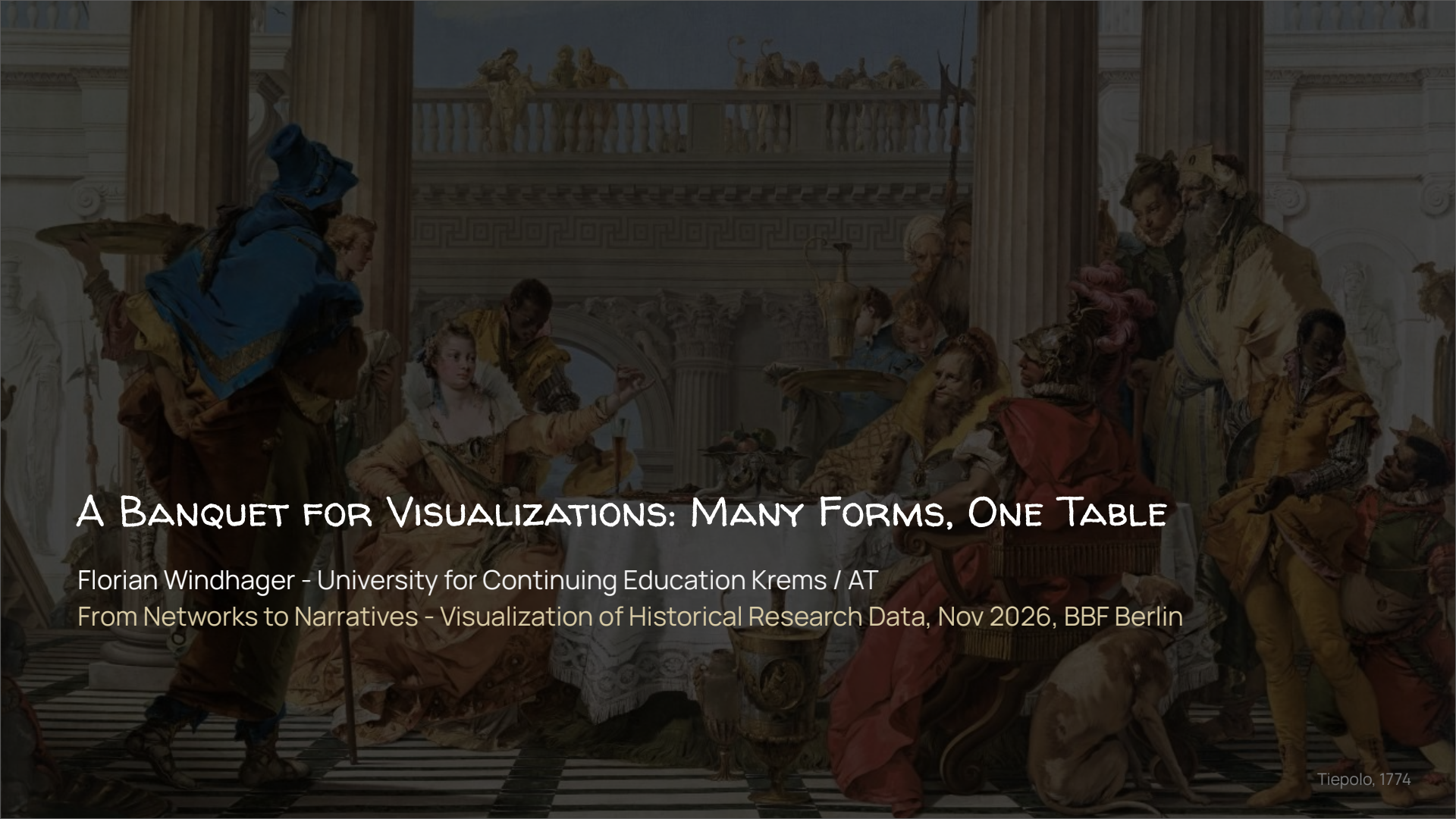


A Banquet for Visualizations: Many Forms, One Table

Florian Windhager - University for Continuing Education Krems / AT

From Networks to Narratives - Visualization of Historical Research Data, Nov 2026, BBF Berlin

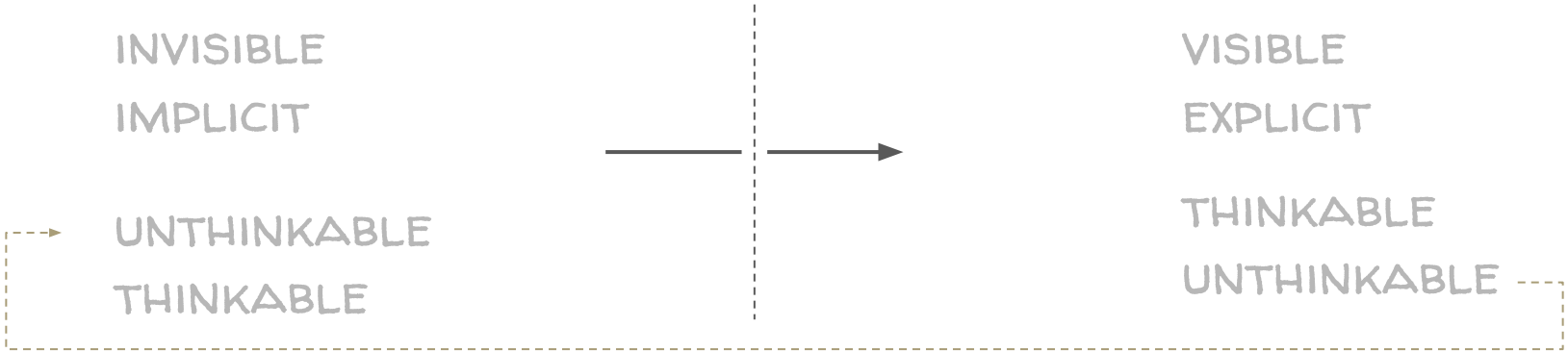
Tiepolo, 1774

Big Picture

The canon of historical data visualization has its holy triad: the *timeline*, the *network*, the *map* - while other forms wait in the wings. I will suggest a modest heresy by fusing them into a synoptic modeling scheme, *PolyCube*, open to narrative and exploratory modes of experience. As a facilitator for interfaith dialogue, this framework seeks to represent cultural and historical data without enforcing one single orthodoxy of form.

Q: Why is he bothering us with religious and/or culinary Metaphors?

- because some things are complex, real, and important - but *invisible* and hard to imagine
- in such cases we need *vehicles*, mediators, models, or in general: attempts to explicate - to bring things into a field of collective perception, reasoning, and critique
- things also can get worse, but we can work collectively on making our vehicles *less terrible*

