 date of death	F16 place of death	Kategorie values: Rabbi, Scholar, Functionary
10015	Weiss, Samson Raphael (1910–1990)	Weiss	Samson Raphael	m	1910-03-09	Emden	1990-02-06	Manhattan, New York City, NY	Rabbi,Scholar
10024	Kaelter, Wolfgang (Wolli) (1914–2008)	Kaelter	Wolfgang (Wolli)	m	1914-02-12	Gdańsk	2008-01-09	Long Beach, CA	Rabbi

Data sets in table beziehung and SQL query

F41X	Art 1 (is parent of), 2 (is husband of)	F41Y	Text date of marriage
10015	2	13015	1936
10015	1	15032	
10015	1	15033	
10015	1	15034	
10015	1	15035	
10015	1	15539	
10024	2	13024	1938-07-14
10024	1	15053	
10024	1	15054	

```
SELECT
  concat(p1.Nachname, ', ', p1.Vorname) as Husband,
  '∞',
  concat(p2.Nachname, ', ', p2.Vorname) as Wife,
  Text as Marriage
FROM beziehung b join person p1 on (b.F41X = p1.F41) join person p2 on (b.F41Y = p2.F41)
  where b.Art = 2 and p1.F41 IN ( 10024, 10015 );
```

Result of SQL query

Husband	∞	Wife	Marriage
Weiss, Samson Raphael	∞	Carlebach (Weiss), Helene (Leni) (Leah)	1936
Kaelter, Wolfgang (Wolli)	∞	Shapiro (Kaelter), Sarah R.	1938-07-14

Webbased database user interface phpMyAdmin: Table ereignis

Webportal mira.geschichte.lmu.de: Biographies

data sets from table person

data sets from table ereignis

data sets from table literature

Webportal mira.geschichte.lmu.de: Automatically generated content

automatically aggregated content
(autority files / standard data)

Reference data (GND)

Citation (PID)

Webportal mira.geschichte.lmu.de: Family tree

relationsships

visualization button

family tree
(only logged in)

3 dimensional
visualization

Webportal mira.geschichte.lmu.de: Visualization buttons

visualization buttons

map with timeline
graph representations

map with
individual life path,
time line and
information boxes

Webportal mira.geschichte.lmu.de: Map with individual life path

+ information boxes to
events at any point of time
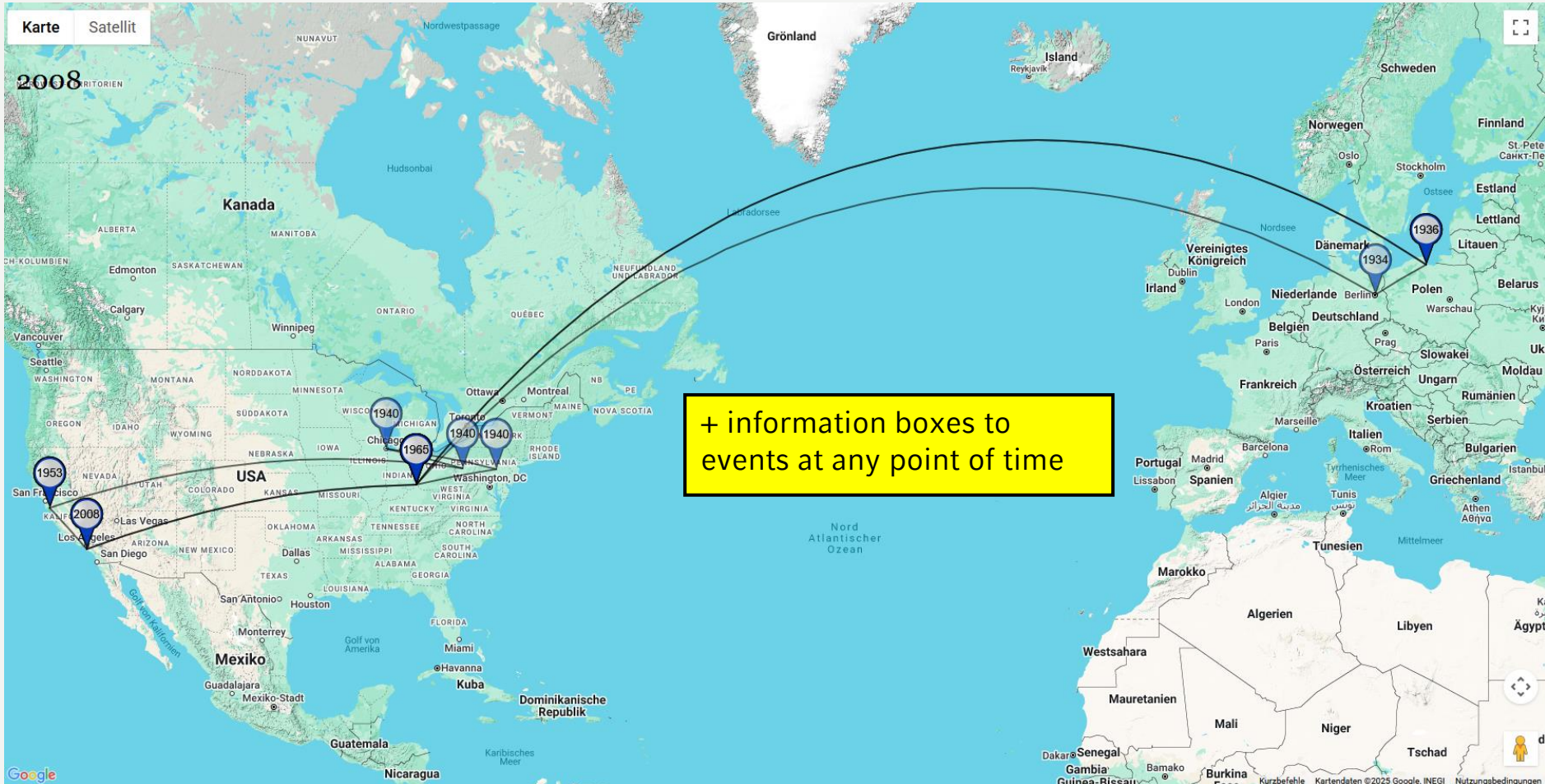
Webportal mira.geschichte.lmu.de: Map with timeline

