# Visualization of **Cultural Heritage Collection Data**

Florian Windhager

VIS for DH – Lecture No. 2

1. Complex cultural things – what's the issue?
2. Close Reading & Viewing
3. Distant Reading & Viewing
4. Multiple Views & Bridging the Gaps

a) Can we see topic X with our naked eyes?  b) Can we see it well enough?

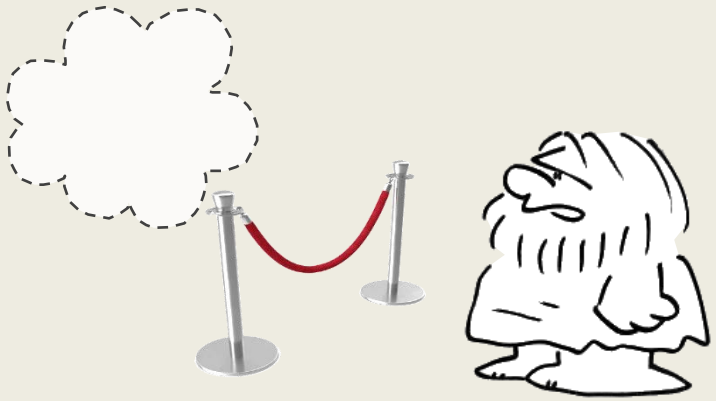
→ If not, we have a case for VIS.

What about

**cultural collections ?**

# 1. Complex Cultural Things - What's the Issue?

# Concepts of “Culture”



a) artful / aesthetic / unique / sacred things

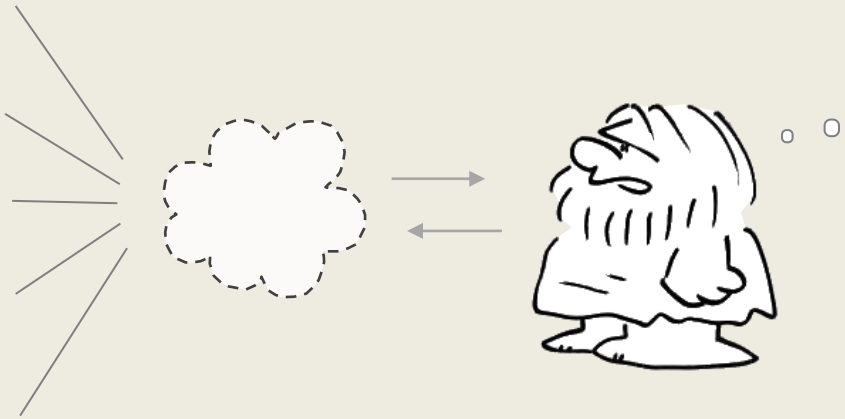
b) useful / practical / daily / mundane things

+ c) awful / unintended / discomforting things

# Challenges & Issues with Cultural Things

A quick data(1), user(2) & task(3) analysis

- **1. different types of „things“**
  - texts & intertexts
  - images
  - objects
  - music
  - movies
  - performances
  - customs & practices
  - etc.
- object **collections**, corpora, editions & aggregated collections



**2. different types of users**

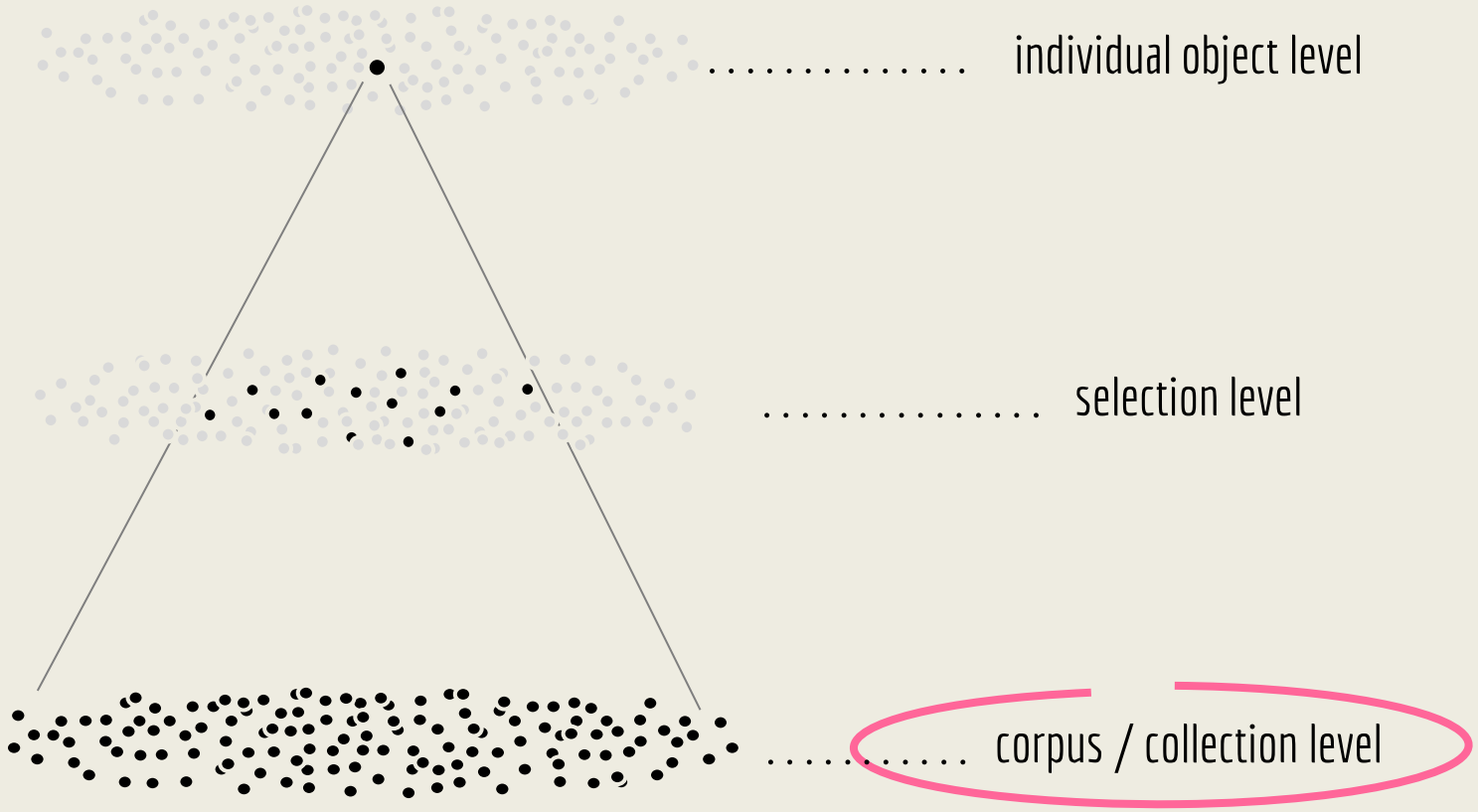
- experts
- „casual users“ (non-experts)

**3. different cognitive activities**

- to see / observe
- to remember
- to represent
- to mediate
- to *analyze*
- to enjoy / to savour
- to interpret
- to evaluate
- to contextualize
- *to understand*

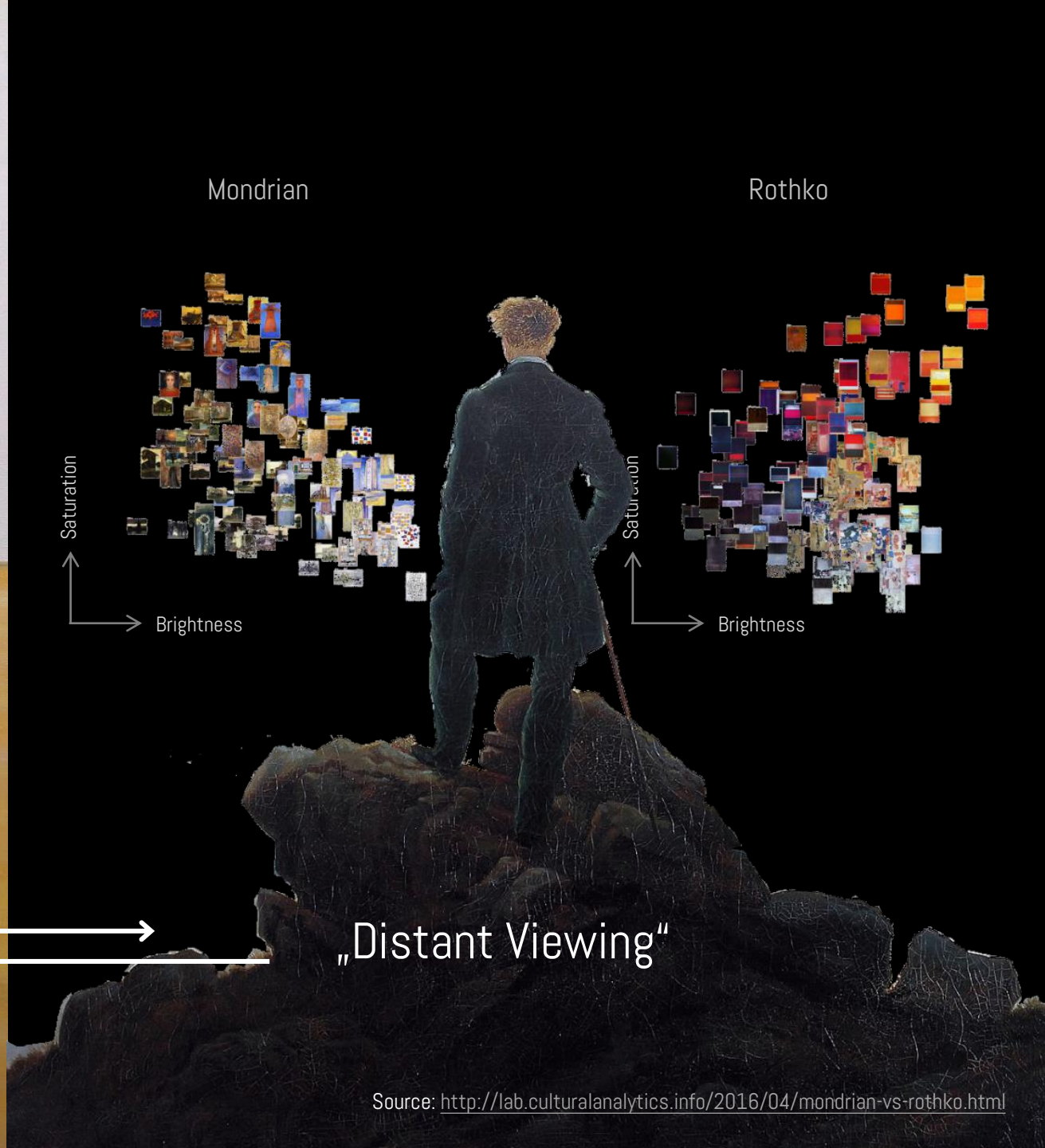
# The Challenge of Scale

- complex **cultural objects**
  - texts & intertexts
  - images
  - objects
  - music
  - movies
  - performances,
  - customs & practices
  - etc.
- object **collections**, corpora, editions & aggregated collections



„Close Viewing“

Source: Pat Whitehead In Monets' Garden



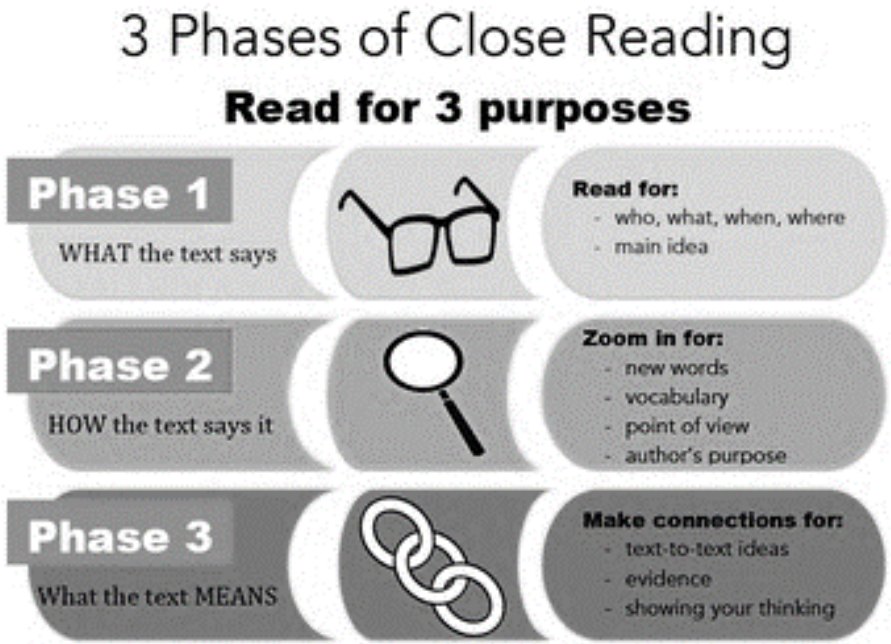

„Distant Viewing“

Source: http://lab.culturalanalytics.info/2016/04/mondrian-vs-rothko.html

- individual object level

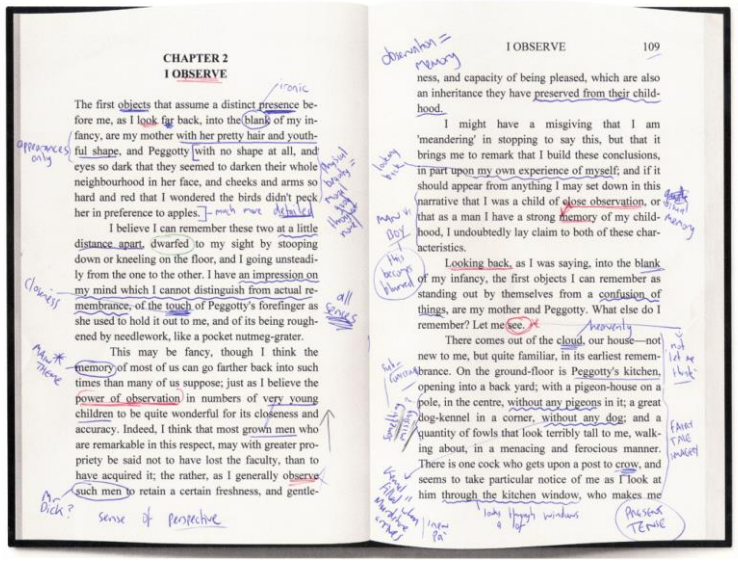
corpus / collection level

# 2.1 „Close Reading “




From „Close Reading Introduction Lessons“


From „Poster Close Reading“ (link)



CHAPTER 2
I OBSERVE

The first objects that assume a distinct presence before me, as I look far back, into the blank of my infancy, are my mother with her pretty hair and youthful shape, and Peggotty with no shape at all, and eyes so dark that they seemed to darken their whole neighbourhood in her face, and cheeks and arms so hard and red that I wondered the birds didn't peck her in preference to apples.

I believe I can remember these two at a little distance apart, dwarfed to my sight by stooping down or kneeling on the floor, and I going unsteadily from the one to the other. I have an impression on my mind which I cannot distinguish from actual remembrance, of the touch of Peggotty's forefinger as she used to hold it out to me, and of its being roughened by needlework, like a pocket nutmeg-grater.

This may be fancy, though I think the memory of most of us can go farther back into such times than many of us suppose; just as I believe the power of observation in numbers of very young children to be quite wonderful for its closeness and accuracy. Indeed, I think that most grown men who are remarkable in this respect, may with greater propriety be said not to have lost the faculty, than to have acquired it; the rather, as I generally observe such men to retain a certain freshness, and gentle-

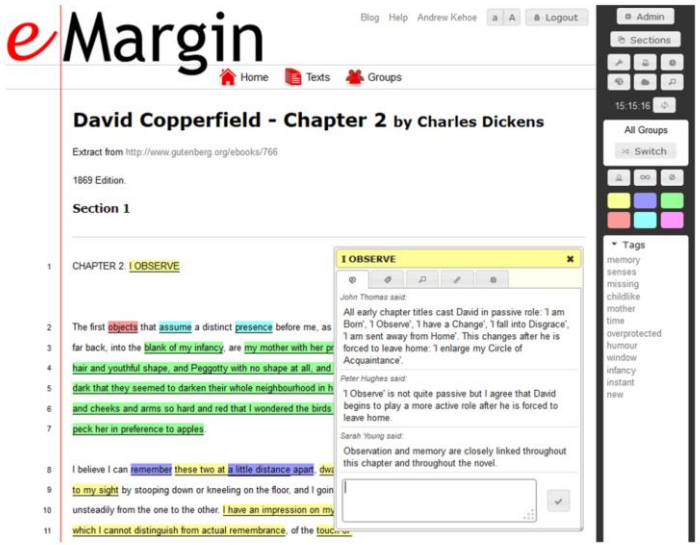


ness, and capacity of being pleased, which are also an inheritance they have preserved from their childhood.

I might have a misgiving that I am 'meandering' in stopping to say this, but that it brings me to remark that I build these conclusions, in part upon my own experience of myself; and if it should appear from anything I may set down in this narrative that I was a child of close observation, or that as a man I have a strong memory of my childhood, I undoubtedly lay claim to both of these characteristics.

Looking back, as I was saying, into the blank of my infancy, the first objects I can remember as standing out by themselves from a confusion of things, are my mother and Peggotty. What else do I remember? Let me see.

