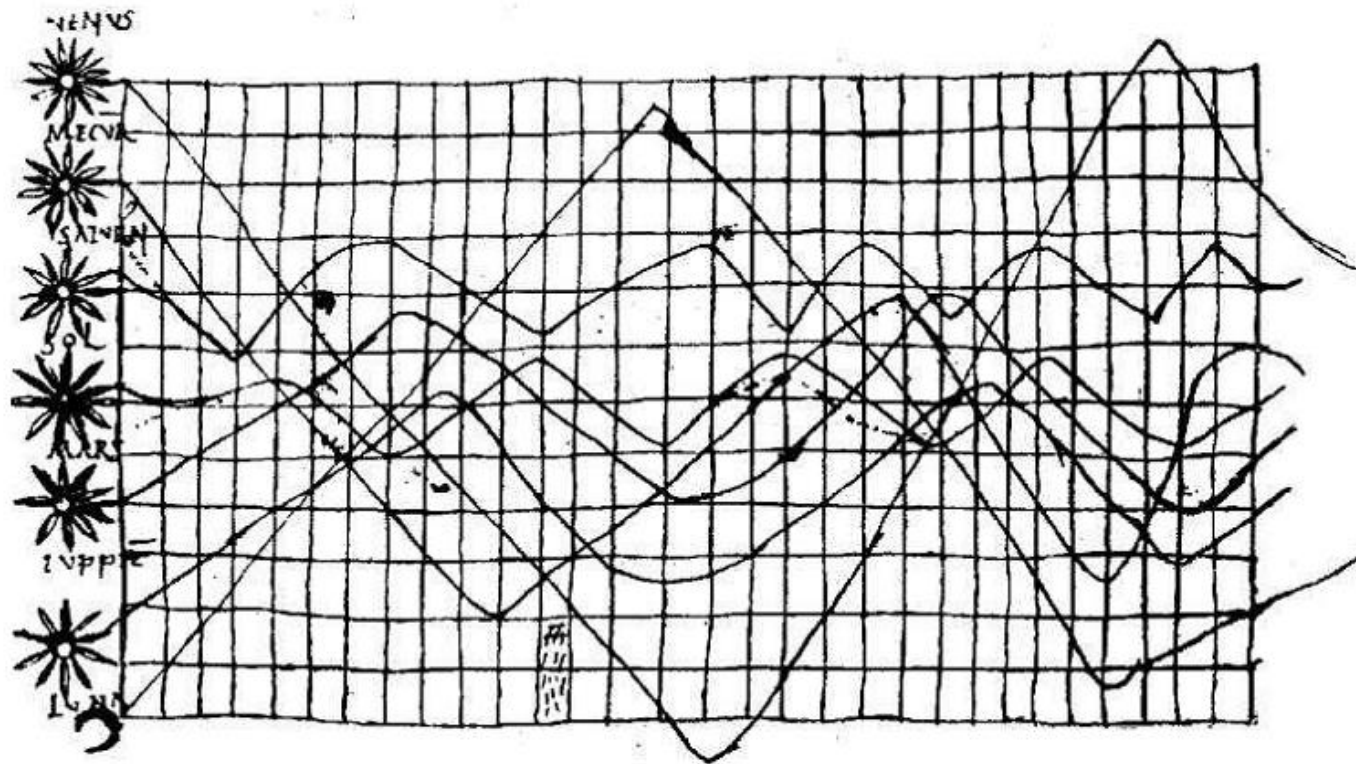


Historie vizualizace dat





Proč historie?

Protože to chceme vzít komplexně.

Protože zjistíme, že nejde o nic nového.

Protože v obdobných zahraničních kurzech má historie vizualizace dat své místo.

Protože nás to může inspirovat.



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.

MEDIA AND PERSIA.

GRECIA.

PAGAN ROME.

THE TEN KINGDOMS.

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

PAPAL ROME.

606

PAPAL ROME.

MAHOMETANS.

1299 **1449**

PAPAL ROME.

MAHOMETANS.