1927

1947
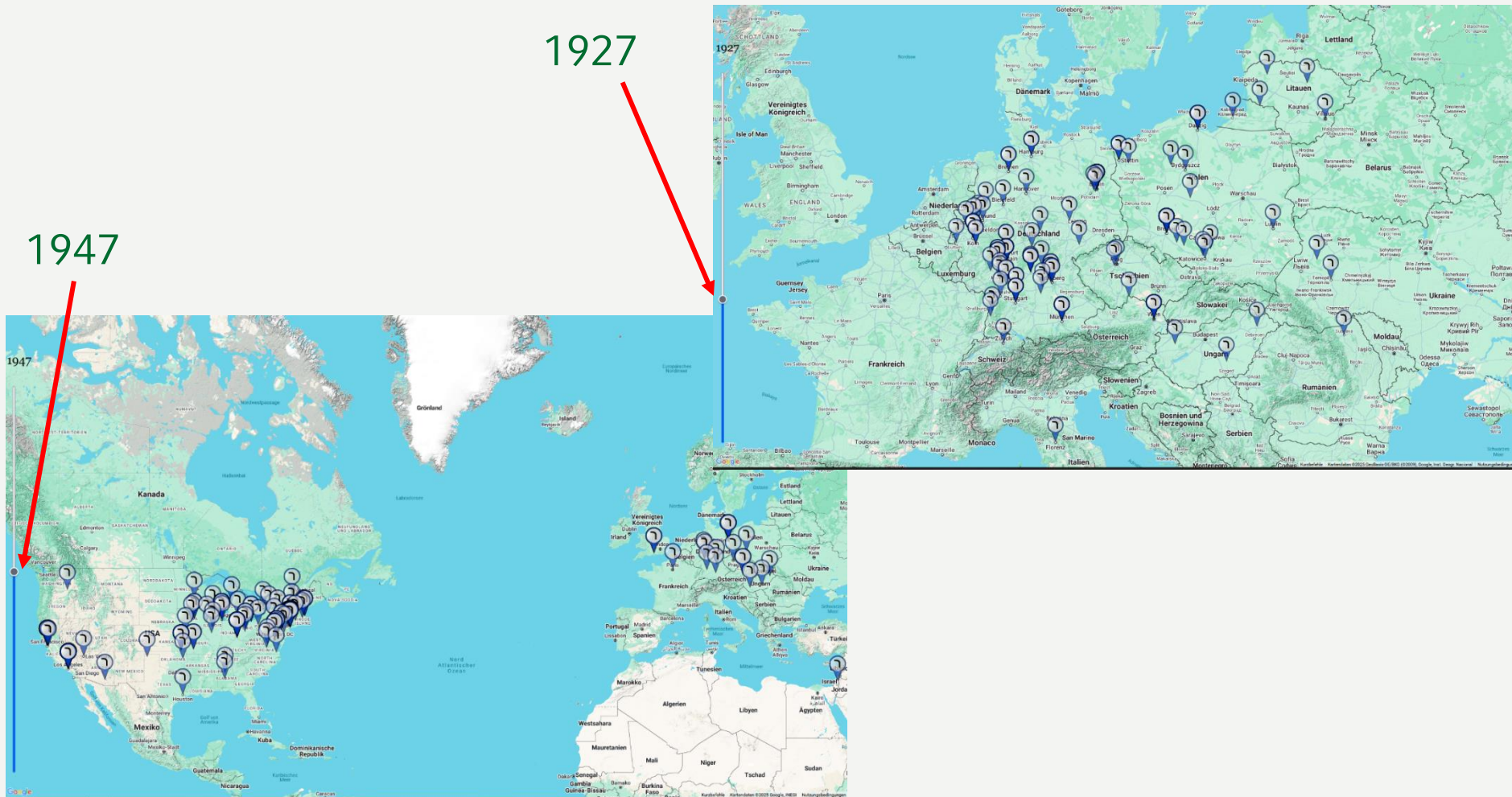
Webportal mira.geschichte.lmu.de: Graphs (simplified)