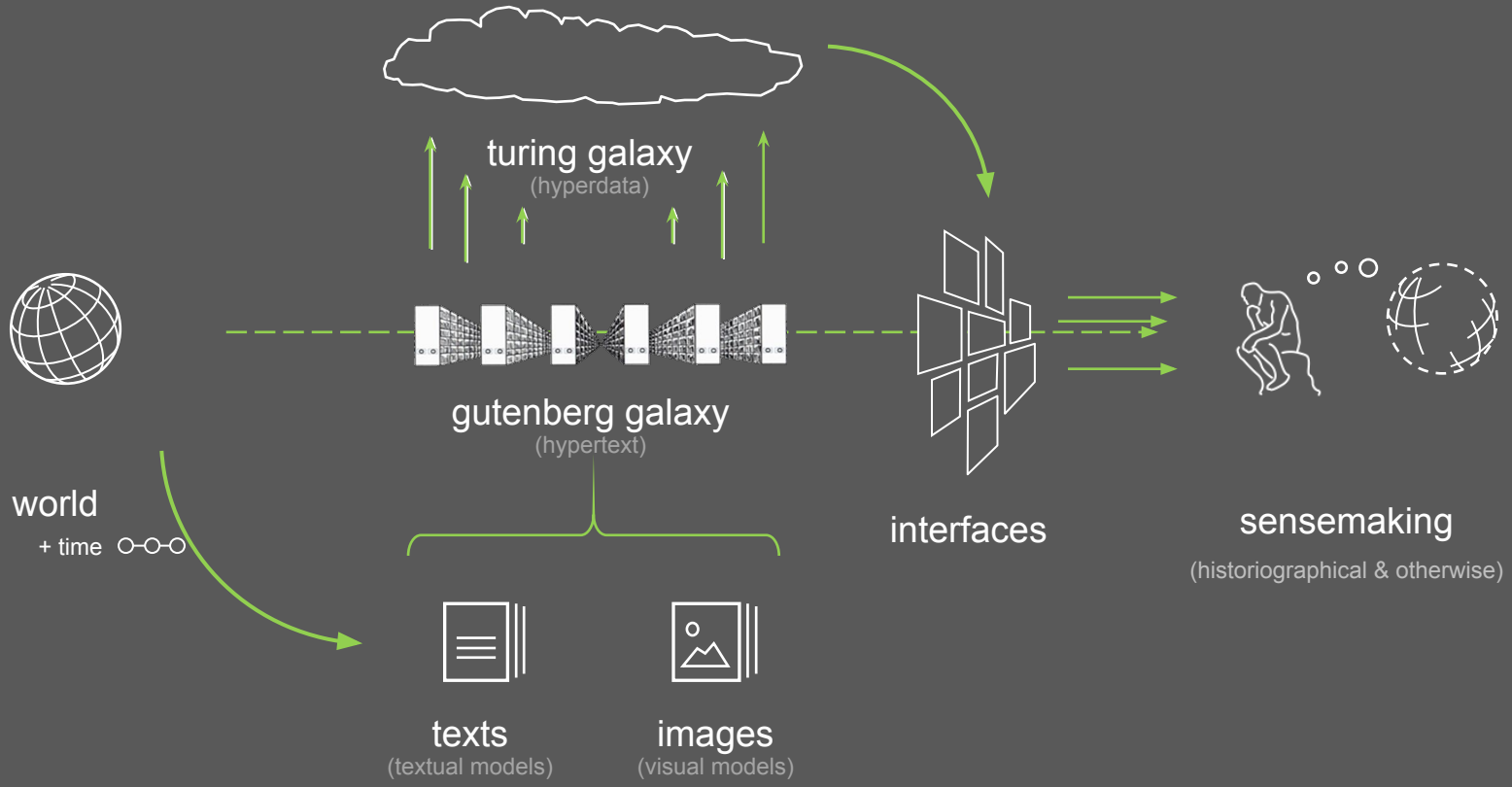


OK, what do we want to make less invisible today?

- history / historical data!
- innovative visualization methods
- my focus: plurality of methods and related cognitive challenges
- in search for: means to reconcile them
- my suggestion: the *polycube* framework
- from networks to narratives *(✓)*
- ***from reductionist (monomodal and mono-method) to rich representations***

INVISIBLE
IMPLICIT

VISIBLE
EXPLICIT


turing galaxy
(hyperdata)
gutenberg galaxy
(hypertext)
world
+ time
texts
(textual models)
images
(visual models)
interfaces
sensemaking
(historiographical & otherwise)

*The **past** itself is not a narrative. In its entirety, it is as chaotic, uncoordinated, and **complex** as life. History is about making sense of that mess, finding or creating patterns and meanings and stories from the maelstrom.*

Arnold, 2000

*[Systems theory] defines complexity as the moment when it is not possible anymore for each element to relate at any moment with all the others. **Complexity forces [reduction, abstraction, and] selection**, what means contingency and risk.*

Neves & Neves., 2026

*Abstraction, etymologically meaning "to drag away, detach, or divert" (ref), is central to the field of information design. In the context of data visualisation, it refers to the process of selecting and representing chosen subjects of study or specific aspects of data, **while leaving others aside**.*

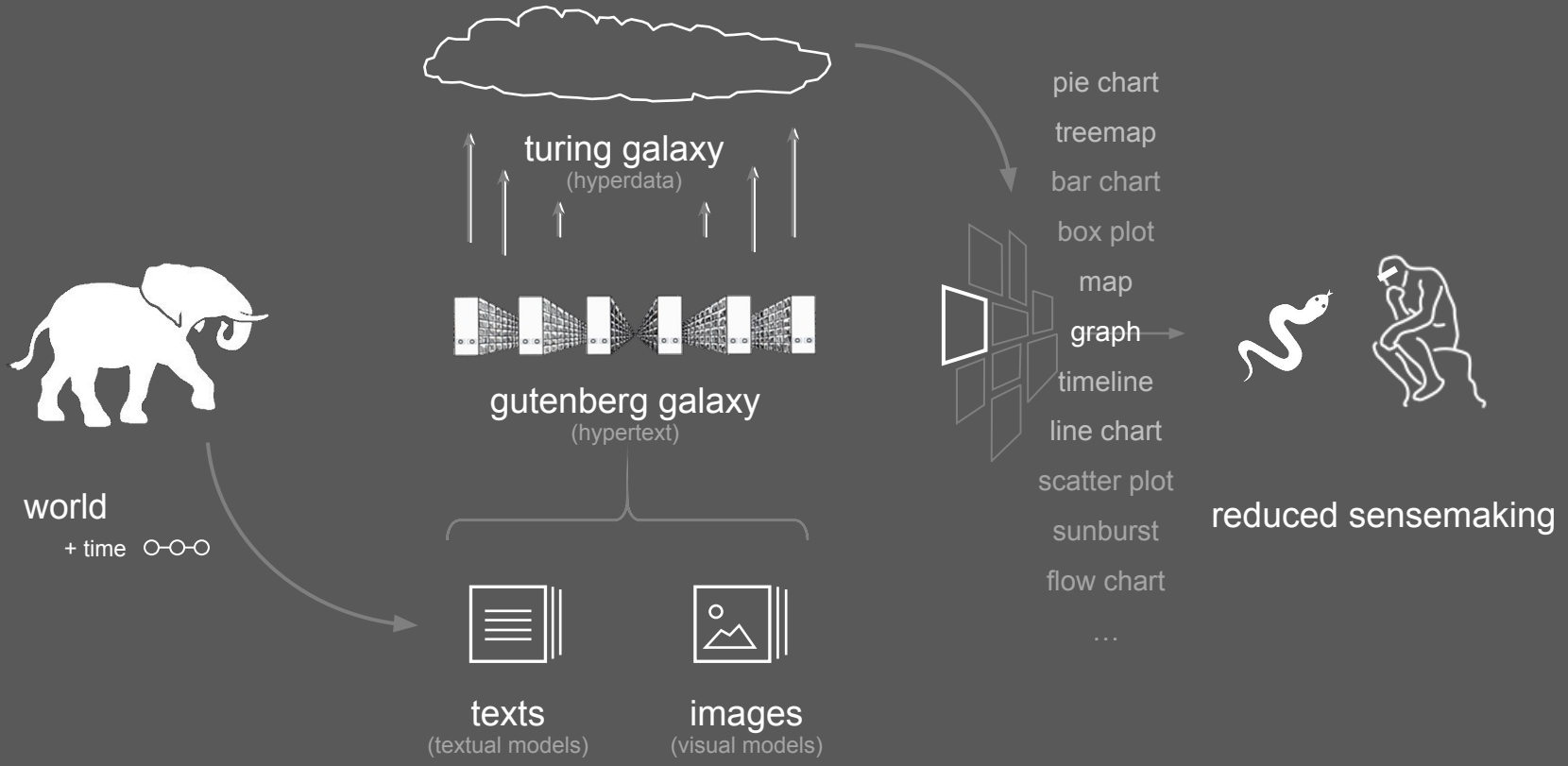
Ficozzi, Jacomy, et al., 2025

*Bei der Reduktion von Komplexität kann man immer nur zwischen **schrecklich und nicht ganz so schrecklich** wählen.*

Heinrichs & Sloterdijk, 2001

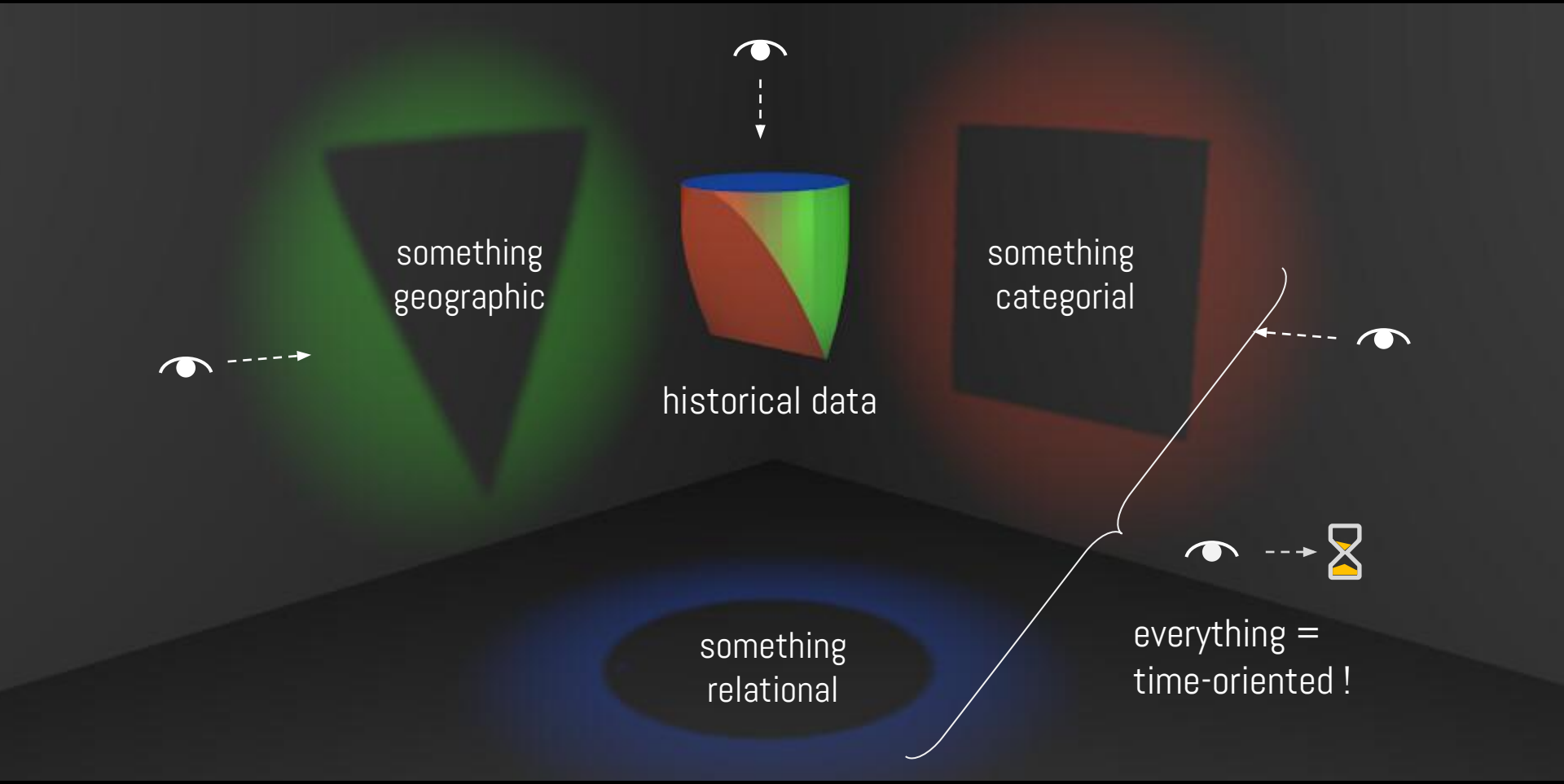
When reducing complexity, you can only ever choose between terrible and not quite so terrible.

