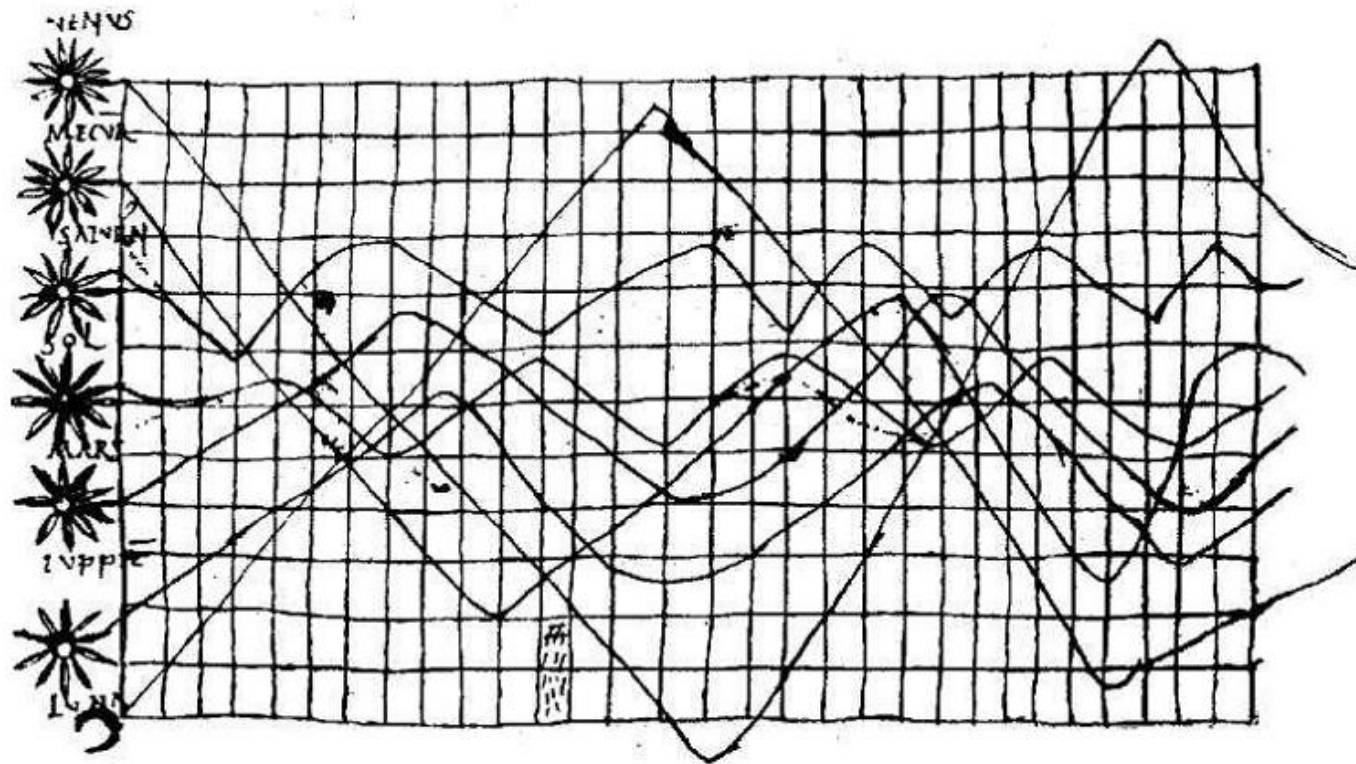


Historie vizualizace dat





Proč historie?

Protože ikonické příklady dokazují, jak efektivní vizualizace je.

Vizualizace jako prostředek k řešení problému.

Vizualizace jako prostředek k ověřování hypotéz.

Vizualizace jako prostředek k přesvědčování.

Vizualizace jako zachránce životů.



BABYLON.

677 **2520** **7**
 677 **12**
 1843. **84**
 30
538 **2300** **2520.**
457 **457**
 1843.

A CHRONOLOGICAL CHART
OF THE
VISIONS OF DANIEL & JOHN.

332 **164**
158

BABYLON. **BABYLON.**
MEDIA AND PERSIA. **MEDIA AND PERSIA.**
GRECIA. **GRECIA.**
PAGAN ROME. **PAGAN ROME.**

THE TEN KINGDOMS.

1335 **490** **33**
1290 **508** **12**
45. **538** **42**
 606 **30**
 1260.

PAPAL ROME. **PAPAL ROME.**
MAHOMETANS. **MAHOMETANS.**

1299 **1449**
1798 **508**
45 **1335**
1843. **1843.**

1843. GOD'S EVERLASTING KINGDOM

Chapter

Handbook of Data Visualization

Part of the series Springer Handbooks Comp.Statistics pp 15-56

A Brief History of Data Visualization

Michael Friendly

Buy chapter

\$29.95 / €24.95 / £19.95 *

Buy eBook

\$379.00 / €296.31 / £251.50*

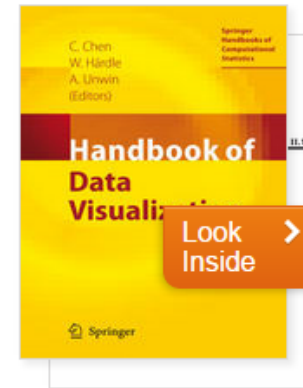


Get Access





* Final gross prices may vary according to local VAT.

Abstract

It is common to think of statistical graphics and data visualization as relatively modern developments in statistics. In fact, the graphic representation of quantitative information has deep roots. These roots reach into the histories of the earliest map making and visual depiction, and later into thematic cartography, statistics and statistical graphics, medicine and other fields. Along the way, developments in technologies (printing, reproduction), mathematical theory and practice, and empirical observation and recording enabled the wider use of graphics and new advances in form and content.



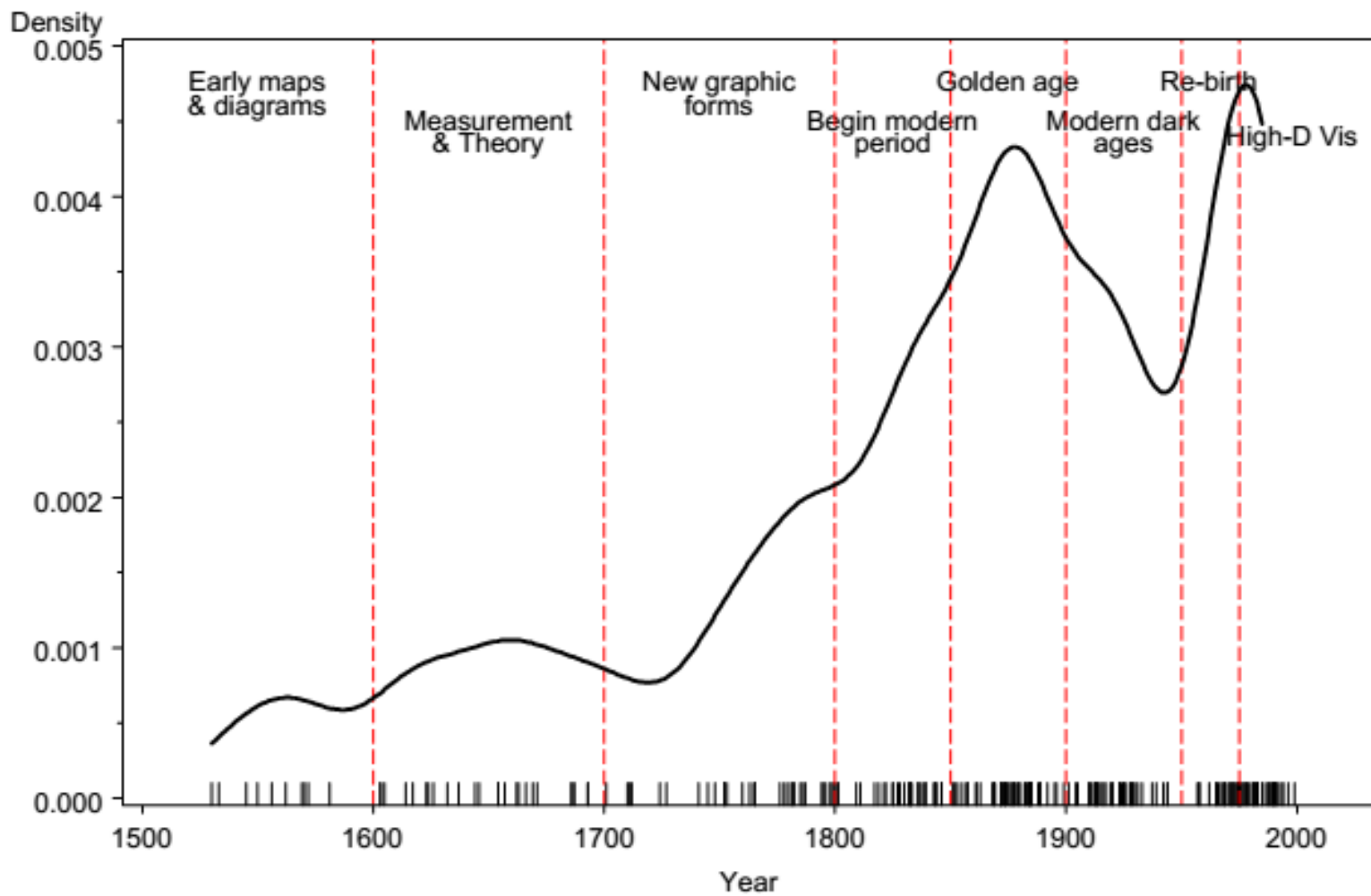
Chapter Metrics

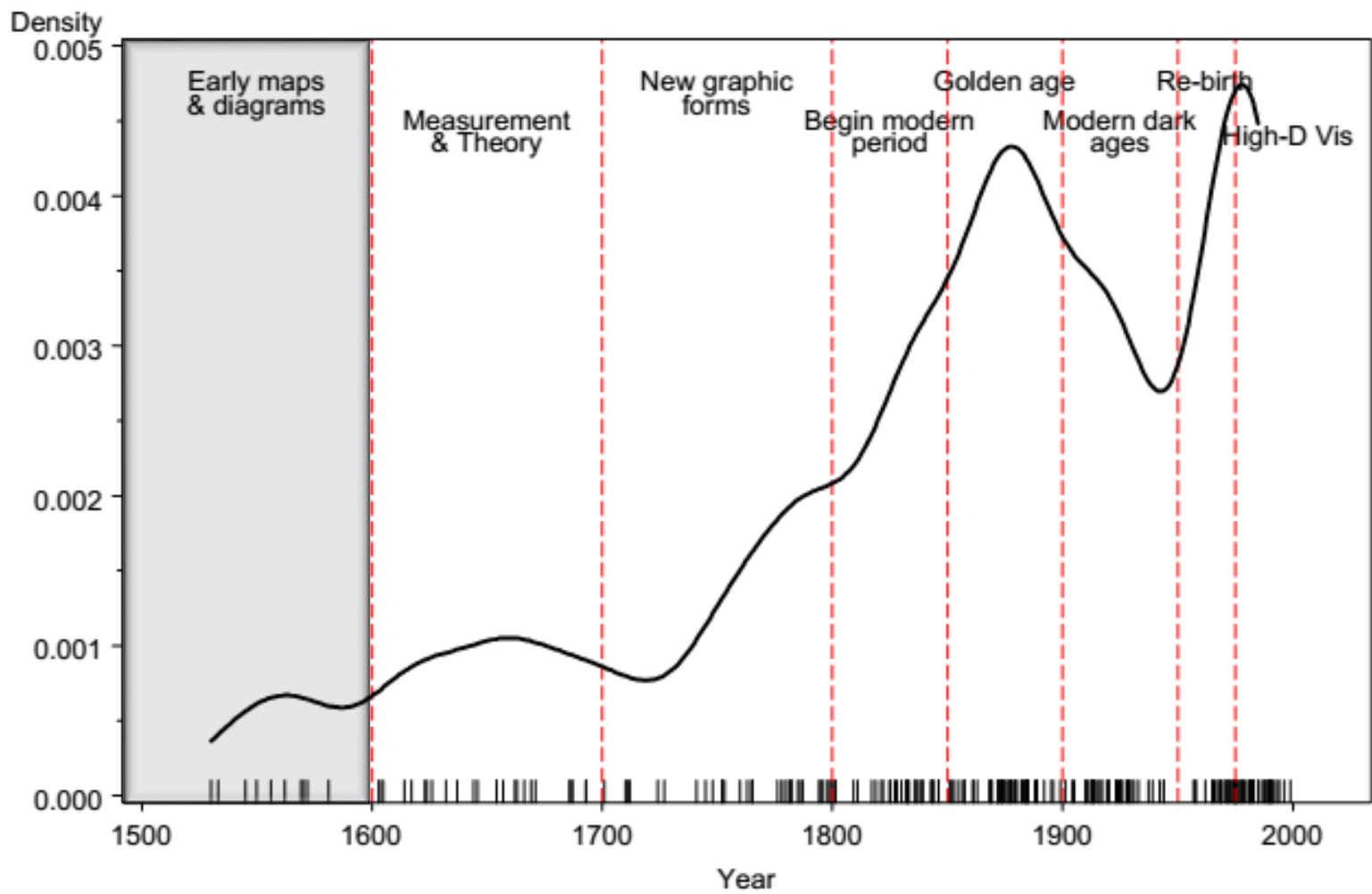
 Citations	6
 Mentions	2
 Readers	40
 Downloads	4K

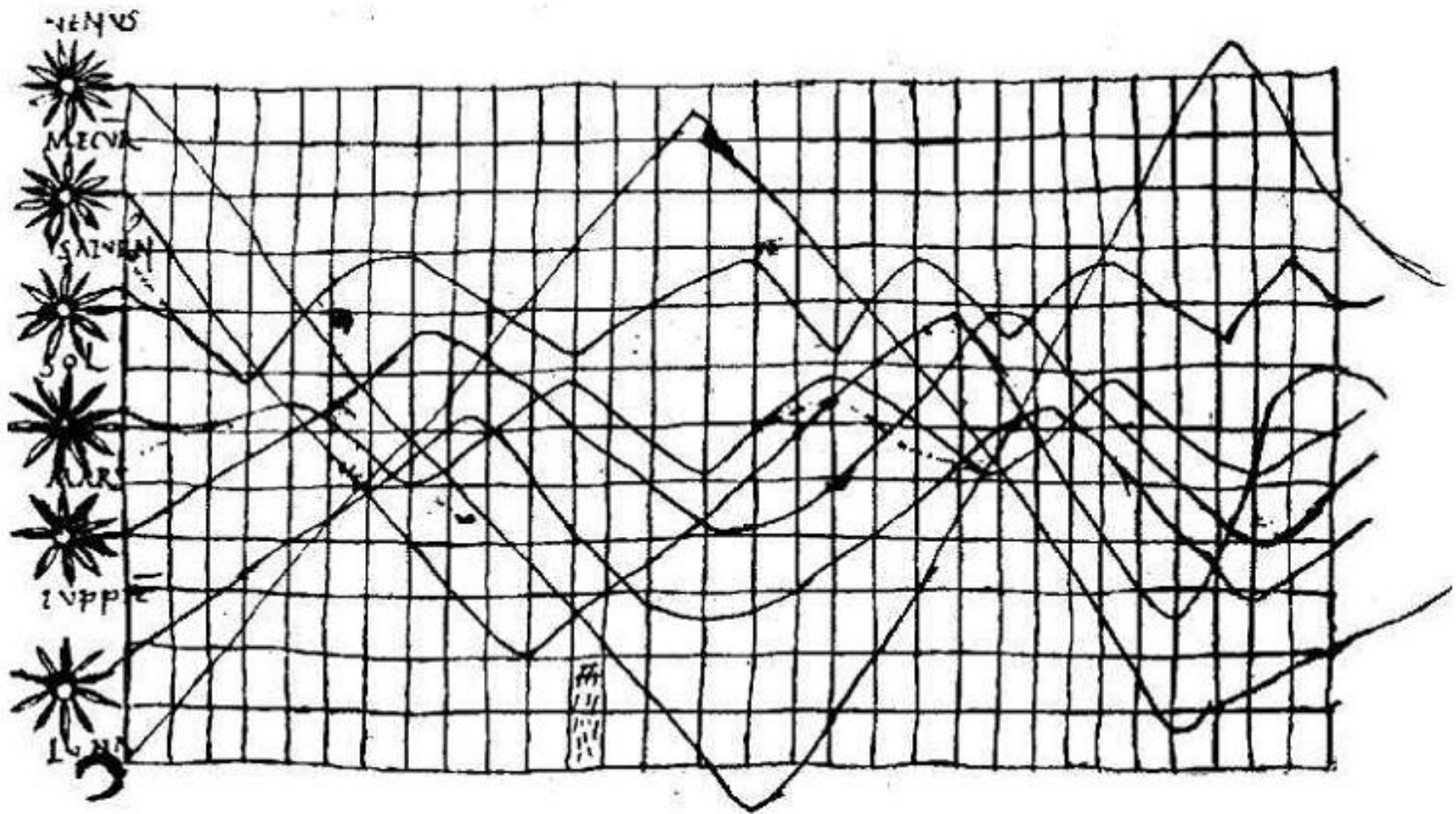
Provided by Bookmetrix

Other actions

- » [Export citation](#)
- » [About this Book](#)
- » [Reprints and Permissions](#)
- » [Add to Papers](#)







difformis uniformiter variatio reddit unifor-
 miter difformiter difforme. ¶ Latine: uni-
 formis est diuorsus est illa quae inter excessus graduum
 equidistantium fuerit eadem proportio eadem in eadem p-
 portione equitatis. Nam si inter excessus graduum
 inter se equidistantium fuerit proportio equita-
 tis ut est. autem: uniformiter difformis ut per ex-
 diffinitionibus membrorum secundae diuisionis
 Rursus si nulla proportio seruetur tunc nulla
 potest attendi uniformitas in latitudine tali et
 sic non esset uniformiter difformis est difformis
 ¶ Latine: difformiter difformiter difformis
 est illa quae inter excessus graduum equidistantium
 non seruet eandem proportionem sicut in se-
 cunda parte patebit. Notandum tamen est
 quod sicut in supradictis diffinitionibus ubi loquitur
 de excessu graduum inter se equidistantium