Organisation
(education, degree, occupation)

Person
(information on mouse over)

Hochschule für die Wissenschaft des Judentums (HWJ)

Kaelter, Wolfgang (Wolli) (1914-2008)

Hebrew Union College (HUC), Cincinnati

Breuer Yeshiva, Frankfurt am Main

Breuer Joseph (1882-1980)
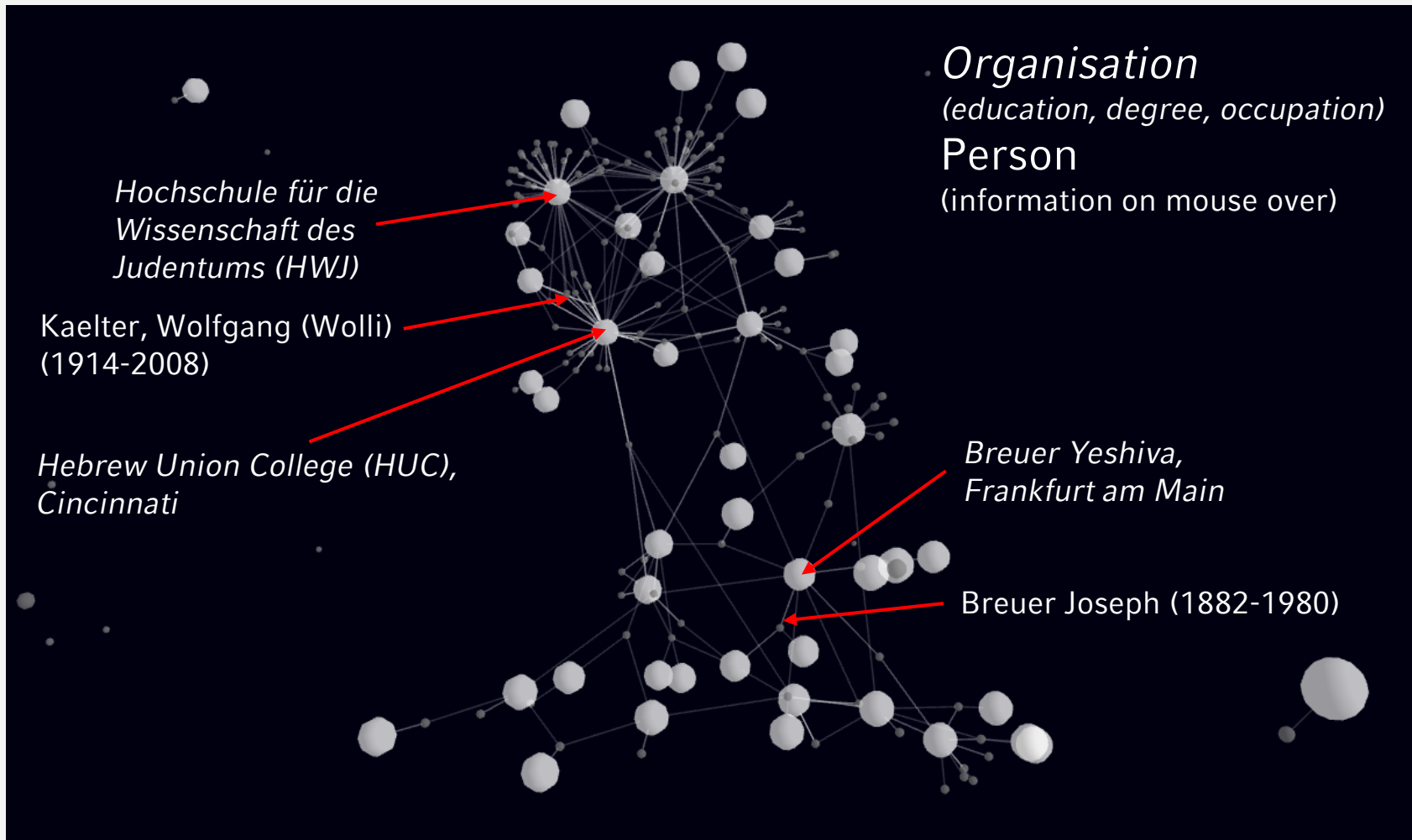
Webportal mira.geschichte.lmu.de: Graphs (labeled, colored)
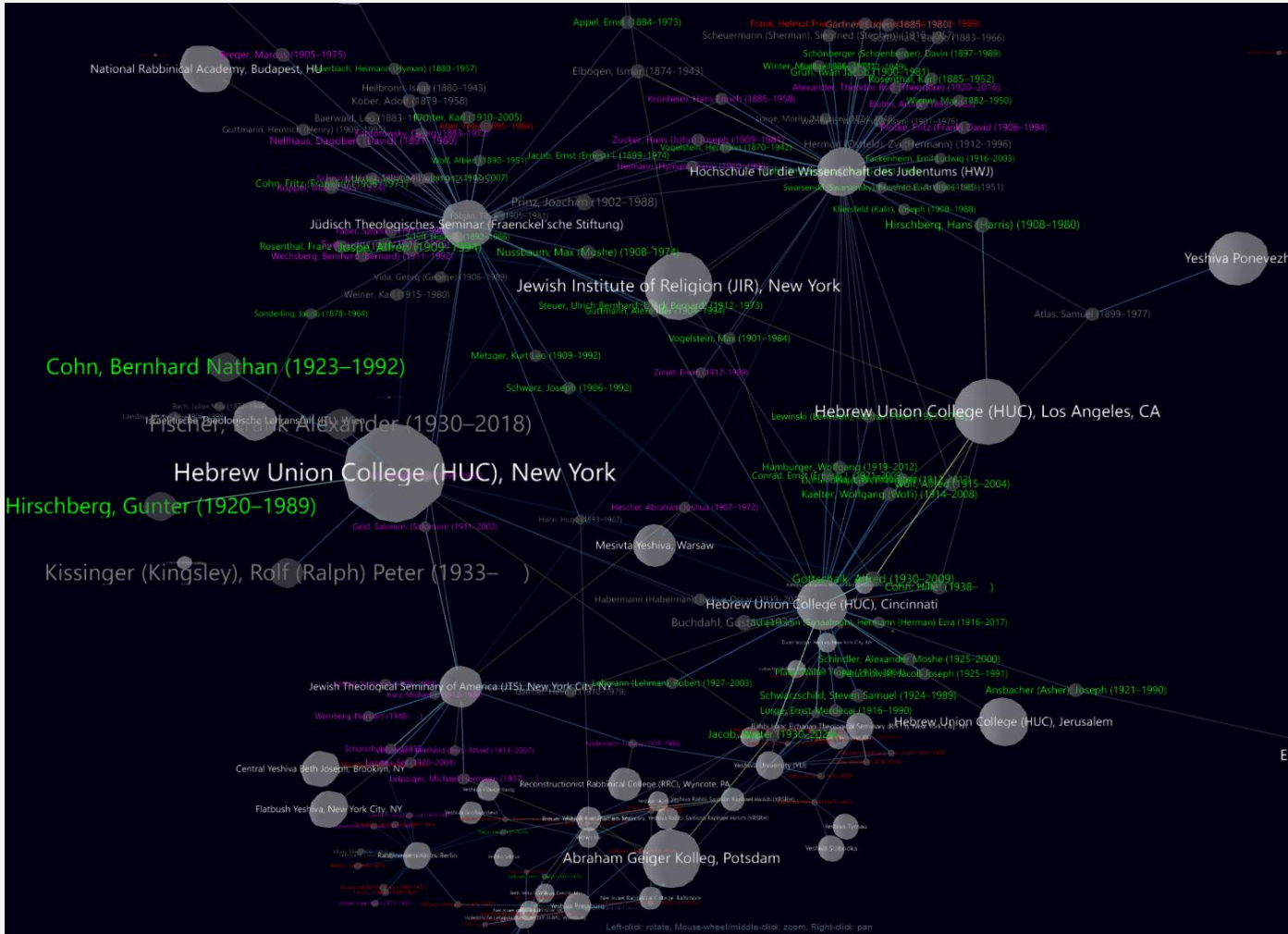
Organisation
Person
(labeled)