OK, ONE LAST METAPHOR:



II. Against Visualization Reductionism

Image Source:
https://www.dailytravelphotos.com/archive/2009/04/17/


something
geographic
historical data
something
categorial
something
relational
everything =
time-oriented !

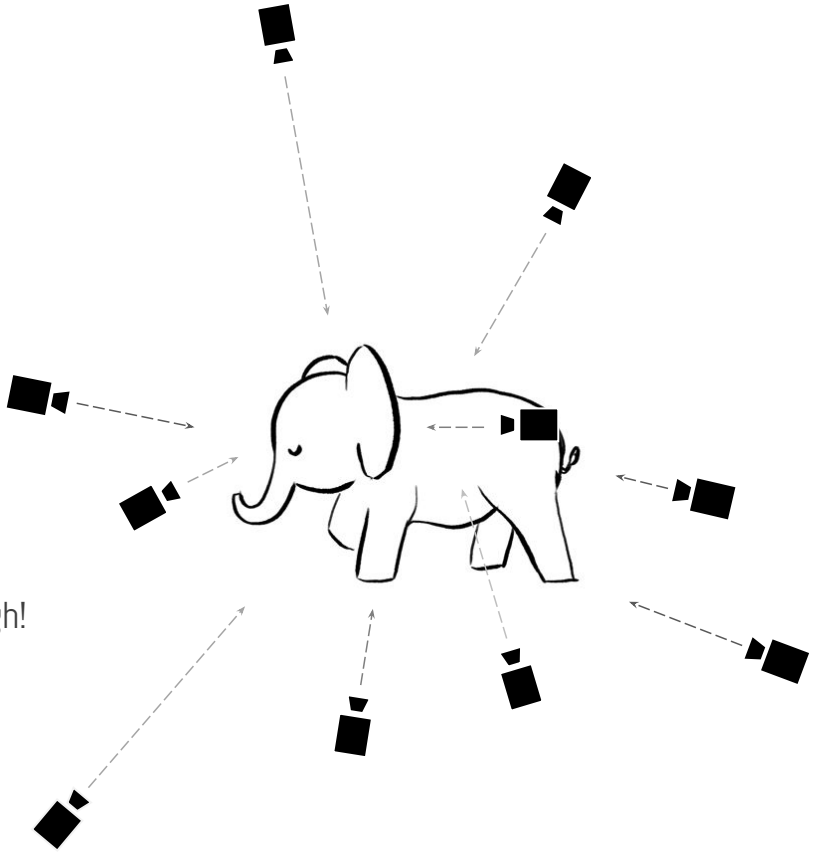
Zer-Aviv, M. (2016). If everything is a network, nothing is a network
https://visualisingadvocacy.org/node/739.html

Oftentimes, our subject matters are complex and entail relational aspects or characteristics.

□□ Let's model these phenomena as networks!

Visualization Zeitgeist,
early 21st century

Oftentimes, our subject matters are complex, i.e. their large number of heterogeneous parts are somehow connected, but also geographically embedded, hierarchically nested, chronologically ordered, partially categorized and quantified, causally interrelated, polysemic and polycontextual, conceptually and theoretically contested, as well as dynamic and evolving over time.

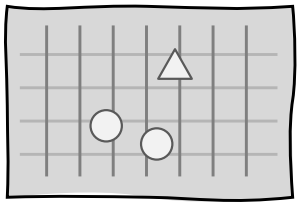


In face of such phenomena, one visualization method is not enough!

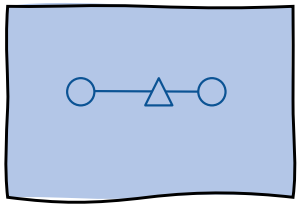
We have to draw together **multiple means** of representation and bring them into **productive combinations** !

Abstraction, etymologically meaning "to drag away, detach, or divert" (ref), is central to the field of information design. In the context of data visualisation, it refers to the process of selecting and representing chosen subjects of study or specific aspects of data, ***while leaving others aside****.*

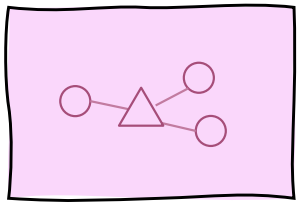
Ficozzi, Jacomy, et al., 2025



geo vis



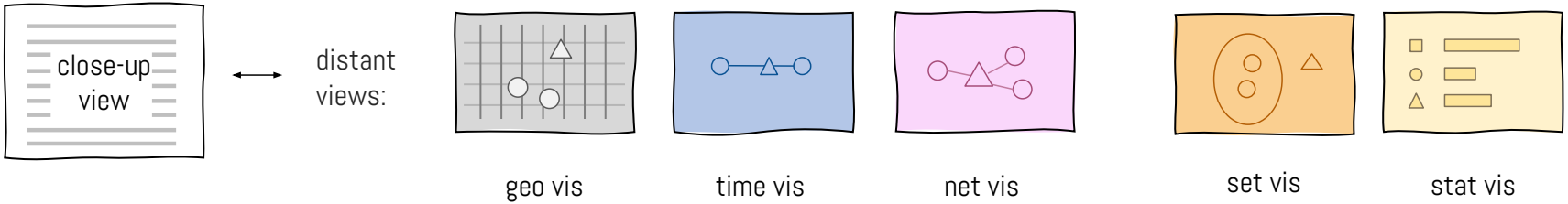
time vis



graph vis

The canon of historical data visualization has its holy triad: the map, the timeline, the network

Which distant views can support the study of biographies?



a) coord. timeline

b) animation

c) color-coding

d) data comics

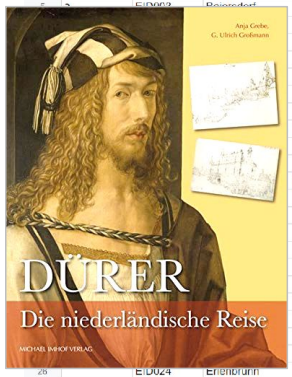
e) space-time cube

How to represent biographical time in all distant views?