1798 **508**
45 **1335**
1843. **1843.**

1843. GOD'S EVERLASTING KINGDOM

Page 112 should be read in the title of the frontispiece of the Day.

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.

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 *

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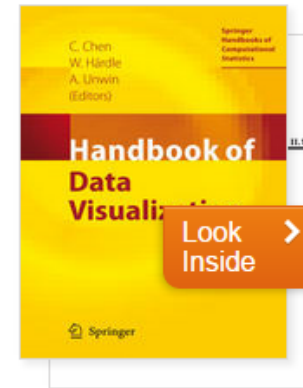


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Abstract

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.



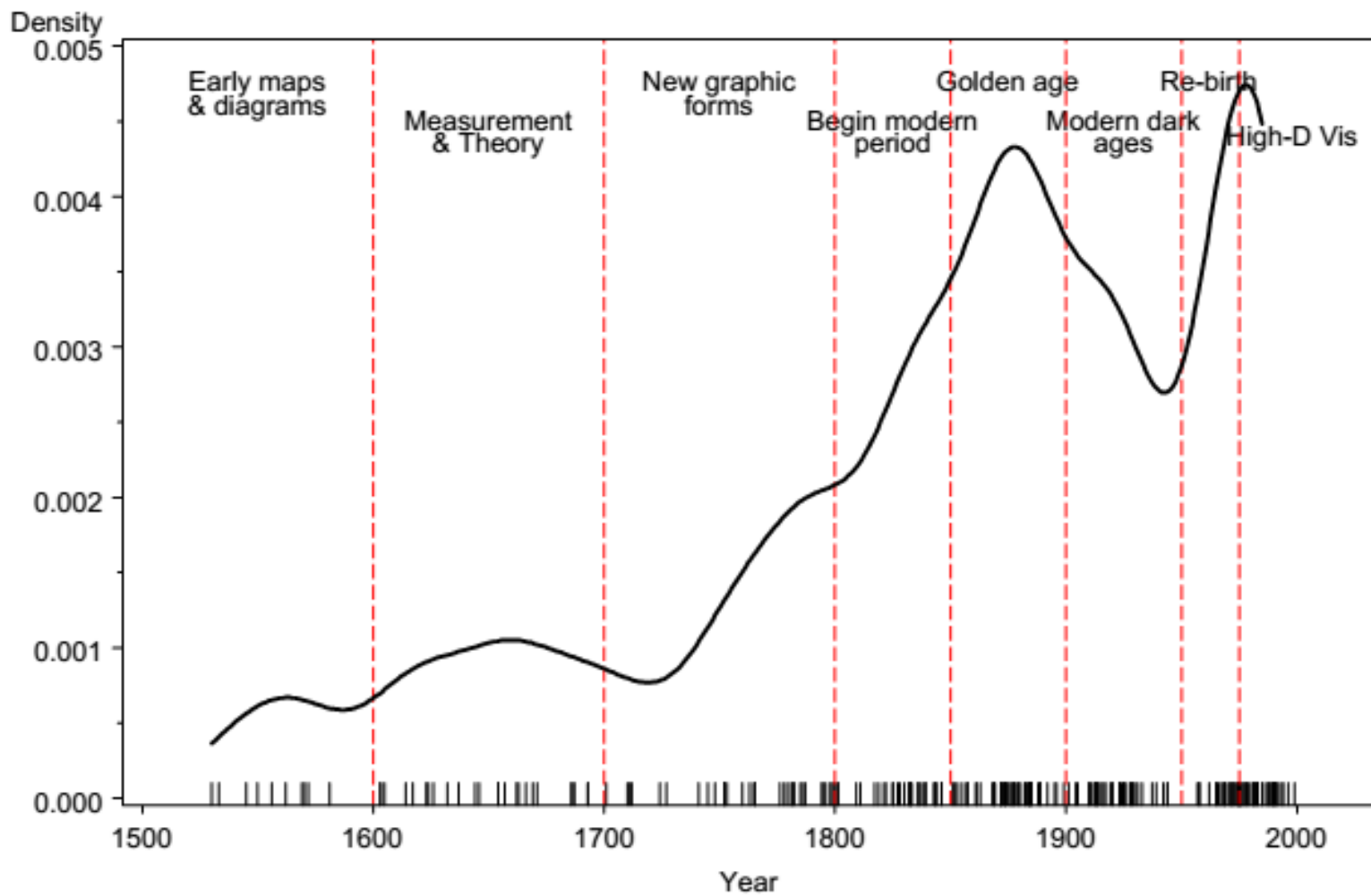
Chapter Metrics

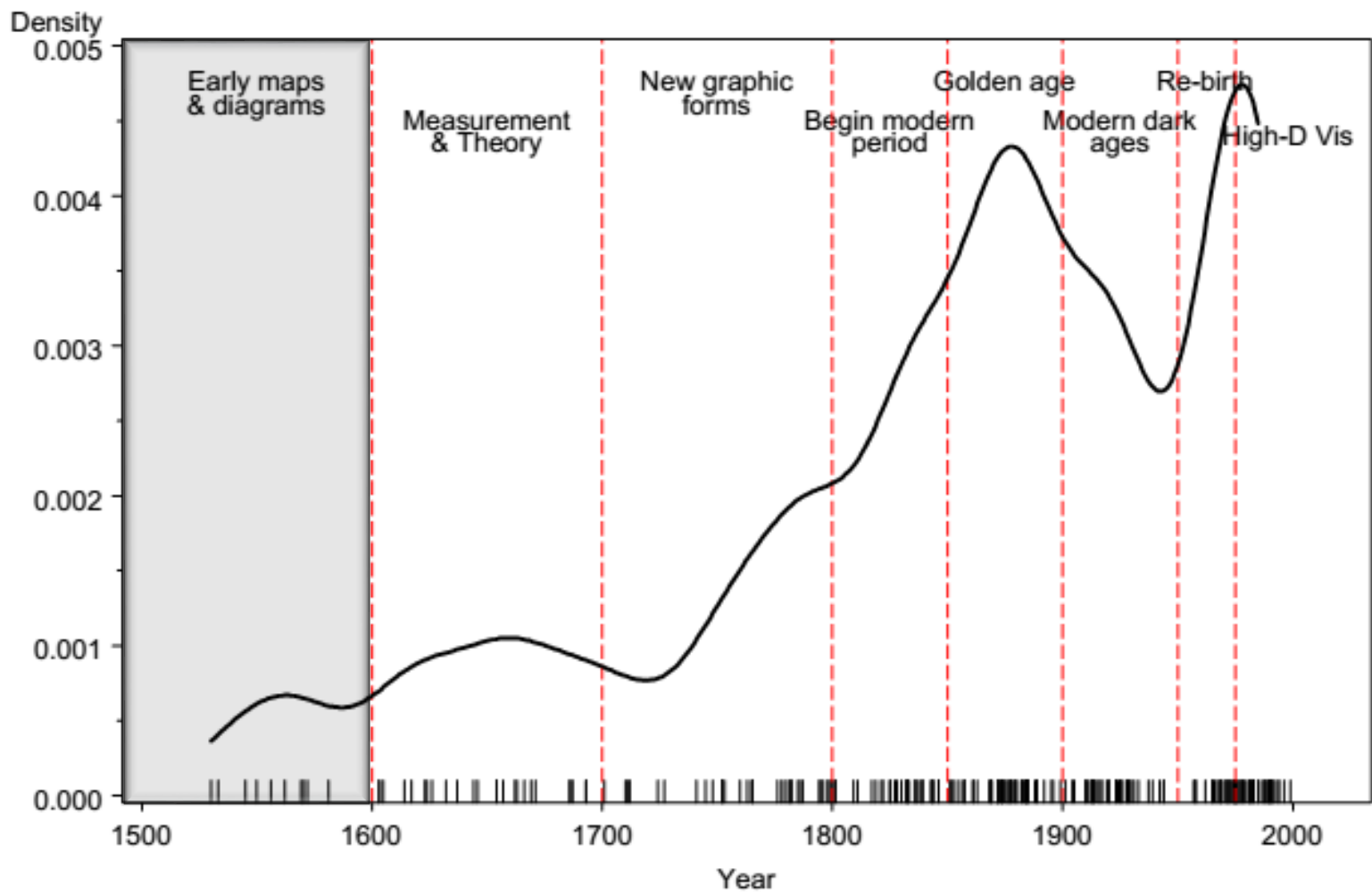
	Citations	6
	Mentions	2
	Readers	40
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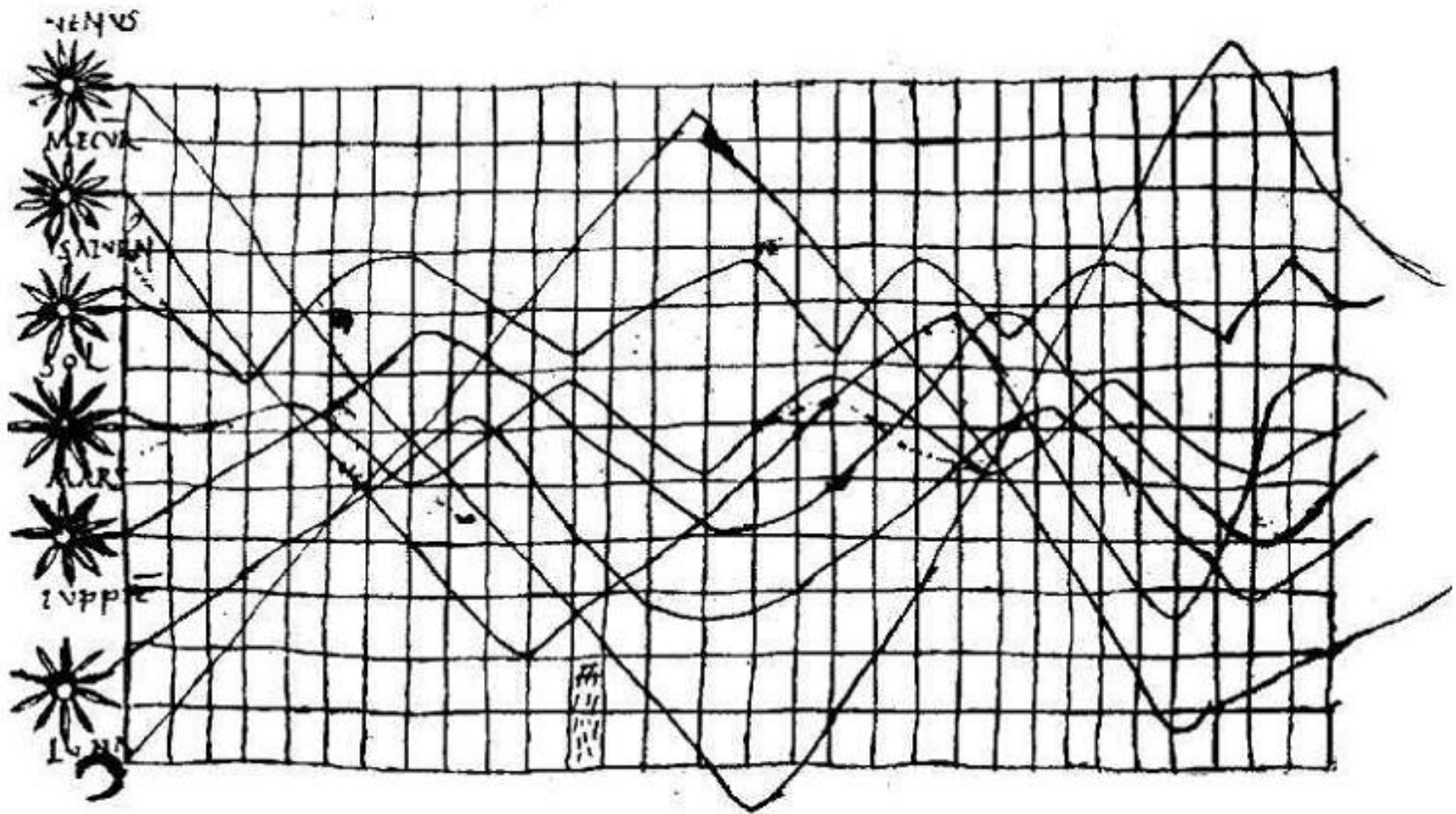
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difformis uniformiter variatio reddit unifor-
 miter difformiter difforme. ¶ Latine: uni-
 formis est diuorsus est illa quae inter excessus graduum
 equidistantium fuerit eadem proportio eadem in eadem p-
 portione equitatis. Nam si inter excessus 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