Color Code
(religous movement)

R-eform
O-rthodox
C-onservative
O-thers

Filter by
organisation
(not applied)

Webportal mira.geschichte.lmu.de: Graphs (labeled, colored)
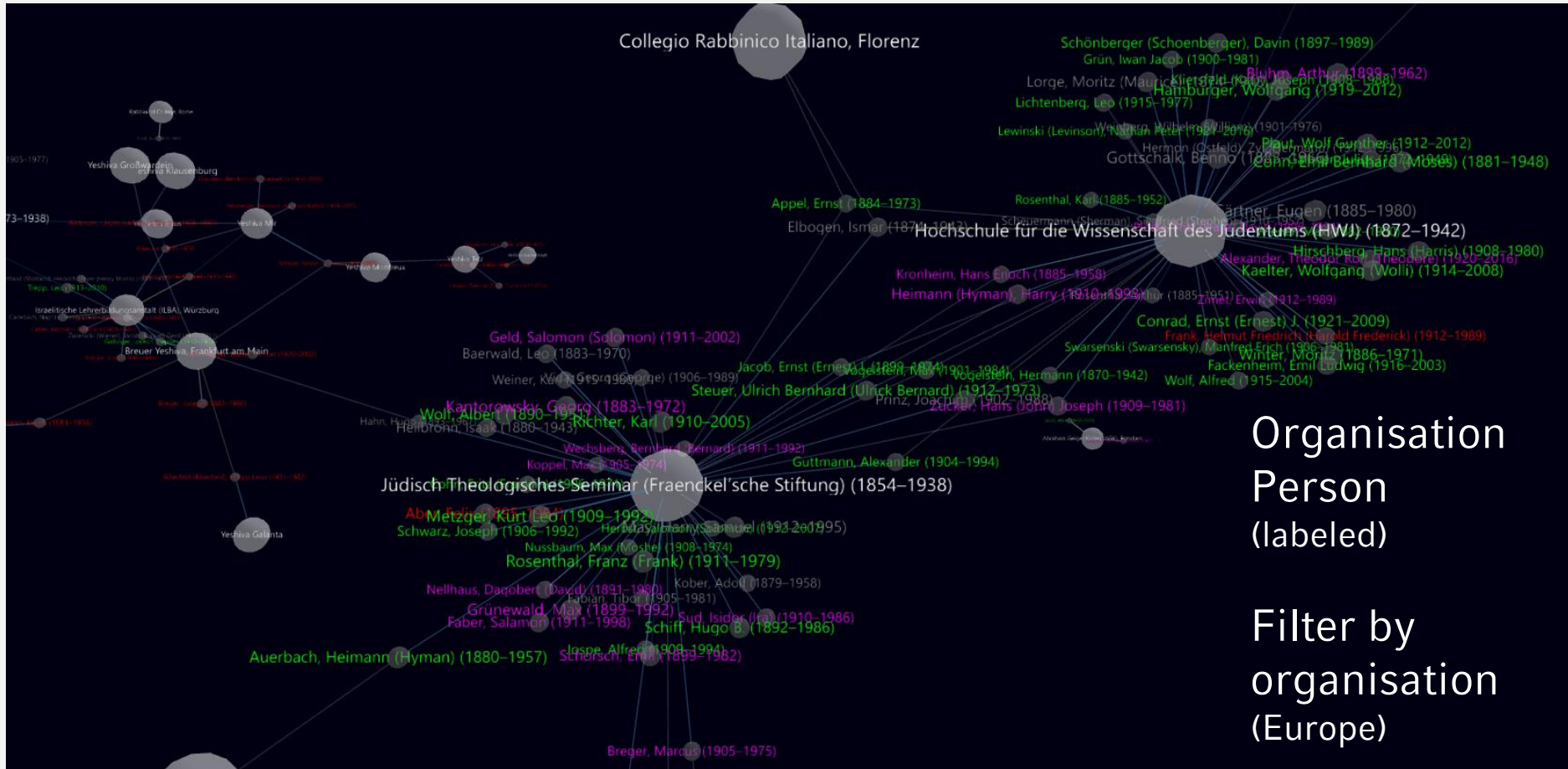
Organisation
Person
(labeled)