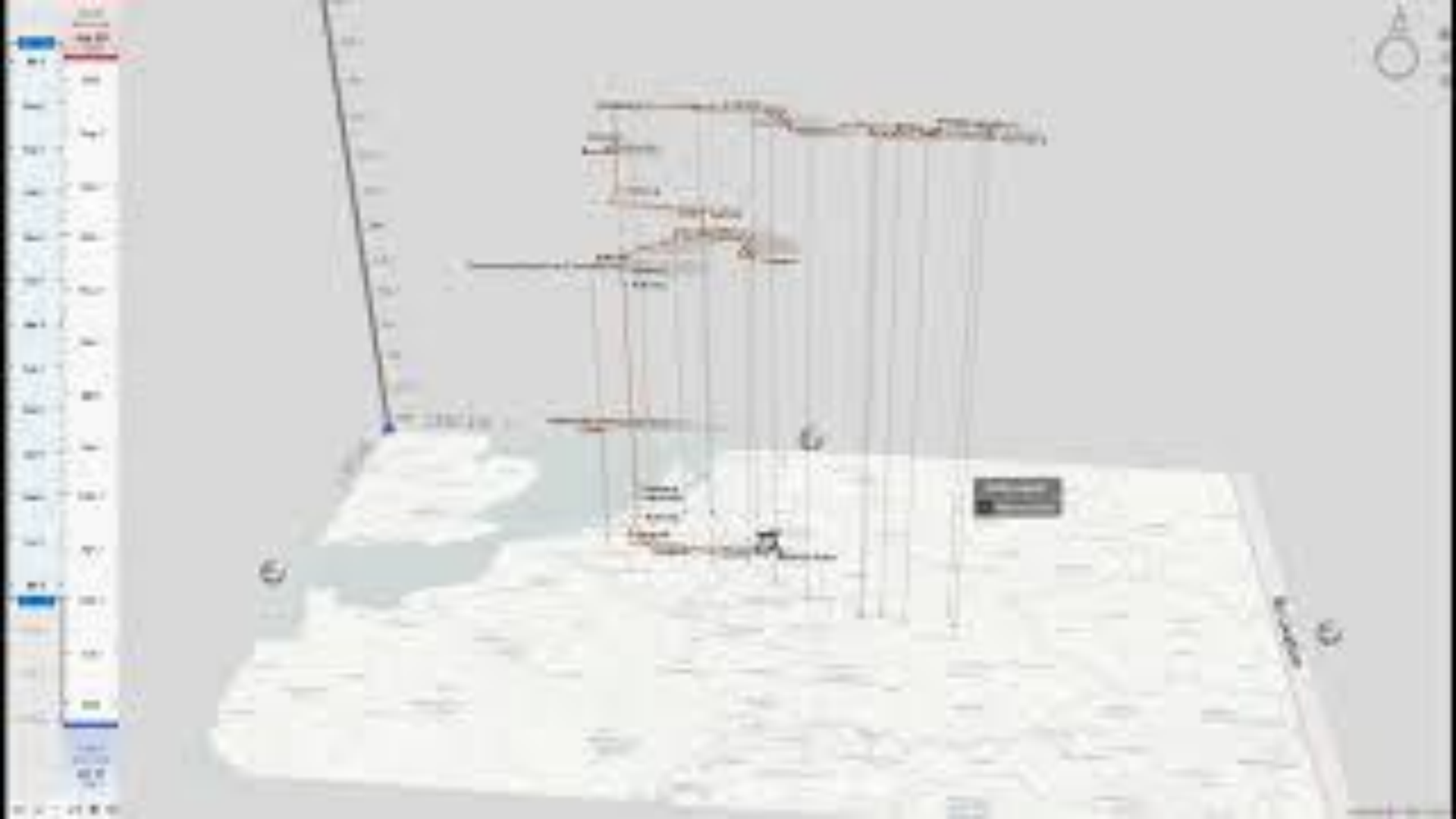
A Look at the Data: Manual annotation and extraction of journey events from the "Journey to the Netherlands"

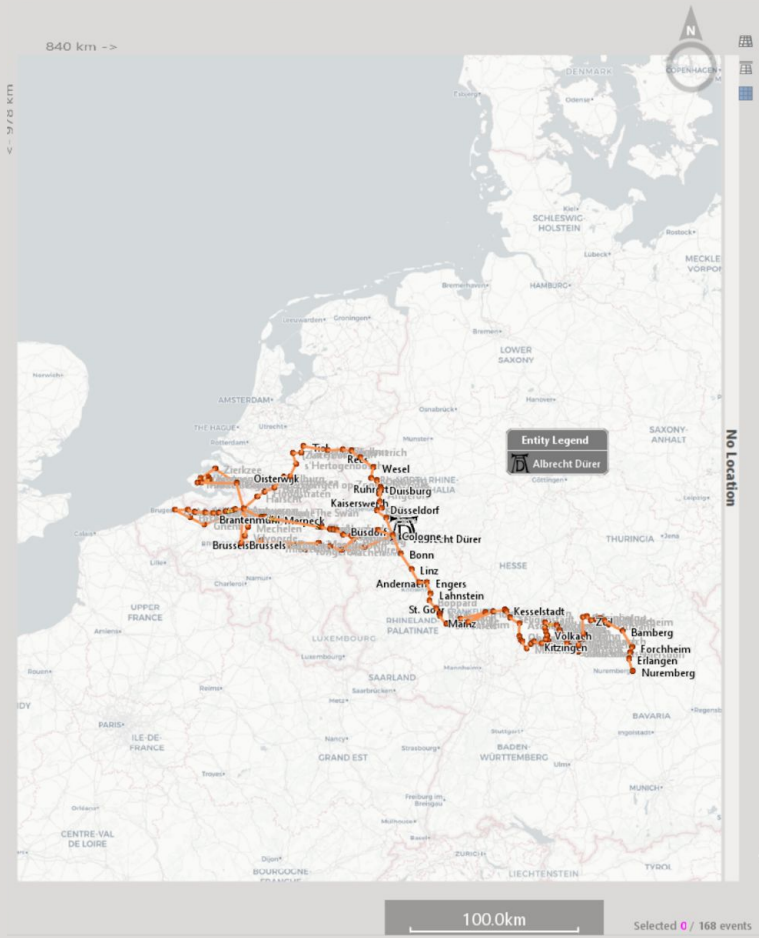
Dürer Niederländische Reise 1520/21 (Juli 1520 – August 1521)

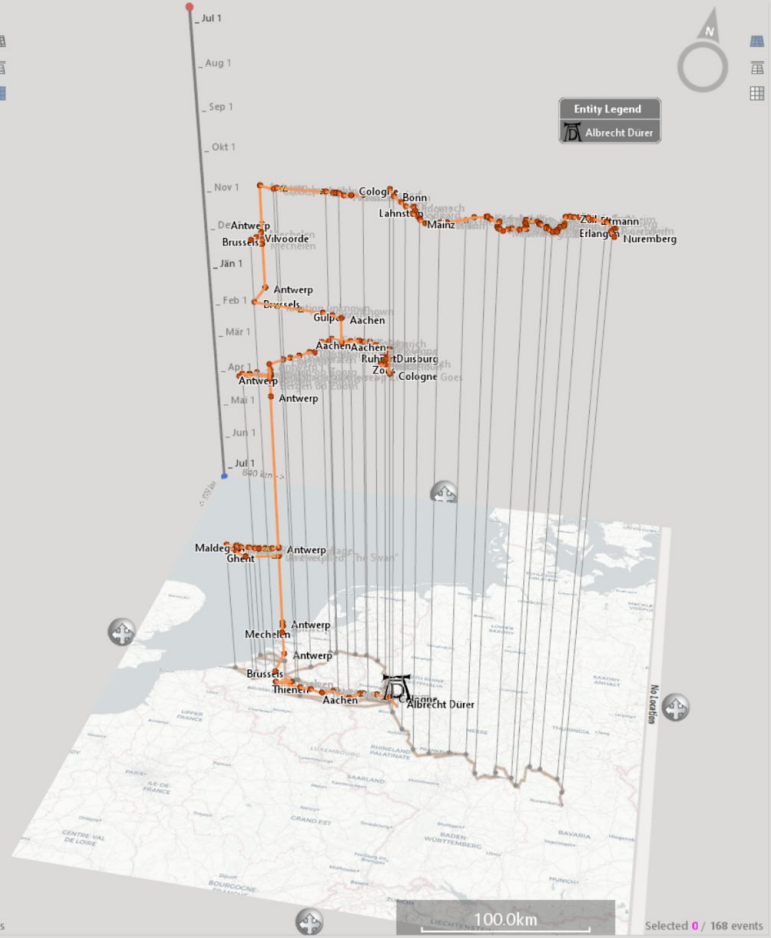
Slide ID	Event ID	Place Name *	Place Comment	Lat	Lon	Baselayer Notes	Event Start * YYYY-MM-DD	Date Comment	Event End	Event Description *	Linked Objects *	Linked Persons
1	EID001	Nuremberg		49.4521018	11.0766654		1520-07-12	Thursday morning		Departure from home by horse carriage with wife Agnes and maid Susanna		PID004
2	EID002	Erlangen		49.5896744	11.0119611		1520-07-12	midday				
				49.661089	11.0345826		1520-07-12	evening, overnight sta	1520-07-13	Dinner in Tavern		
				49.7188374	11.0679502		1520-07-13	Friday morning		hires escort to Bamberg		
				49.8988135	10.9027636		1520-07-13	afternoon, overnight st	1520-07-14	visits Bishop of Bamberg in his episc	OID001	PID001
				49.9673521	10.8635056		1520-07-14	Saturday morning		continues journey by boat (Main river), toll station		
			Zeil am Reihn	50.011546	10.5922117		1520-07-14	morning				
				50.0371575	10.5151523		1520-07-14	midday				
			"Theres Kloster"	50.0232513	10.4478964		1520-07-14	afternoon		toll station		
			"Rein"	50.0127319	10.3562007		1520-07-14	evening, overnight sta	1520-07-15			
				50.0586856	10.2698428		1520-07-15	Sunday morning		toll station		
				50.0492047	10.2194228		1520-07-15	midday		toll station, invited by a Doktor Rebart, who gives him wine to drink in the ship, buys a grilled chicken		
				49.8839895	10.2309327		1520-07-15	afternoon		toll station		
			Schwarz	49.8056839	10.2292557		1520-07-15	evening overnight stay	1520-07-16			
				49.8037832	10.165725		1520-07-16	Monday morning				
				49.7340805	10.1473777		1520-07-16					
				49.7074086	10.1300955		1520-07-16					
				49.6664618	10.142098		1520-07-16			toll station		
				49.6710163	10.0862845		1520-07-16					
				49.6640025	10.0709014		1520-07-16					
				49.7255609	10.0014362		1520-07-16					
				49.7626094	9.943696		1520-07-16					
				49.7913044	9.9533548		1520-07-16					
	EID024	Erlenbrunn		49.8580258	9.8435268		1520-07-16	overnight stay	1520-			
	EID025	Retzbach		49.9047223	9.8217594		1520-07-17	Tuesday				
	EID026	Zellingen		49.8974807	9.816277		1520-07-17					
	EID027	Karlstadt		49.9604785	9.7734603		1520-07-17					
	EID028	Hochstätt					1520-07-17					
	EID029	Lohr	Lohr am Main	49.9892207	9.5722309		1520-07-17					
	EID030	Neuenstadt	Neustadt am Main	49.930843	9.5706809		1520-07-17					
	EID031	Rothenfels		49.8929338	9.5859552		1520-07-17	overnight stay	1520-			
	EID032	Heidenfeld	Marktheidenfeld	49.8454938	9.6088146		1520-07-18	Wednesday				
	EID033	Triffenstein		49.8000272	9.58533		1520-07-18					
	EID034	Homburg		49.793323	9.625462		1520-07-18					
	EID035	Wertheim		49.7586035	9.5128511		1520-07-18					
	EID036	Protzelten		49.7802347	9.3820446		1520-07-18			toll station		
	EID037	Freudenberg		49.7540767	9.3266483		1520-07-18			toll station		
	EID038	Miltenberg		49.7019294	9.2559213		1520-07-18	overnight stay	1520-07-19	toll station		
	EID039	Klingenberg		49.7805714	9.1830957		1520-07-19	Thursday		toll station		
	EID040	Wördt		49.795558	9.1547301		1520-07-19					
	EID041	Obernburg		49.8381779	9.1323585		1520-07-19					