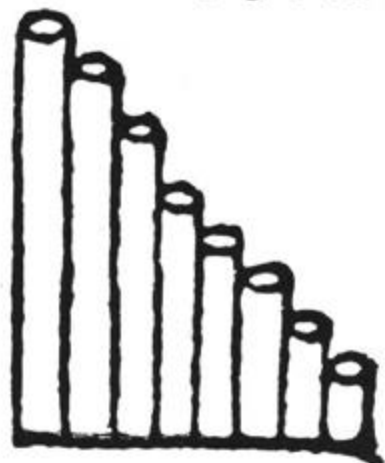
scilicet. et fiat ad inq

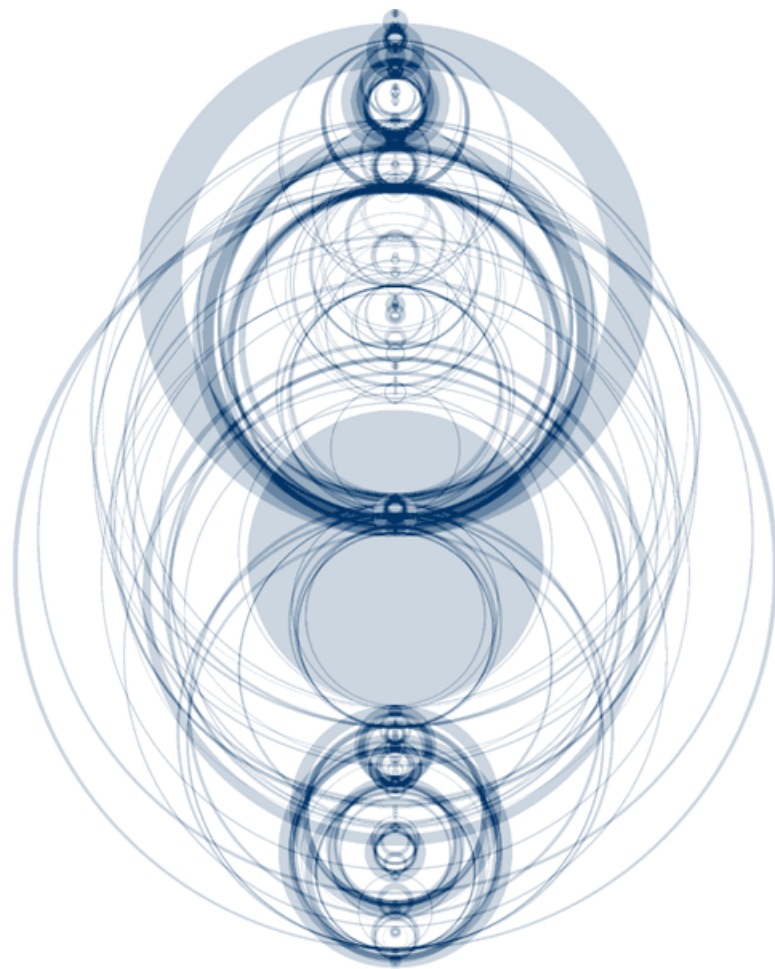
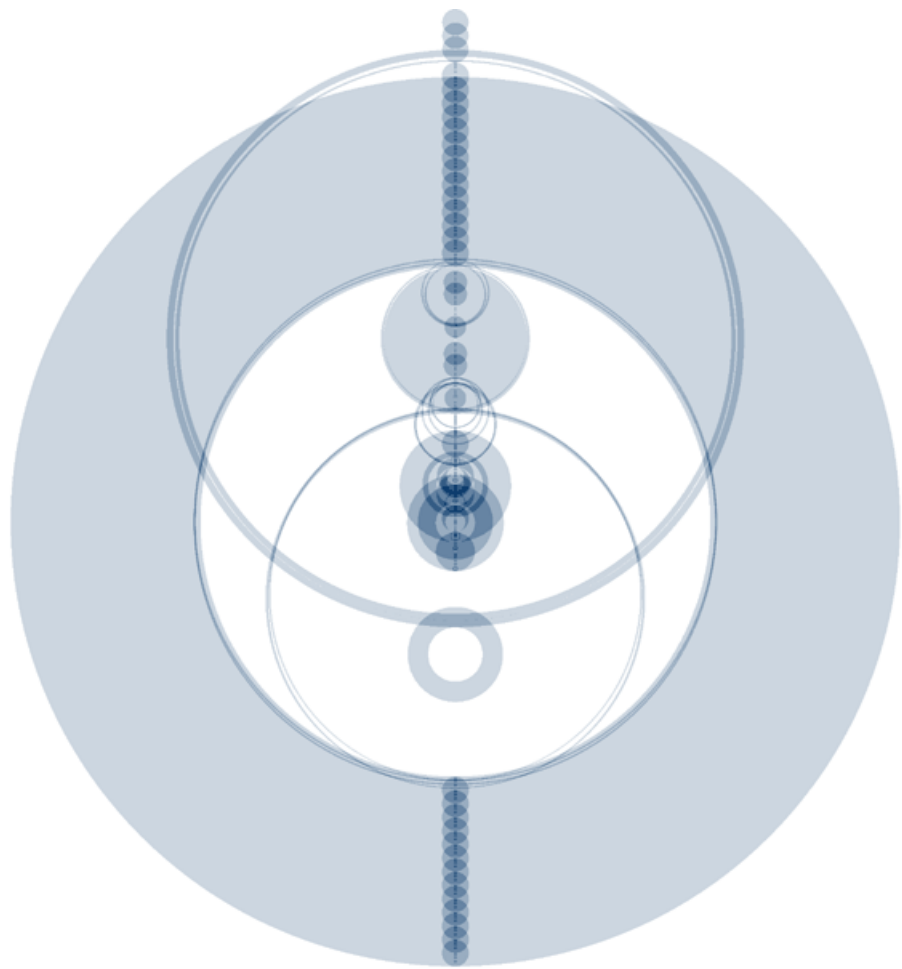


Diffōrū difforū



dif, dif, difforū







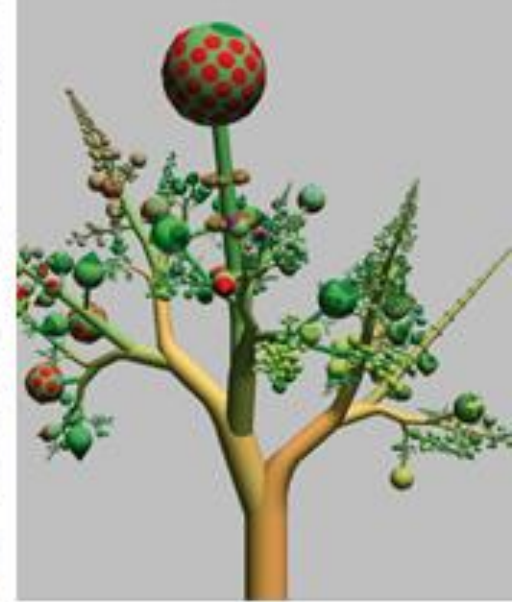
1202



1478

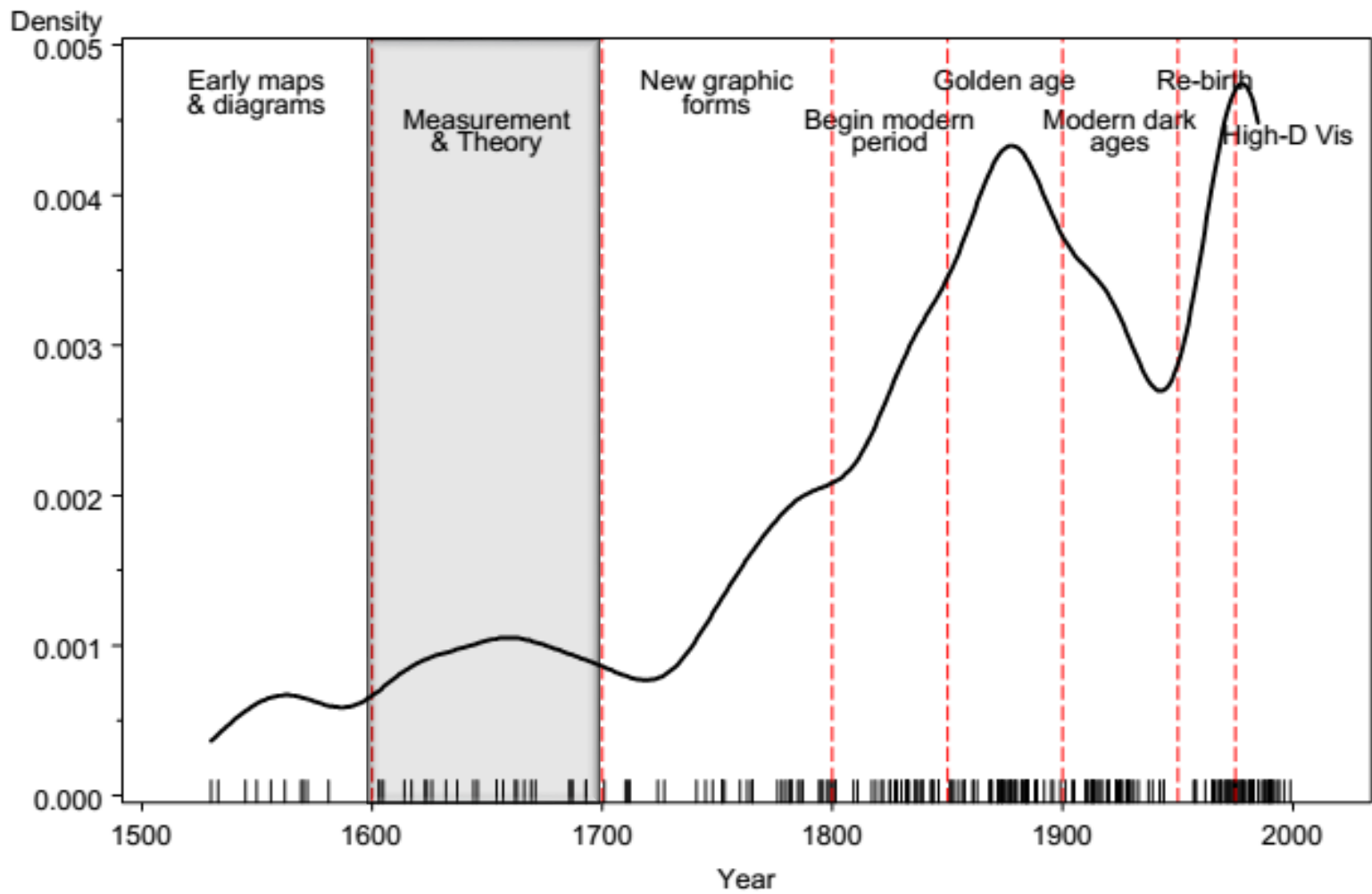


1780



2001

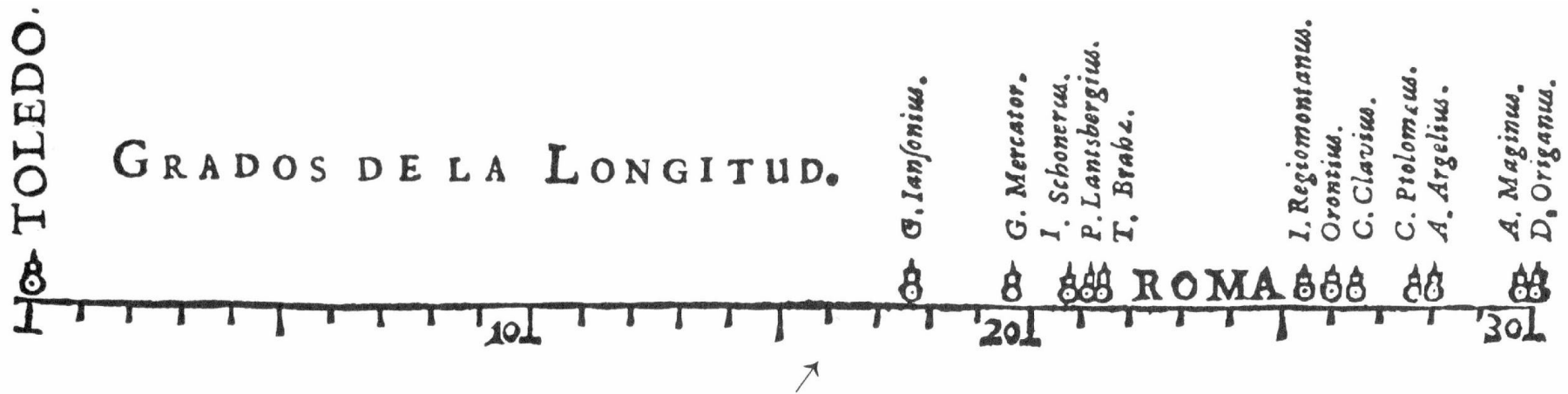
visualcomplexity.com



1644

Michael Florent van Langren

Rozdíly v odhadech zeměpisné délky

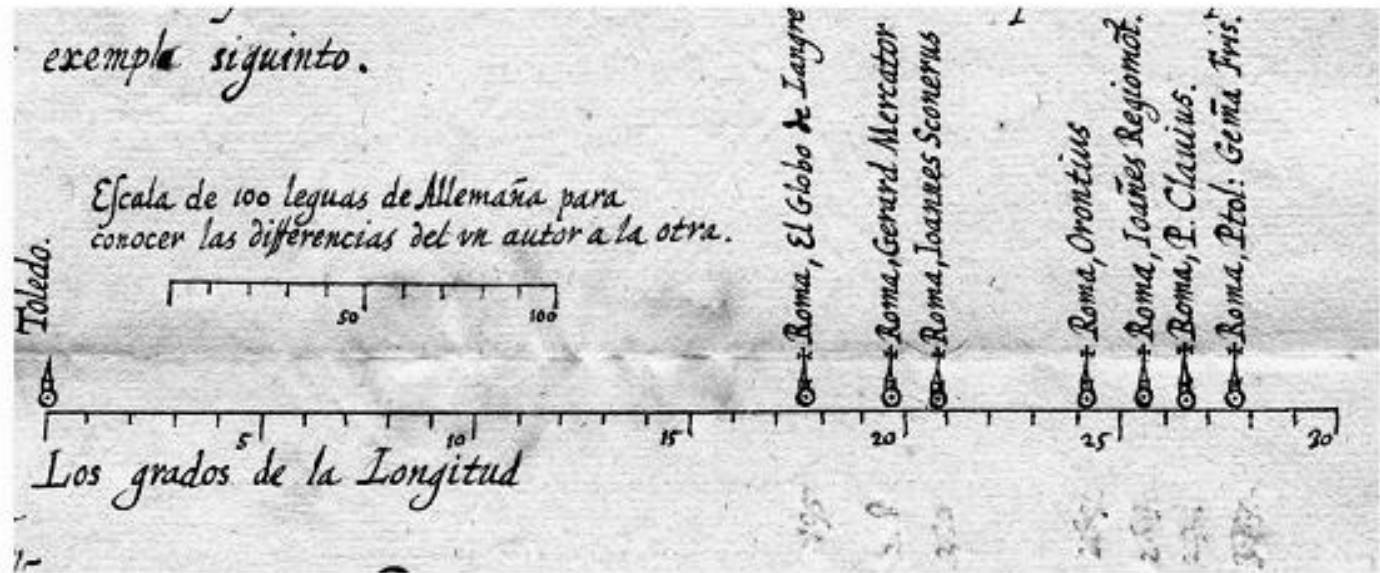


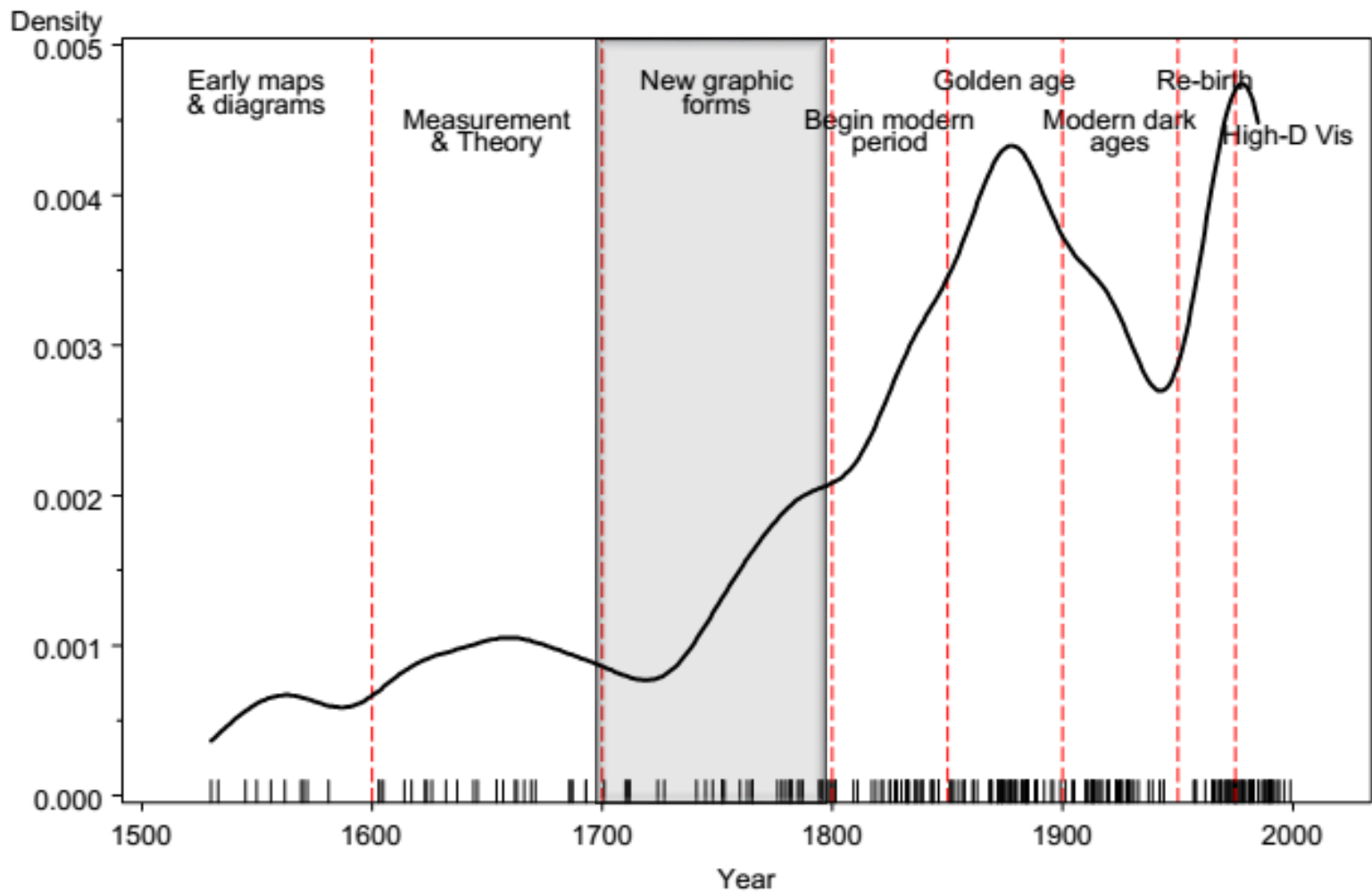
Michael Florent van Langren

Rozdíly v odhadech zeměpisné délky

Las distancias de
Roma y Toledo segun
los autores. Leg. de Allé

El Globo	195
Gerð. Mercat	210
Ioan sconer	230
Orontius	269
Ioan Regiöt	283
P. Clavius	294
Ptolomeus	307