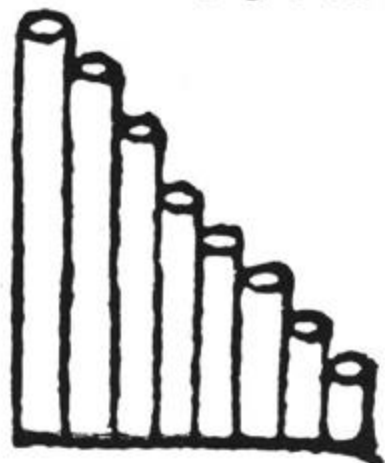
scilicet. et fiat ad inq

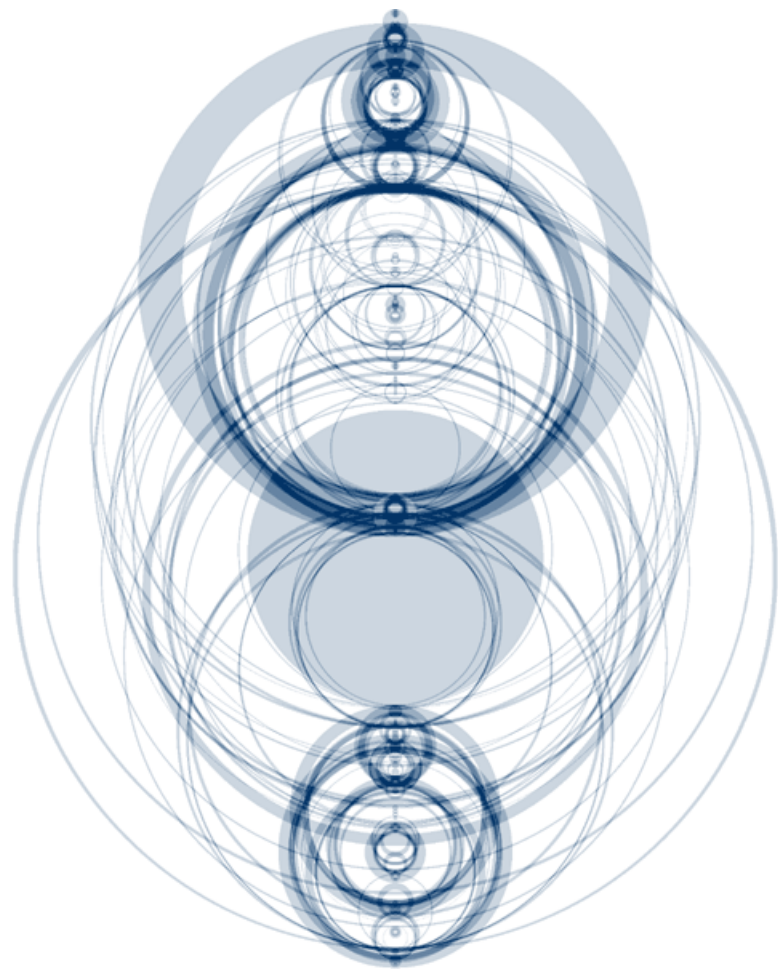
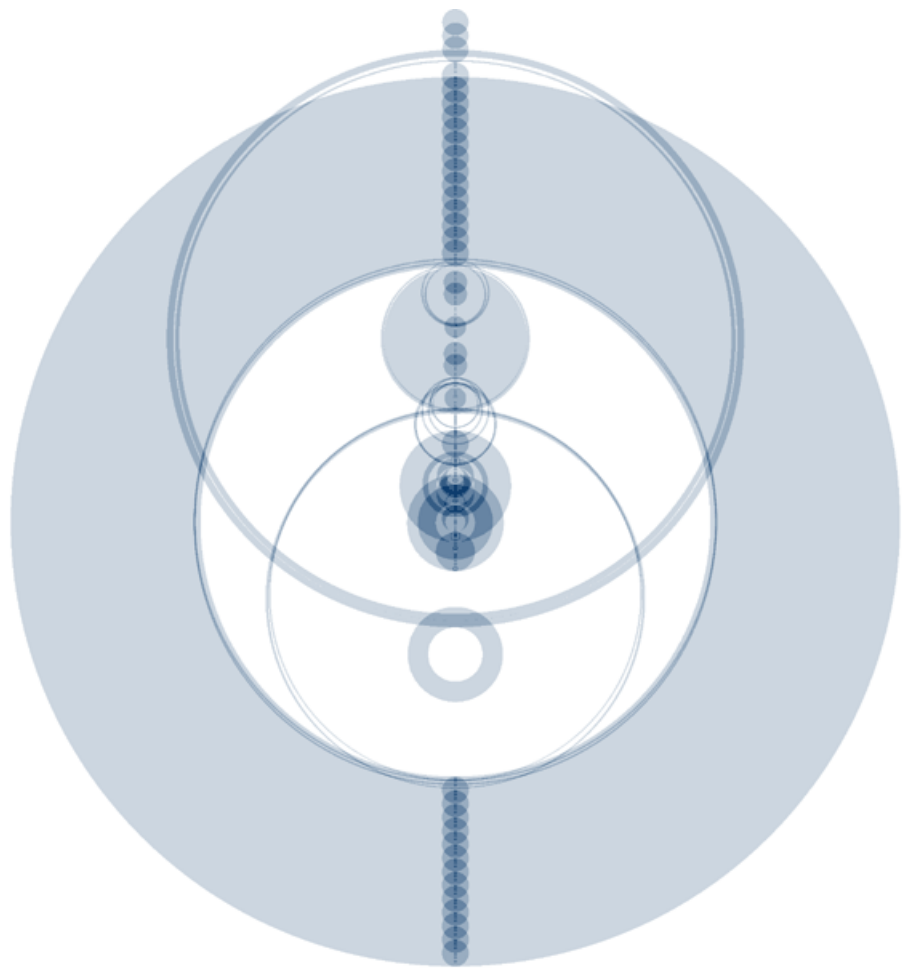