Filter by
organisation
(Europe)

Color Code: (religous movement) **R-eform** **O-rthodox** **C-onservative** **O-thers**

Webportal mira.geschichte.lmu.de: Graphs (labeled, colored)

Organisation
Person
(labeled)

Filter by
organisation
(USA)

Graph visualization with filter options and timeline

Orthodox
Conservative
Reform

☑ Education
☑ Occupation

← Filter options

Orthodoxes Rabbinerseminar zu Berlin (1873–1938)

Altmann, Alexander (1906–1987)

Ner Israel Rabbinical College, Baltimore

Yeshiva Pressburg

Schorsch, Ismar (1935–)

Neuberger, Hermann (Herman) Naftoli (1918–2005)

Jewish Theological Seminary of America (JTS), New York City, NY

Yeshiva Mir

Weiss, Samson Raphael (1910–1990)

Mesivta Yeshiva, Warsaw

Beth Yehuda Yeshiva, Detroit, MI

Heschel, Abraham Joshua (1907–1972)

Ner Israel Yeshiva, Baltimore, MD

Etz Chaim Yeshiva, London

Israelitische Lehrerbildungsanstalt (ILBA), Würzburg

Ansbacher (Asher), Joseph (1921–1990)   Hochschule für die Wissenschaft des Judentums (HWJ) (1872–1942)

Kaelter, Wolfgang (Wolli) (1914–2008)

Schaalmann (Schaalman), Hermann (Herman) Ezra (1916–2017)   Jüdisch Theologisches Seminar (Fraenckel'sche Stiftung) (1854–1938)

Jospe, Alfred (1909–1994)

Plaut, Wolf Gunther (1912–2012)

Hebrew Union College (HUC), Cincinnati   Hebrew Union College (HUC), New York

Rika Breuer Teachers Seminary, Yeshiva Rabbi Samson Raphael Hirsch (YRSRH)

Elias, Joseph (1919–2014)

Nussbaum, Max (Moshe) (1908–1974)

Jewish Institute of Religion (JIR), New York

Breuer, Joseph (1882–1980)   Breuer Yeshiva, Frankfurt am Main

Jacob, Walter (1930–2024)   Gottschalk, Alfred (1930–2009)

Yeshiva Rabbi Samson Raphael Hirsch (YRSRH)

Hebrew Union College (HUC), Los Angeles, CA

Yeshiva Slobodka

Munk, Michael Levin (1905–1984)

Friedler, Nathan (1921–1997)

Abraham Geiger Kolleg (AGK), Potsdam

Yeshiva University (YU)

Yeshiva Tyrnau

Feldmann (Feldman), Leon Aryeh (1921–2008)

Timeline (1951) →

Rabbi Isaac Elchanan Theological Seminary (RIETS), New York City, NY

1951

Graph visualization with filter options and timeline

Highlighting of institutions
and relationships to persons

Timeline (1971)

Quantitative evaluation: Combination of a set of criteria

Number of affiliation
to organizations?
Type of occupation?