1753

Jacques Barbeu-Dubourg

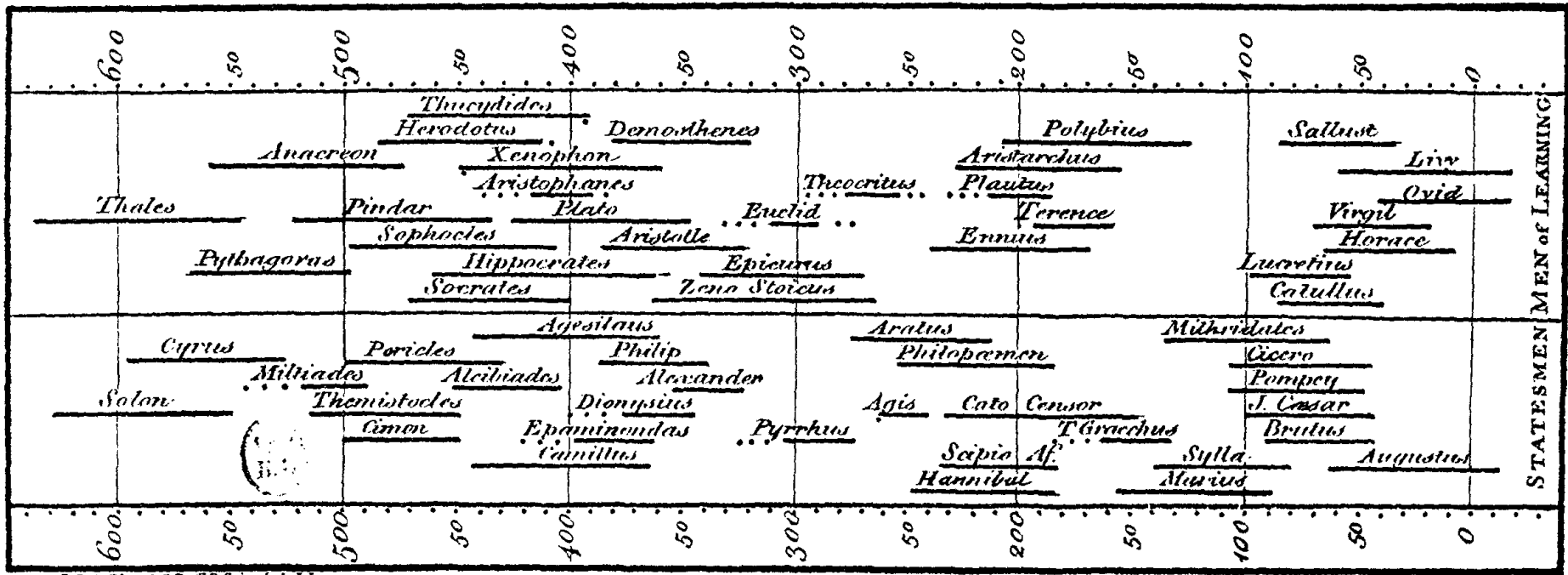
Časová osa



1765

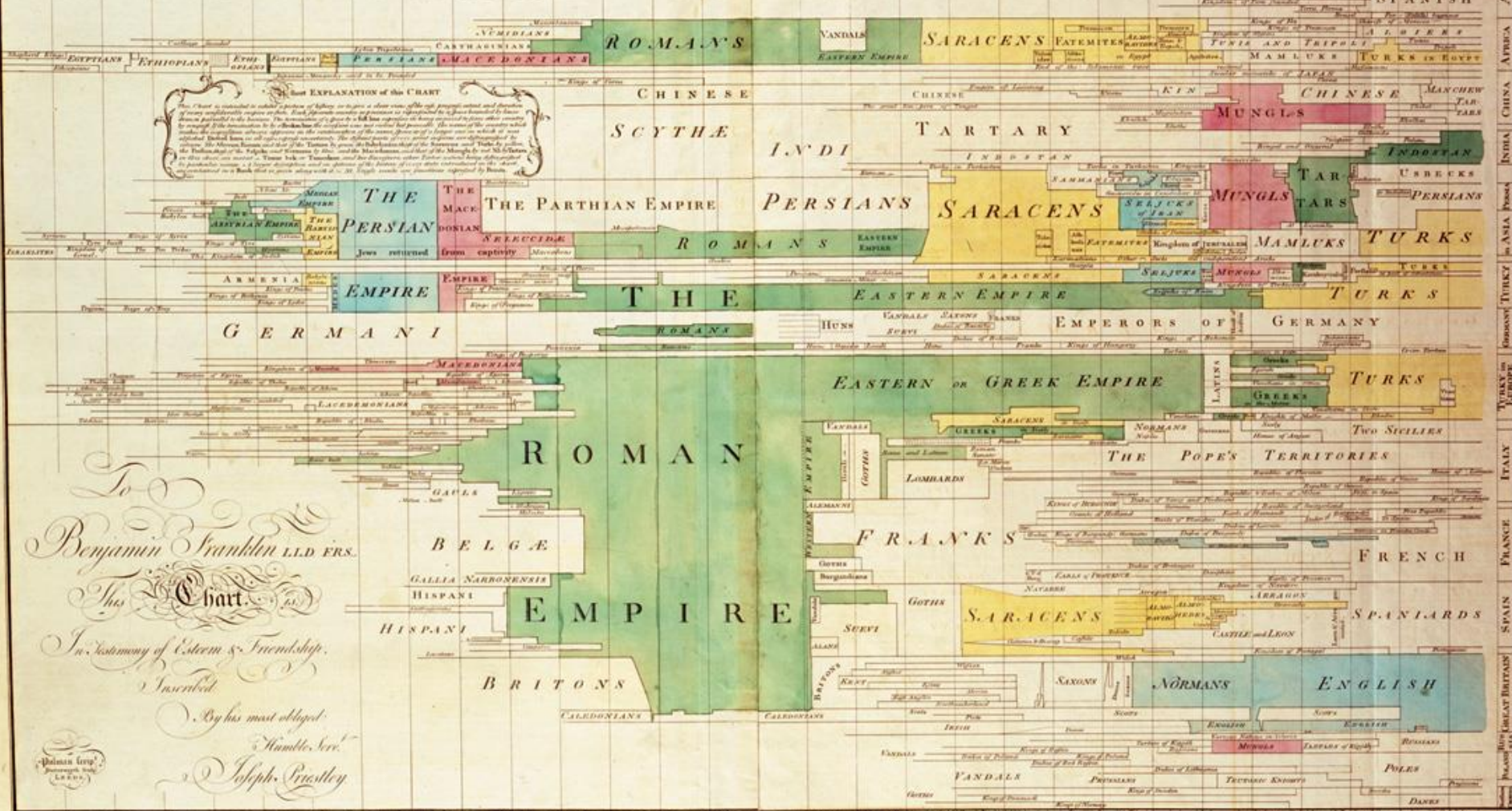
Joseph Priestly

Časová osa



Allegory in Eastern languages, written
by Augustus, M.D.C.C.

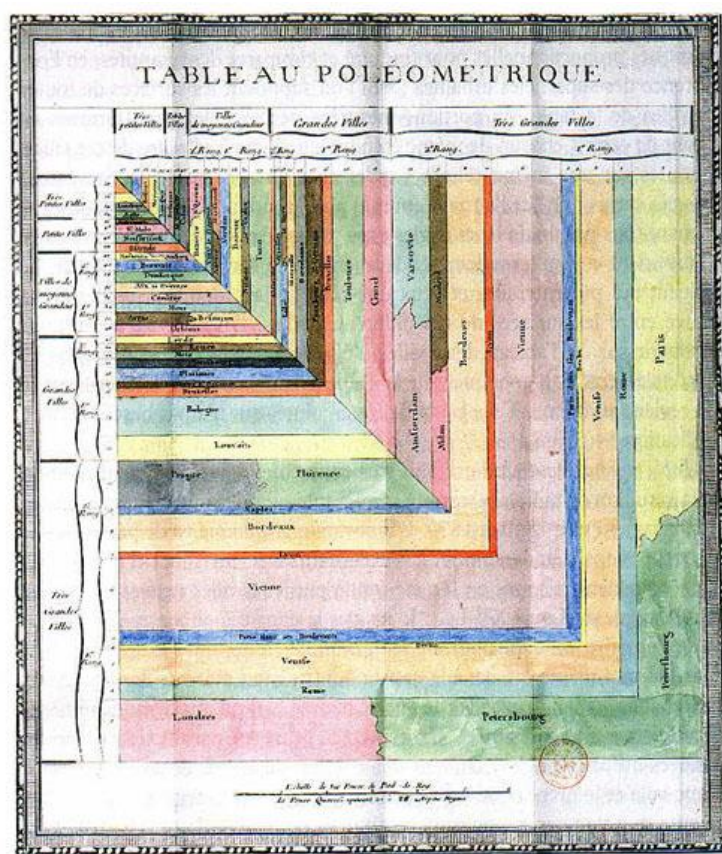
A NEW CHART OF HISTORY.



1782

Charles de Fourcroy

Předchůdce kartodiagramu



1780+

William Playfair

Skoro všechny základní statistické grafy

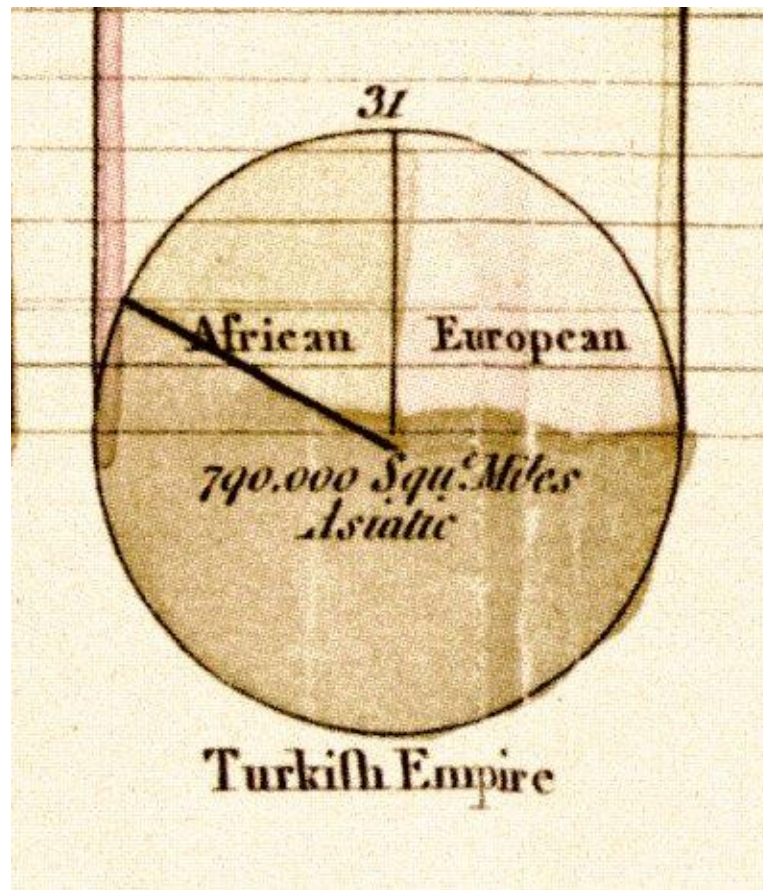
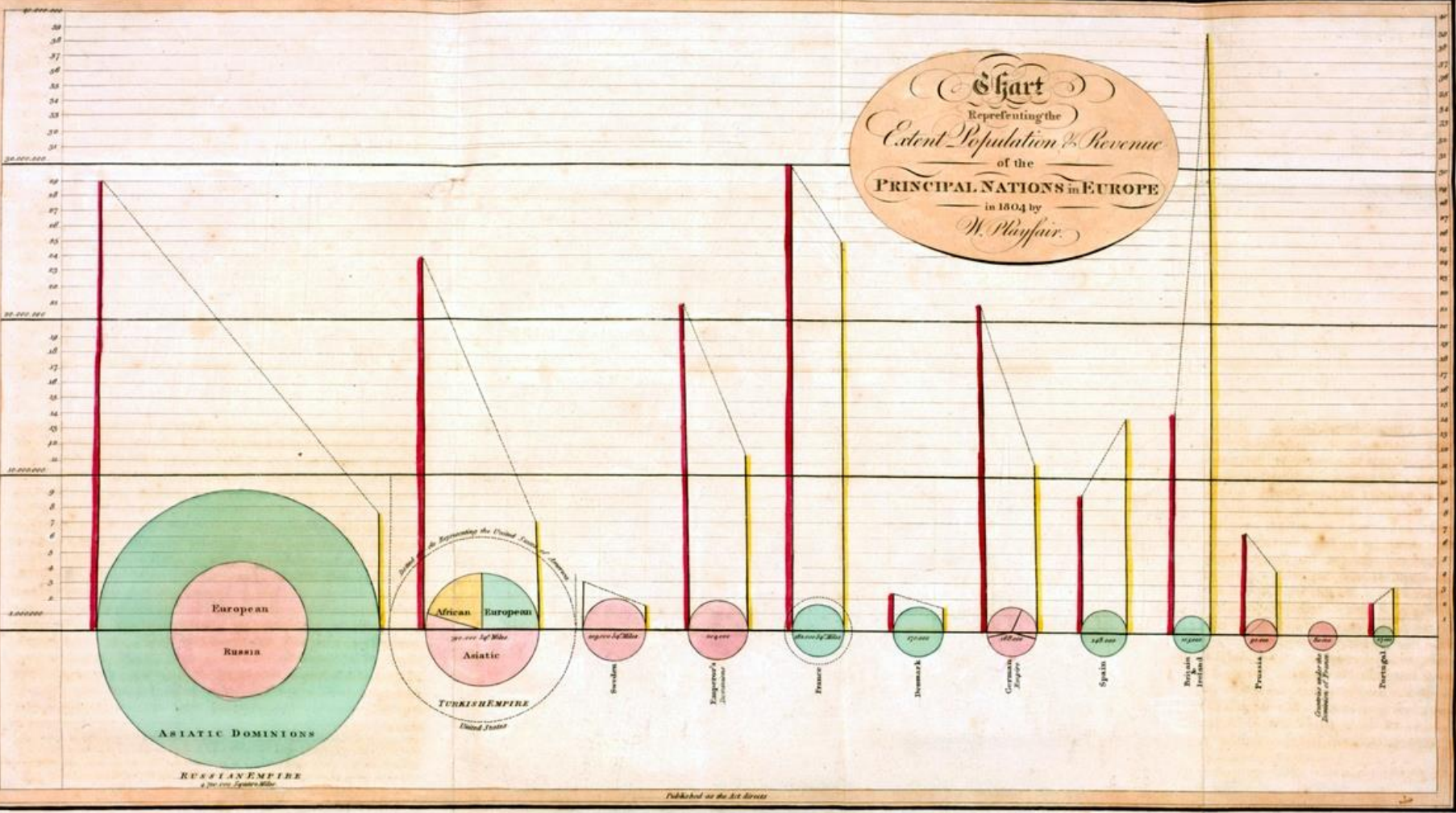
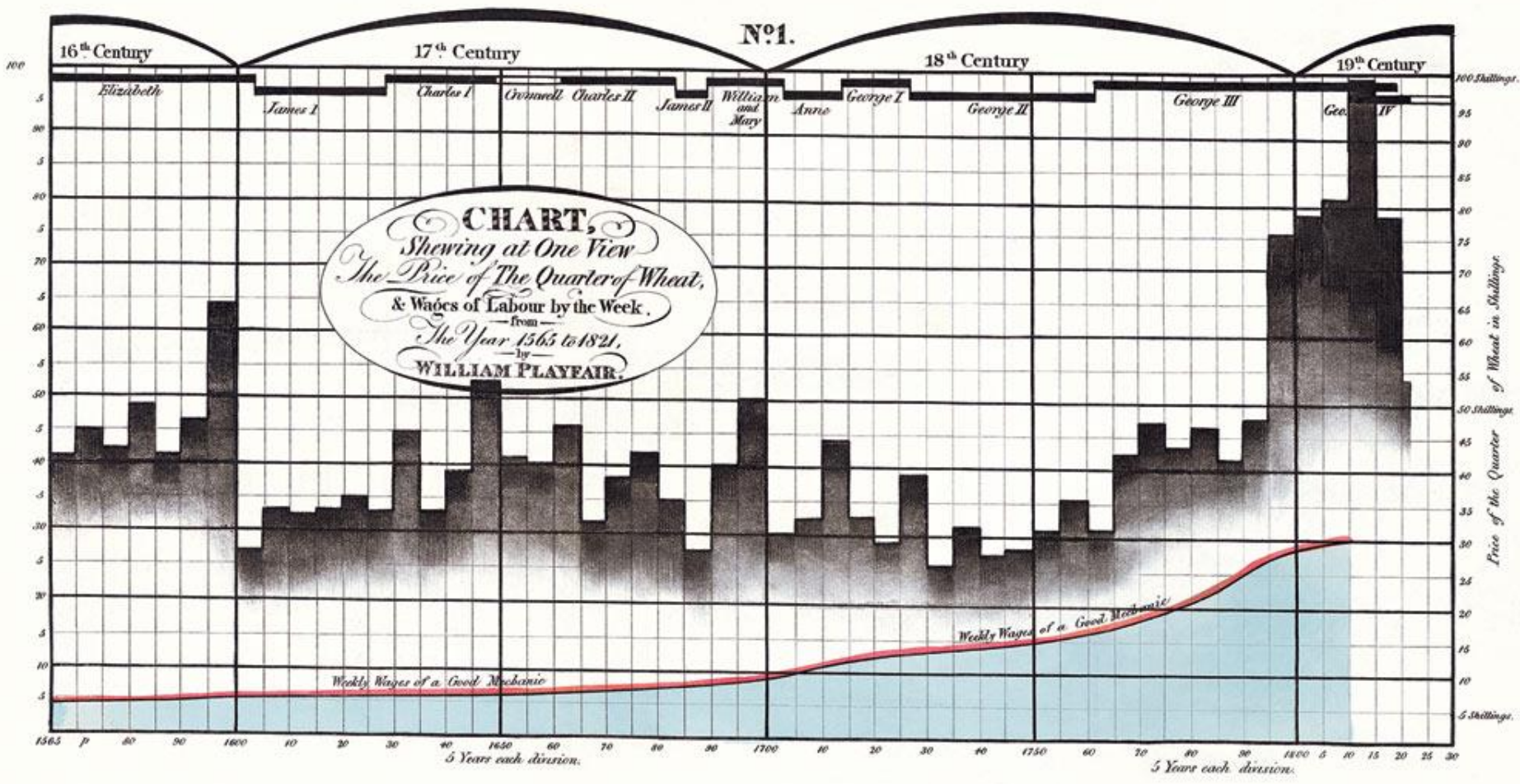


Chart
 Representing the
Extent, Population & Revenue
 of the
PRINCIPAL NATIONS in EUROPE
 in 1804 by
W. Playfair.