There comes out of the cloud, our house—not new to me, but quite familiar, in its earliest remembrance. On the ground-floor is Peggotty's kitchen, opening into a back yard; with a pigeon-house on a pole, in the centre, without any pigeons in it; a great dog-kennel in a corner, without any dog; and a quantity of fowls that look terribly tall to me, walking about, in a menacing and ferocious manner. There is one cock who gets upon a post to crow, and seems to take particular notice of me as I look at him through the kitchen window, who makes me




„Traditional Humanities“

TH practice of
annotation + visualization

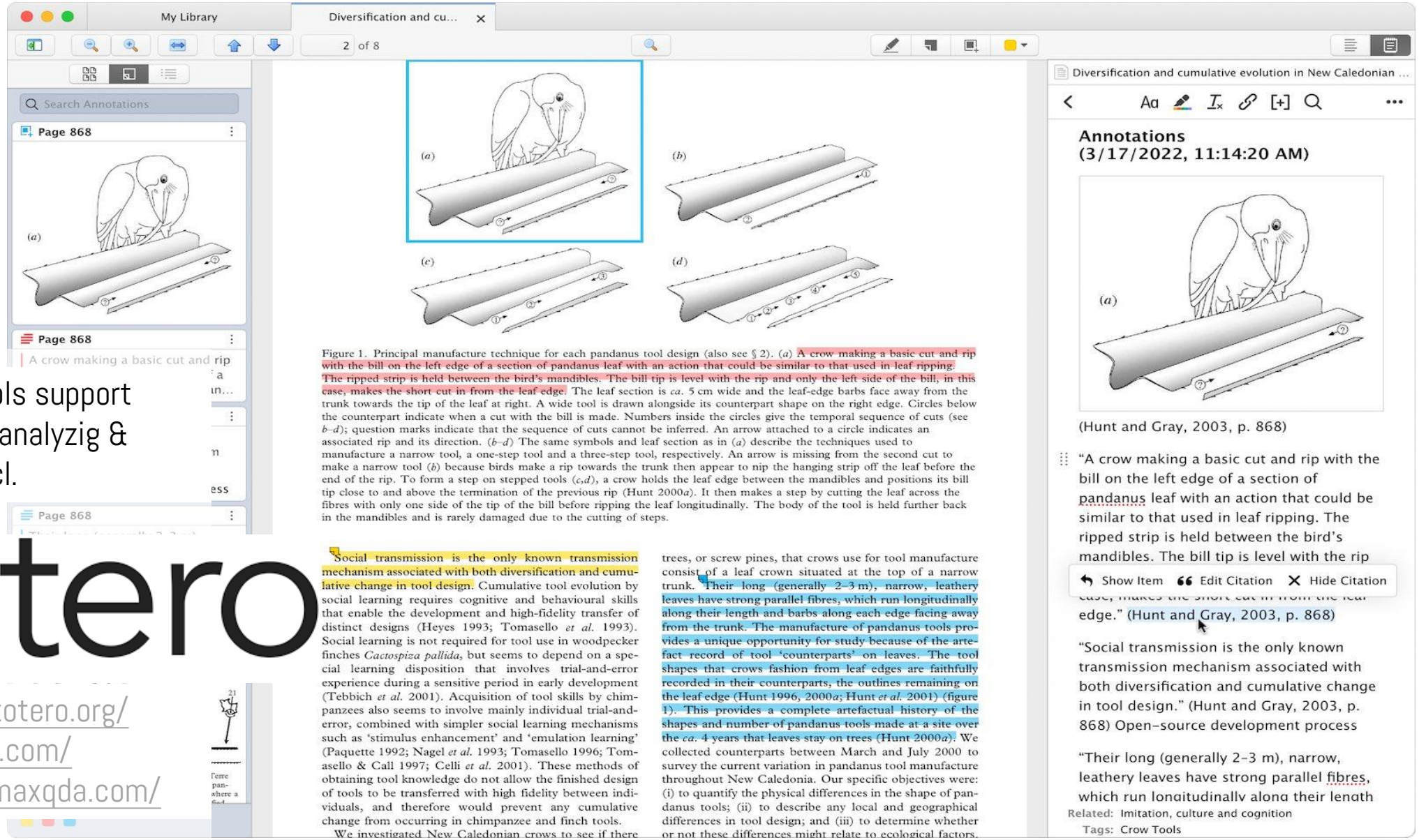
DH practice of
annotation / NLP + visualization

(Jänicke et al., 2017, link )

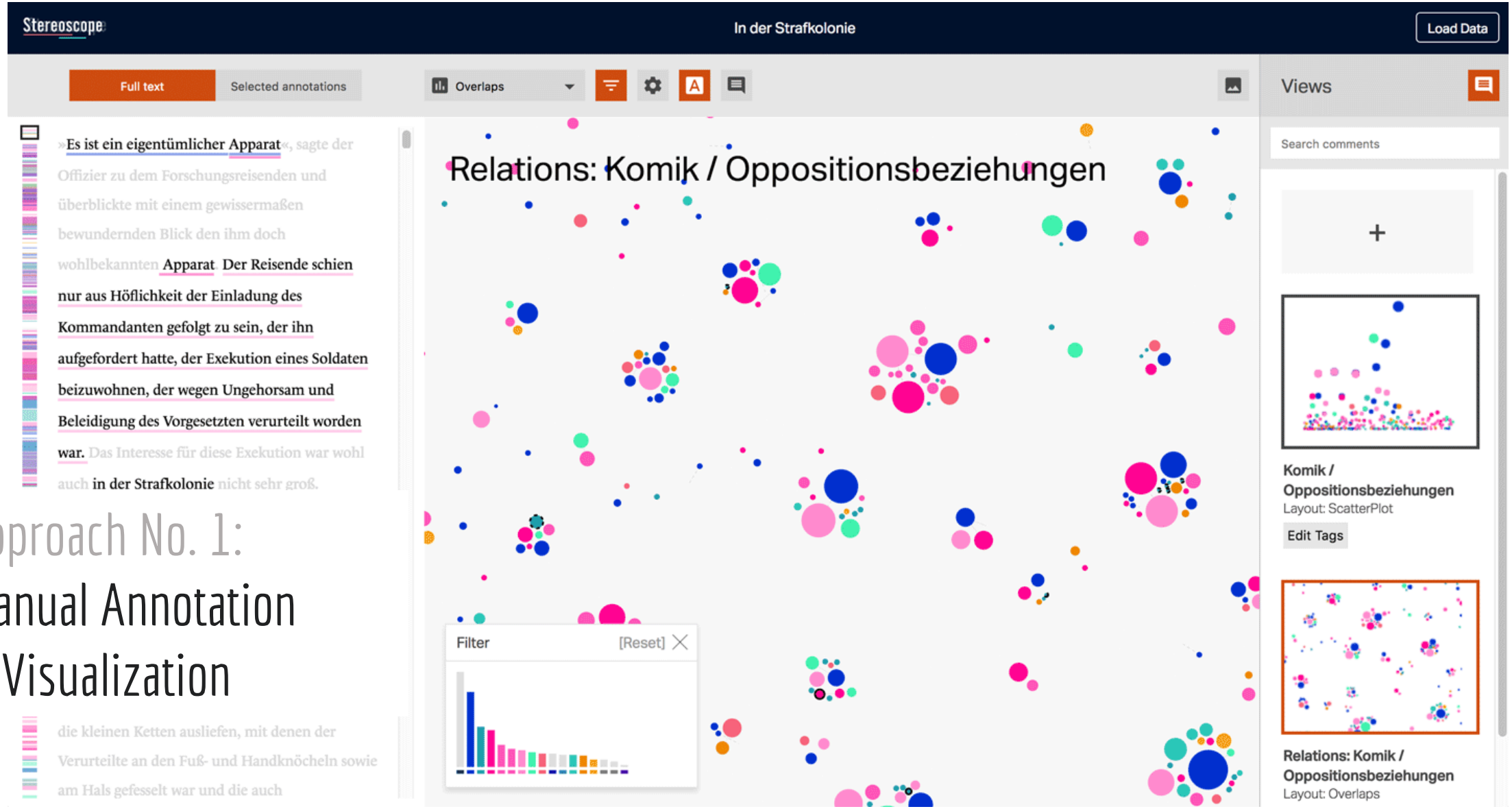
Many great tools support close reading, analyzig & annotating, incl.

zotero

https://www.zotero.org/
https://atlasti.com/
https://www.maxqda.com/

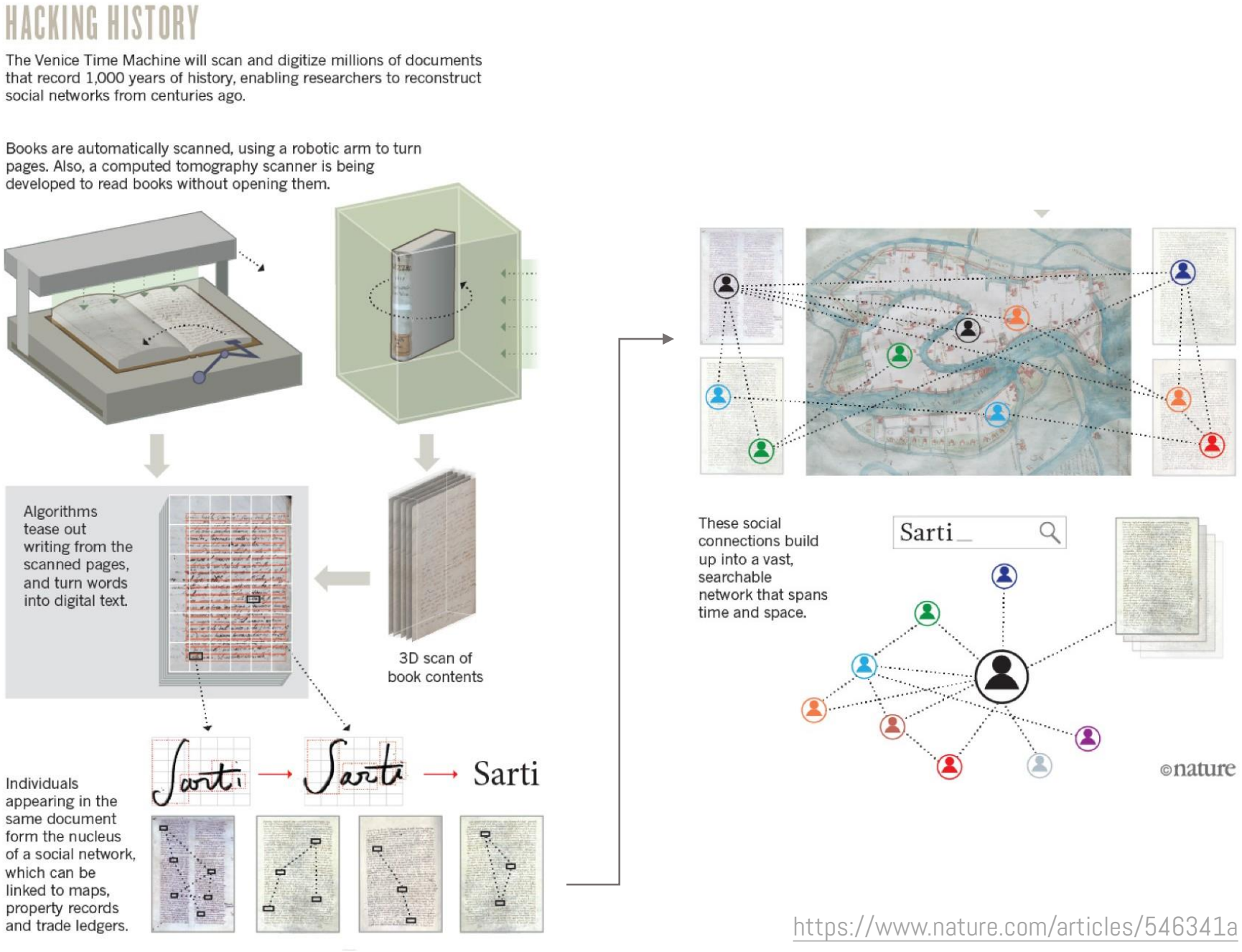


# Approach No. 1:
# Manual Annotation & Visualization




Source: https://stereoscope.threedh.net/

# Approach No. 2:
# Computational Text Analysis & Visualization




https://www.nature.com/articles/546341a

- individual object level
- corpus / collection level

# 2.2 „Close Viewing“


Jan Asselijn (1640-1652) – „The Threatened Swan“ (link)
in the 3D Streetview of the Rijksmuseum


## The Threatened Swan

Jan Asselijn, around 1650

A swan fiercely defends its nest against a dog.

In later centuries this scuffle was interpreted as a political allegory: the white swan was thought to symbolize the Dutch statesman Johan de Witt (assassinated in 1672) protecting the country from its enemies. This was the meaning attached to the painting when it became the very first acquisition to enter the Nationale Kunstgalerij (the forerunner of the Rijksmuseum) in 1800.

https://www.insidebruegel.net/

Inside Bruegel
Vienna paintings
Backstage
Imaging methods
Info

Inside Bruegel

Vienna paintings

Backstage

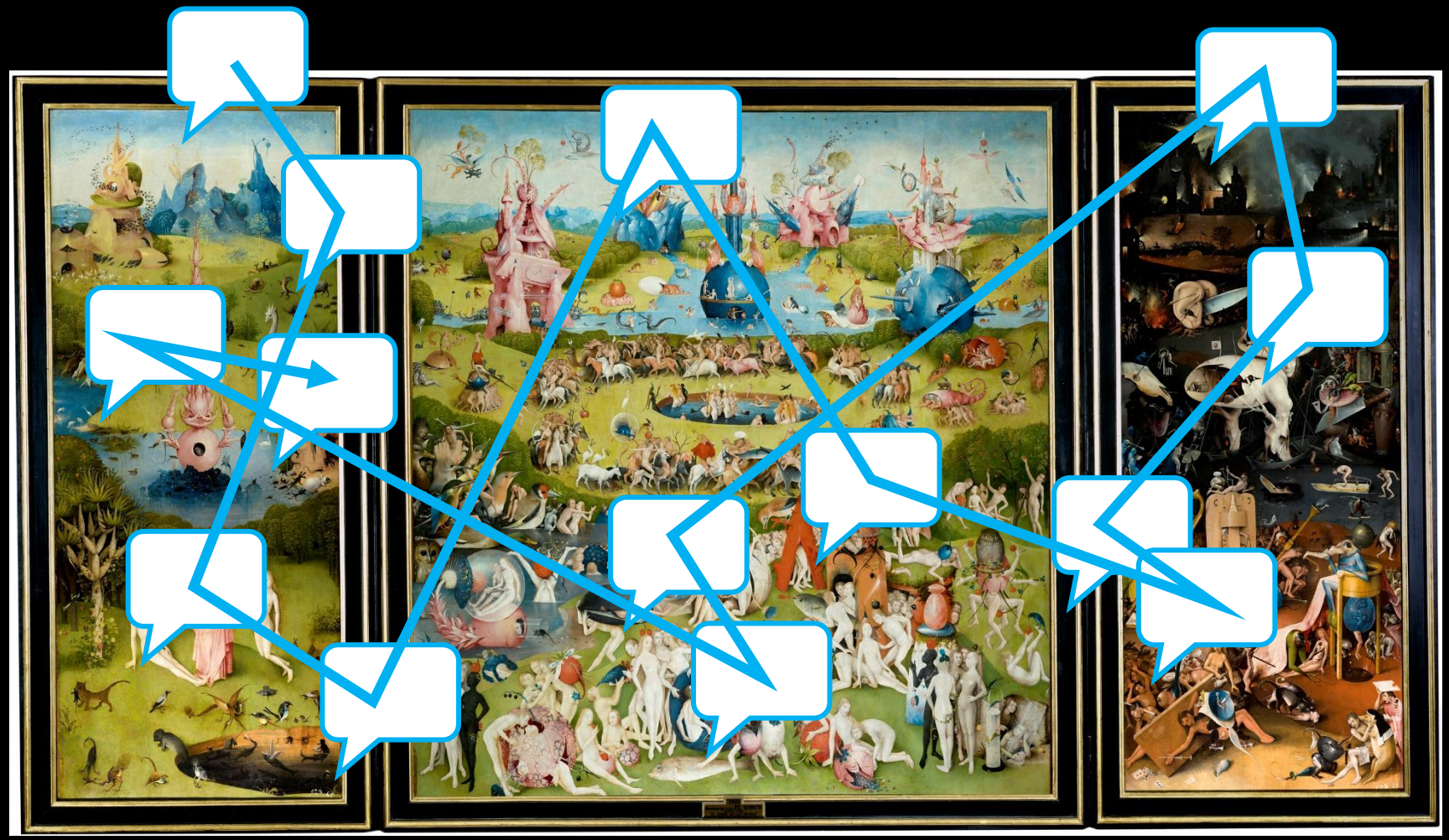
Imaging methods

Info

**Hunters in the Snow**
Macrophotography


**Hunters in the Snow**
X-radiography


https://www.insidebruegel.net/



Storymap https://storymap.knightlab.com/examples/bosch-garden/

## EARTH: PANEL 3

...tice the sinister duckbilled creature dressed in religious garb and reading a book. ...is implies that outward religious trappings are actually corrupting influences.

## HEAVEN AND BIRTH INTO THE EARTHLY SPHERE: PANEL 4

The lake represents birth, life, death, and influences that affect man.
The central tower represents the human condition, it is made in the divine image and resembles the tower from the first panel.

The rivers from left to right:
Divine influences - birds rest upon this tower and the army of God underneath bears fruit
Birth - coming from the mountain rooted in earth (blue) but with divine influence (pink and birds)
Death - a divine and earthly mountain representing the soul's return to heaven (birds fly out of the top and upwards)
Material influences - blue, veiny, phallic crystals are piercing through the pink of the divine leaf

Storymap https://storymap.knightlab.com/examples/bosch-garden/

individual object level

corpus / collection level

# 3. Distant Reading & Viewing

# “Distant reading” (Moretti, 2000)

galleries, libraries, archives, museums

“Ars longa,
vita brevis.”