AnzOrgUSA (education, degree, occupation, membership)

AnzOrgEUR (education, degree, occupation, membership)
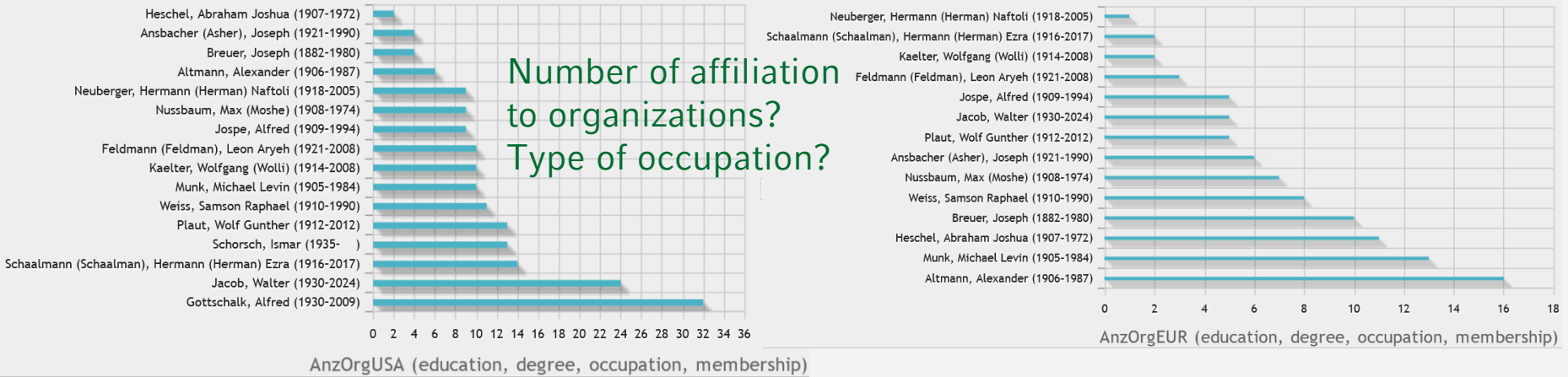
How to measure importance and influence of a person?

Number of publications?
Number of Citations (unknown)?

Ranking?
Possibility space?
Approximate values?

Anz_Pub
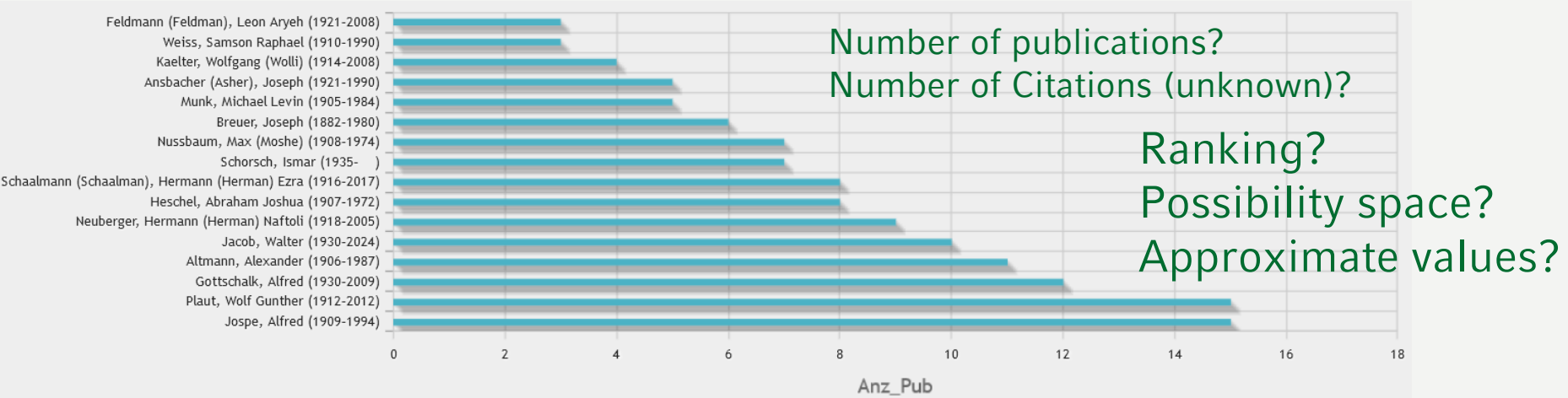
Computation of teacher-student relationship?