C. J. Harris

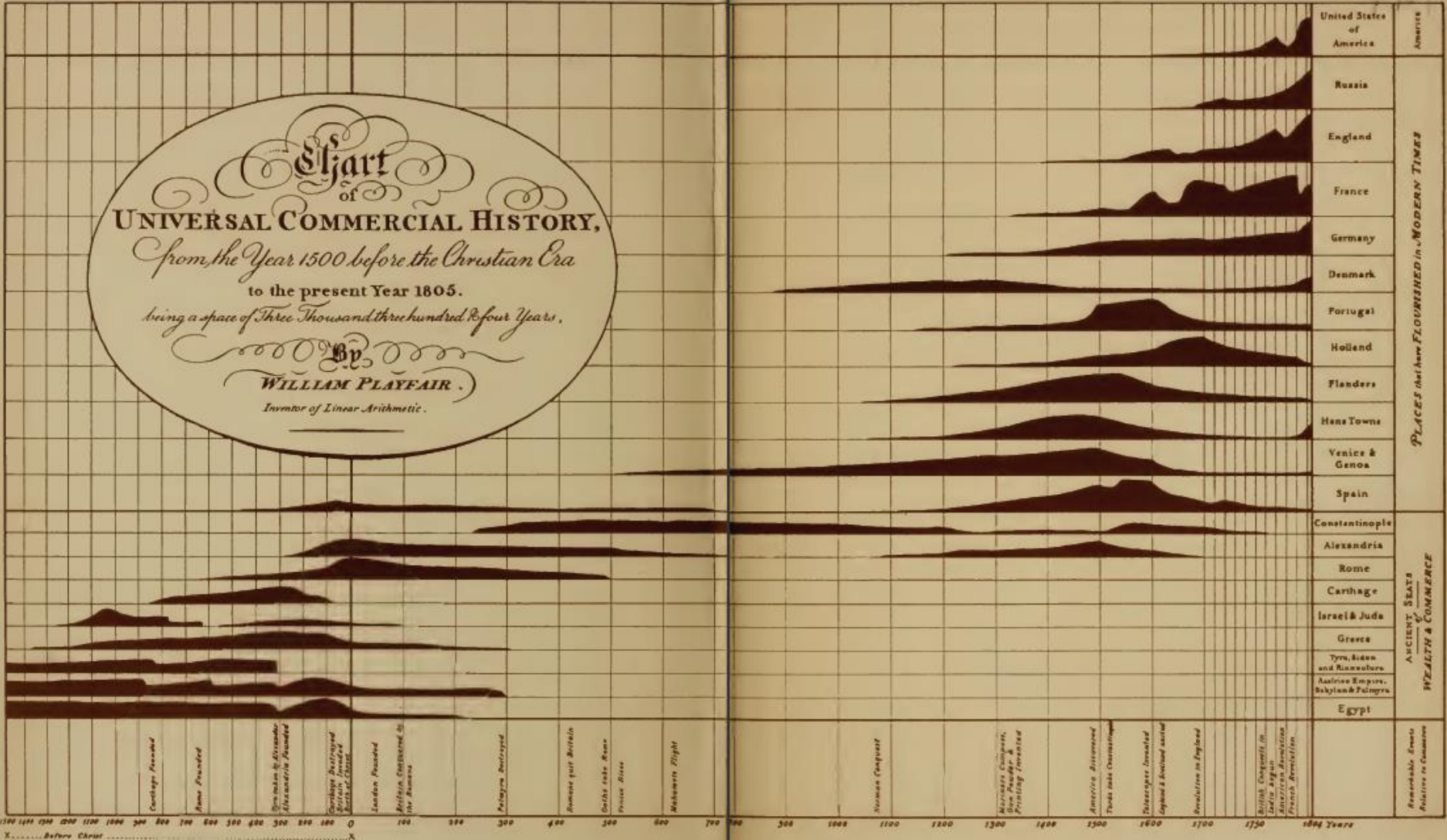
C. J. Harris

FC 11/91

581 PM



Start
 of
UNIVERSAL COMMERCIAL HISTORY.
From the Year 1500 before the Christian Era
 to the present Year 1805.
being a space of Three Thousand three hundred & four Years,
 By
WILLIAM PLAYFAIR.
Inventor of Linear Arithmetic.

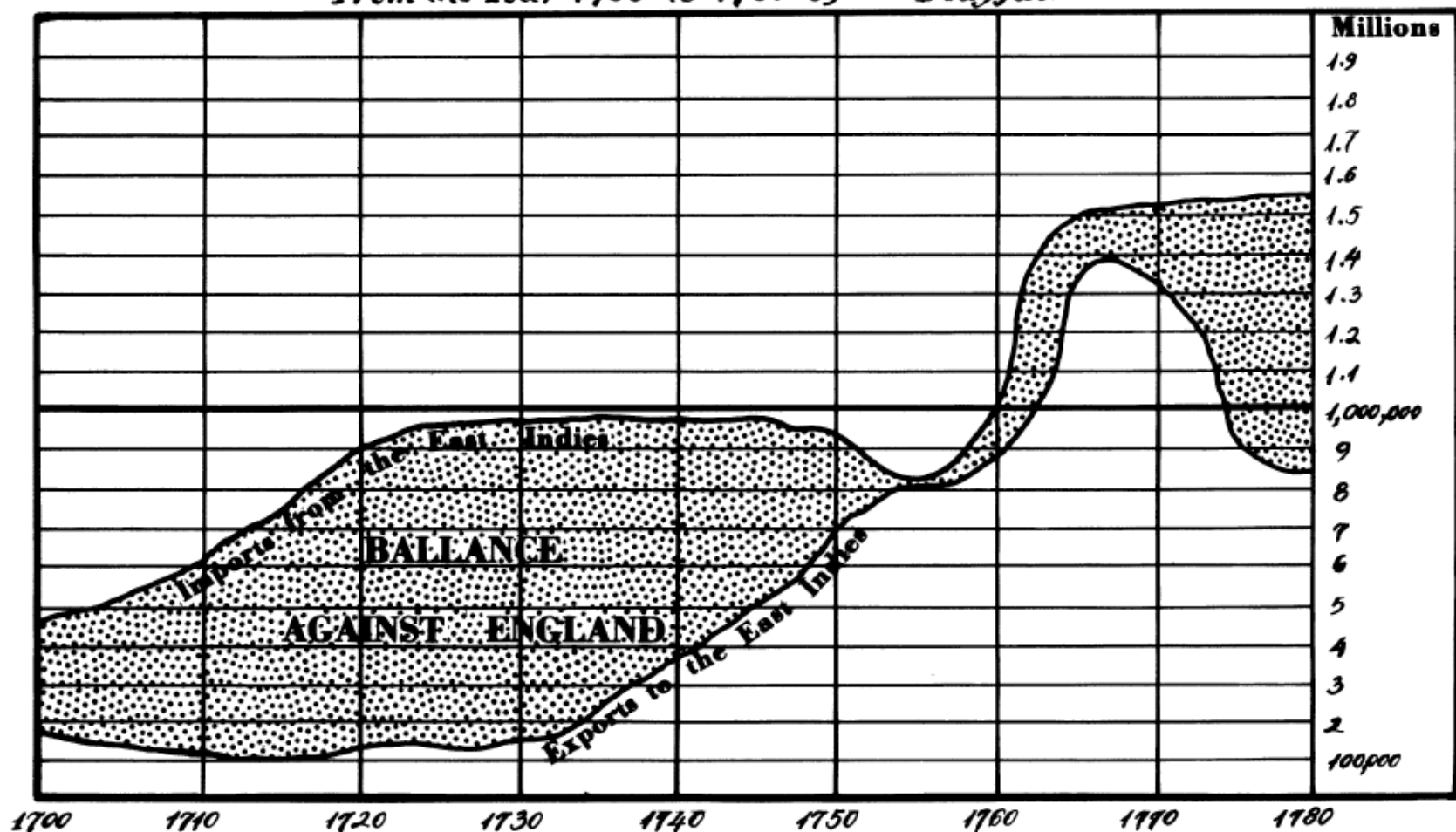


PLACES WHICH FLOURISHED IN MODERN TIMES

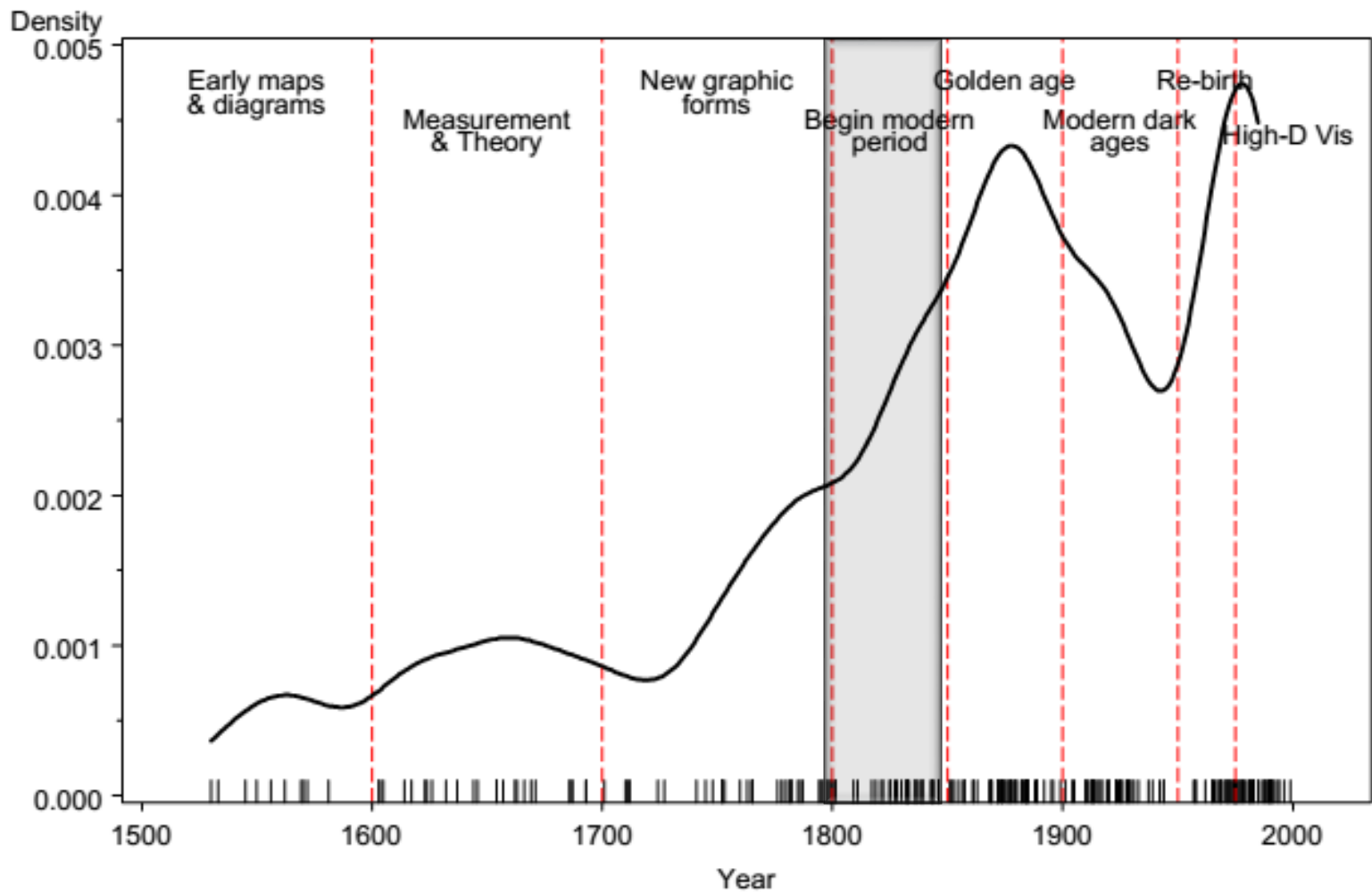
ANCIENT SEATS OF WEALTH & COMMERCE

From Frontispiece of Book by WILLIAM PLAYFAIR, An Inquiry Into the Permanent Causes of the Decline and Fall of Powerful and Wealthy Nations, London, 1805.

CHART of EXPORTS and IMPORTS to and from the EAST INDIES
From the Year 1700 to 1780 by W. Playfair



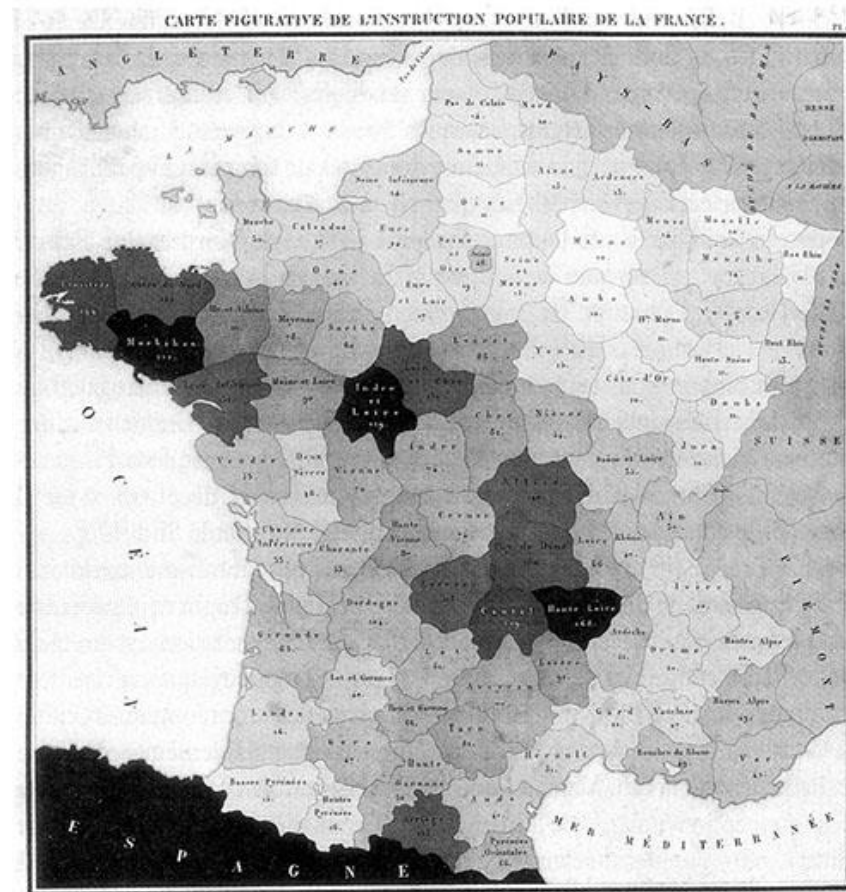
The Bottom Line is Divided into Years the Right hand Line into HUNDRED THOUSAND POUNDS
King of the Kings is force Page 31st Published in the Act Divine 16th Aug. 1785



1826

Charles Dupin

První choropleth (kartogram)



1833

André-Michel Guerry

Essai sur la statistique morale de la France.

„Let us now compare this map with the one for crimes against persons. The maximum crime rate is in Corsica. Is this because there is greater ignorance there? Our map supplies evidence to the contrary. Further, the minimum occurs in the western and central provinces. Can it be said that the highest level of education prevails there?“

„Clearly, the relationship people talk about does not exist.“

1833 / 1854

Robert Baker, **John Snow**

Mapy cholery (dot mapa)



1833 / 1854

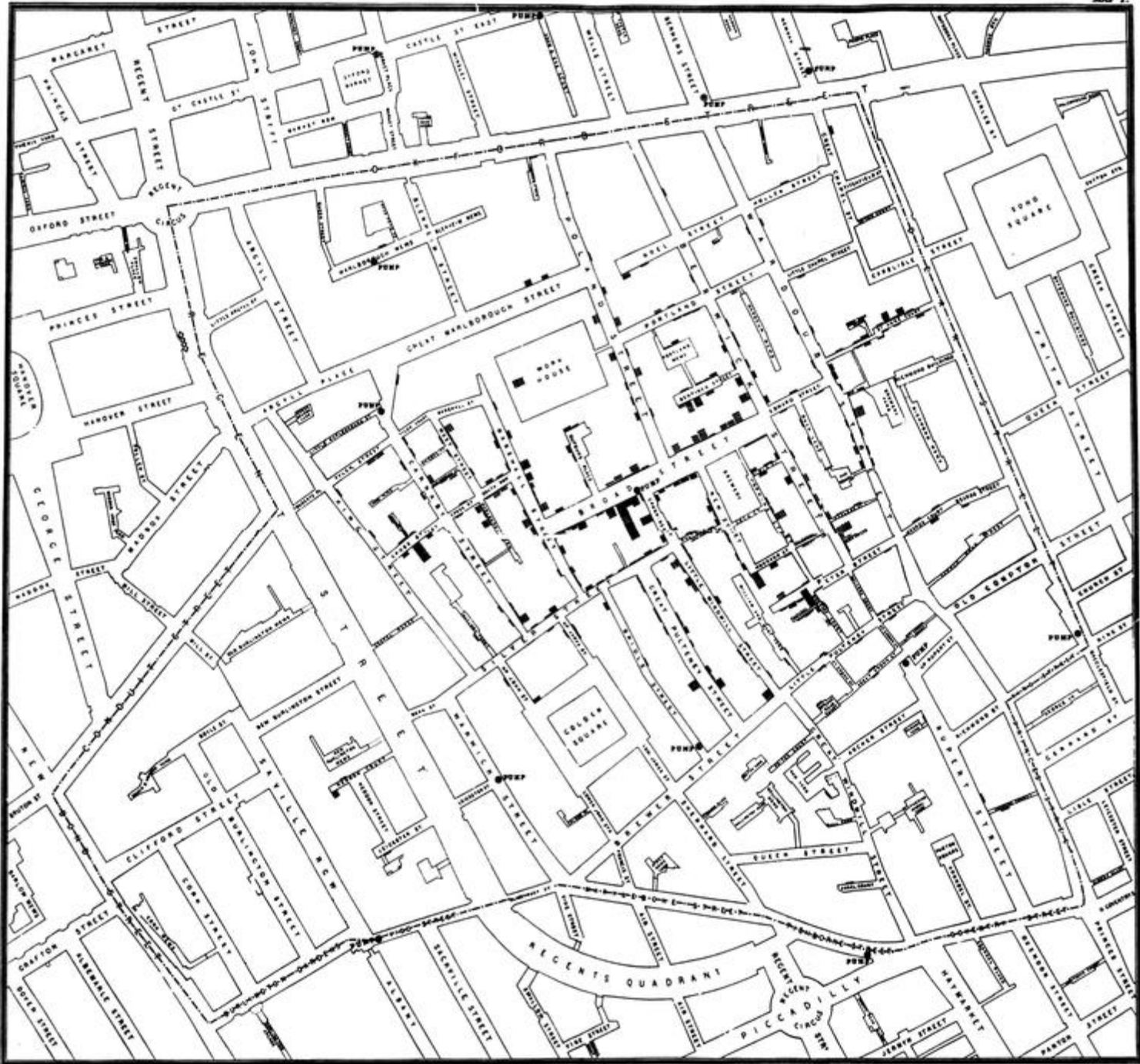
Robert Baker, **John Snow**

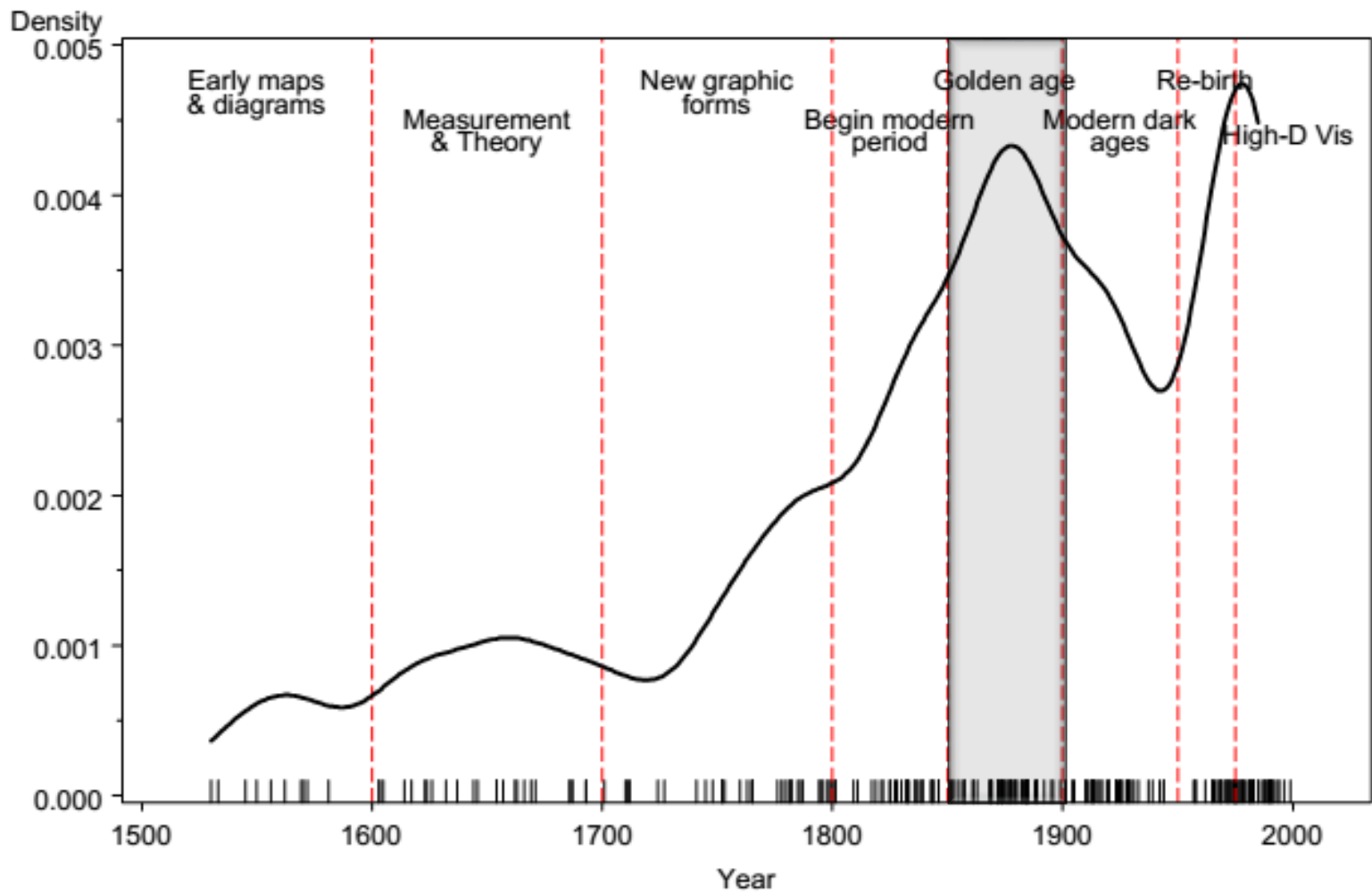
Mapy cholery (dot mapa)

„We are of the opinion that the streets in which malignant cholera prevailed most severely, were those in which the drainage was most imperfect; and that the state of the general health of the inhabitants would be greatly improved, and the probability of a future visitation from such malignant epidemics diminished, by a general and efficient system of drainage, sewerage and paving, and the enforcement of better regulations as to the cleanliness of the streets.“



https://books.google.cz/books?id=-N0_AAAcAAJ&printsec=frontcover&hl=cs&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false





1869

Charles Joseph Minard

Napoleonův pochod na Rusko a zpět

★ ★ ★ ★ ★

„Probably the best statistical graphic ever drawn.“

- *Edward Tufte*

Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Chiers, de Legur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre. — Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Nètome et du Maréchal Davout qui avaient été détachés sur Minsk et Mohilow et qui rejoignent vers Orscha et Witebsk, avaient toujours marché avec l'armée.