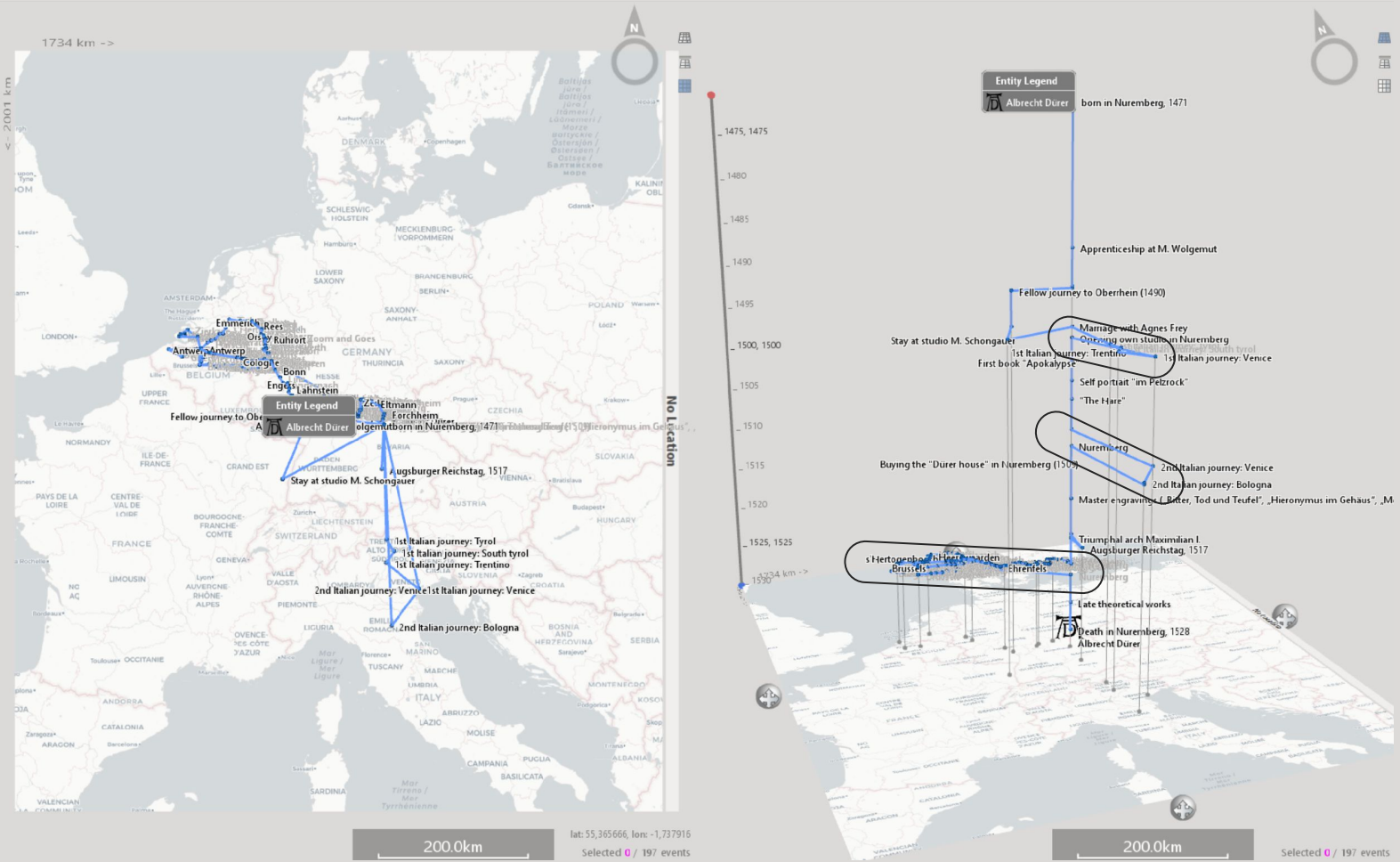
GeoTime®







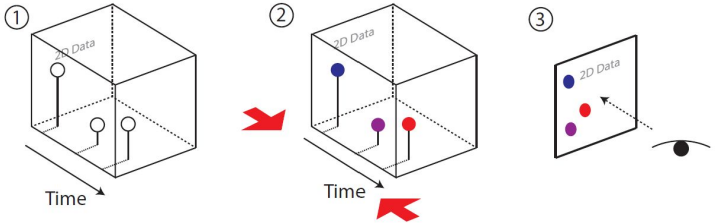
Software: GeoTime


1734 km ->
Entity Legend
Albrecht Dürer
Emmerich
Rees
Orsoy
Ruhrort
Antwerp
Cologne
Bonn
Engers
Lahnstein
Zell-Eltmann
Forchheim
Fellow journey to Oberrhein (1490)
Stay at studio M. Schongauer
Augsburger Reichstag, 1517
1st Italian journey: Tyrol
1st Italian journey: South tyrol
1st Italian journey: Trentino
2nd Italian journey: Venice
1st Italian journey: Venice
2nd Italian journey: Bologna
No Location
200.0km
lat: 55,365666, lon: -1,737916
Selected 0 / 197 events
Entity Legend
Albrecht Dürer
born in Nuremberg, 1471
1475, 1475
1480
1485
1490
1495
1500, 1500
1505
1510
1515
1520
1525, 1525
1530
Apprenticeship at M. Wolgemut
Fellow journey to Oberrhein (1490)
Stay at studio M. Schongauer
Marriage with Agnes Frey
Opening own studio in Nuremberg
1st Italian journey: Trentino
1st Italian journey: Venice
First book "Apokalypse"
Self portrait "im Pelzrock"
"The Hare"
Nuremberg
Buying the "Dürer house" in Nuremberg (1509)
2nd Italian journey: Venice
2nd Italian journey: Bologna
Triumphal arch Maximilian I.
Augsburger Reichstag, 1517
Brussels
Ehrenfels
Late theoretical works
Death in Nuremberg, 1528
Albrecht Dürer
1734 km ->
200.0km
Selected 0 / 197 events

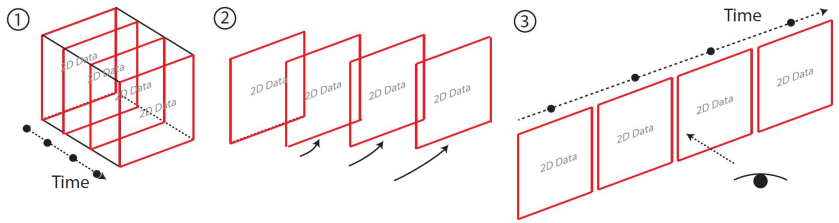
Ceci n'est
pas de la 3D!