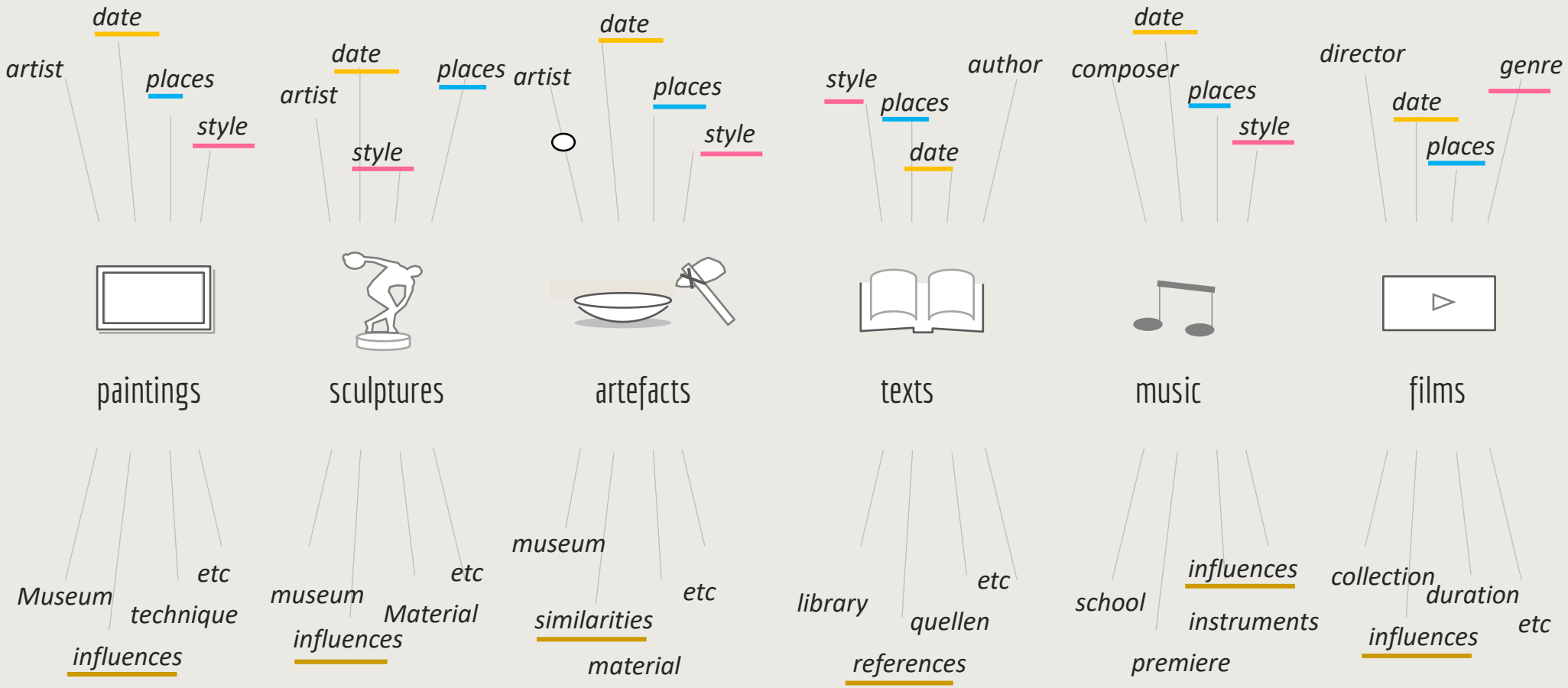

1) Art is long . . . . .

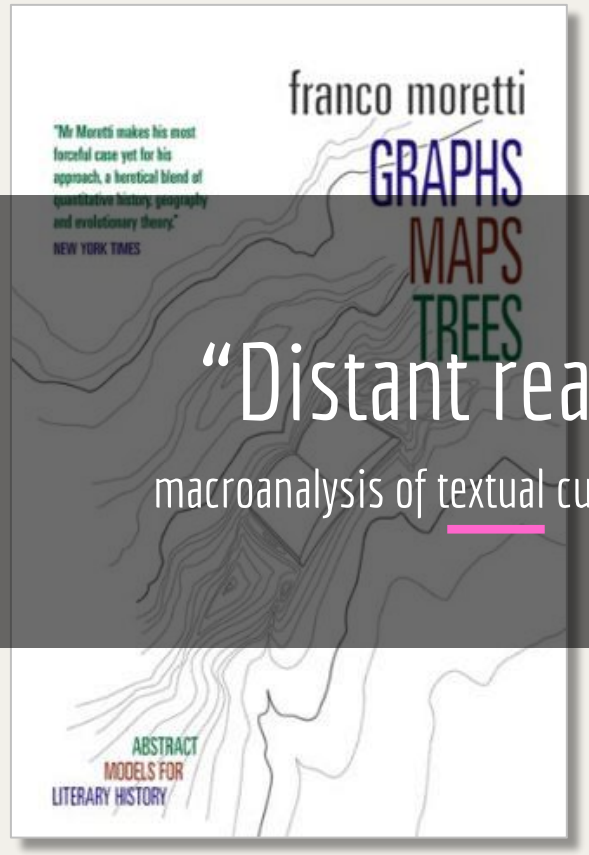
2) life is short . . . .

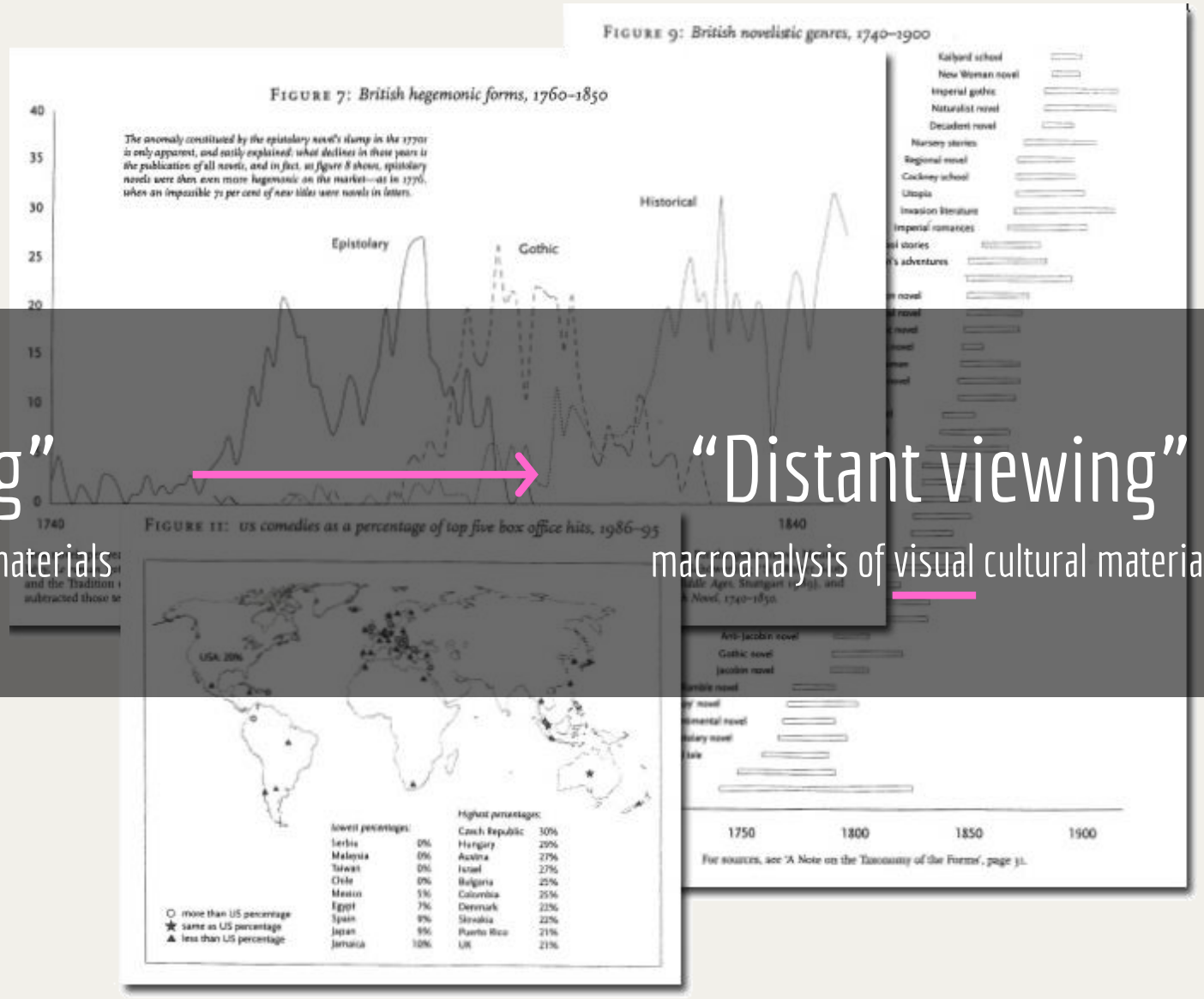
3) comp. is fast . . .

4) visualizations make big data structures & dynamics visible . . . . . .

# Different Types of Metadata





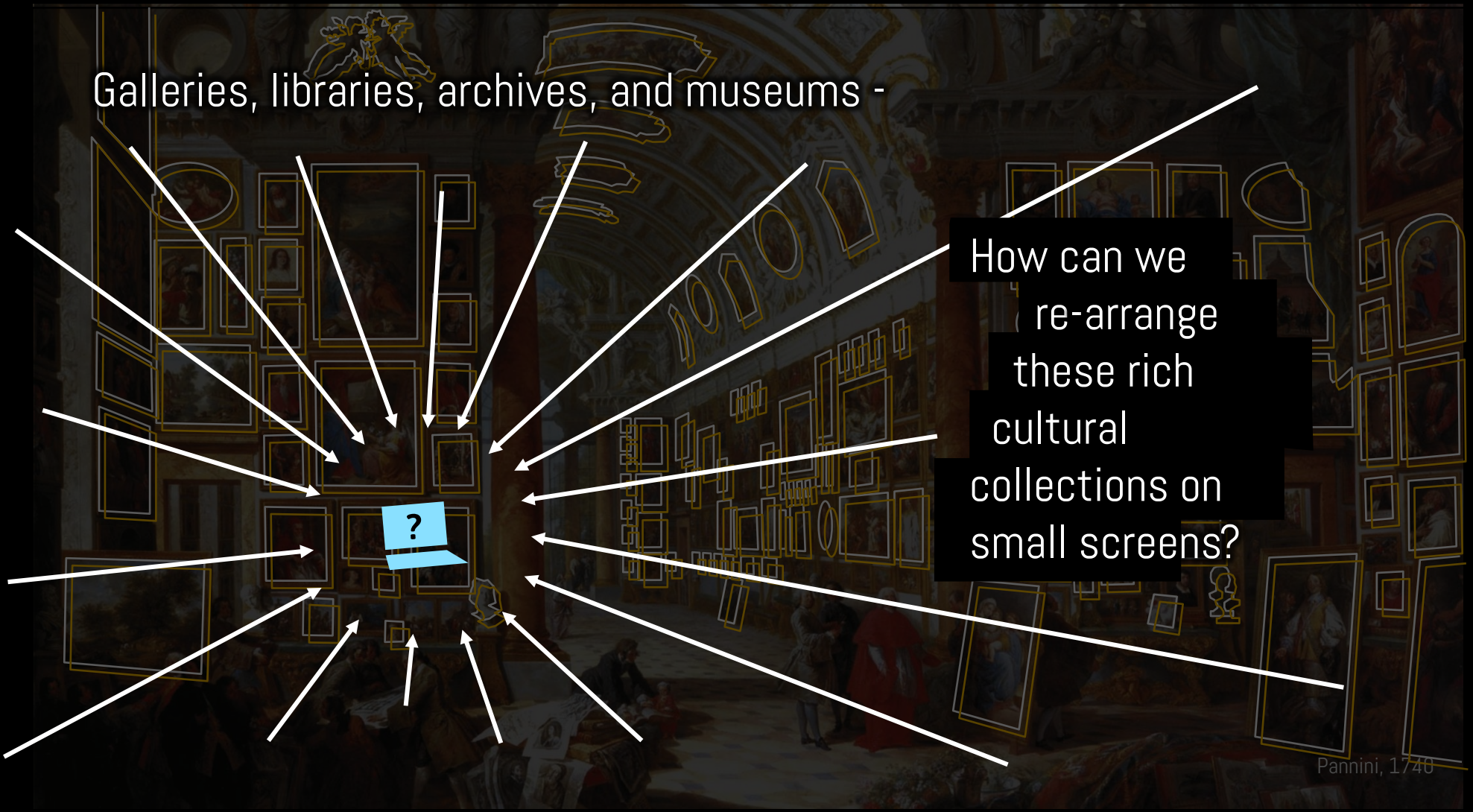



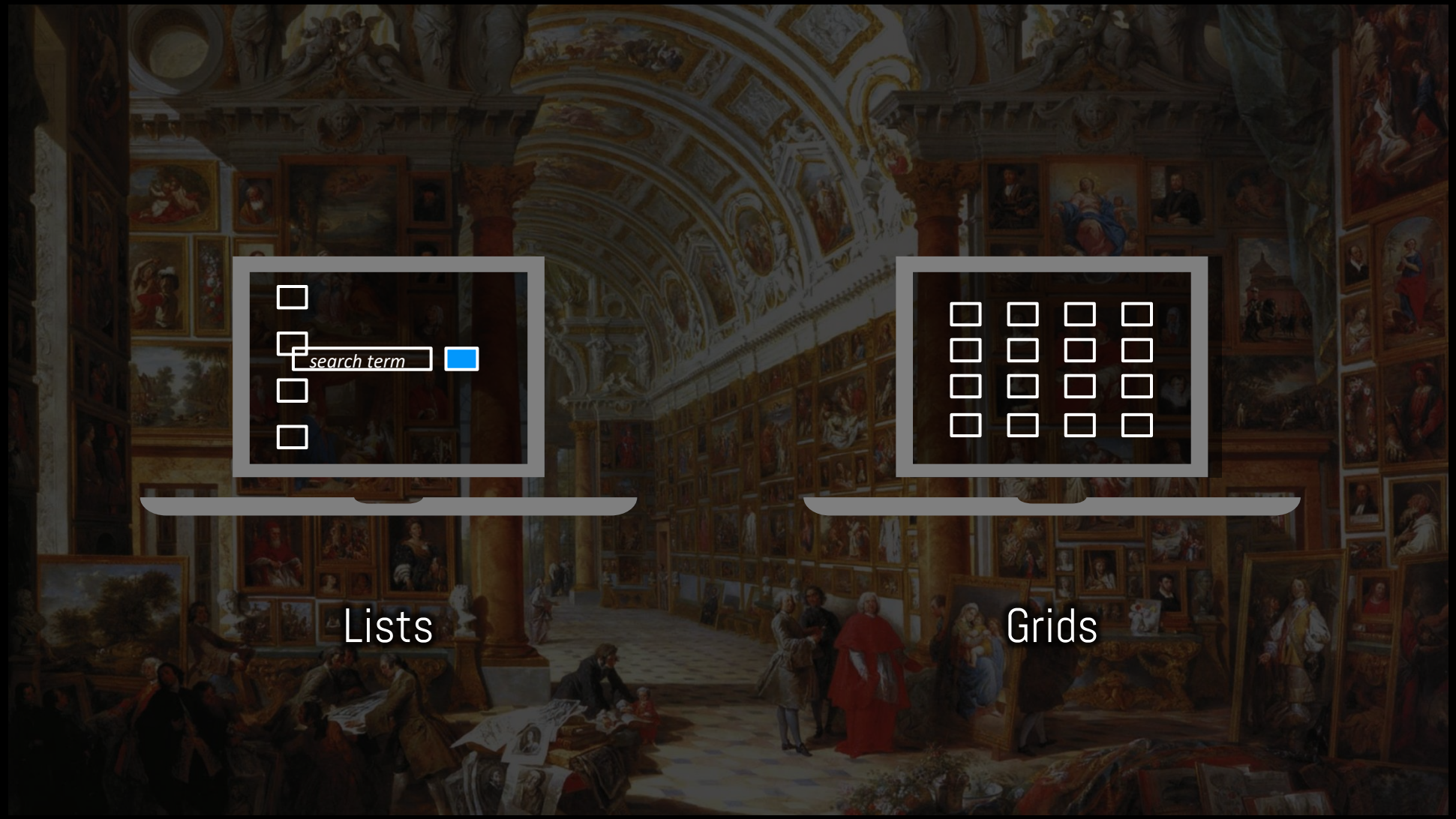

# "Distant reading" → "Distant viewing"

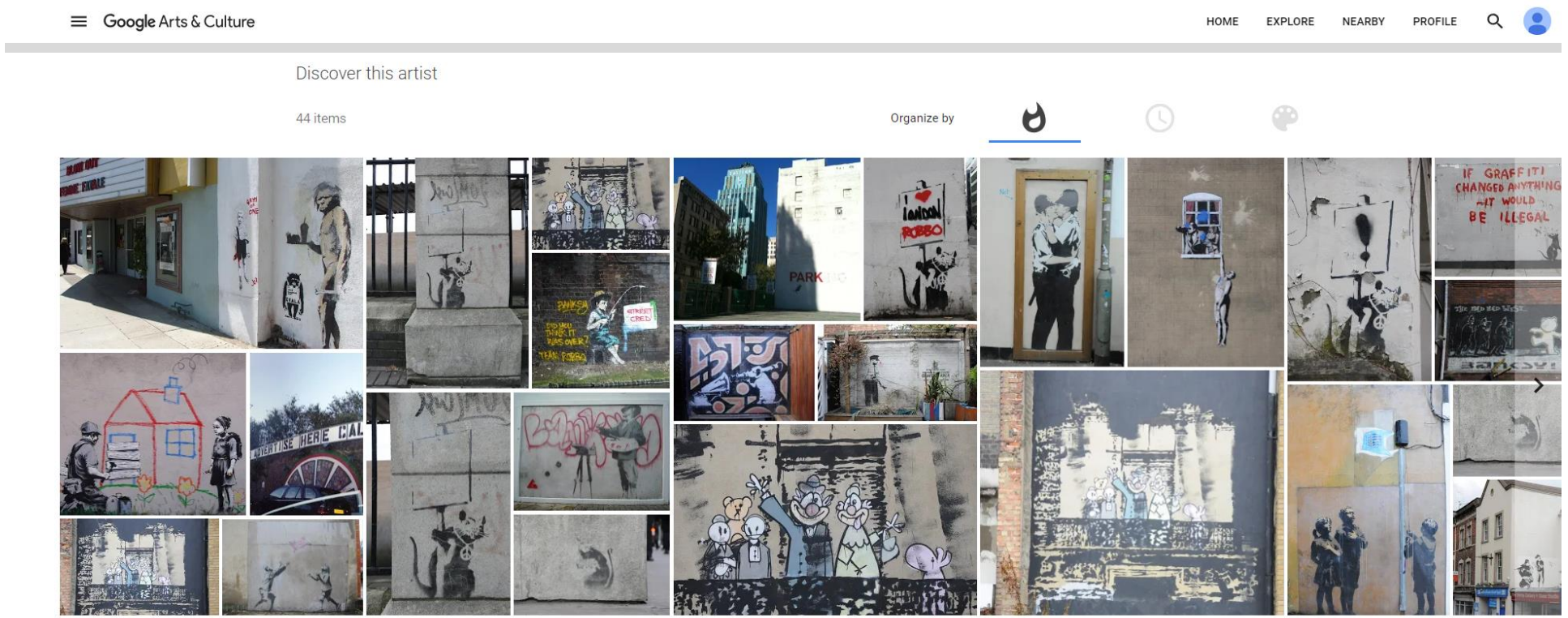
macroanalysis of textual cultural materials

macroanalysis of visual cultural materials

(Moretti, 2005; Jänicke et al., 2015, Arnold & Tilton, 2019)


Galleries, libraries, archives, and museums -
?
How can we re-arrange these rich cultural collections on small screens?
Pannini, 1740


search term
Lists
Grids




"Art should comfort the disturbed and disturb the comfortable."