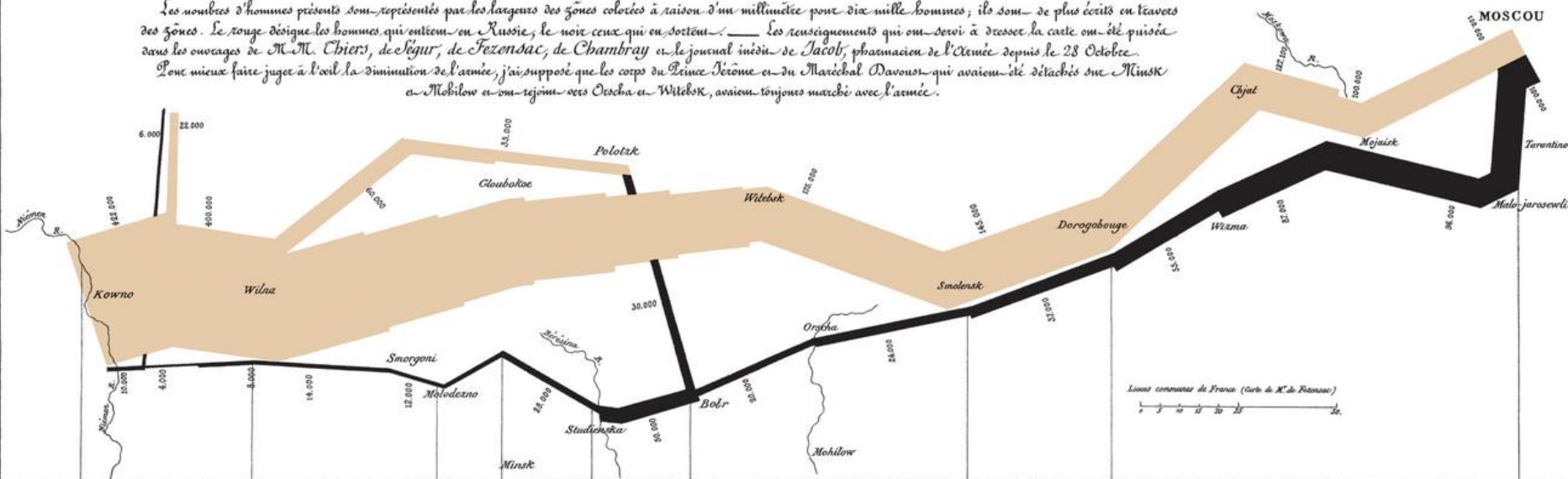
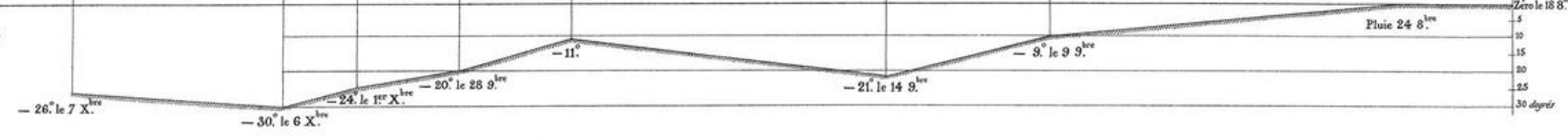
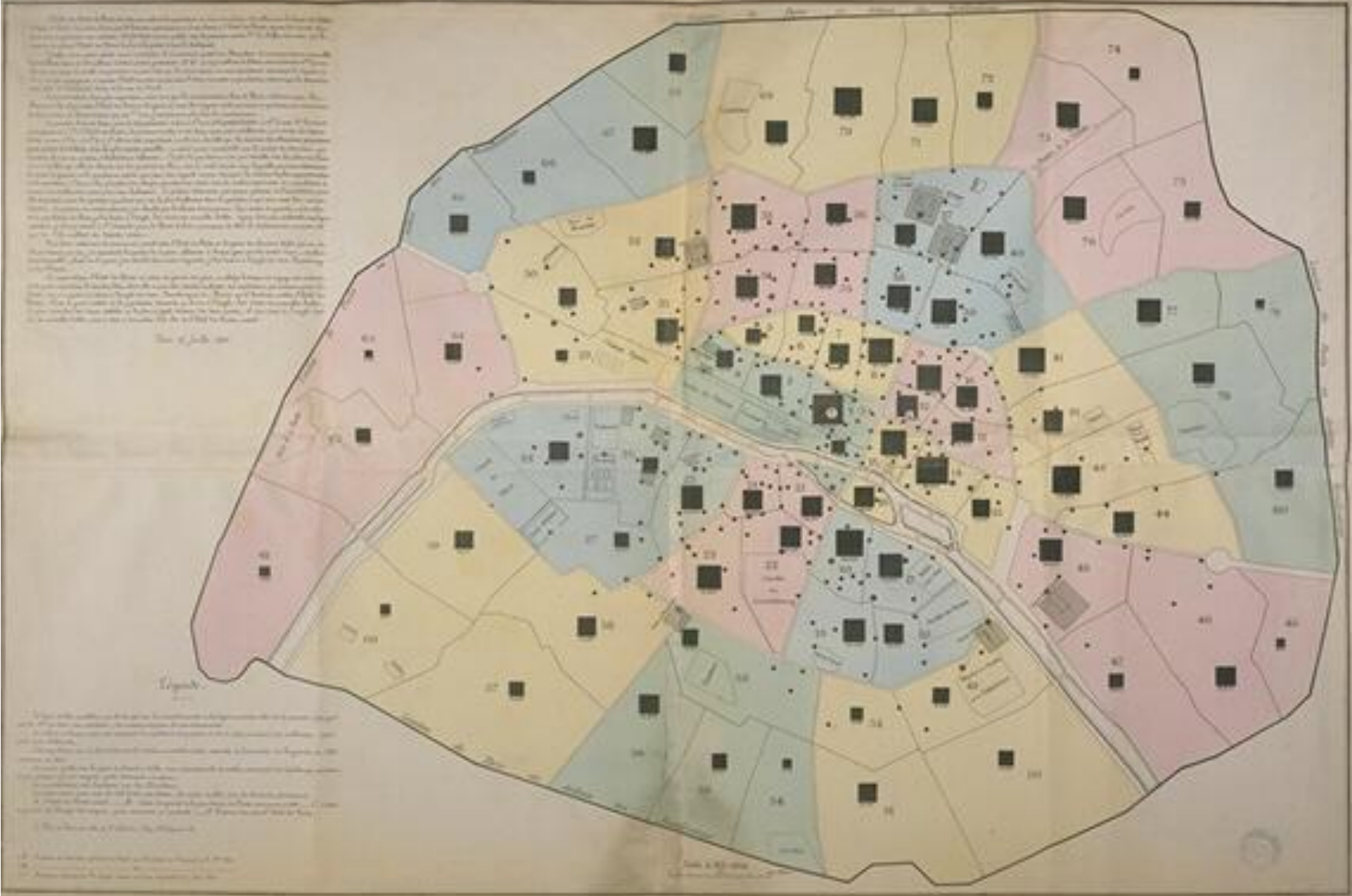


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.



Les Cosaques passent au galop le Niémen gelé.



Textual notes on the left side of the map, providing details about the districts and the map's purpose.

Plan de Paris

Paris

Additional text at the bottom left, possibly a legend or further notes.

Scale and date information at the bottom center.



1858

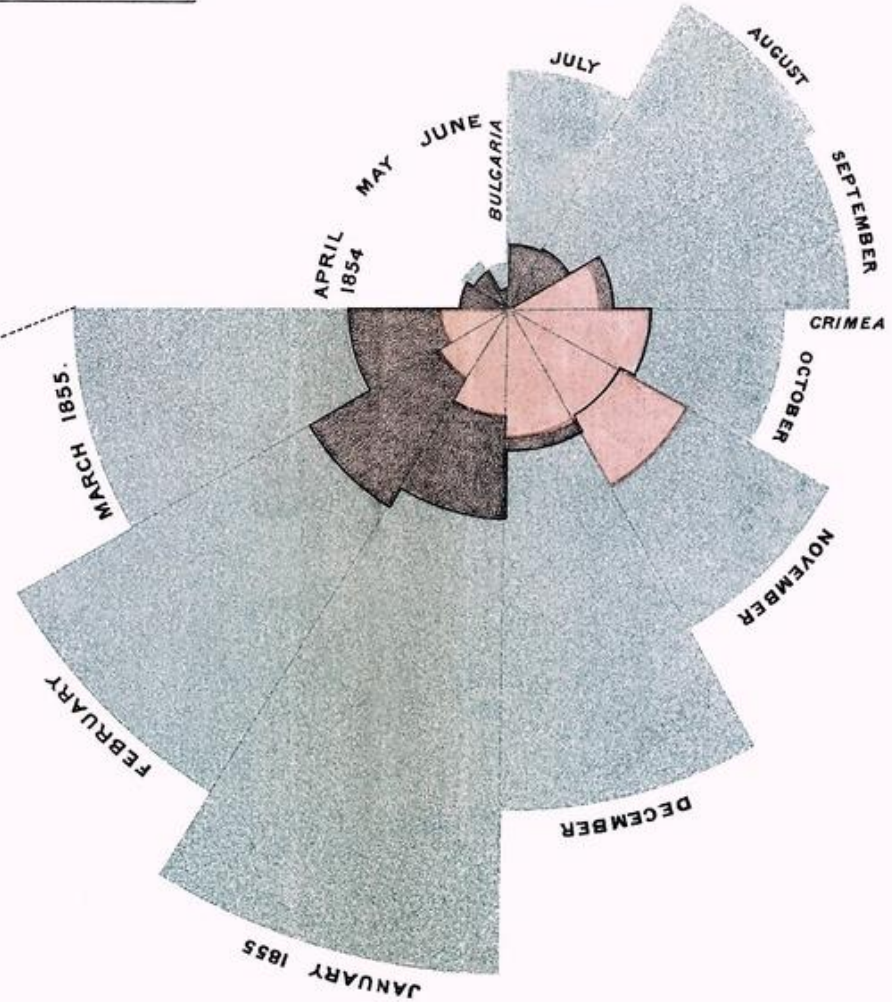
Florence Nightingale

Coxcomb

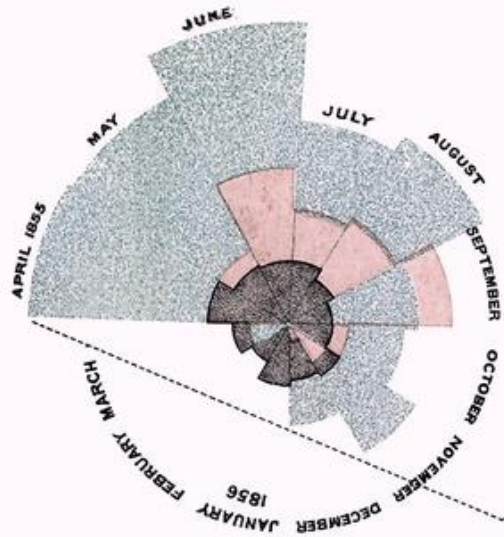


DIAGRAM OF THE CAUSES OF MORTALITY IN THE ARMY IN THE EAST.

1.
APRIL 1854 TO MARCH 1855.



2.
APRIL 1855 TO MARCH 1856.



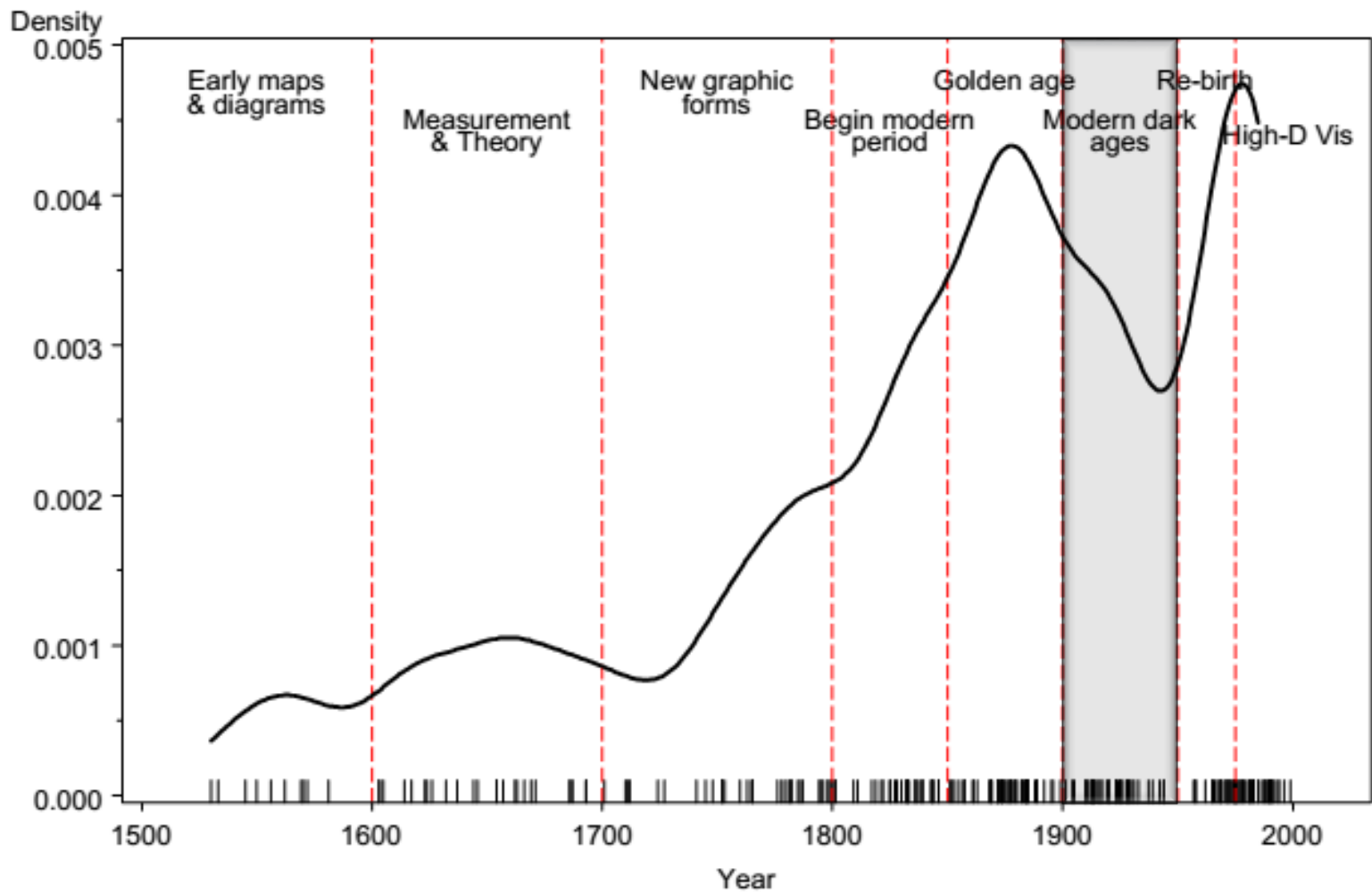
The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.

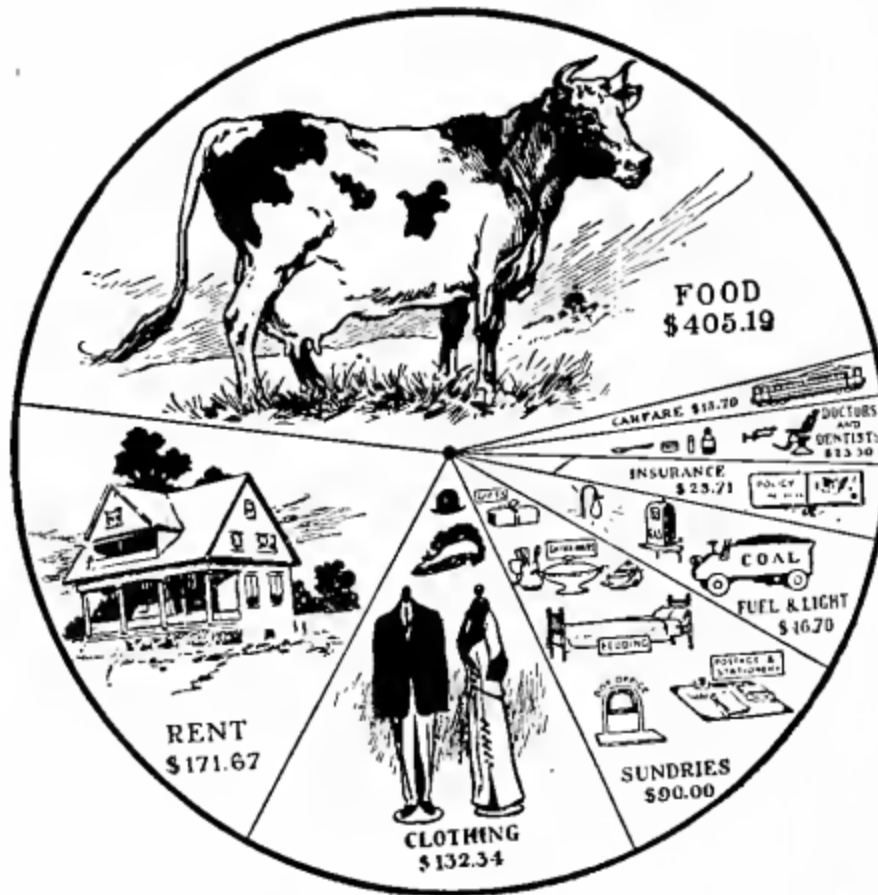
The blue wedges measured from the centre of the circle represent area for area the deaths from Preventible or Mitigable Zymotic diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes.