https://aviz.fr/~bbach/spacetimecubes/

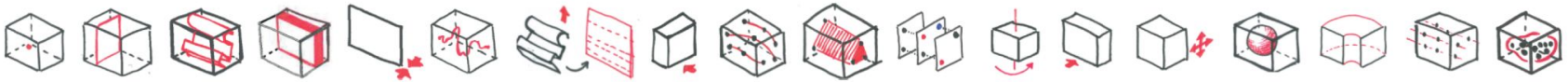
STC TRANSITIONS



"Colored Time Flattening Operation"



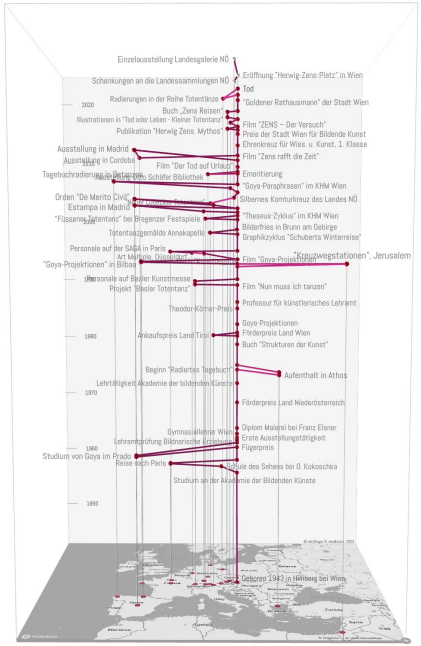
"Time Juxtaposing Operation"



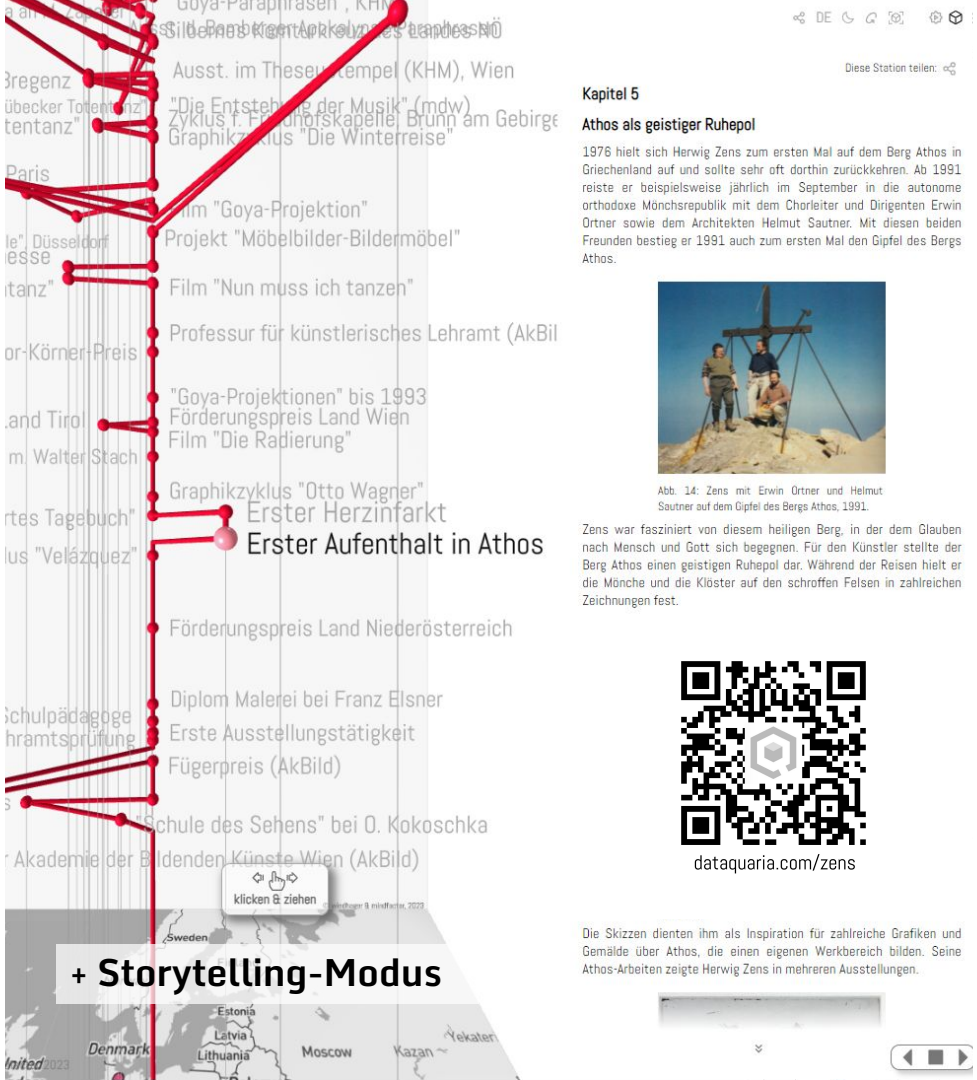
Bach et al., 2016

From Space-Time Maps to Narratives

Software: dataquaria (M. Smuc & F. Windhager)
Data curation: V. Rühse & F. Windhager, Story: Viola Rühse

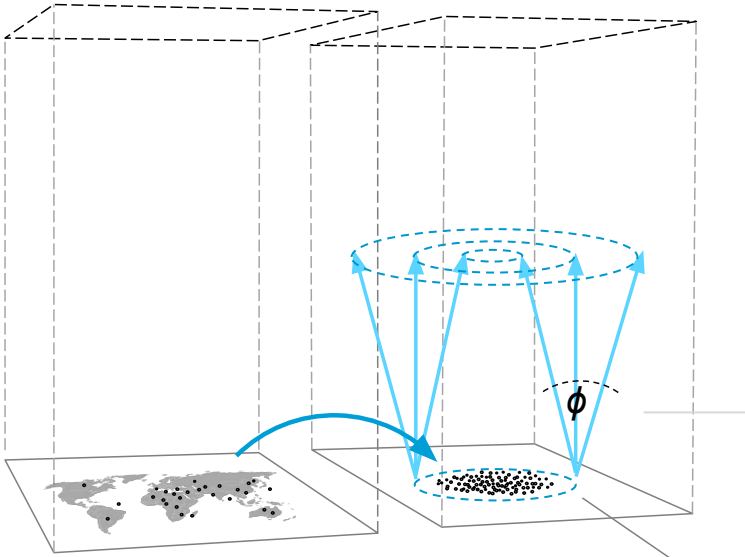


mindfactor
https://dataquaria.com/zens



III. Outlook

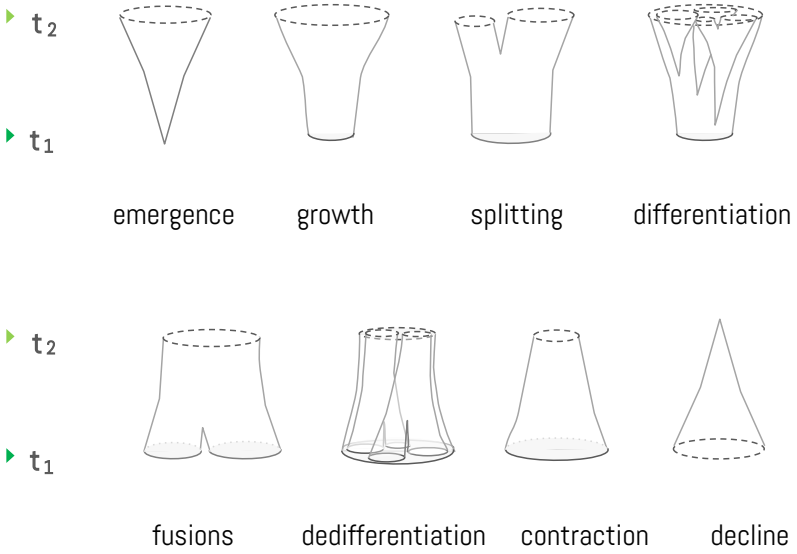
Linking Geographic & Non-geographic Maps



geo-temporal perspective

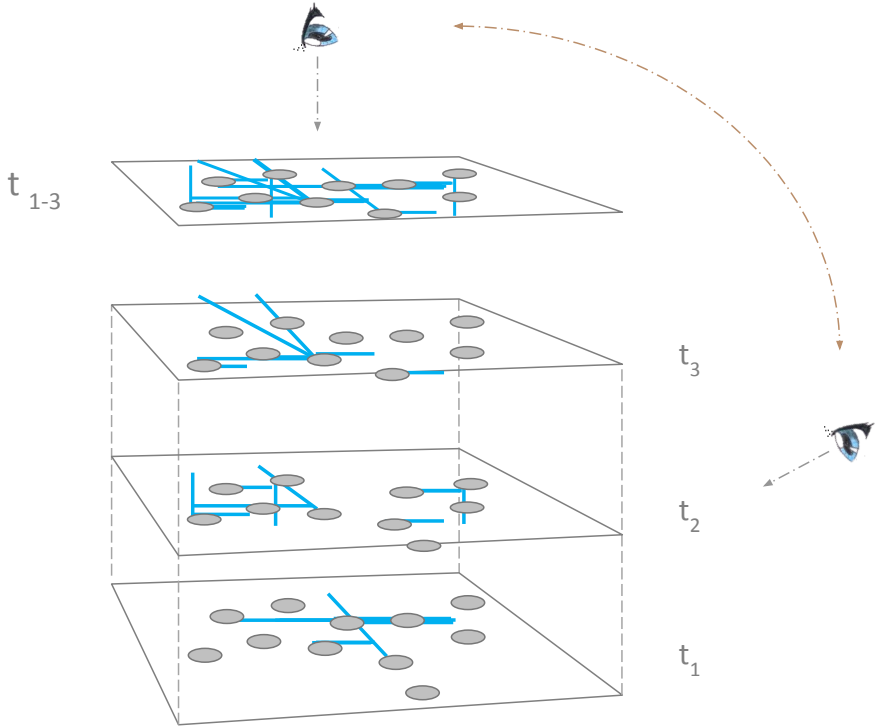
set-diagrammatic perspective

temporal evolution of ϕ :