**Banksy**

https://artsandculture.google.com/

# BELOW THE SURFACE

2005

NZD1.00027KST002 H:4 Ø:45

NZD1.00620MTL039 Ø:39

NZD1.00444KST001 Ø:25

NZD1.00042MTL035 Ø:21

NZD1.00042MTL014 Ø:25

NZD1.00007KST003 LxW:85x54

23KST001
4x54x32

NZD1.00087KST002 LxW:85x54

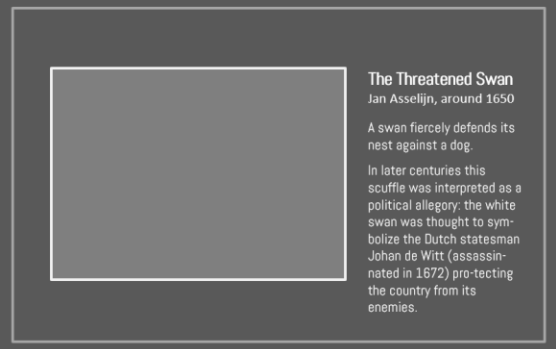
NZD1.00542KST007
LxWxH:46x41x6

NZD1.00068KST001 L:78 Ø:44

NZD1.00042MTL016 Ø:23

NZD1.00042MTL028 Ø:19

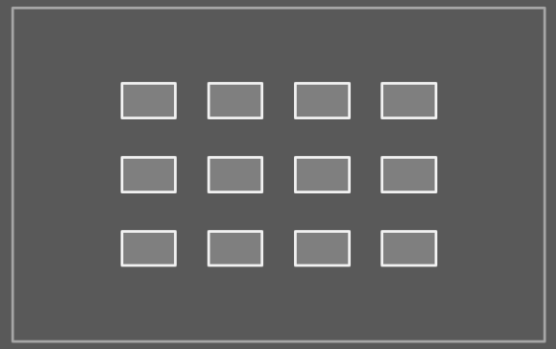
https://belowthesurface.amsterdam/en/vondsten



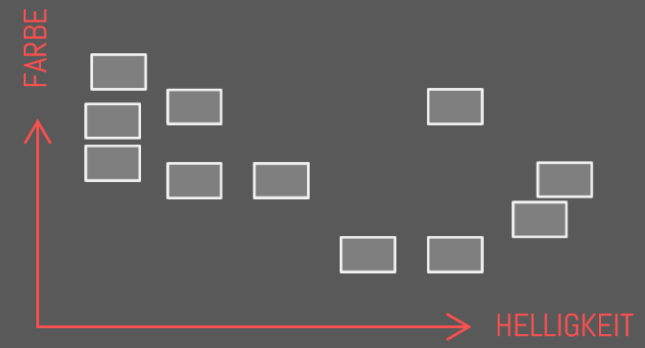

Close-up View


Timelines

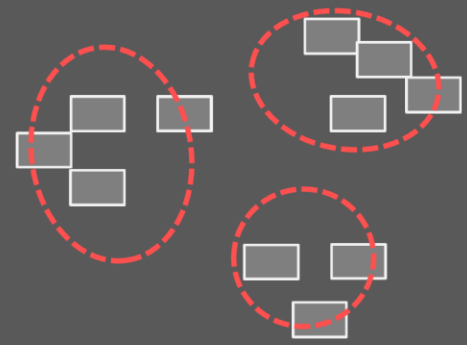
Maps



Grids / Lists




Plots



Sets

# Visualization of Cultural Heritage Collection Data: State of the Art and Future Challenges

Florian Windhager, Paolo Federico, Günther Schreder, Katrin Glinka, Marian Dörk, Silvia Miksch, *Member, IEEE*, and Eva Mayr

**Abstract**—After decades of digitization, large cultural heritage collections have emerged on the web, which contain massive stocks of content from galleries, libraries, archives, and museums. This increase in digital cultural heritage data promises new modes of analysis and increased levels of access for academic scholars and casual users alike. Going beyond the standard representations of search-centric and grid-based interfaces, a multitude of approaches has recently started to enable visual access to cultural collections, and to explore them as complex and comprehensive information spaces by the means of interactive visualizations. In contrast to conventional web interfaces, we witness a widening spectrum of innovative visualization types specially designed for rich collections from the cultural heritage sector. This new class of information visualizations gives rise to a notable diversity of interaction and representation techniques while lending currency and urgency to a discussion about principles such as serendipity, generosity, and criticality in connection with visualization design. With this survey, we review information visualization approaches to digital cultural heritage collections and reflect on the state of the art in techniques and design choices. We contextualize our survey with humanist perspectives on the field and point out opportunities for future research.

**Index Terms**—Information visualization, introductory and survey, digital libraries, arts and humanities

## 1 Introduction

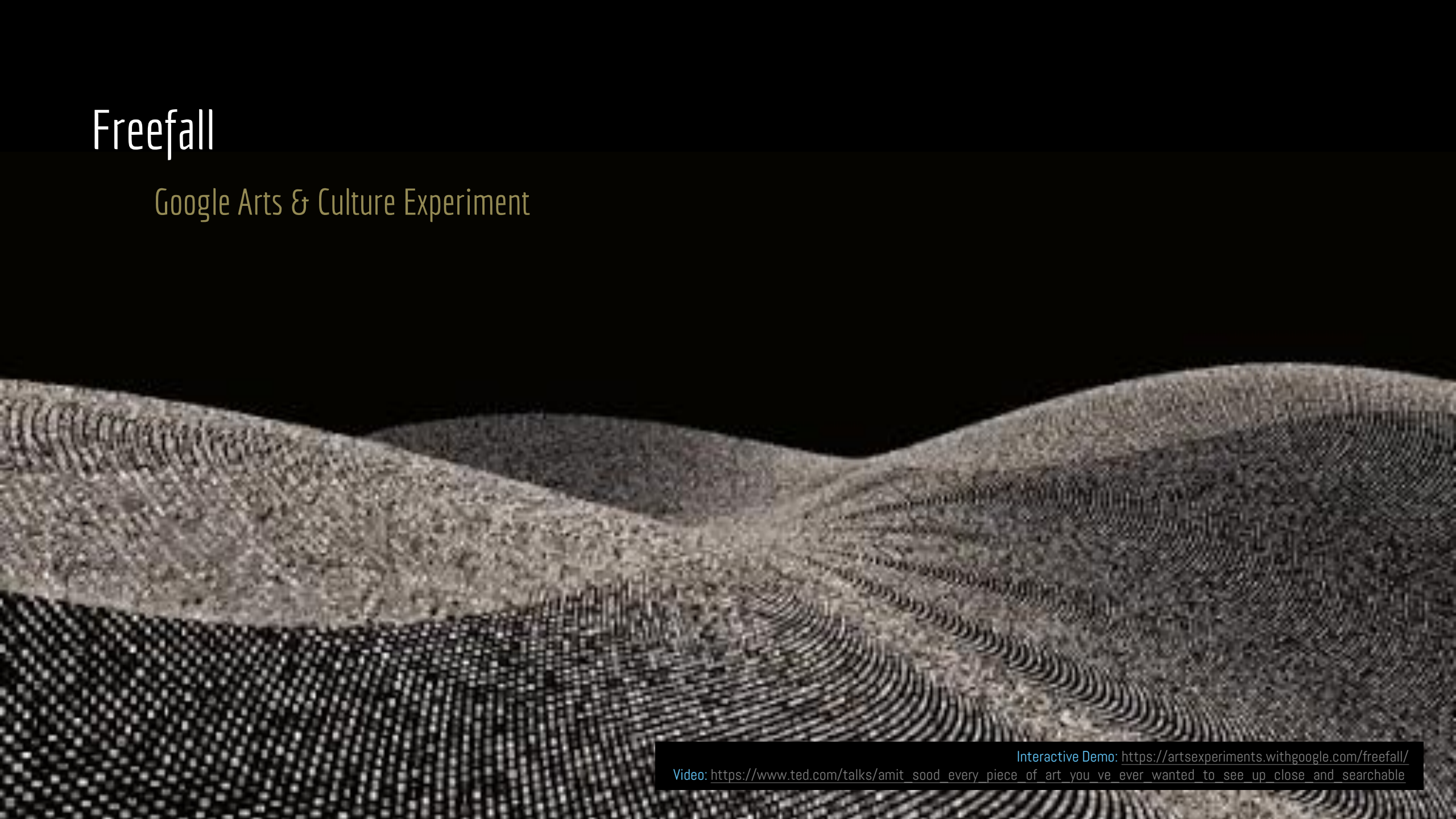
Arguably, it is cultural expression and exchange that distinguish humans from other animals. Devising and sharing objects, ideas, and practices enrich behavioral options, facilitates problem-solving, and thus drives the evolution of human collectives [1], [2]. From physical tools and information artifacts to arts and entertainment—cultures create and collect things and pass them on across space and time. While doing so, cultures are changing, and so are the means of transmitting their assets [3]. Digitization has expanded the means for representing and transmitting cultural collections, which makes large stocks of cultural content available, in principle for everyone and everywhere. Against the background of these large data collections, new types of typically web-based interfaces are assuming a role similar to galleries, libraries,

In this report, we collect recent developments of interfaces, which leverage methods of information visualization (InfoVis) to enhance access to cultural collections in order to support their scholarly analysis and casual appreciation. The survey sheds light on this emerging field, and aims to assess the state of the art for a diverse group of readers and audiences. We assume the findings and discussions to be of relevance for InfoVis researchers and practitioners, cultural scientists and digital humanities scholars, as well as owners, curators and custodians of CH collections. The general purpose of this paper is to explore and consolidate this new field by summarizing recent achievements and by reflecting on future challenges. To do so, we will discuss the background of CH data (Section 1) and describe our survey methodology

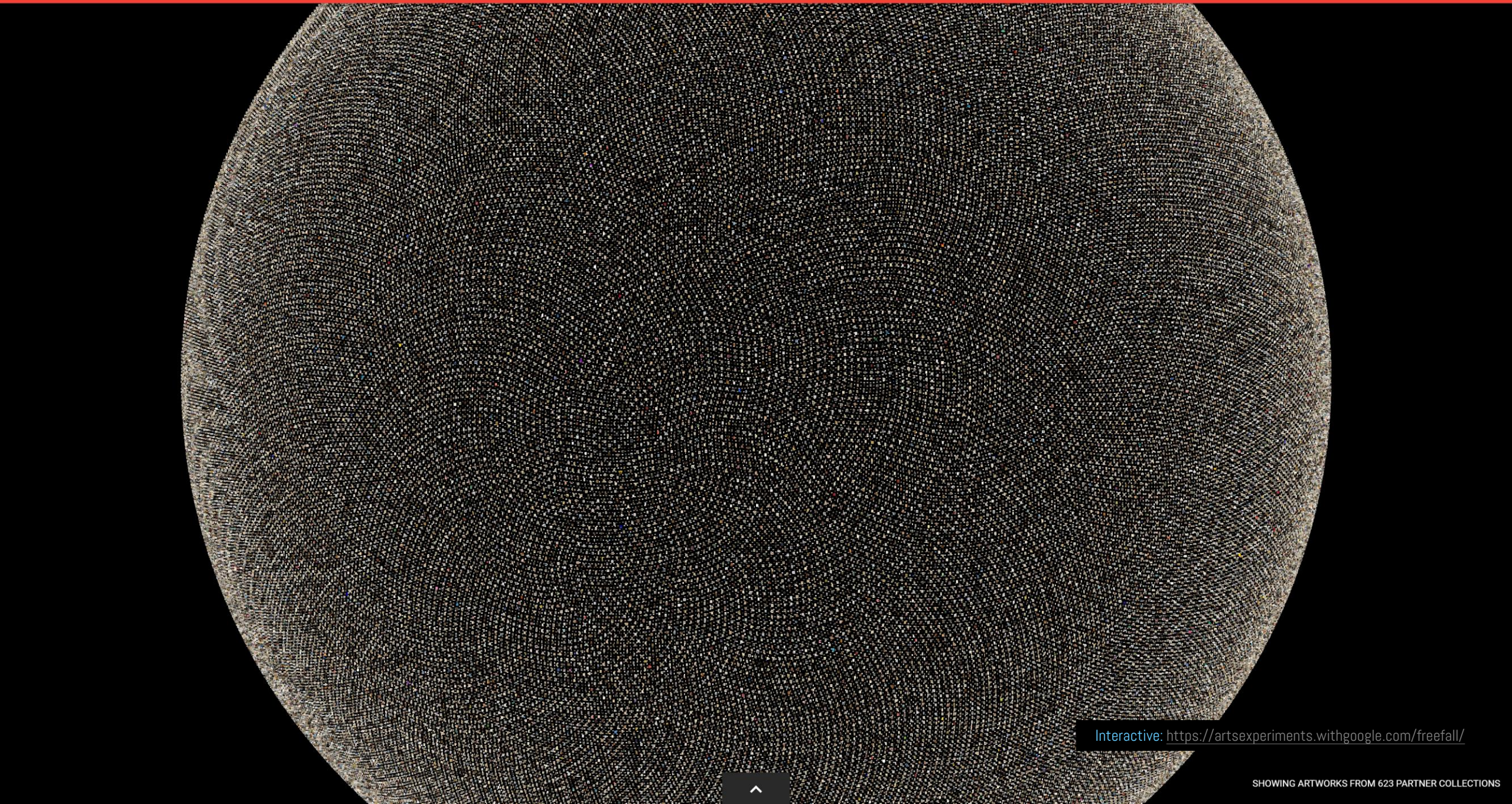
(Survey Study, 2018, link)

# Freefall

## Google Arts & Culture Experiment

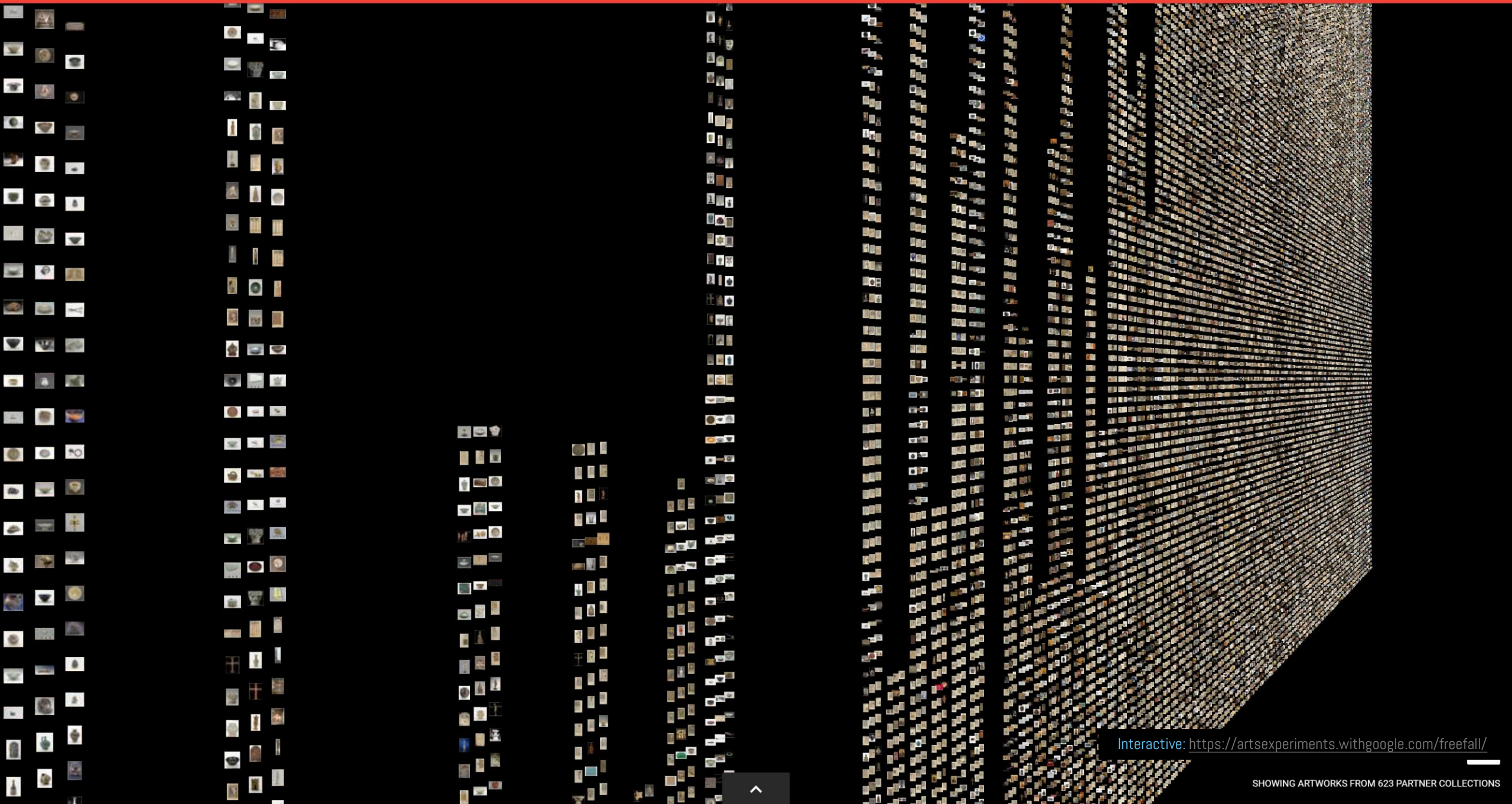


Interactive Demo: https://artsexperiments.withgoogle.com/freefall/
Video: https://www.ted.com/talks/amit_sood_every_piece_of_art_you_ve_ever_wanted_to_see_up_close_and_searchable