| Poss_Teacher	Organisation	Beginn	Ende	Anzahl ▼ 1	Poss_Student
Rosenthal, Franz Wilhelm (1914–2003)	Hebrew Union College (HUC), Cincinnati	1940	1948	11	Lorge, Ernst Mordecai (1916–1990) [1942] Schaalmann (Schaalman), Hermann (Herman) Ezra (1916–2017) [1941] Habermann (Haberman), Joshua Oscar (1919–2017) [1945] Wolf, Alfred (1915–2004) [1941] Lorge, Ernst Mordecai (1916–1990) [1942] Schwarzschild, Steven Samuel (1924–1989) [1948] Conrad, Ernst (Ernest) J. (1921–2009) [1947] Wolf, Alfred (1915–2004) [1941] Lewinski (Levinson), Nathan Peter (1921–2016) [1948] Schwarzschild, Steven Samuel (1924–1989) [1948] Conrad, Ernst (Ernest) J. (1921–2009) [1947]
Sperber, Alexander (1897–1970)	Jewish Theological Seminary of America (JTS), New York City, NY	1938	1970	10	Leipziger, Michael Hermann (1937–) [1964] Szobel, Sigmund (1908–1989) [1939] Landau, Sol (1920–2004) [1954] Szobel, Sigmund (1908–1989) [1942] Geld, Salomon (Solomon) (1911–2002) [1939] Schorsch, Ismar (1935–) [1962] Nadelmann, Ludwig (1928–1986) [1955] Szobel, Sigmund (1908–1989) [1942] Schorsch, Ismar (1935–) [1962] Klappholz, Kurt (1913–1975) [1938]
Wiener, Max (1882–1950)	Hochschule für die Wissenschaft des Judentums (HWJ) (1872–1942)	1934	1939	8	Heschel, Abraham Joshua (1907–1972) [1934-07] Zimet, Erwin (1912–1989) [1938] Weinberg, Wilhelm (William) (1901–1976) [1935] Fackenheim, Emil Ludwig (1916–2003) [1939] Wolf, Alfred (1915–2004) [1935] Plotke, Fritz (Frank) David (1906–1994) [1936-02-05] Conrad, Ernst (Ernest) J. (1921–2009) [1938] Weinberg, Wilhelm (William) (1901–1976) [1938-08]
Guttmann, Alexander (1904–1994)	Hochschule für die Wissenschaft des Judentums (HWJ) (1872–1942)	1935	1940	5	Fackenheim, Emil Ludwig (1916–2003) [1939] Weinberg, Wilhelm (William) (1901–1976) [1938-08] Conrad, Ernst (Ernest) J. (1921–2009) [1938] Plotke, Fritz (Frank) David (1906–1994) [1936-02-05] Zimet, Erwin (1912–1989) [1938]

Students [year of degree]

Teacher at   between   and

Possibility space
Approximate values
Limitation of result set

No autonomous decision

How can sustainability of research software and data be achieved?
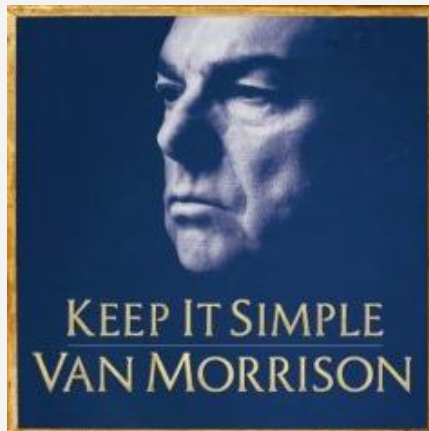
„Keep it simple"

„Be FAIR"

Sustainability of Research Software and Data:

- Database System: MySQL with GUI phpMyAdmin
- Development Environment: PHP, JavaScript + Libraries (3js)
- CMS: WordPress

- Comprehensive, multilevel data management by ITG
- File servers at Leibniz Supercomputing Centre
- Redundant database and webservers at ITG

- Research data management services at ITG and UB LMU
- Research data repositories and archives at UB LMU
  - OpenData LMU
  - UB Discover
  - UB Fedora: MIRA Digital Collection

Value and benefits of digital/computational methods

Collecting, structuring and modeling (large amounts) of data ✓

Classifying and (semi-)automatic annotating of data ✓

Geo- and time-referenced visualization ✓

Computation of data and visualization as heuristic method:

- Essential requirement: High data quality and transparency ?
- Statistical evaluation and visualization 👍
- Rule based computation with results that open up a possibility space (computational humanities) 👍

Didactic and heuristic value → improvement of data quality ✓

Sustainable research data management (FAIR) ✓

Thanks to

Prof. Dr. Cornelia Wilhelm
Tabea Henn, M.A.
Dr. Gerhard Schön
Dr. Florian Zacherl
Dr. Stephan Lücke
Kurt Stonus

Questions?

Contact:
riepl@lmu.de