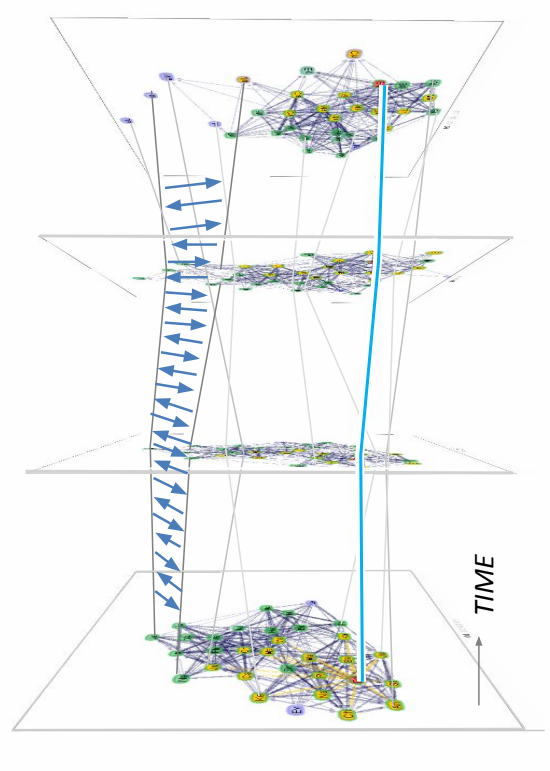


collective entity – such as groups, organizations, institutions, societies, schools, movements, parties, religions, opinions, ideas, ideologies, theories, customs, practices, memes, styles, genres, etc. – visualized with a set diagram