Interactive: https://artsexperiments.withgoogle.com/freefall/

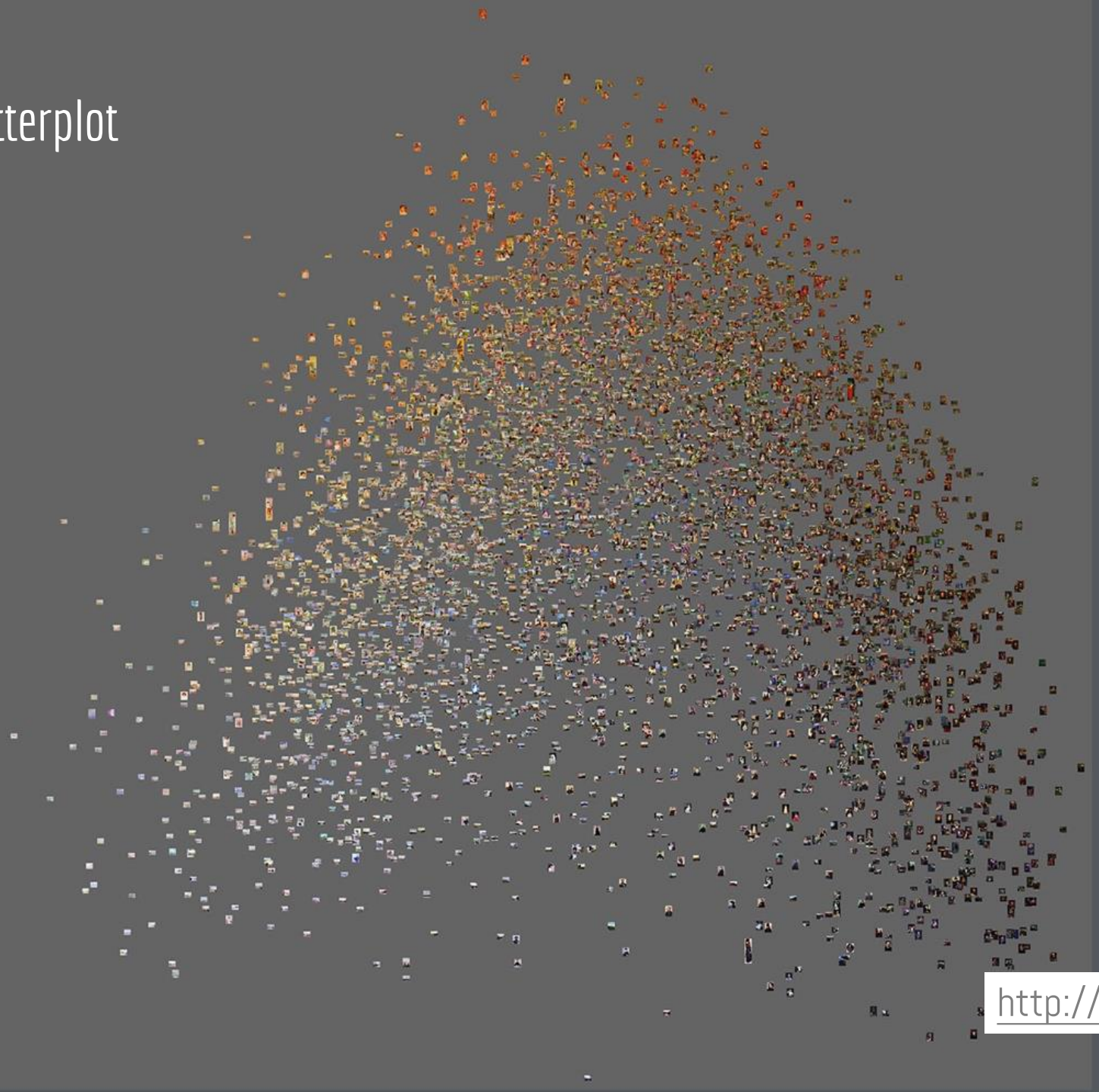
SHOWING ARTWORKS FROM 623 PARTNER COLLECTIONS


Interactive: https://artsexperiments.withgoogle.com/freefall/
SHOWING ARTWORKS FROM 623 PARTNER COLLECTIONS


# VIS method: Set-based Clustering

https://olafureliasson.net/uncertain

# VIS method: scatterplot



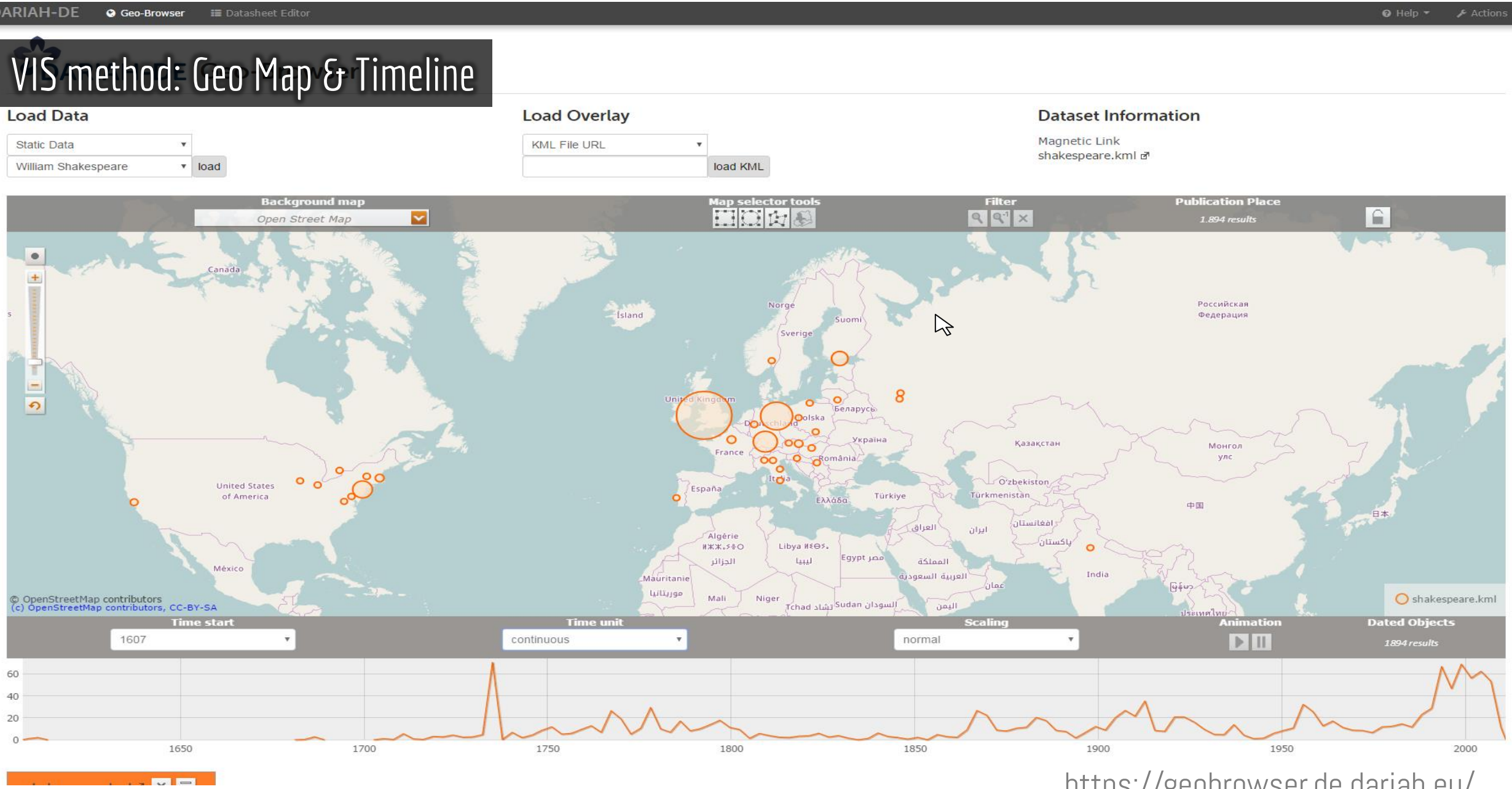
Visualization of 5000 paintings of French Impressionist artists

x and y - first two dimensions of PCA using 200 features

The familiar paintings  of French impressionists (see closeup on next slide) turn to be only %20-%30 of their whole creative output

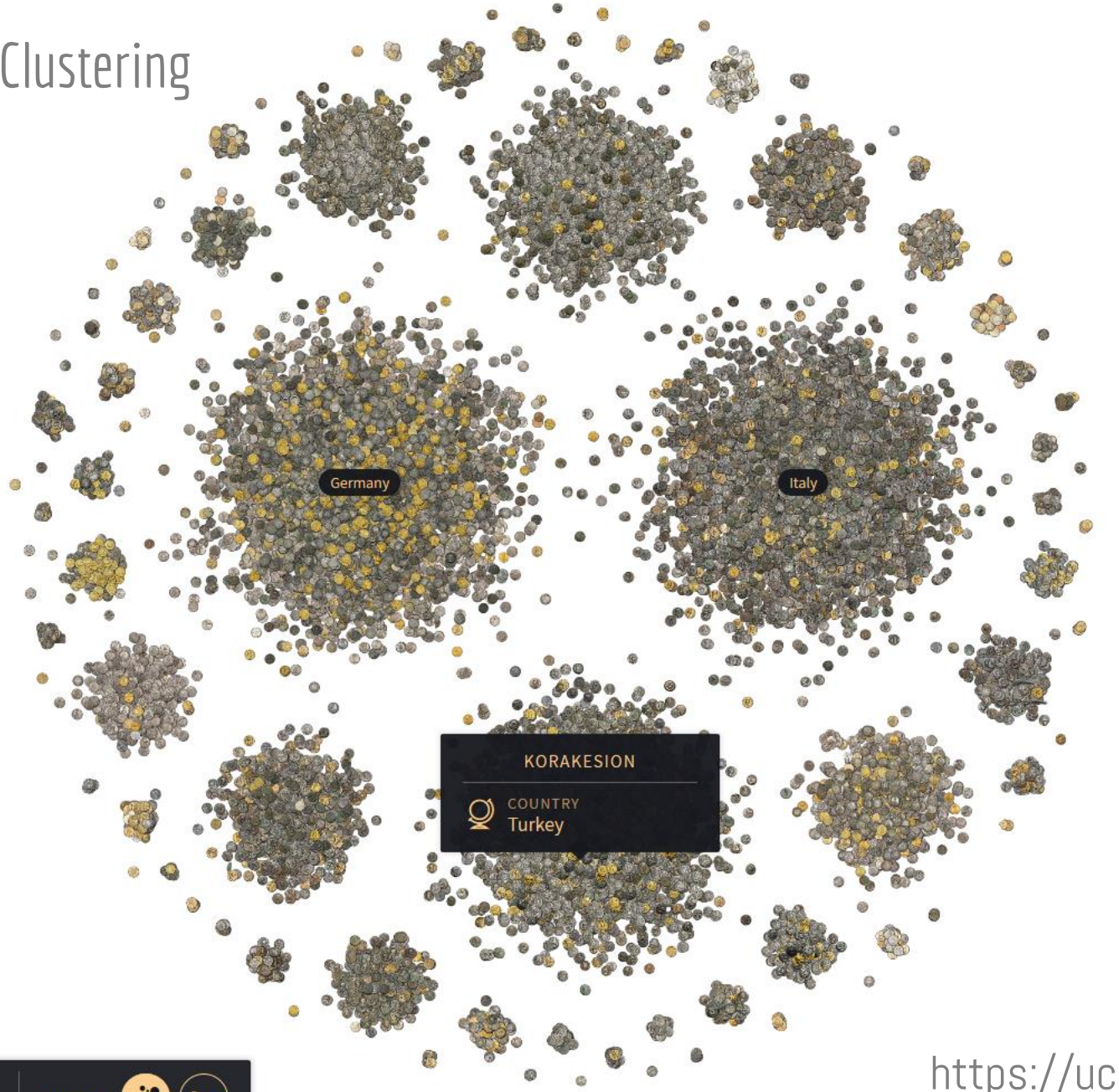
http://www.culturalanalytics.info

# VIS method: Geo Map & Timeline



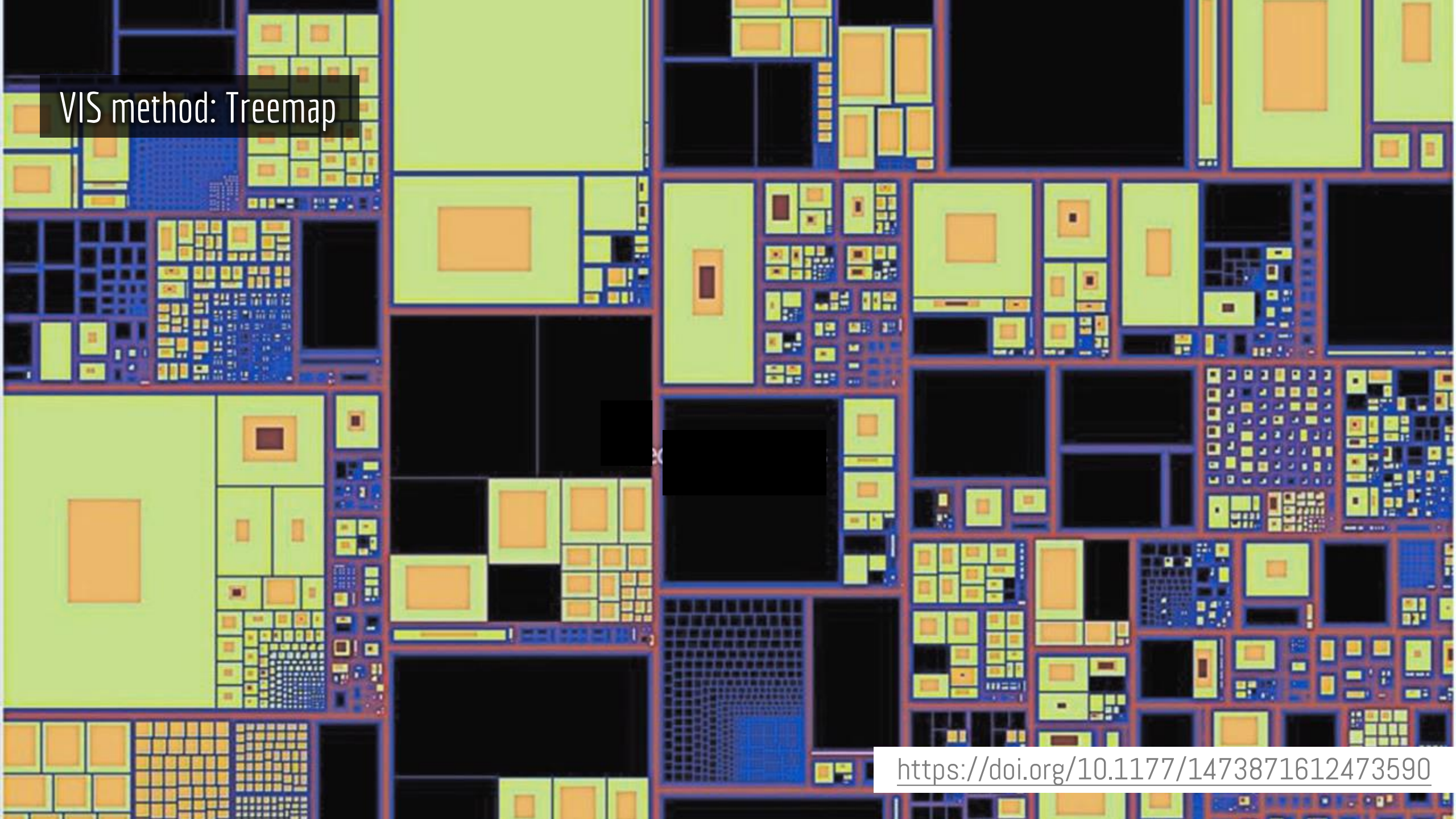

https://geobrowser.de.dariah.eu/

# VIS method: Set-based Clustering



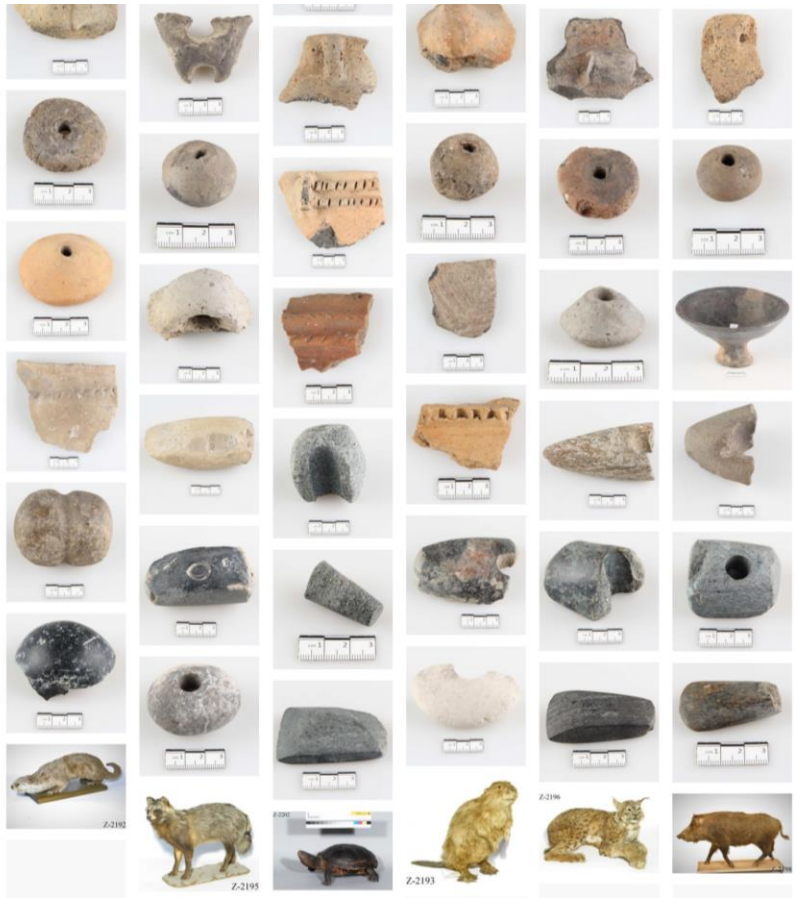

https://uclab.fh-potsdam.de/coins/

# VIS method: Treemap



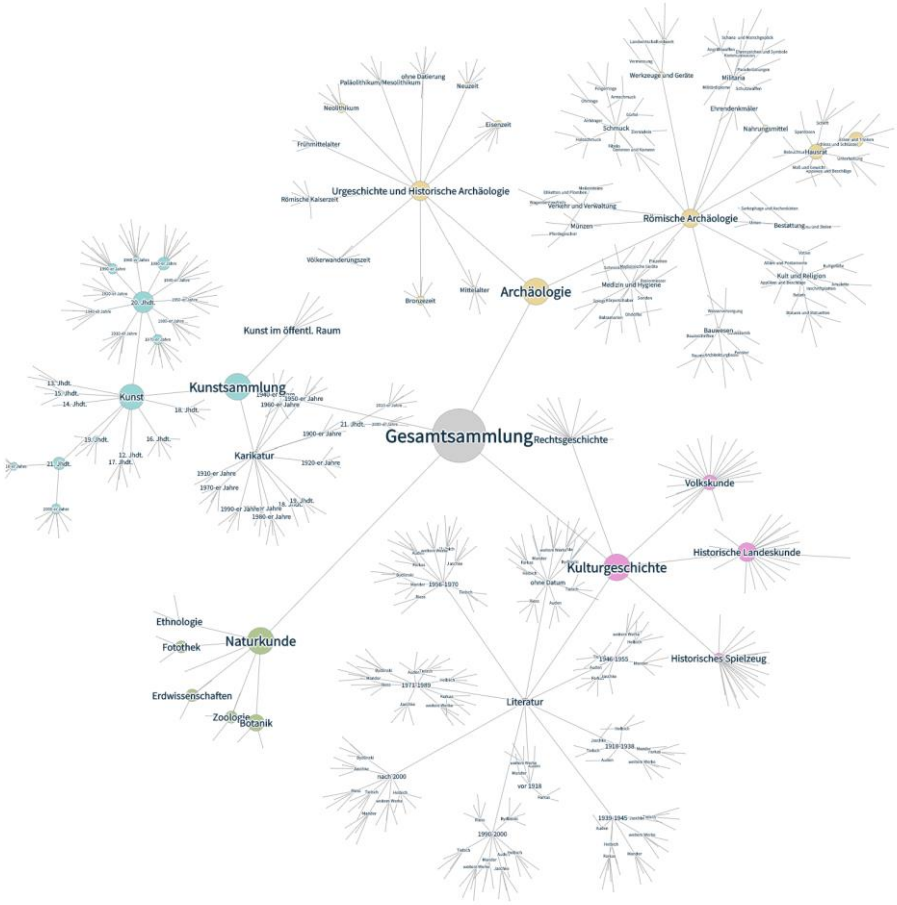
https://doi.org/10.1177/1473871612473590