The black line across the red triangle in Nov. 1854 marks the boundary of the deaths from all other causes during the month.

In October 1854, & April 1855, the black area coincides with the red; in January & February 1856, the blue coincides with the black.

The entire areas may be compared by following the blue, the red & the black lines enclosing them.

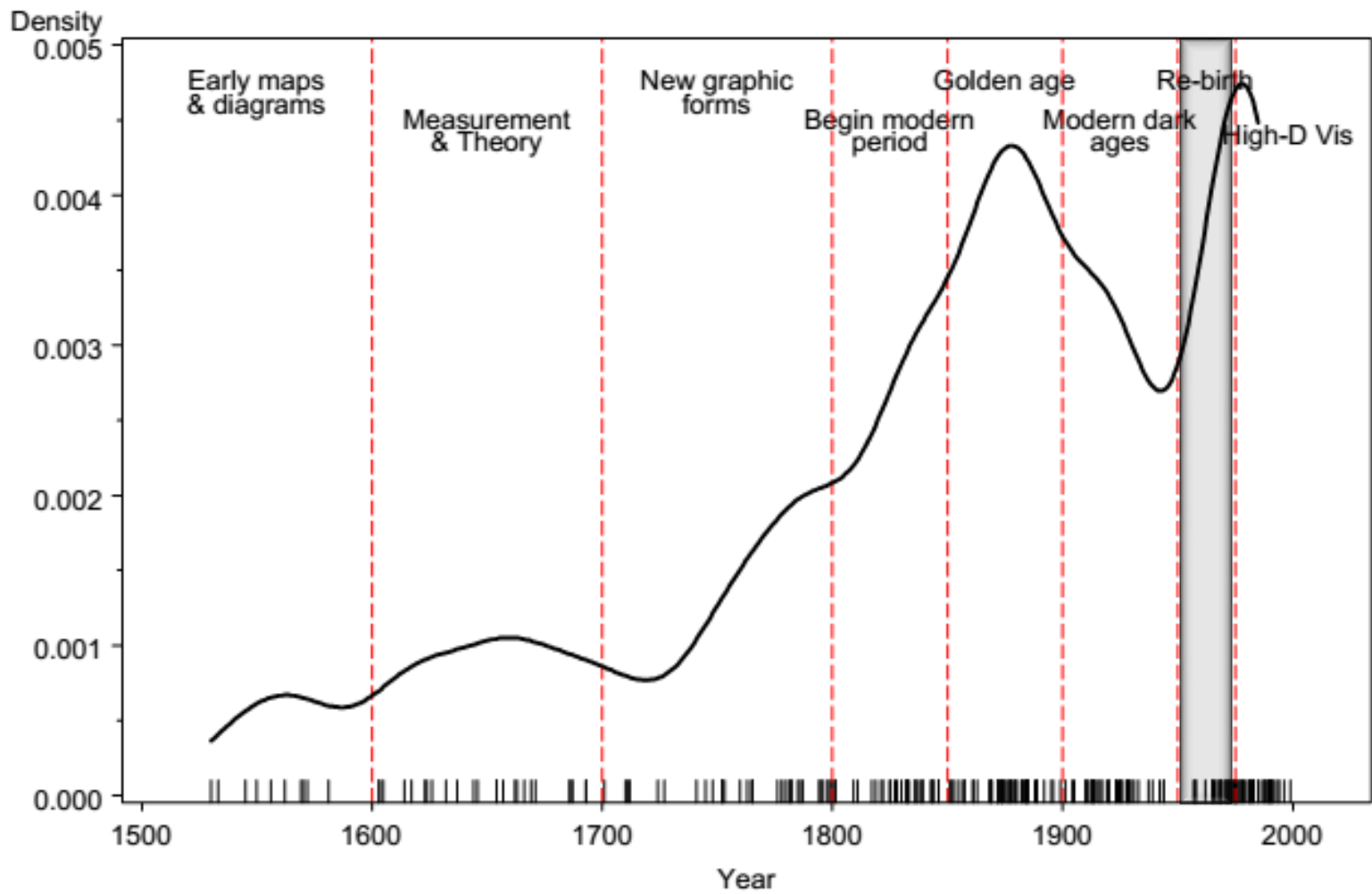




The Survey

Fig. 3. Disposition of a Family Income of from \$900 to \$1000

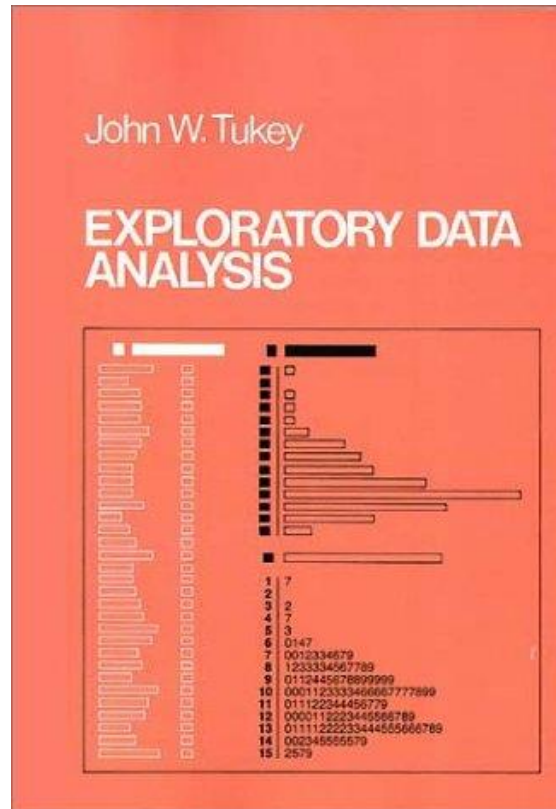
This cut shows an attempt to put figures in popular form. The eye is likely to judge by the size of the pictures rather than by the angles of the sectors

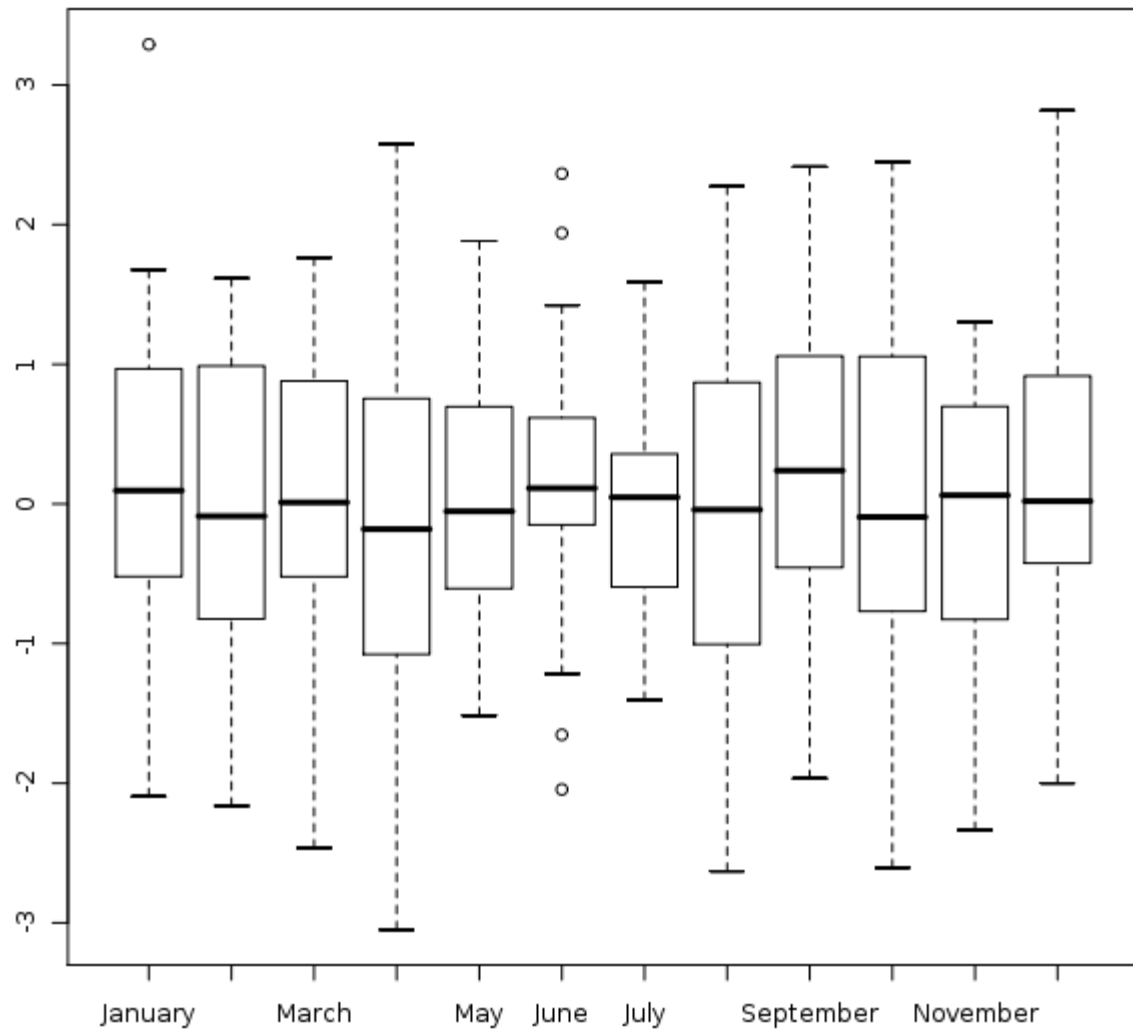


1962

John Tukey

Exploratory Data Analysis

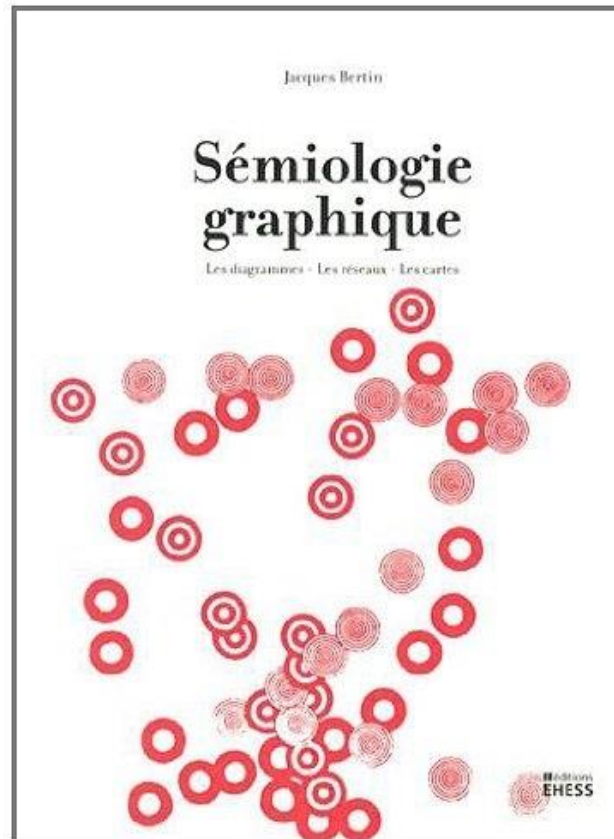




1967

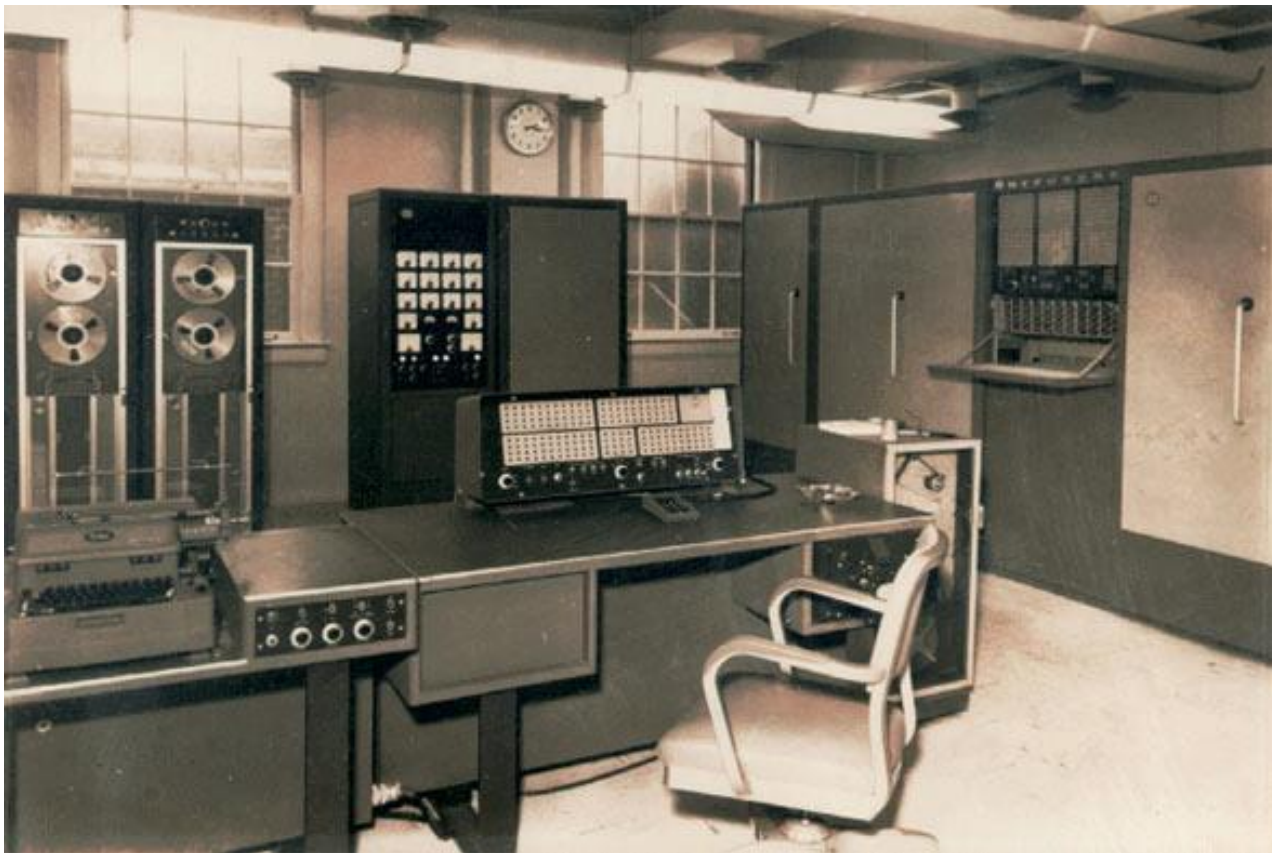
Jacques Bertin

Sémiologie Graphique



1950+

Počítače



2000+

Současný stav

otevírání pole širokému spektru lidí (ve smyslu tvorby)
stabilní oblast studia v akademické sféře
vznikají samostatné studijní obory
otevřené vzdělávání v oblasti - MOOC
zmatení pojmů a představ (*umění*)

1. Data
2. Nástroje
3. Spolupráce
4. Vzdělávání

2000+

Objem a dostupnost dat

2011 - 1.8 ZB dat

data smog - přehlčení daty

big data - krása, ale co s tím

nefunguje bez “information taming” technologií

široká dostupnost všem, open data hnutí

2000+

Dostupnost nástrojů

Demokratizace, laicizace

Naklikávačky

Tableau; D3.js,...

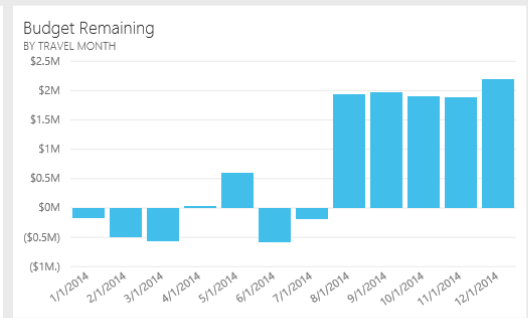
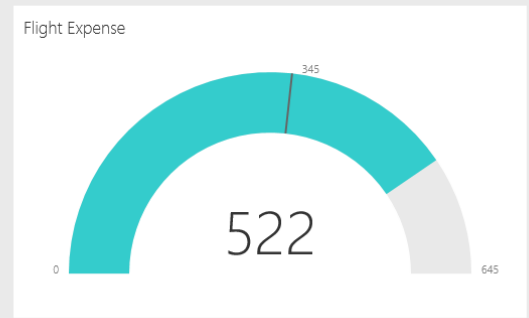
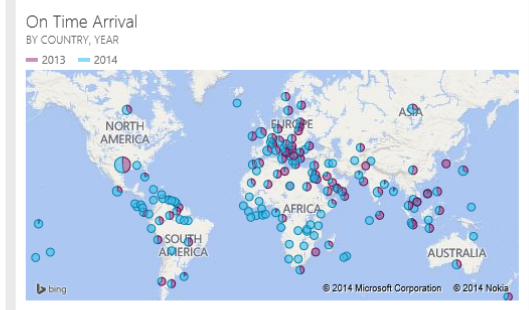
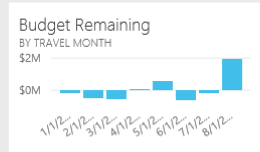
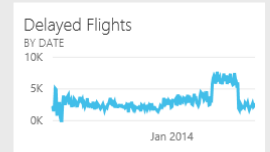
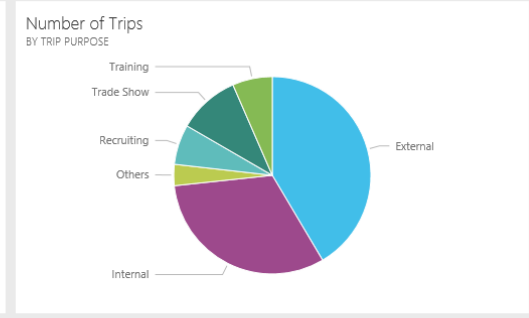
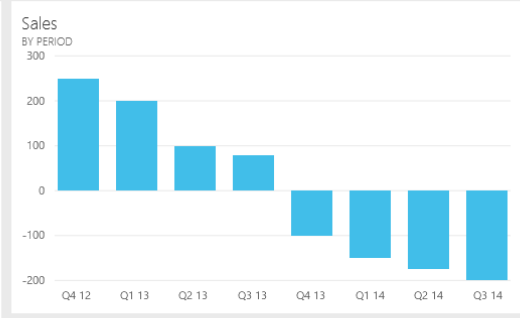
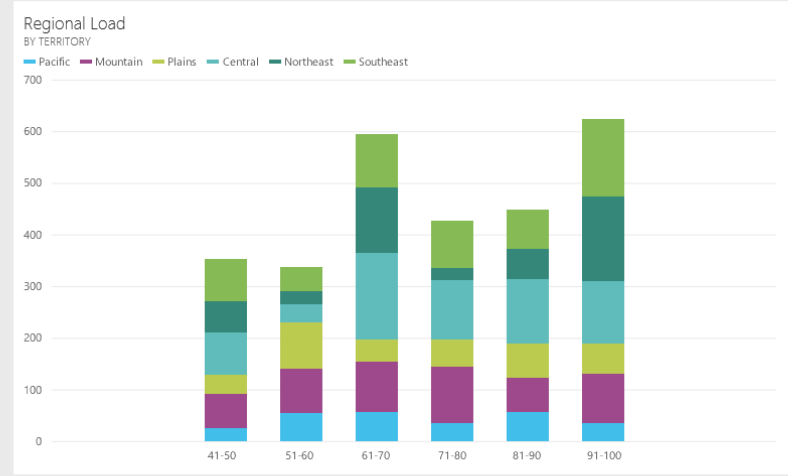
Gephi, NodeXL - sítě

ImagePlot - digital humanities

Quadrigram R, Processing

Travel Analysis

Ask a question about your data



Variance to Budget

(\$1.39M)

Average Cost Per Trip

\$723.16

<http://idl.cs.washington.edu/projects/lyra/>

2000+

Web 2.0 a spolupráce

Sdílení

Inspirace

Spolupráce

<http://www.visualizing.org/>

<http://helpmeviz.com/>

2000+

Otevřené vzdělávání

Knihy zacílené na “nevědce”.