Linking Back to Networks

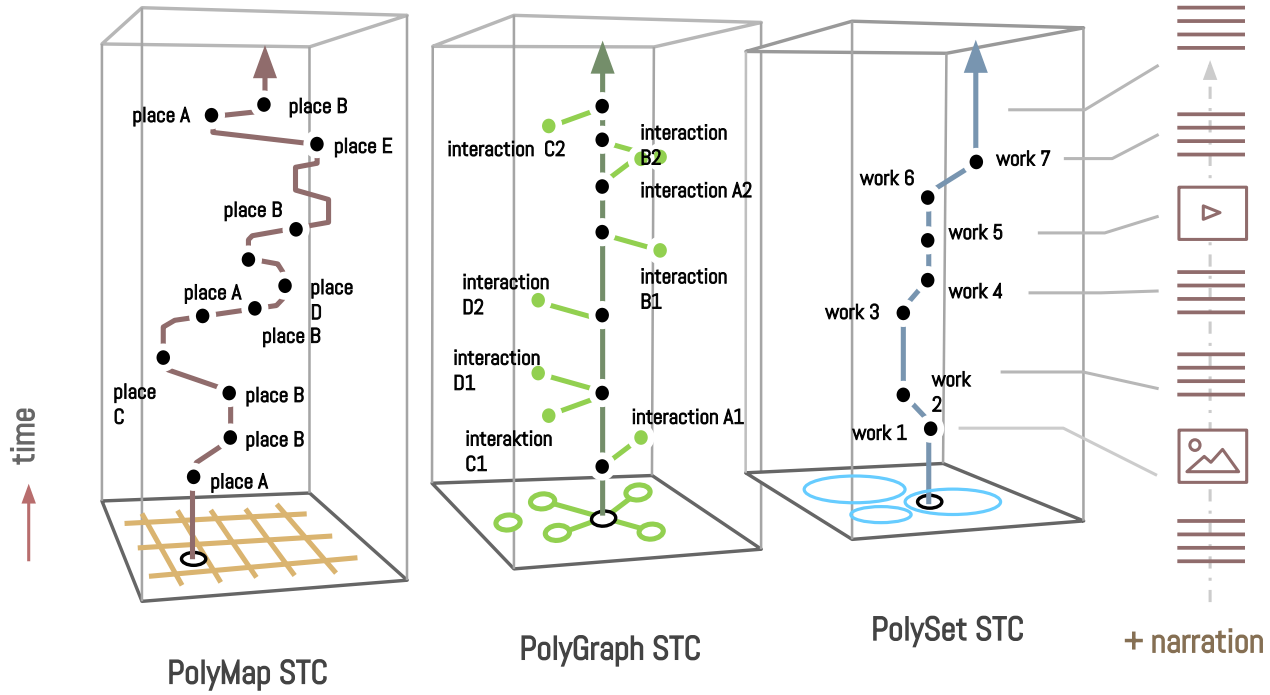


relational-temporal
history perspective

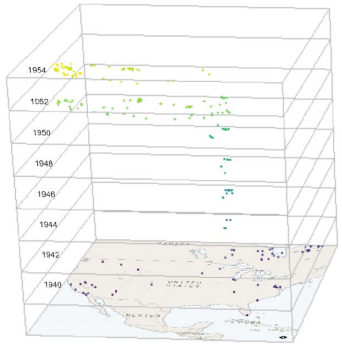


relational-temporal case study

The "Banquet View" for Biography & History Visualization



time axis

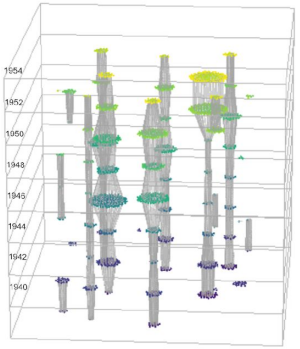


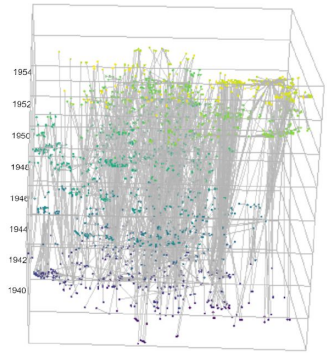
geo-temporal perspective

showing geo-temporal distribution of photographs

categorical-temporal perspective

showing categories of photographs over time

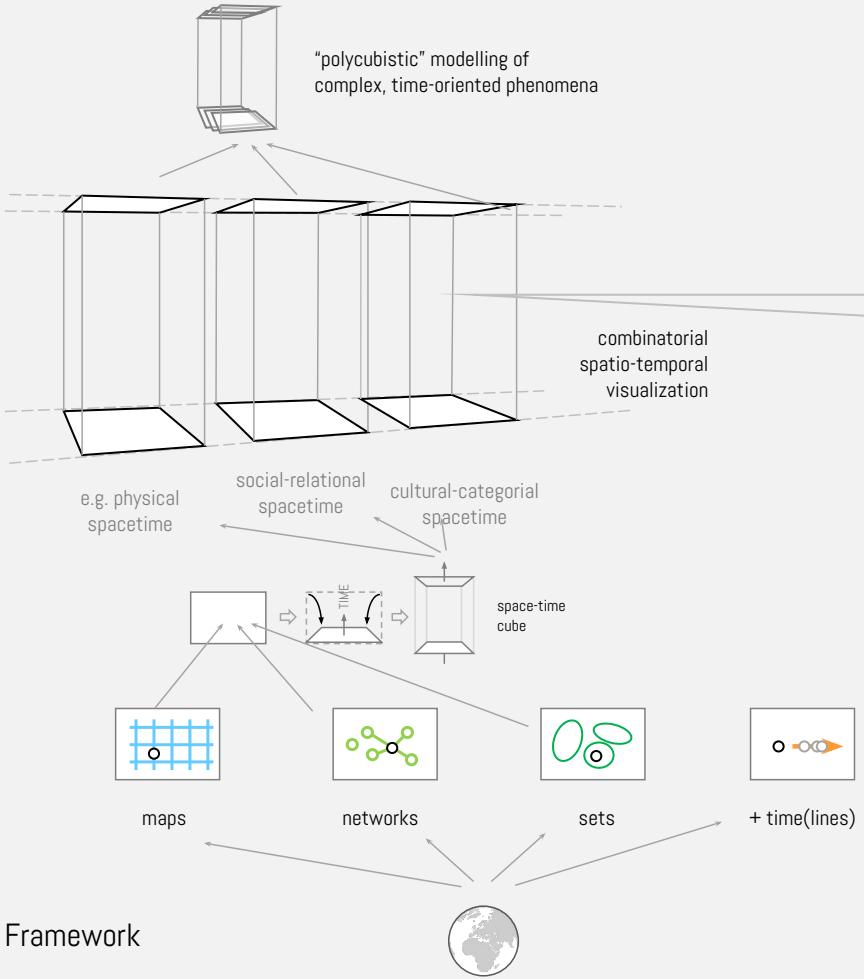




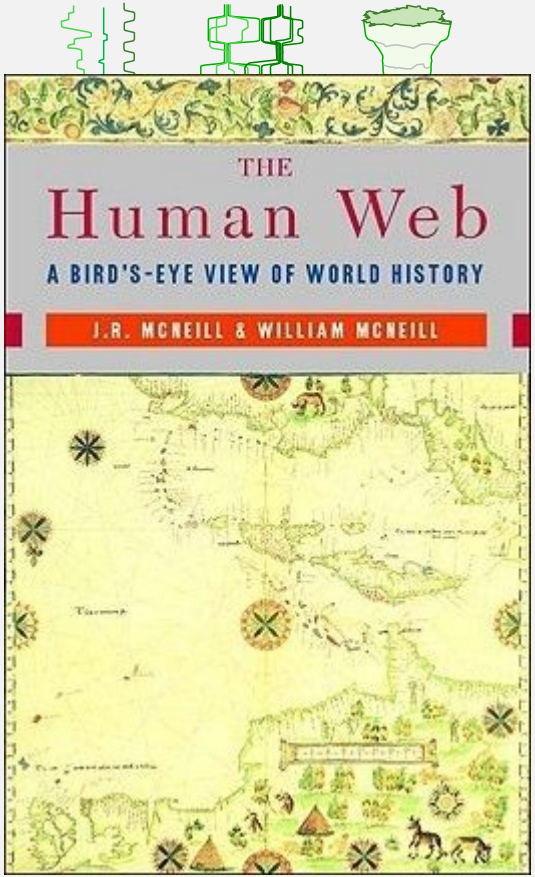
relational-temporal perspective

showing calculated similarity of photographs

Interactive Demo:
https://danubevislab.github.io/polycube/cga2020/



The PolyCube Framework



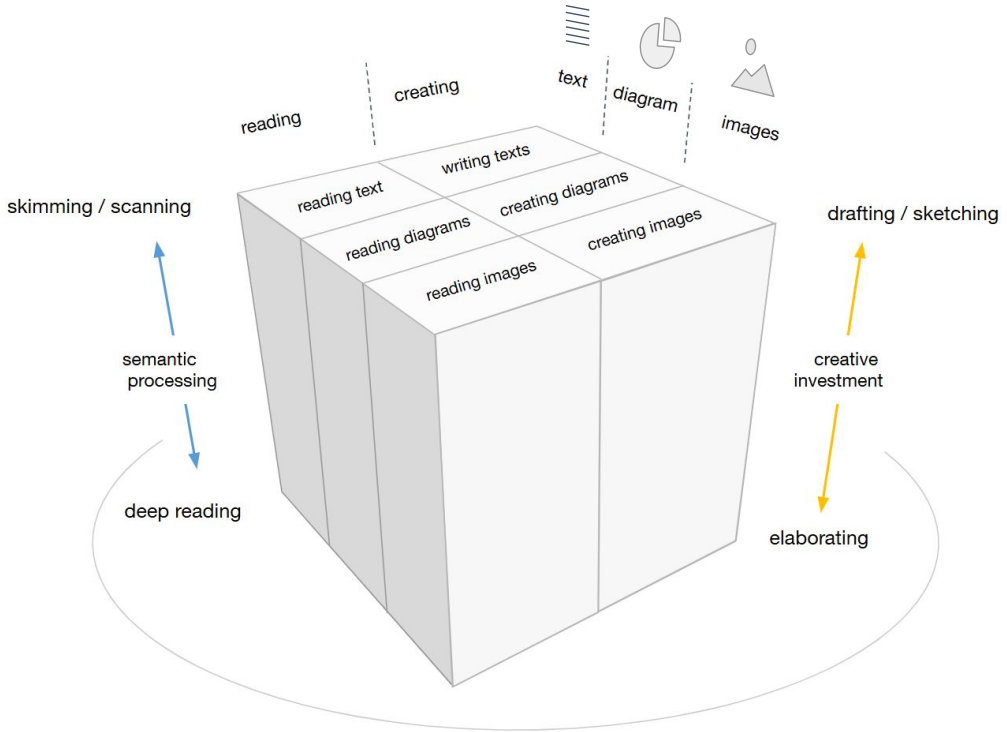
cluster evolution

cluster genealogy

cultural diversification

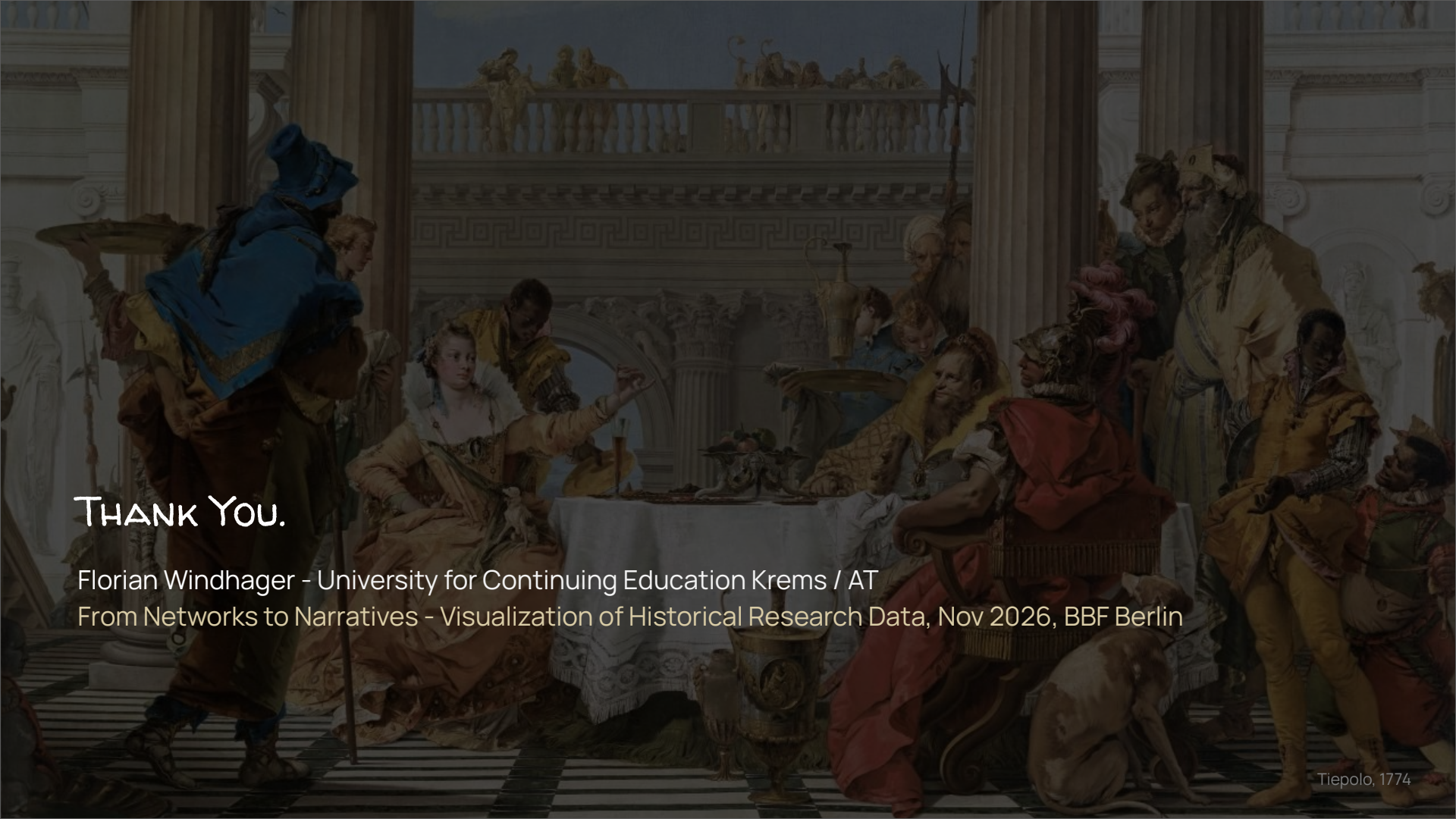
From reductionist (monomodal and mono-method) descriptions / depictions towards rich, synoptic representations of historical data

- Research prototypes (✓)
- Tools
- Production skills
- Critical literacies



cube of multimodal competencies

Freyberg, Wachter, & Windhager (forthcoming)



Thank You.

Florian Windhager - University for Continuing Education Krems / AT

From Networks to Narratives - Visualization of Historical Research Data, Nov 2026, BBF Berlin

Tiepolo, 1774