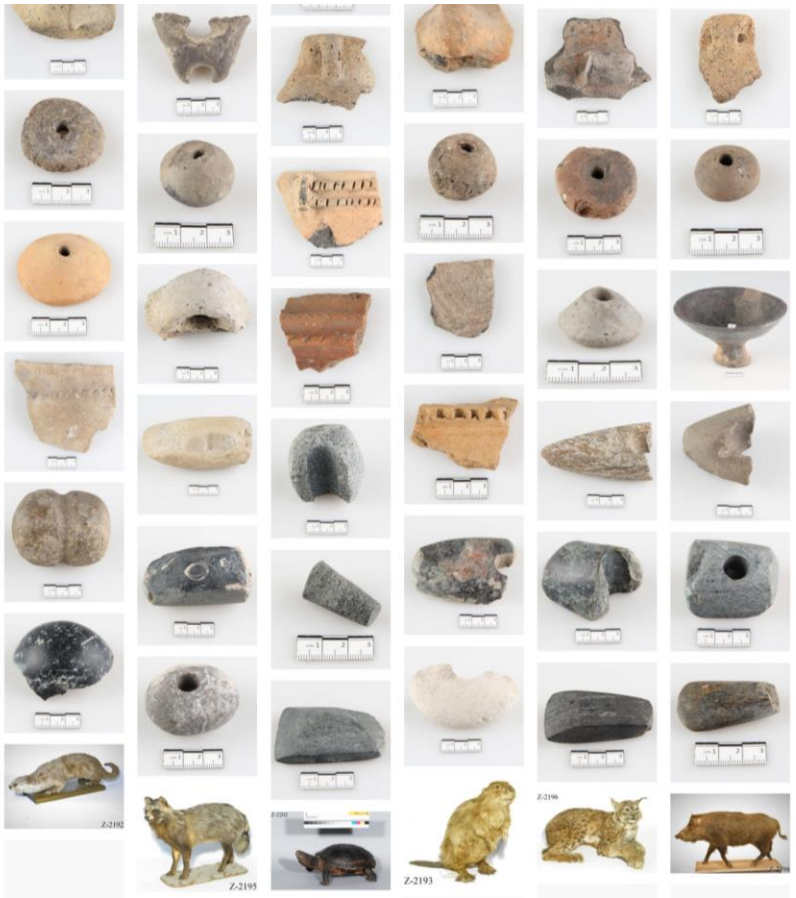
# VIS method: Grid & Sunburst Diagram

https://https://visualisierung.landessammlungen-noe.at/

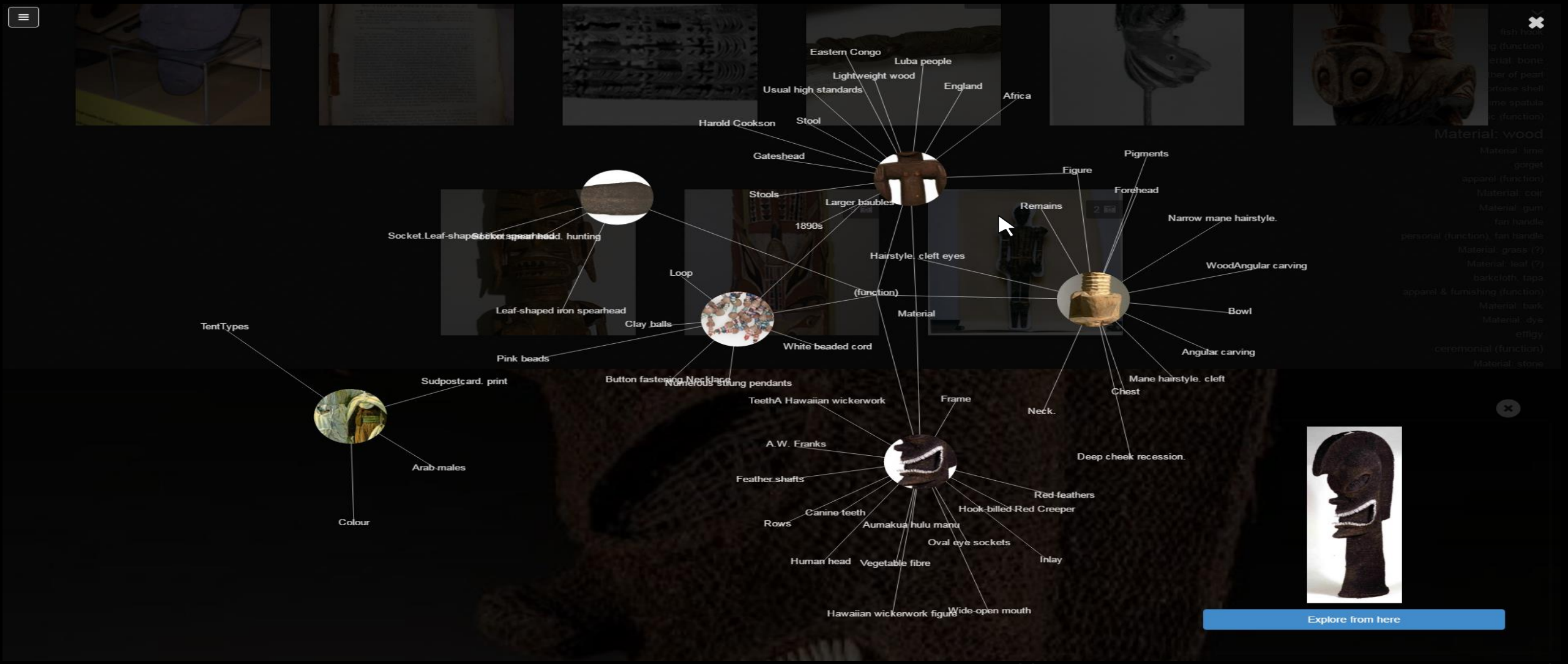
# VIS method: Grid & Node-Link Diagram



https://https://visualisierung.landessammlungen-noe.at/

# VIS methods: Grid & Node-Link Diagram




http://www.collectionsdivetwmuseums.org.uk/

# 4. Multiple Views and Beyond

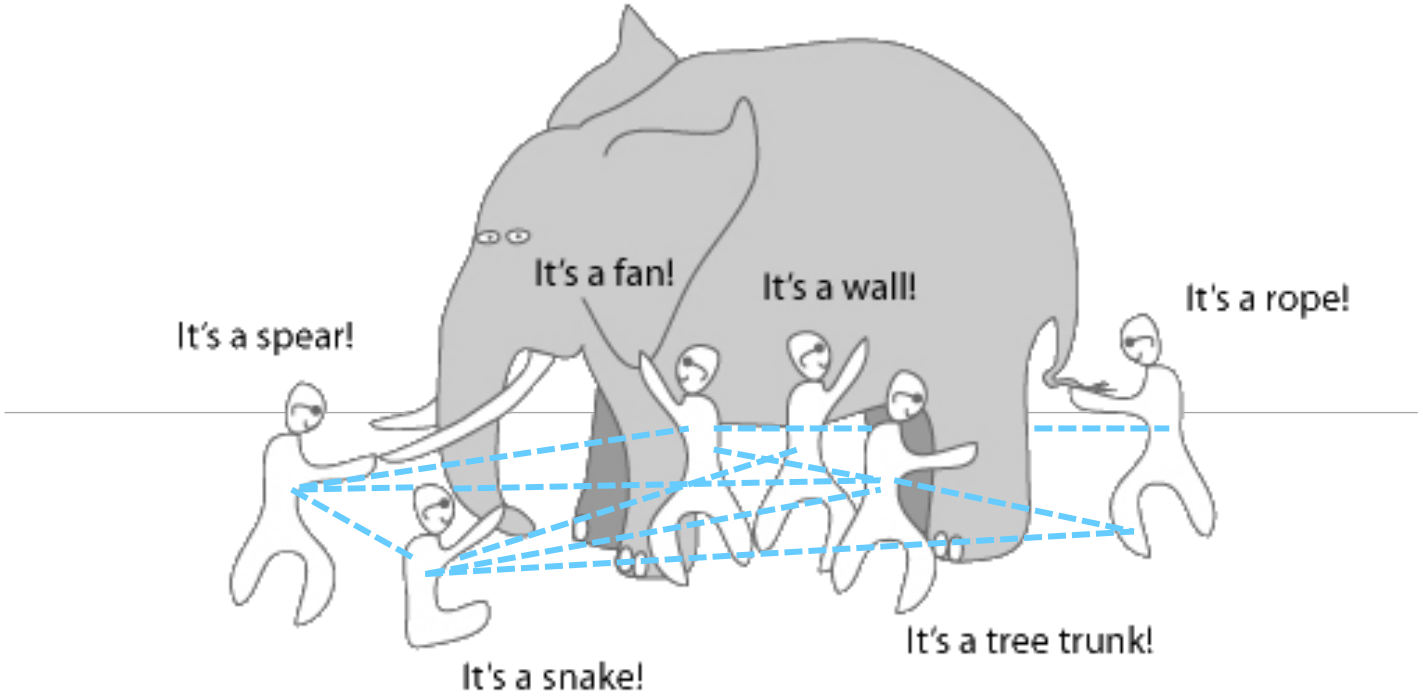
# One View is not Enough !

(Dörk, Pietsch & Credico, 2017)

Can we foster the **synoptic** understanding of cultural collections? → PolyCube project

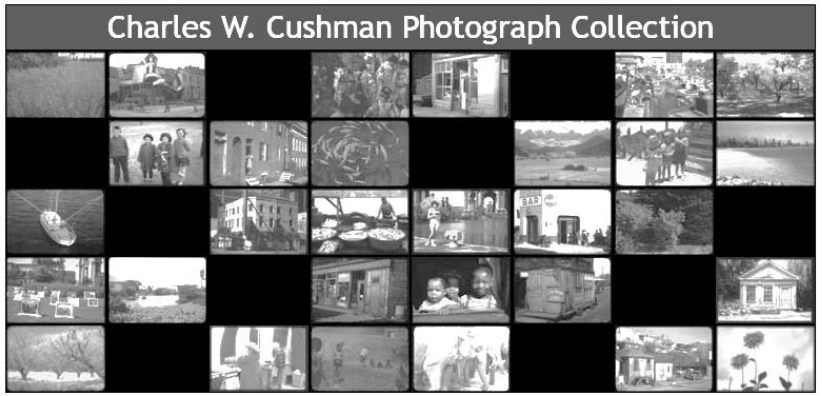
## utilization of "multiple views"

- 2,63 non-temporal views (from 1 to 6)
- 1,16 temporal views (from 0 to 3)

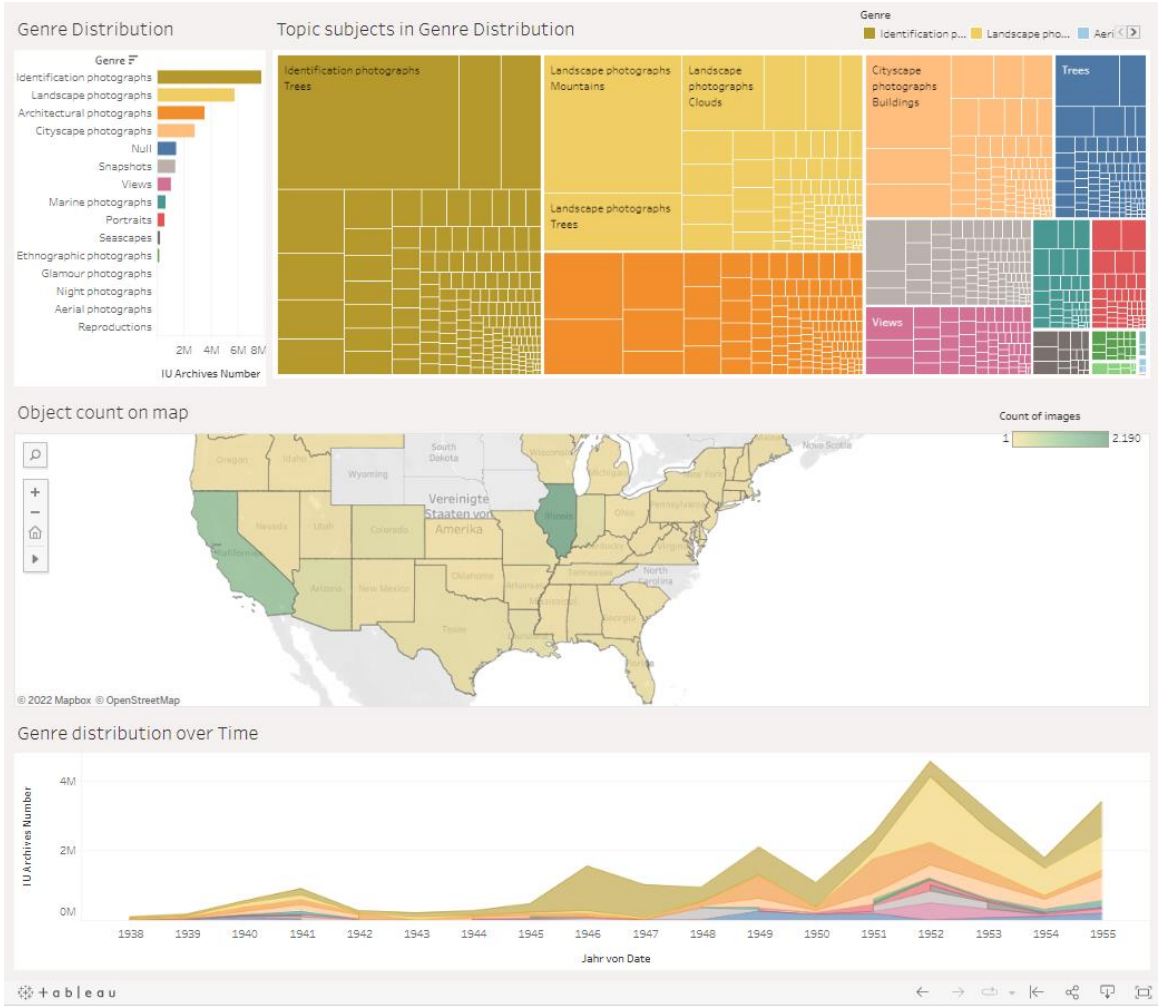



Source: http://www.sexandquantumphysics.com/2011/07/paradigms-shift/

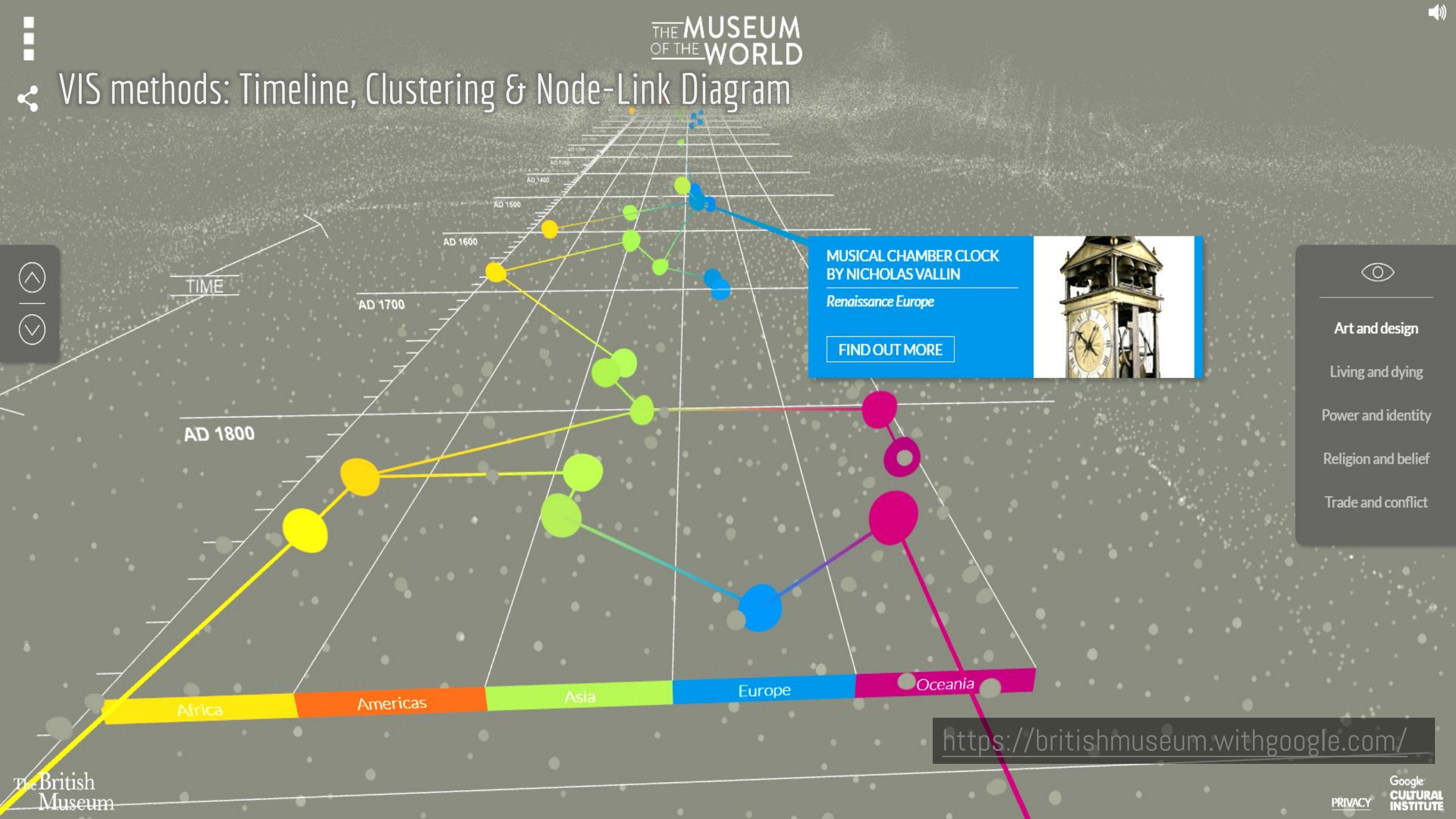
# Assignment No. 1 – The Cushman Photography Collection