Nathan Yau - Data Points

Nathan Yau - Visualize This!

MOOC a kurzy



Tradiční definice vizualizace

“...the use of computer-supported, interactive, visual representations of data to amplify cognition.”

(Card et al., 1999)

K čemu běžně slouží vizualizace?

Vizualizace jako pragmatický nástroj, **pragmatický** vhled do dat,
cílem je informace, znalost.



“Umělecké vizualizace jsou vizualizace dat
vytvářené umělci s účelem tvořit umění,”

Viégasová a Wattenberg

Data visualization is the fastest way to make a whole bunch of numbers look a lot more interesting.

Vizualizace je **nástroj**
s širokým spektrem použití.

Přesvědčování

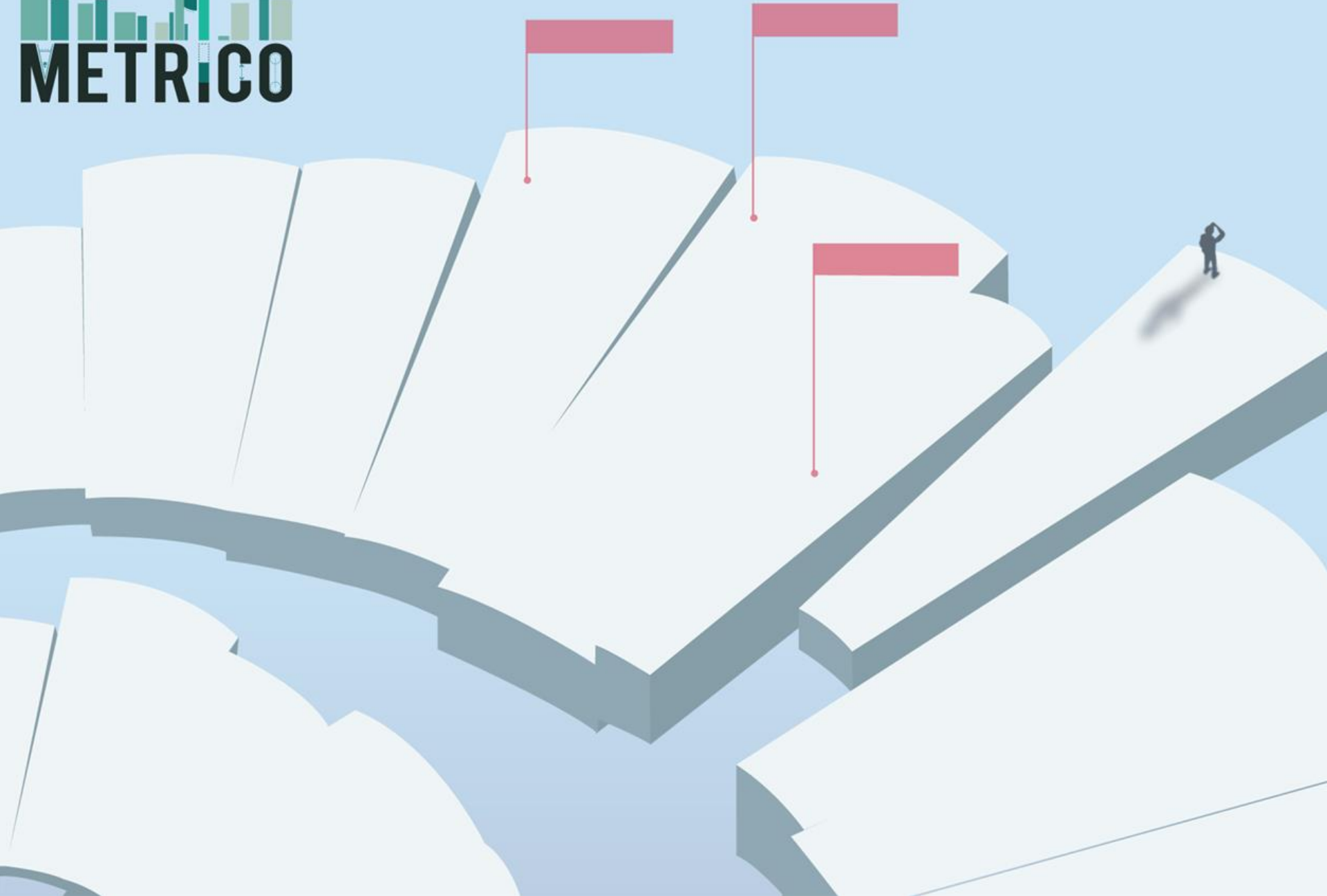
Argumentace

Motivace

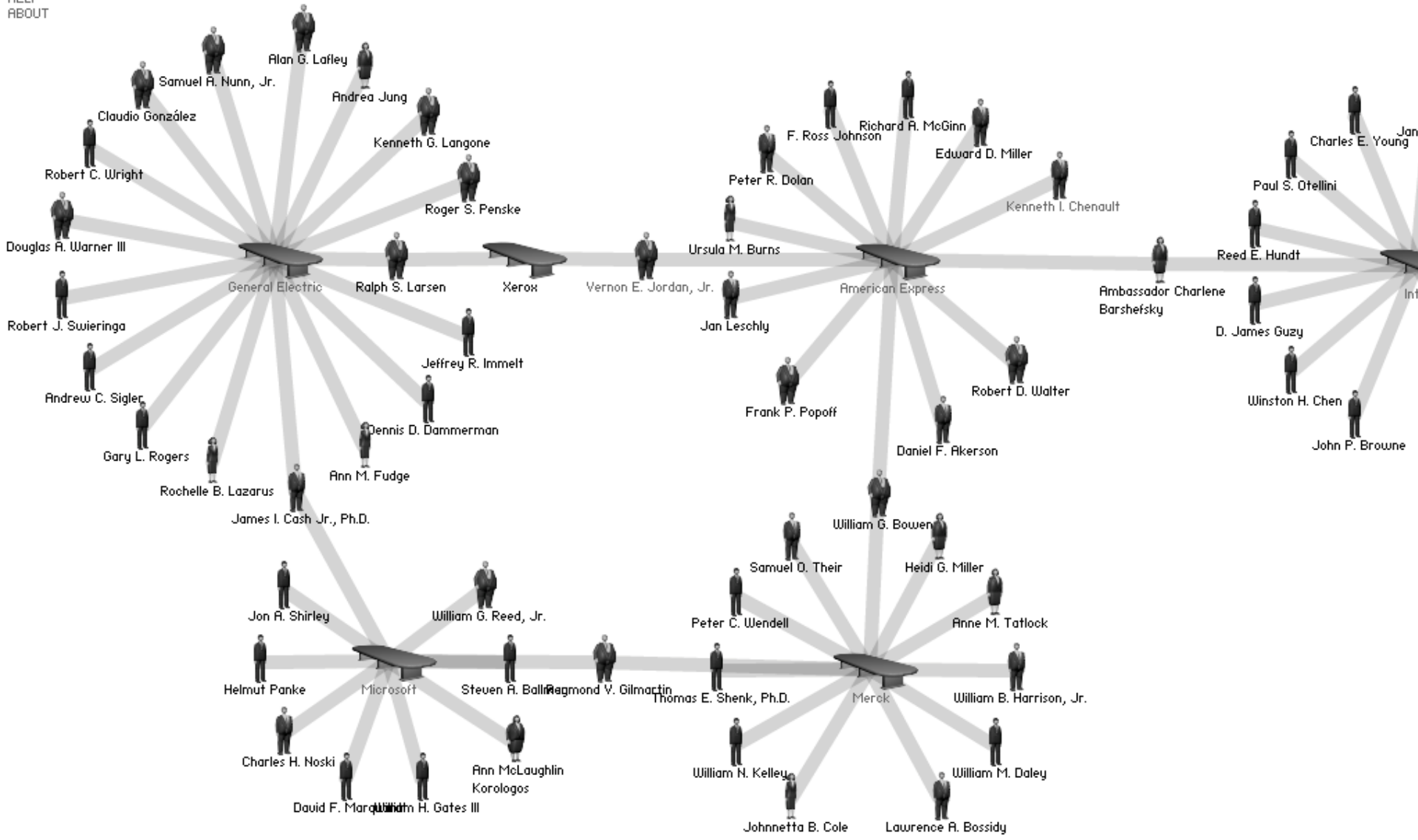
Ilustrace

Vhled

Emoce



- COMPANIES
- DIRECTORS
- INSTITUTIONS
- LOAD MAP
- SAVE MAP
- CLEAR MAP
- FIND CONNECTION
- ADD NOTE
- LOG-IN | SIGN-UP
- PRINT MAP
- HELP
- ABOUT





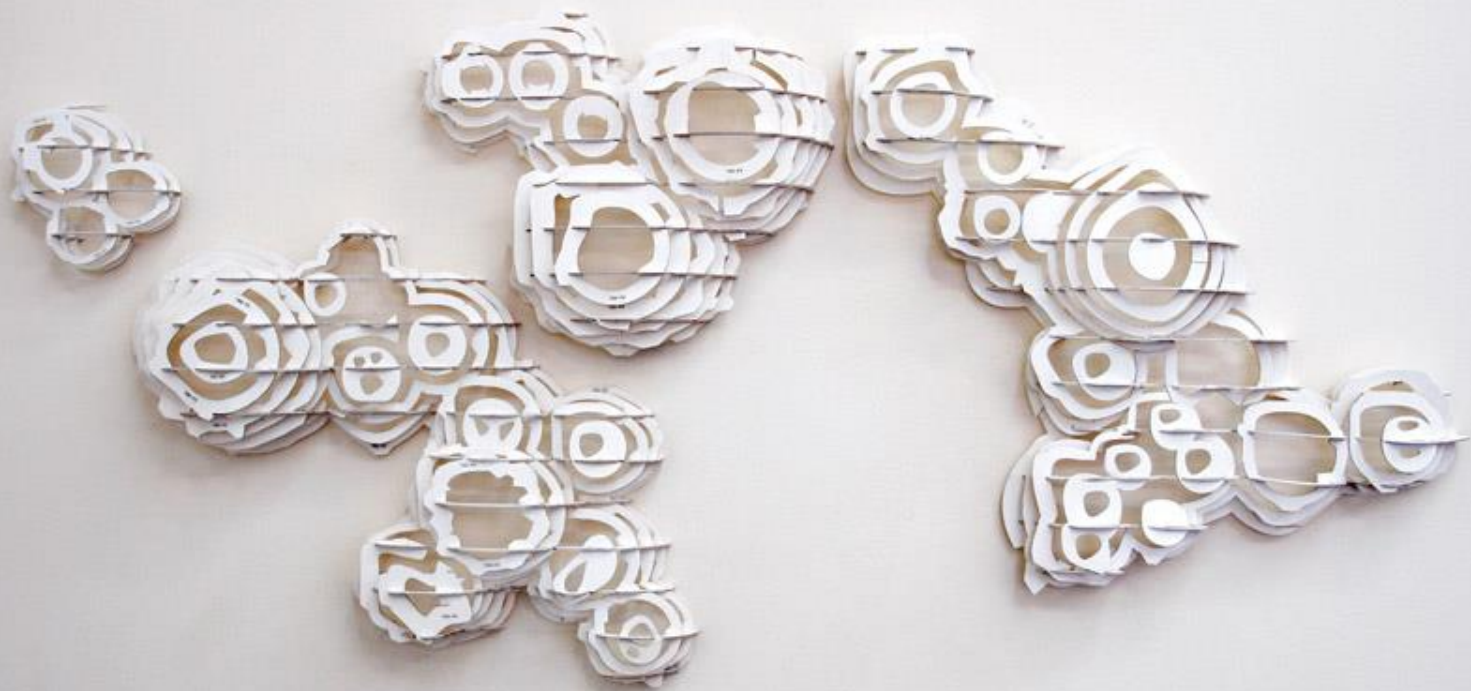












Feeling All

Gender Both

Age All

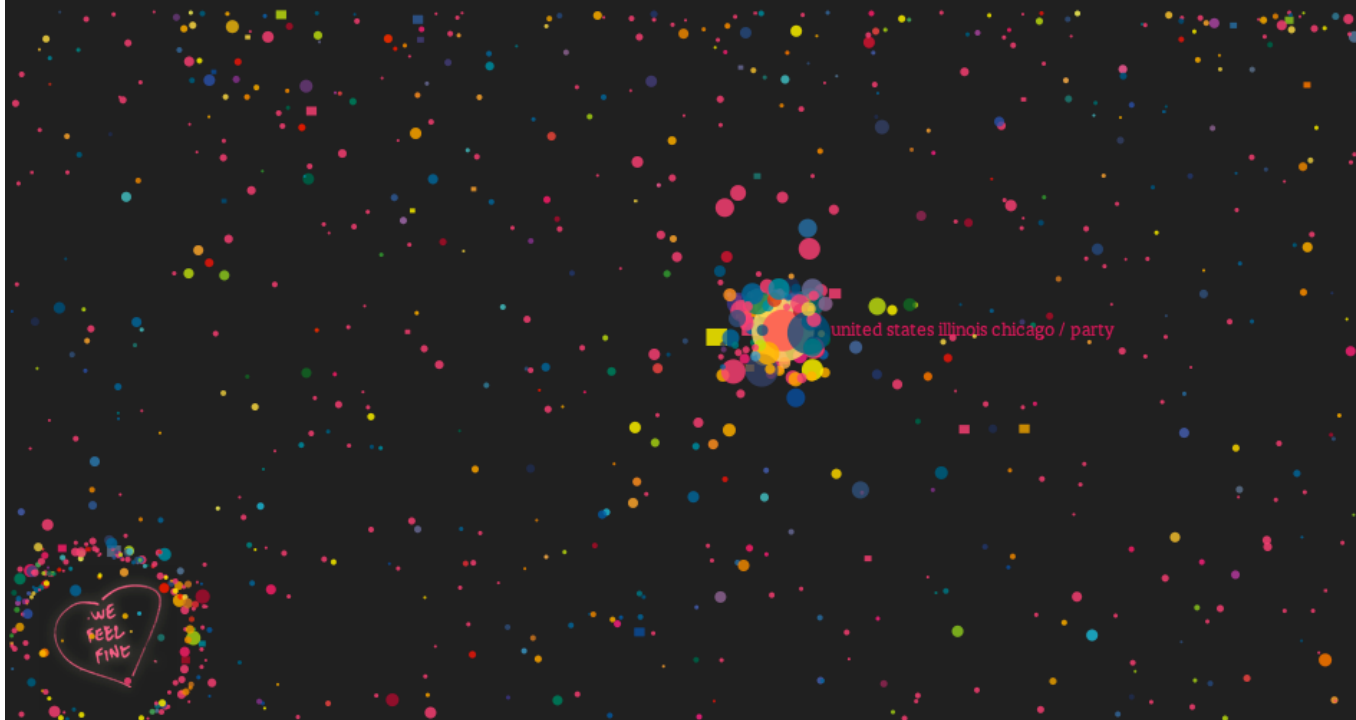
Weather All

Location All

Date All

i seriously hope youre not upset that i passed on drinks at her club gig that night i desperately wanted to meet you there though i feel like you should have enough insight to realize i cant afford to drive into the city and party whenever i feel like it and put my health at risk

39 mins ago / from a 106 year old in chicago illinois united states when it was cloudy



united states illinois chicago / party

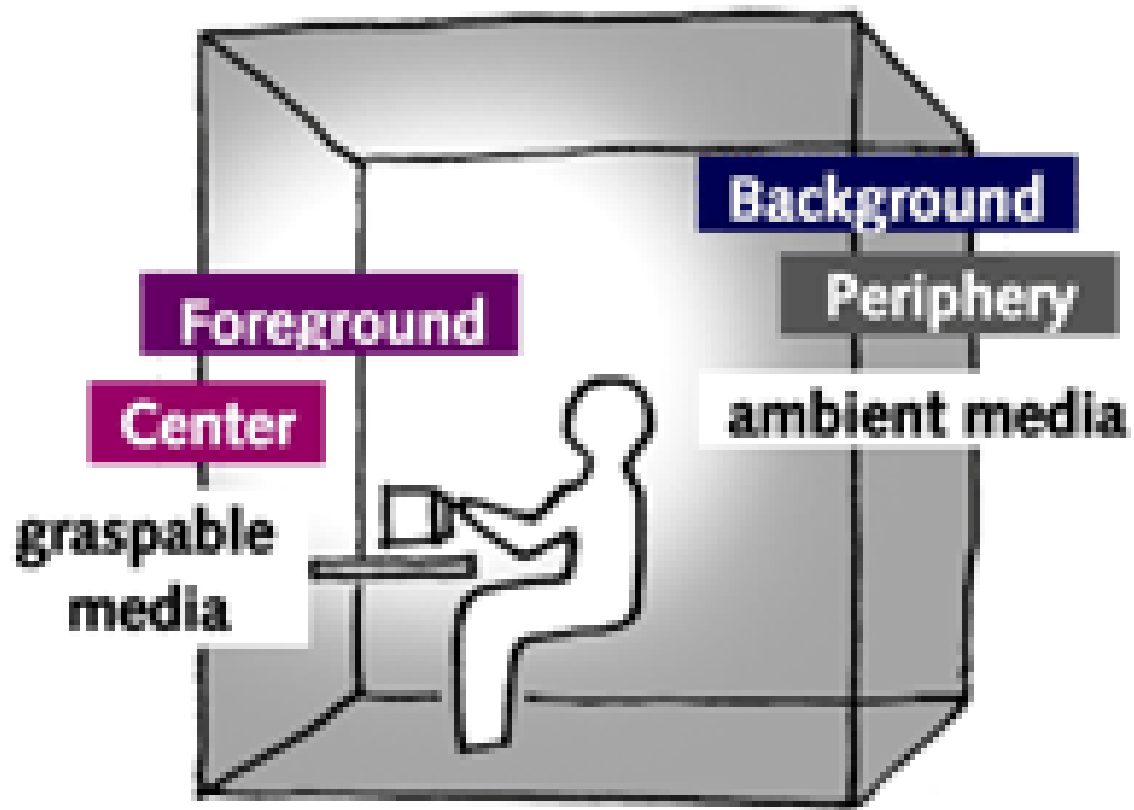








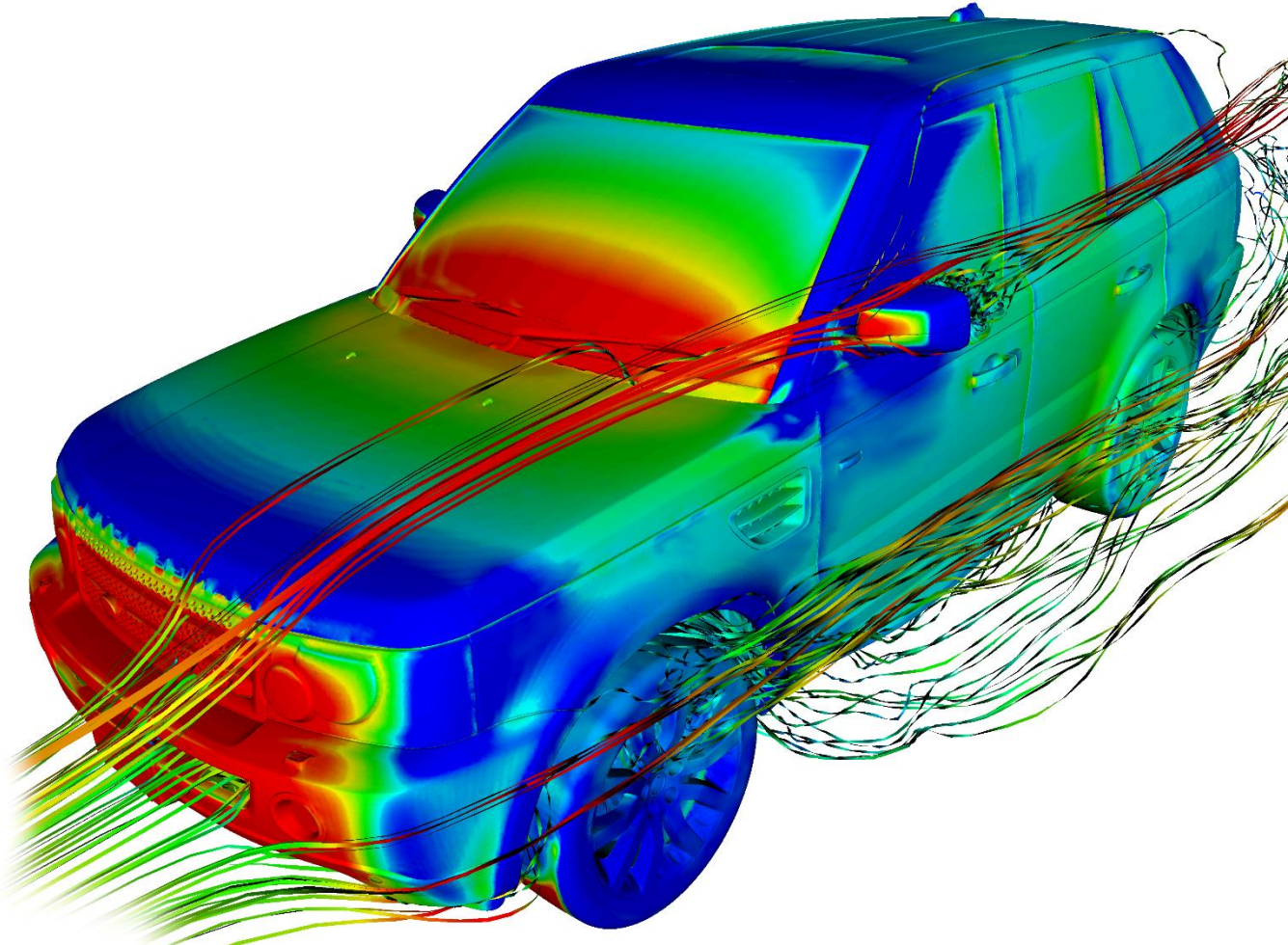
Mimo vizuálno



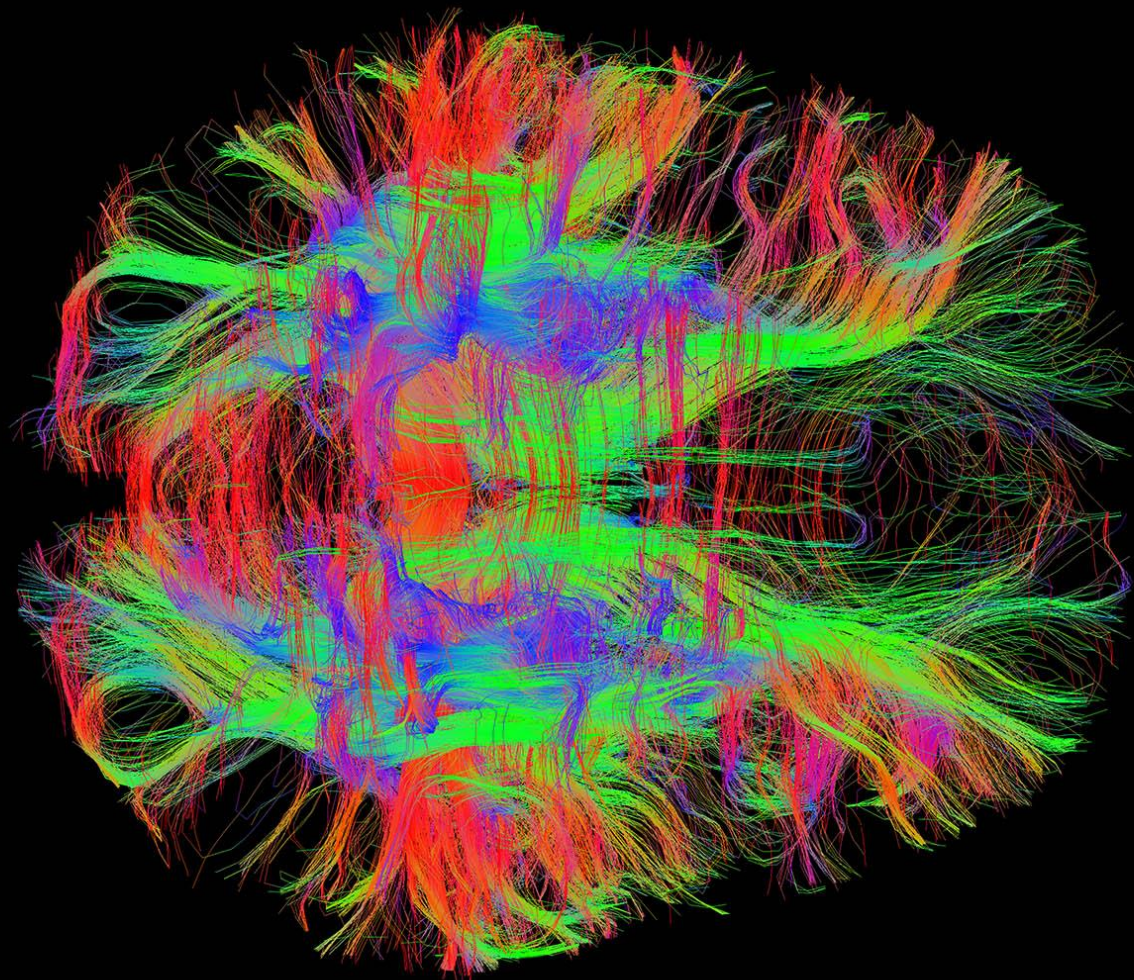


Terminologické okénko

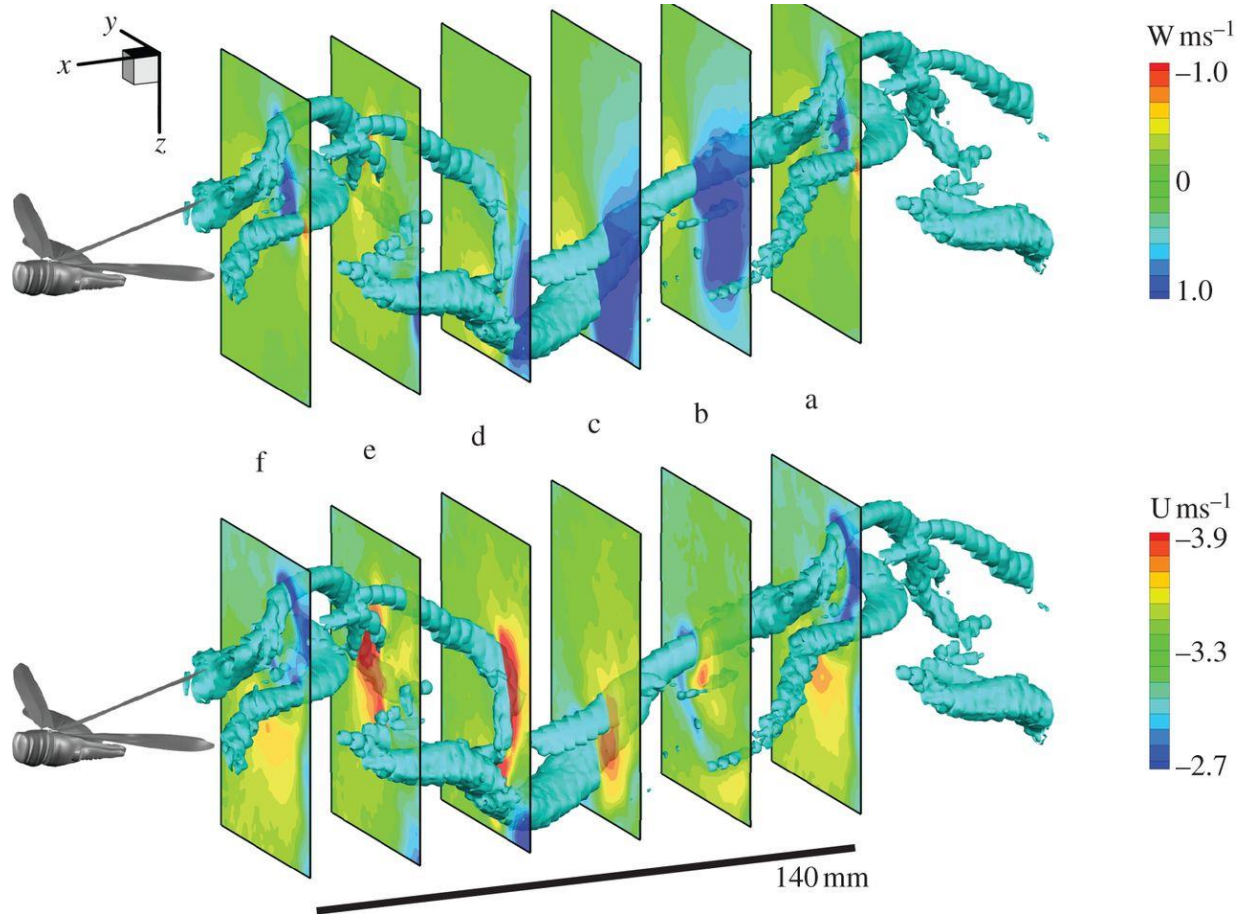
#sciviz



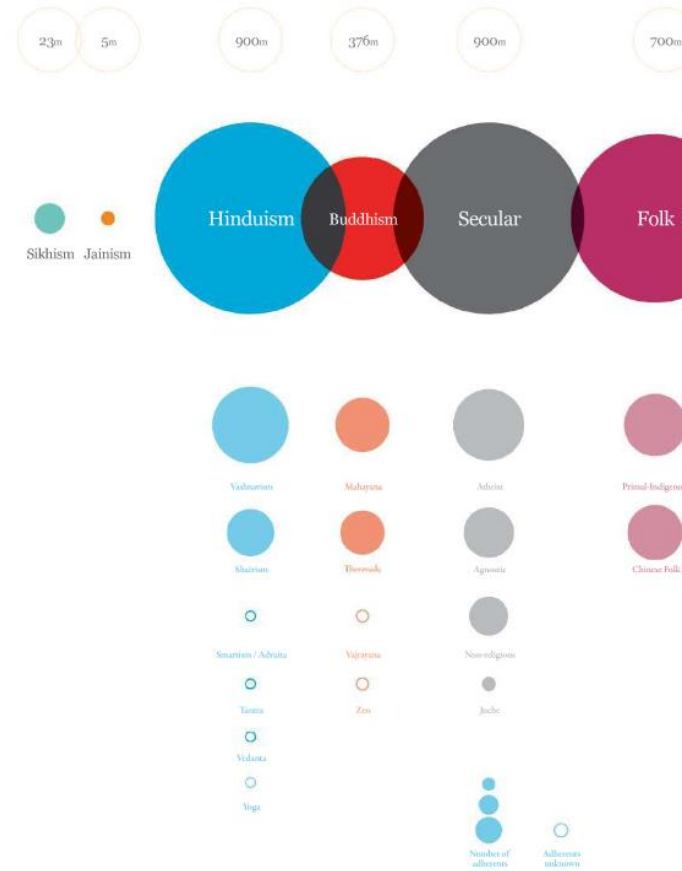
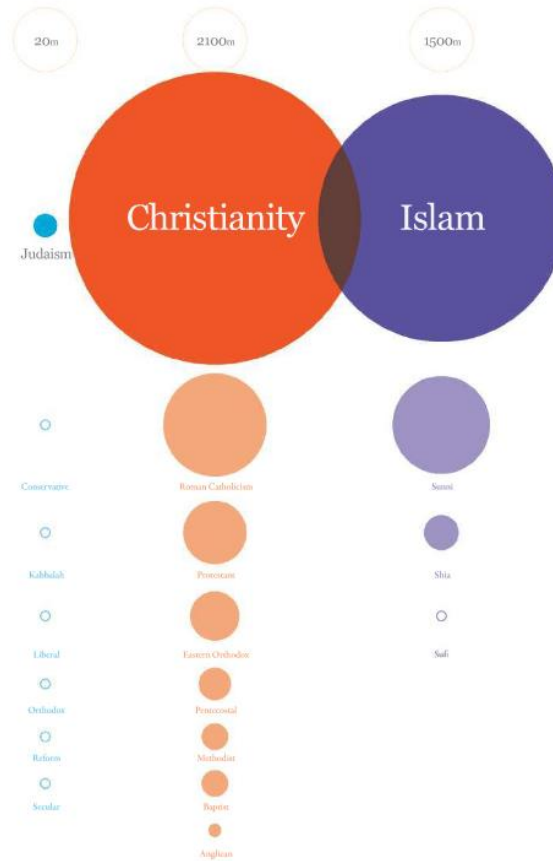
#sciviz



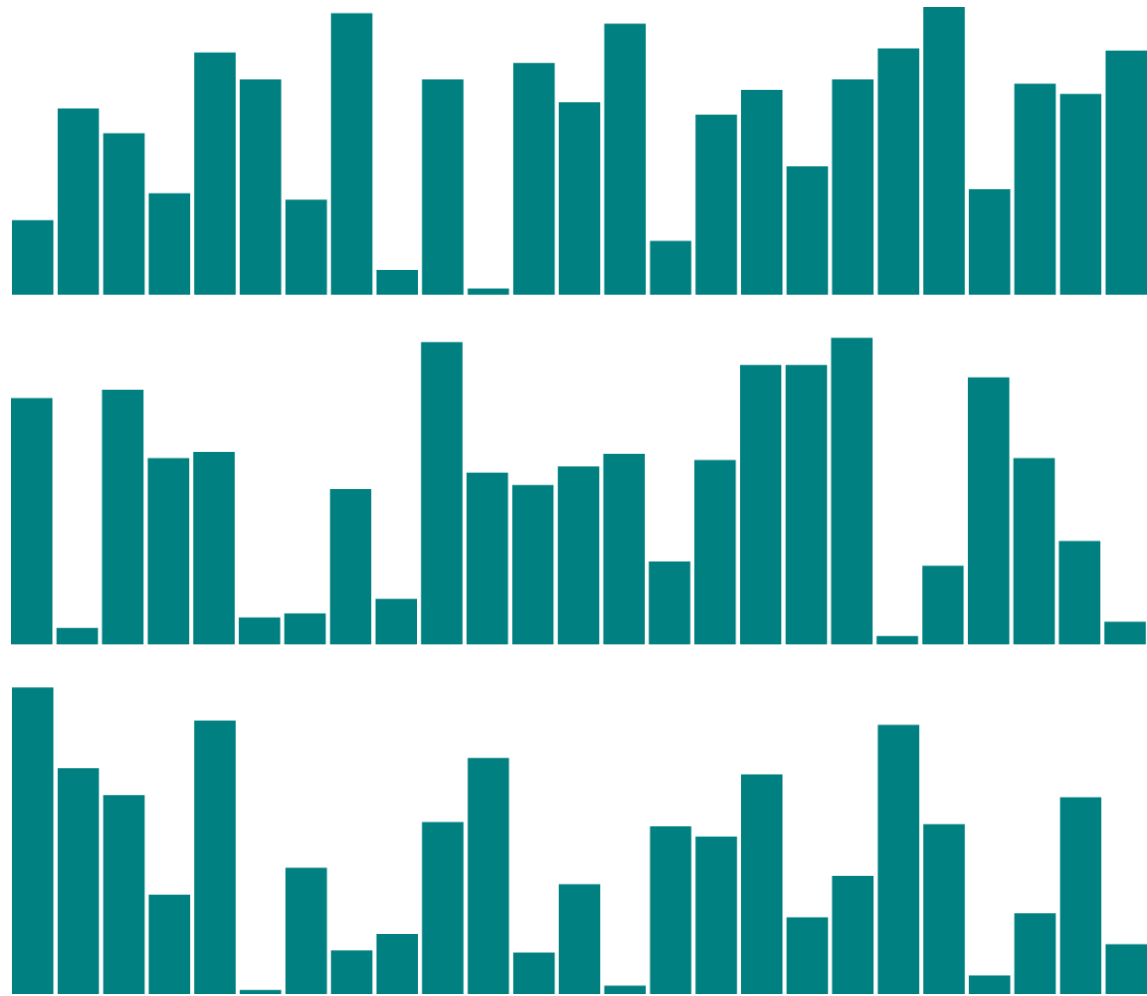
#sciviz



#infoviz



#infoviz



#infoviz

The image displays three overlapping dialog boxes titled "Vložit graf" (Insert Chart) from a software application. Each dialog box shows a list of chart types on the left and a preview of the selected chart type on the right.

- Top Dialog (Pie Chart):** The "Výšečový" (Pie) chart type is selected. The preview shows a pie chart with a single orange slice.
- Middle Dialog (Column Chart):** The "Sloupcový" (Column) chart type is selected. The preview shows a 100% stacked column chart with four bars, each divided into segments of different colors (blue, orange, grey, yellow).
- Bottom Dialog (Line Chart):** The "Spojnicový" (Line) chart type is selected. The preview shows a line chart with three data series (blue, orange, grey) plotted over four categories.

Each dialog box includes a sidebar with the following chart types: Poslední, Šablony, Sloupcový, Spojnicový, Výšečový, Pružový, Plošný, XY bodový, Burzovní, Povrchový, Paprskový, Stromová mapa, Vícevrstvý prstencový, Histogram, Krabicový graf, Vodopádový, Trychtýřový, and Kombinovaný.

#geoviz