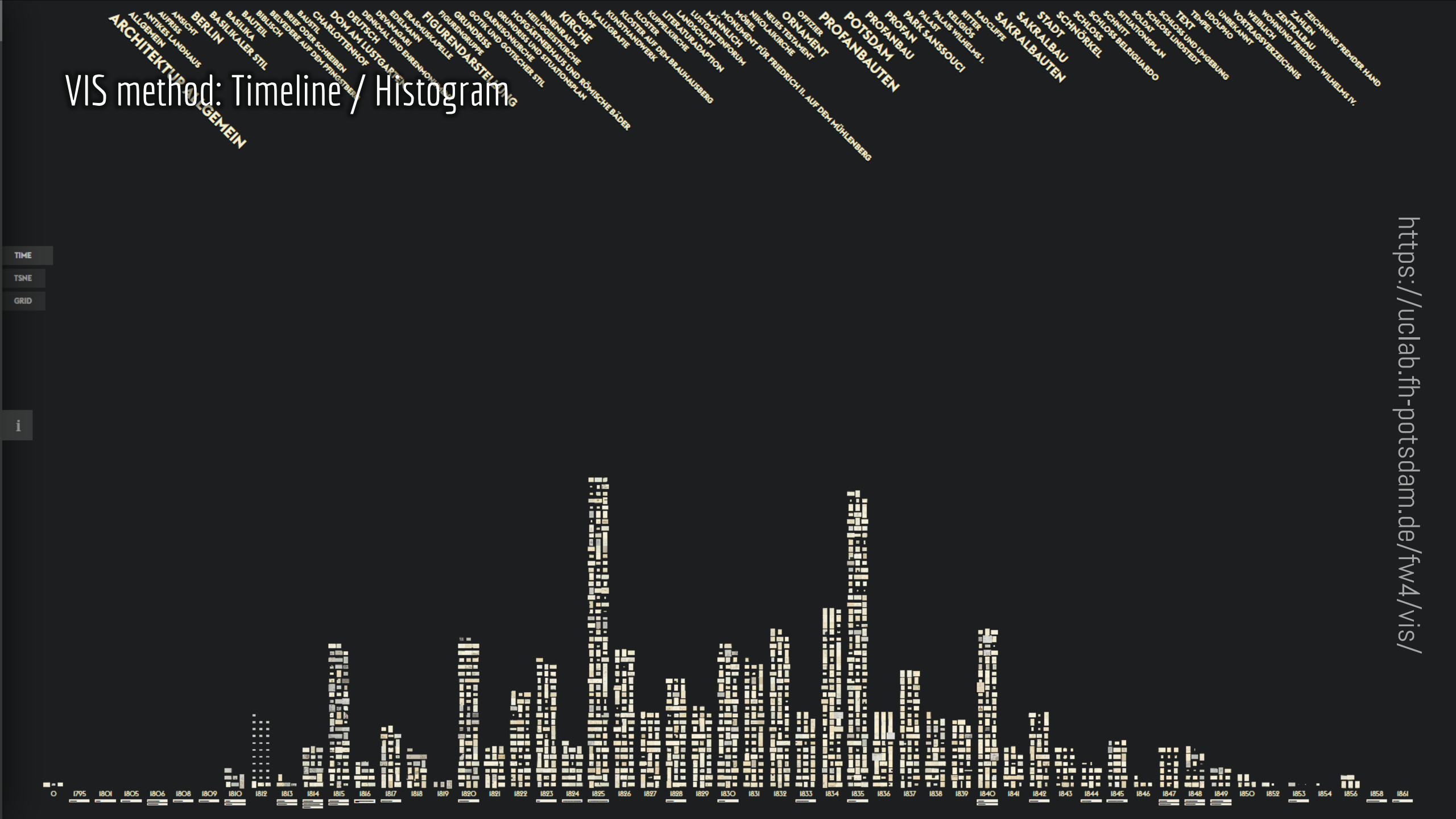

| Number | IU Archives | PURL | Image URL | Date | Archive Dat | Description | Description | City and Sta | Genre | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Sub | Topical Subject Headings 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5502 | http://purl.d | http://iveba | 1952-01-04 | Jan. 4, 1952 | Agua Prieta | Agua Prieta | Agua Prieta | Architectur | Domes | Towers | Casinos | Buildings | Walls | Women | Utility poles | Dogs | Windows | | |
| 2 | 5503 | http://purl.d | http://iveba | 1952-01-04 | Jan. 4, 1952 | Residence | Residence | Agua Prieta | Architectur | Houses | Windows | Agaves | Trees | Shrubs | Walls | Fences | Streets | Cities & tow | Domers | |
| 3 | 5504 | http://purl.d | http://iveba | 1952-01-04 | Jan. 4, 1952 | Calle 2 - Ag | Calle 2. Ag | Agua Prieta | Cityscape p | People | Dogs | Automobile | Fences | Streets | Cities & tow | City & town | Adobe bulk | Buildings | | |
| 4 | 5505 | http://purl.d | http://iveba | 1952-01-04 | Jan. 4, 1952 | Shops at cc | Bar and bar | Agua Prieta | Architectur | Streets | Cities & tow | Automobile | Bars | Barbershop | Signs (Notic | Advertisem | Buildings | | | |
| 5 | 5506 | http://purl.d | http://iveba | 1952-01-04 | Jan. 4, 1952 | West side o | Along west | Agua Prieta | Ethnograph | Bars | Tailor shop | Mercantile f | Signs (Notic | Advertisem | Men | Automobile | Electric line | Streets | City & town life | |
| 6 | 5602 | http://purl.d | http://iveba | 1952-01-22 | Jan. 22, 195 | Street scen | Calle 4 Agu | Agua Prieta | Snapshots | Streets | City & town | Adobe bulk | Trees | Doors & doo | Windows | Electric line | Gates | Women | | |
| 7 | 5603 | http://purl.d | http://iveba | 1952-01-22 | Jan. 22, 195 | Street scen | Calle 4 Agu | Agua Prieta | Architectur | Trees | Doors & doo | Windows | Buildings | Electric line | Sidewalks | Streets | Cities & tow | Signs (Notices) | | |
| 8 | 5604 | http://purl.d | http://iveba | 1952-01-22 | Jan. 22, 195 | 3 Children A | In Agua Pric | Agua Prieta | Portraits | Children | Adobe bulk | Walls | Boys | Girls | Dresses | Holding har | Shadows | | | |
| 9 | 5605 | http://purl.d | http://iveba | 1952-01-22 | Jan. 22, 195 | 3 Children A | In Agua Pric | Agua Prieta | Portraits | Children | Adobe bulk | Girls | Boys | Holding har | Dresses | Shadows | | | | |
| 10 | 5606 | http://purl.d | http://iveba | 1952-01-22 | Jan. 22, 195 | An adobe C | An adobe c | Agua Prieta | Architectur | Women | Fences | Trees | Clothesline | Adobe bulk | Chimneys | Rocks | Courtyards | Laundry | Doors & doorways | |
| 11 | 5588 | http://purl.d | http://iveba | 1952-01-19 | Jan. 20, 195 | Cactus & or | Cactus with | Ajo, Arizona | Landscape | Cactus | Deserts | Mountains | Shrubs | | | | | | | |
| 12 | 5589 | http://purl.d | http://iveba | 1952-01-19 | Jan. 20, 195 | Another Sa | Tall cactus | Ajo, Arizona | Landscape | Cactus | Shrubs | Trees | Mountains | Deserts | | | | | | |
| 13 | 5539 | http://purl.d | http://iveba | 1952-01-19 | Jan. 20, 195 | In Organ Pi | Unbranche | Ajo, Arizona | Identificatio | Cactus | Automobile | Shrubs | Trees | Deserts | | | | | | |
| 14 | 5600 | http://purl.d | http://iveba | 1952-01-19 | Jan. 20, 195 | Tall Saihuar | Very tall Sai | Ajo, Arizona | Identificatio | Cactus | Trees | Shrubs | Automobile | Deserts | | | | | | |
| 15 | 5601 | http://purl.d | http://iveba | 1952-01-19 | Jan. 20, 195 | Organ Pipe | Organ Pipe | Ajo, Arizona | Identificatio | Cactus | Trees | Shrubs | Deserts | | | | | | | |
| 16 | 15735 | http://purl.d | http://iveba | 1938-09-2 | Sep. 23, 193 | E-24: Stree | E- 24 + Cus | Alberton, M | Cityscape p | Clouds | Trees | Hills | Signs (Notic | Utility poles | Hotels | Balconies | Dirt roads | Ladders | Fences | |
| 17 | 2234 | http://purl.d | http://iveba | 1941-04-14 | Apr. 14, 194 | Fruit Tree, I | Fruit Tree, I | Albion, Illinc | Albion, Illinc | Fruit trees | Shrubs | Barns | Croplands | | | | | | | |
| 18 | 2235 | http://purl.d | http://iveba | 1941-04-14 | Apr. 14, 194 | Blond Gilbe | Gilberta Alb | Albion, Illinc | Identificatio | Trees | Shrubs | Girls | Lawn mowi | Dwellings | Grasses | Mowing machines | | | | |
| 19 | 6144 | http://purl.d | http://iveba | 1952-04-14 | Apr. 14, 195 | Albuquerq | Plaza - Old | Albuquerq | Architectur | Trees | Lawns | Streets | Sidewalks | Cannons | Plazas | Cities & tow | Towers | Churches | Spires | |
| 20 | 6145 | http://purl.d | http://iveba | 1952-04-14 | Apr. 14, 195 | Albuquerq | Plaza and C | Albuquerq | Architectur | Streets | Cities & tow | Sidewalks | Lawns | Benches | Trees | Plazas | Churches | Street lights | Towers | |
| 21 | 2068 | http://purl.d | http://iveba | 1940-09-2 | Sep. 23, 19 | Spire of old | Alexandria, | Alexandria, | Architectur | Clouds | Clock tower | Buildings | City & town | halls | | | | | | |
| 22 | 2069 | http://purl.d | http://iveba | 1940-09-2 | Sep. 23, 19 | Old raven, | Alexandria, | Alexandria, | Cityscape p | Dwellings | Women | Automobile | Bars | Windows | Shutters | Sidewalks | Signs (Notic | Doors & doorways | | |
| 23 | 2070 | http://purl.d | http://iveba | 1940-09-2 | Sep. 23, 19 | Row of hou | Lower Princ | Alexandria, | Cityscape p | Row house | Vines | Shrubs | Sidewalks | Windows | Shutters | Chimneys | Doors & doo | Automobiles | | |
| 24 | 2071 | http://purl.d | http://iveba | 1940-09-2 | Sep. 23, 19 | Dock scene | River front F | Alexandria, | Marine phot | Boats | Men | Hoisting ma | Reflections | Rivers | Piers & wharves | | | | | |
| 25 | 5057 | http://purl.d | http://iveba | 1951-10-21 | Oct. 21, 195 | Tahe Fox ri | Fox river at | Algonquin, | Landscape | Rivers | Reflections | Trees | Mounds (Landforms) | | | | | | | |
| 26 | 5058 | http://purl.d | http://iveba | 1951-10-24 | Oct. 24, 195 | The Fox rive | Little maple | Algonquin, | Identificatio | Rivers | Trees | Leaves | Reflections | Shrubs | Shadows | Bridges | Maples | | | |
| 27 | 5059 | http://purl.d | http://iveba | 1951-10-24 | Oct. 24, 195 | Oaks along | Oaks above | Algonquin, | Illinois | Oaks | Leaves | Autumn | Rivers | | | | | | | |
| 28 | 5060 | http://purl.d | http://iveba | 1951-10-24 | Oct. 24, 195 | A flaming o | A flaming O | Algonquin, | Identificatio | Oaks | Leaves | Autumn | | | | | | | | |
| 29 | 5061 | http://purl.d | http://iveba | 1951-10-24 | Oct. 24, 195 | A flaming o | Flaming Oa | Algonquin, | Identificatio | Oaks | Trees | Autumn | | | | | | | | |
| 30 | 2140 | http://purl.d | http://iveba | 1940-11-15 | Nov. 15, 194 | Along US 6 | Along U.S. | Alleghany, | Virginia | Trees | Shrubs | Flowers | | | | | | | | |
| 31 | 2534 | http://purl.d | http://iveba | 1941-09-3( | Sep. 30, 19 | P.R.R. freig | Penna. freig | Altoona, Pe | Views | Reservoirs | Railroads | Railroad tre | Trees | Roads | Hydraulic fa | Hills | Historic site | Lakes & pol | Mountains | |
| 32 | 2535 | http://purl.d | http://iveba | 1941-09-3( | Sep. 30, 19 | Another frei | P.R.R. freig | Altoona, Pe | Landscape | Railroads | Railroad tre | Reservoirs | Mountains | Forests | Lakes & ponds | | | | | |
| 33 | 2536 | http://purl.d | http://iveba | 1941-09-3( | Sep. 30, 19 | Left side of | P.R.R. pass | Altoona, Pe | Views | | Reservoirs | Lakes & pol | Railroads | Railroad pa | Trees | Forests | Hills | Mountains | Roads | Hydraulic facilities |
| 34 | 2537 | http://purl.d | http://iveba | 1941-09-3( | Sep. 30, 19 | PRR passer | P.R.R. PASS | Altoona, Pe | Snapshots | Railroads | Railroad tre | Smoke | Mountains | Forests | Trees | | | | | |
| 35 | 2538 | http://purl.d | http://iveba | 1941-09-19 | Sep. 20, 19 | Doubleheac | P.R.R. doul | Altoona, Pe | Snapshots | Railroad na | Railroads | Railroad pa | Railroad loc | Smoke | Cliffs | Rocks | | | | |
| 36 | 8130 | http://purl.d | http://iveba | 1955-06-16 | Jun. 18, 195 | Low sunflov | Wild flowers | Alturas, Cal | Identificatio | Sunflowers | | | | | | | | | | |
| 37 | 8131 | http://purl.d | http://iveba | 1955-06-16 | Jun. 18, 195 | Farm scene | Farm scene | Alturas, Cal | Landscape | Clouds | Trees | Farmhouse | Fences | Croplands | Grasses | Utility poles | Farms | Agricultural facilities | | |
| 38 | 8132 | http://purl.d | http://iveba | 1955-06-16 | Jun. 18, 195 | Blond horse | Blond horse | Alturas, Cal | Identificatio | Clouds | Mountains | Snow | Trees | Shrubs | Horses | Grasses | Grazing | Fences | | |
| 39 | 8133 | http://purl.d | http://iveba | 1955-06-16 | Jun. 18, 195 | Blond horse | Blond horse | Alturas, Cal | Identificatio | Clouds | Horses | Fences | Shrubs | Trees | Mountains | Snow | Grasses | Grazing | | |
| 40 | 2074 | http://purl.d | http://iveba | 1940-09-16 | Sep. 16, 194 | Cupola, Ma | Maryland Cz | Annapolis, I | Architectur | Trees | Towers | Capitols | Domes | Cupolas | | | | | | |
| 41 | 2075 | http://purl.d | http://iveba | 1940-09-21 | Sep. 25, 19 | Cupola, Ma | State Capit | Annapolis, I | Architectur | Trees | Towers | Cupolas | Domes | Chimneys | | | | | | |
| 42 | 2076 | http://purl.d | http://iveba | 1940-09-16 | Sep. 16, 194 | Row of old h | Annapolis | Annapolis, | Maryland | Dwellings | Railings | Doors & doo | Windows | Women | Sidewalks | Shutters | Grilles | Railings | Arches | Row houses |
| 43 | 2077 | http://purl.d | http://iveba | 1940-09-16 | Sep. 16, 194 | Row of old h | Annapolis H | Annapolis, | Maryland | Dwellings | Windows | Shutters | African Am | Doors & doo | Sidewalks | Grilles | Railings | Arches | Row houses | |
| 44 | 2078 | http://purl.d | http://iveba | 1940-09-16 | Sep. 16, 194 | Blue-black | Blue black, | Annapolis, I | Snapshots | Children & s | Sidewalks | Walls | African Americans | | | | | | | |
| 45 | 2079 | http://purl.d | http://iveba | 1940-09-16 | Sep. 16, 194 | Alley scene | An alley sce | Annapolis, I | Cityscape p | Dwellings | Automobile | Alleys | Garages | Signs (Notic | Domes | Chimneys | Buildings | | | |
| 46 | 2080 | http://purl.d | http://iveba | 1940-09-21 | Sep. 25, 19 | Yacht Anne | Seven rives | Annapolis, I | Marine phot | Yachts | Boats | Rivers | Sailboats | Piers & wha | Rowboats | | | | | |
| 47 | 2081 | http://purl.d | http://iveba | 1940-09-21 | Sep. 25, 19 | Seven rives | Seven rives | Annapolis, I | Marine phot | Women | Boats | Rivers | Ships | | | | | | | |
| 48 | 5143 | http://purl.d | http://iveba | 1951-12-05 | Dec. 5, 195 | Anniston Al | two negro v | Anniston, | Alabama | Mountains | | | Dwellings | Women | Cities & towns | | | | | |
| 49 | 7754 | http://purl.d | http://iveba | 1955-03-2 | Mar. 21, 195 | Tow and Tek | Tow and Tek | Argus, Calif. | Landscape | Mountains | Hills | Rocks | Shrubs | | | | | | | |
| 50 | 2410 | http://purl.d | http://iveba | 1941-09-11 | Sep. 11, 194 | Unloading c | Ohio Ashtat | Ashtabula, | Marine phot | Hoisting ma | Smoke | Bridges | Railroad ca | Harbors | Vessels | Rivers | Facilities | Railroad tracks | | |
| 51 | 2411 | http://purl.d | http://iveba | 1941-09-11 | Sep. 11, 194 | View across | Ashtabula H | Ashtabula, | Marine phot | Hoisting ma | Vessels | Harbors | Railroad tra | Railroad ca | Coal | Rivers | Buildings | Dormers | | |



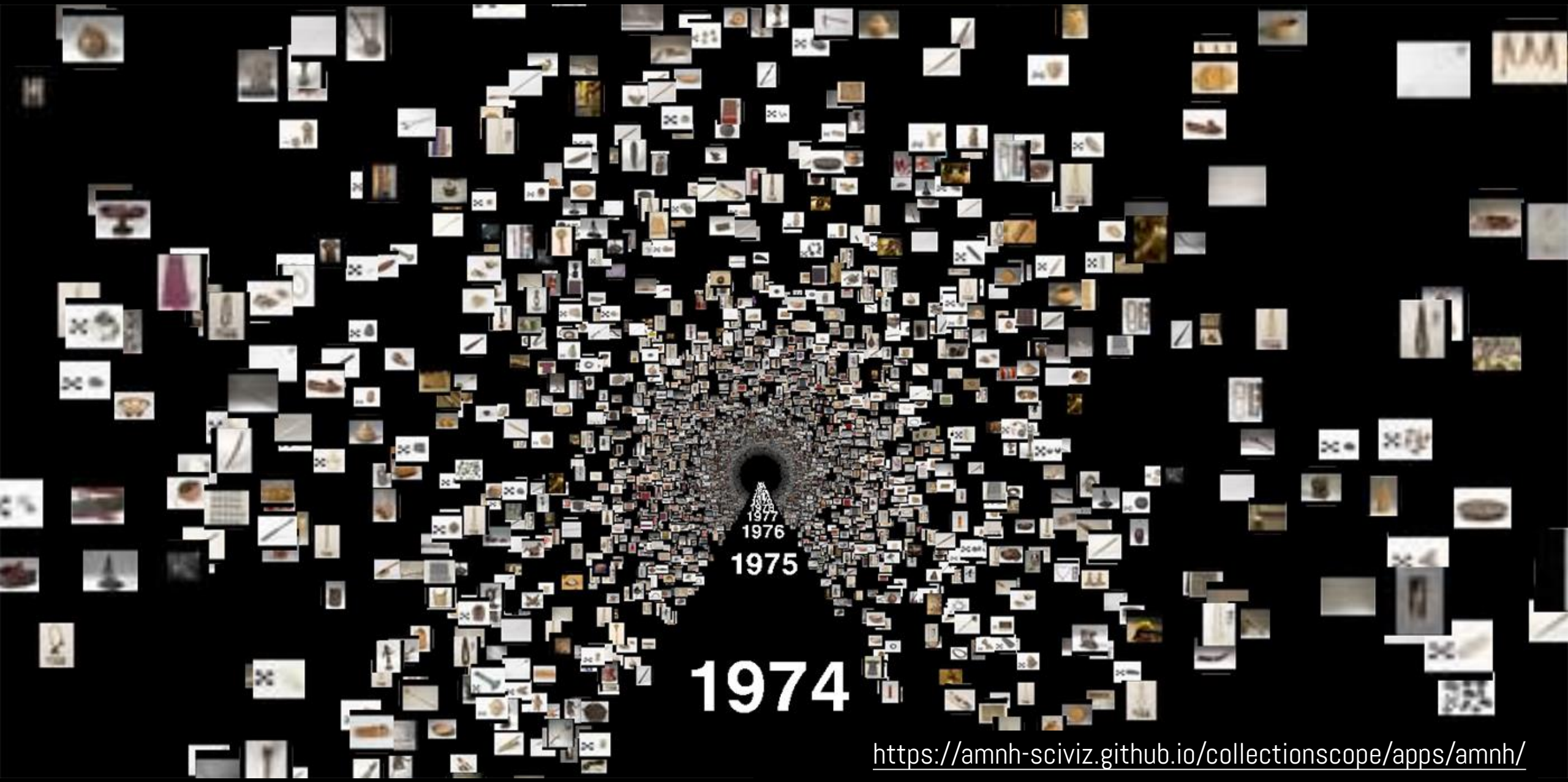
# VIS methods: Timeline, Clustering & Node-Link Diagram



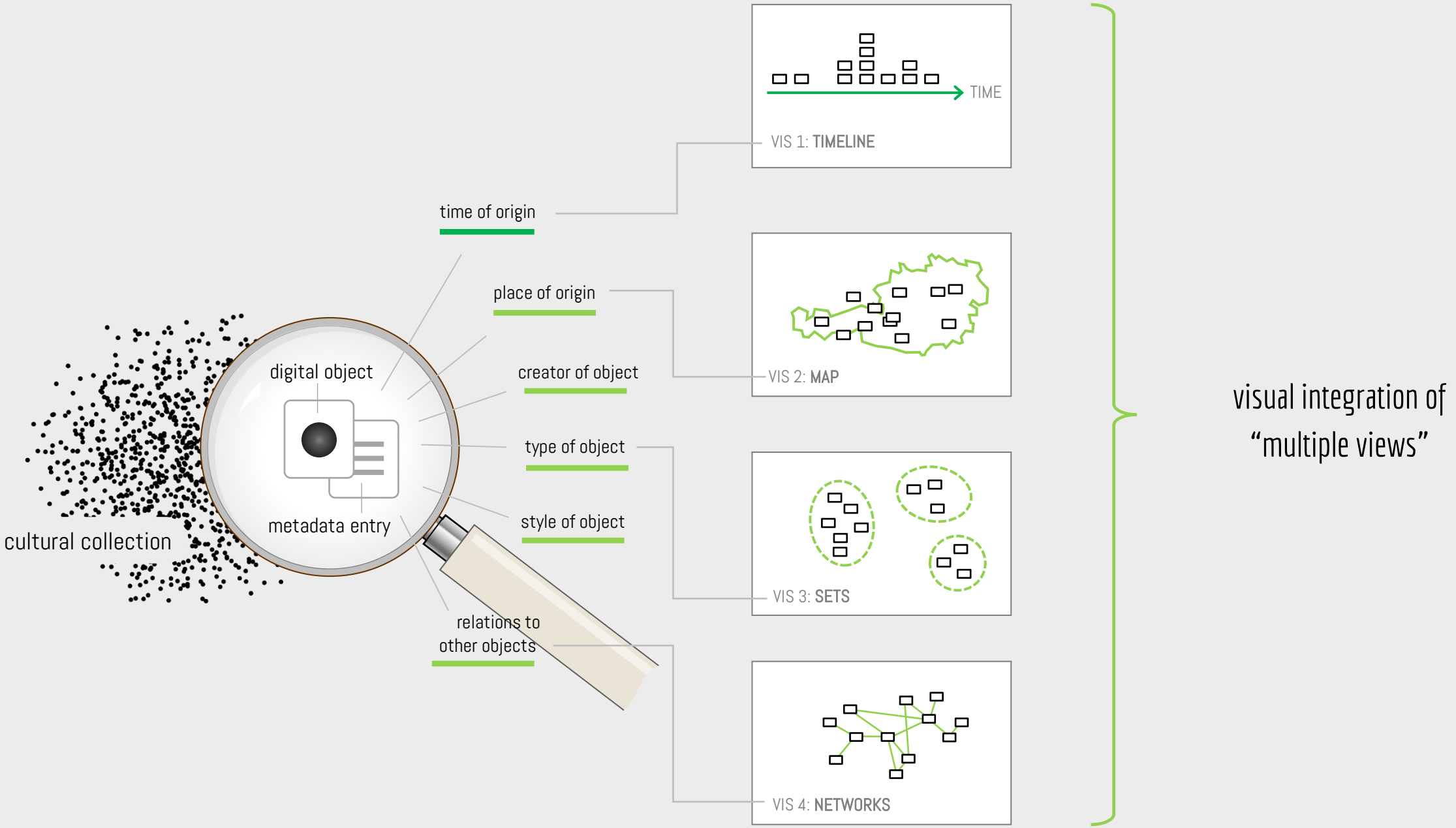
# VIS method: Timeline / Histogram

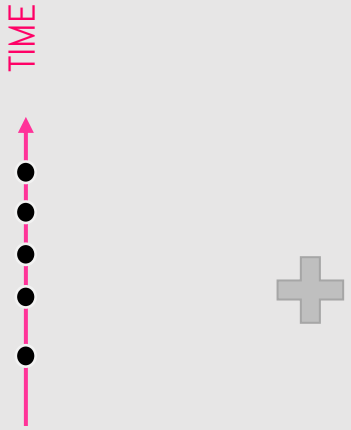



https://uclab.fh-potsdam.de/fw4/vis/



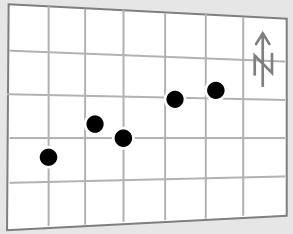

https://amnh-sciviz.github.io/collectionscope/apps/amnh/


cultural collection
digital object
metadata entry
time of origin
place of origin
creator of object
type of object
style of object
relations to other objects
TIME
VIS 1: TIMELINE
VIS 2: MAP
VIS 3: SETS
VIS 4: NETWORKS
visual integration of "multiple views"



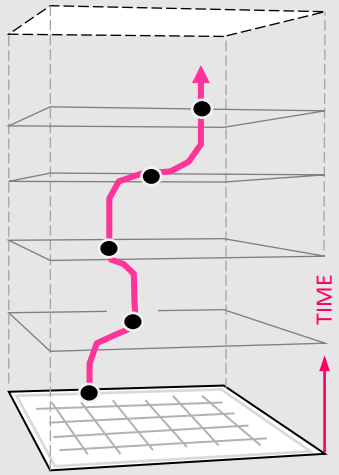

Chronography





Geography





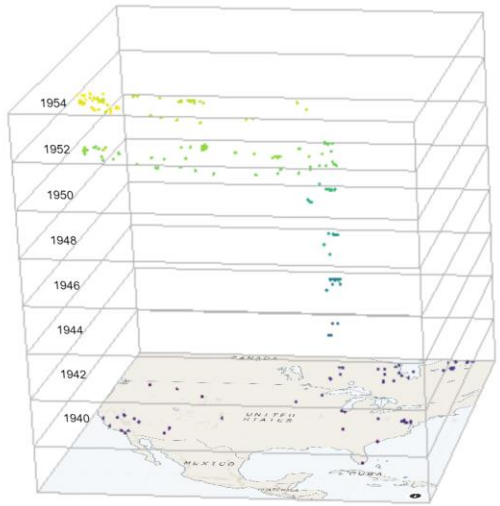

“Chronogeography / Time Geography”

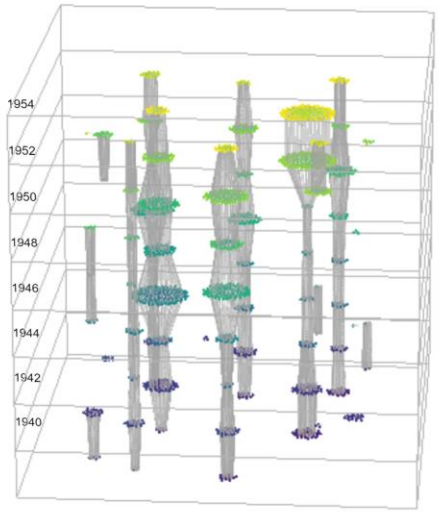
# The PolyCube visualization framework

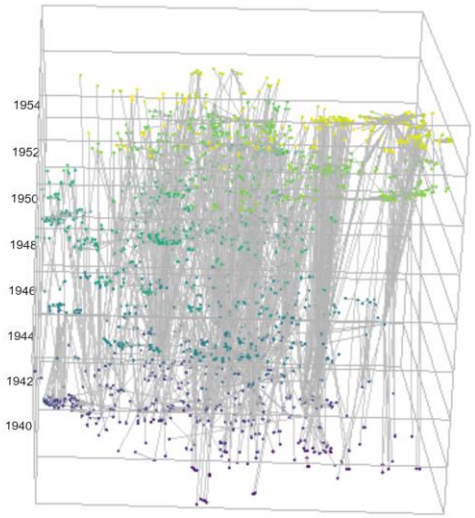
case study: The Charles W. Cushman Photography Collection (link)

categorical-temporal perspective

time axis




geo-temporal perspective

relational-temporal perspective

Paper: CG&A 2020 link

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

# The POLYCUBE visualization framework

Case Study: Highly Cited Movies / IMDB (link)


Comedy
Drama
Thriller

21-08-1991, USA, UK

A renowned New York playwright is enticed to California to write for the movies and discovers the hellish truth of Hollywood.

Related objects:


Network degree in: 4

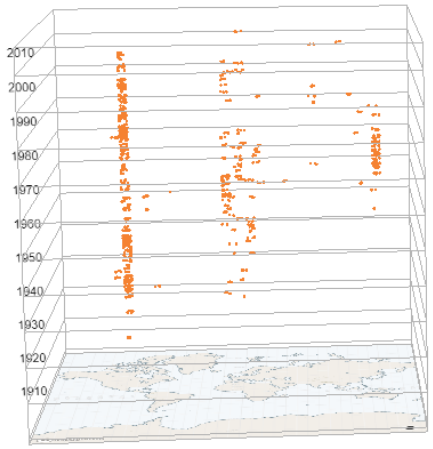
Network degree out: 14

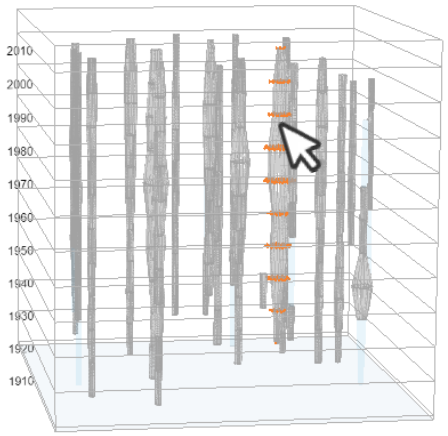
Network degree overall: 18

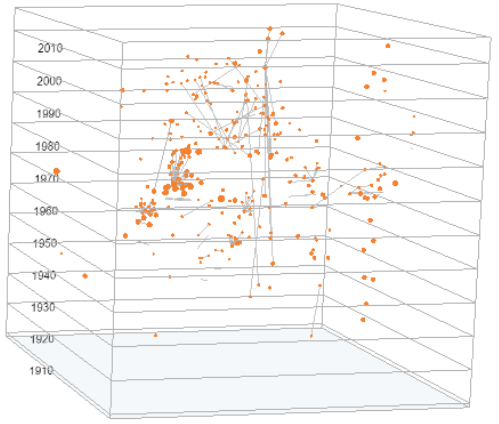
Selected: Comedy

## categorical-temporal perspective

showing movie genres over time




time

## geo-temporal perspective

showing geo-temporal origin of movies

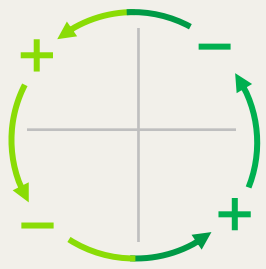
## relational-temporal perspective

showing references between movies

# Wrapping up & Bridging the Gap

Towards scalable & co-supportive DH-TH Cycles

| DH practices | TH practices |
| --- | --- |
| **strengths:** large scale capture and analysis of cultural object data and features (practices of “distant reading & viewing”) | **limitations:** focus on relatively few objects only, due to constraints of scholarly time and attention |
| **limitations:** possible only for low-level features of cultural objects | **strengths:** historical-critical interpretation, evaluation and contextualization of cultural materials (practices of “close reading & viewing”) |



# References


- Arnold, T., & Tilton, L. (2019). Distant viewing: analyzing large visual corpora. Digital Scholarship in the Humanities, 34(Supplement_1), i3-i16.
- Brooks Jr, F. P. (1996). The computer scientist as toolsmith II. Communications of the ACM, 39(3), 61-68. online
- Card, S. K., Mackinlay, J. D., & Shneiderman, B. (1999). Readings in information visualization: using vision to think. Morgan Kaufmann.
- Dörk, M., Pietsch, C., & Credico, G. (2017). One view is not enough: High-level visualizations of a large cultural collection. Information Design Journal, 23(1), 39-47.
- Drucker, J. (2012). Is There a Digital Art History? Visual Resources: An International Journal of Documentation, 29:1-2, 5-13, online
- Jänicke, S., Franzini, G., Cheema, M. F., & Scheuermann, G. (2015, May). On Close and Distant Reading in Digital Humanities: A Survey and Future Challenges. In EuroVis (STARs) (pp. 83-103). online
- Liu, Z., Nersessian, N., & Stasko, J. (2008). Distributed cognition as a theoretical framework for information visualization. IEEE transactions on visualization and computer graphics, 14(6), 1173-1180. online
- Moretti, F. (2000). Conjectures on world literature. New left review, 54-68. online
- Moretti, F. (2005). Graphs, maps, trees: abstract models for a literary history. Verso.
- Soot, A. & Diagne, C. (2016). Every piece of art you've ever wanted to see - up close and searchable. TED Talk. online
- Vasari, G. (2008). The Lives of the Artists (Reissue edition, Original work published in 1550). Oxford, UK: Oxford University Press.
- Vaughan, W. (2005). Introduction: Digital Art History? In A. Bentkowska-Kafel et al. (eds). Digital Art History: A Subject in Transition, 1 (pp. 1–2), Bristol, UK: Intellect Books.
- Windhager, F., Federico, P., Schreder, G., Glinka, K., Dörk, M., Miksch, S., & Mayr, E. (2018). Visualization of cultural heritage collection data: State of the art and future challenges. IEEE transactions on visualization and computer graphics, 25(6), 2311-2330. online