Diffōrū difforū



dif, dif, difforū







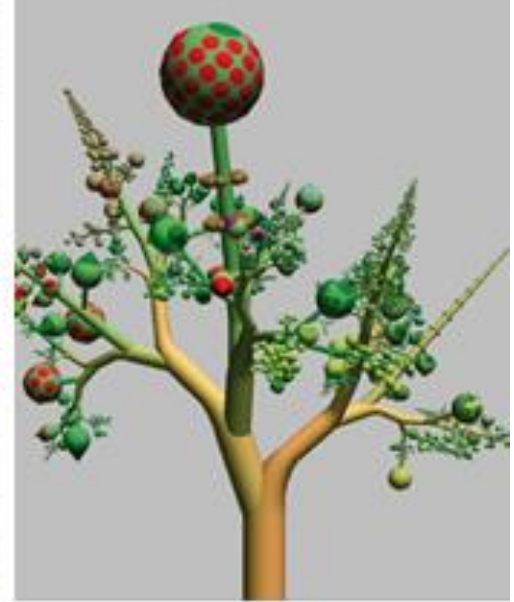
1202



1478

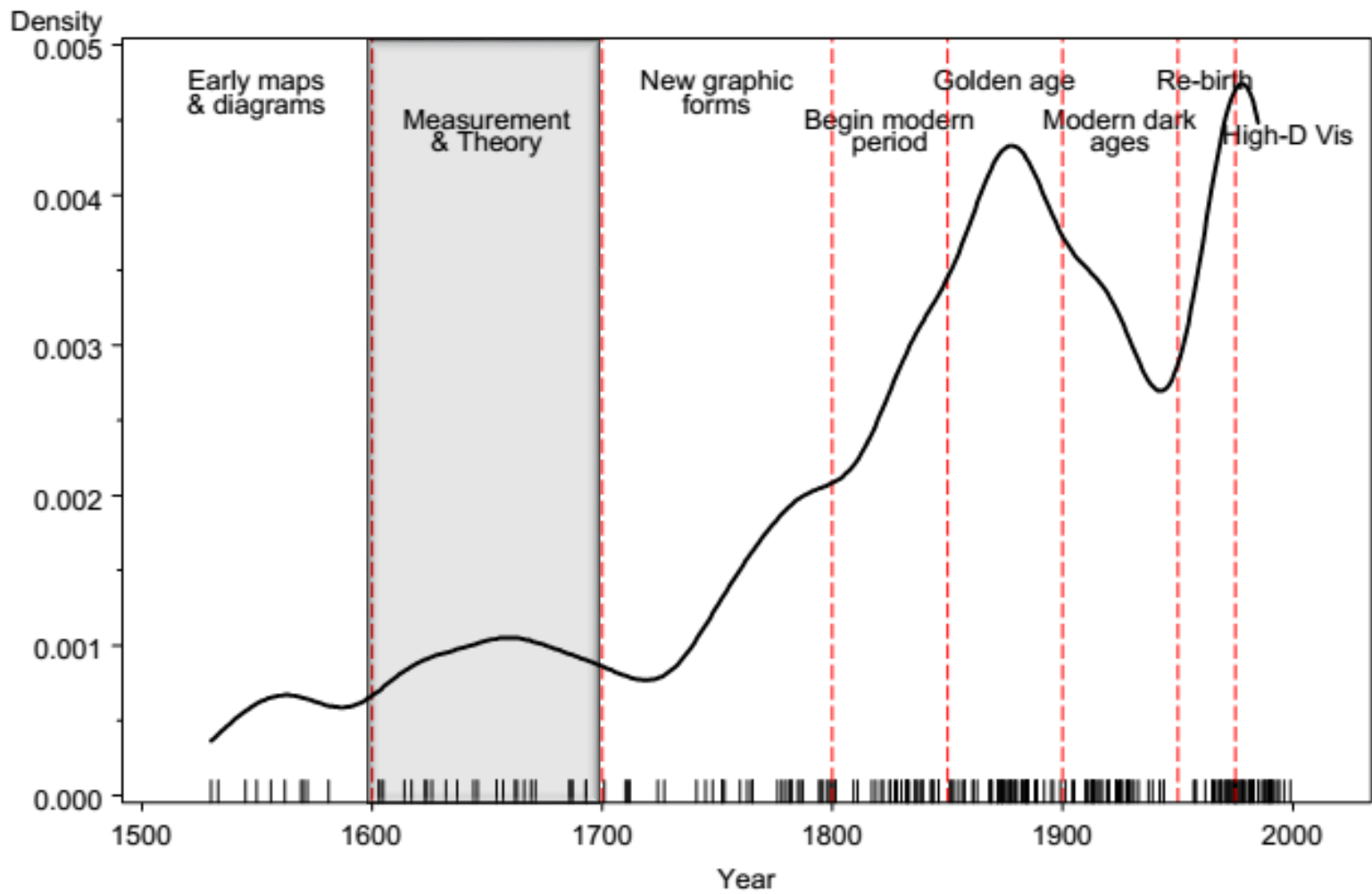


1780



2001

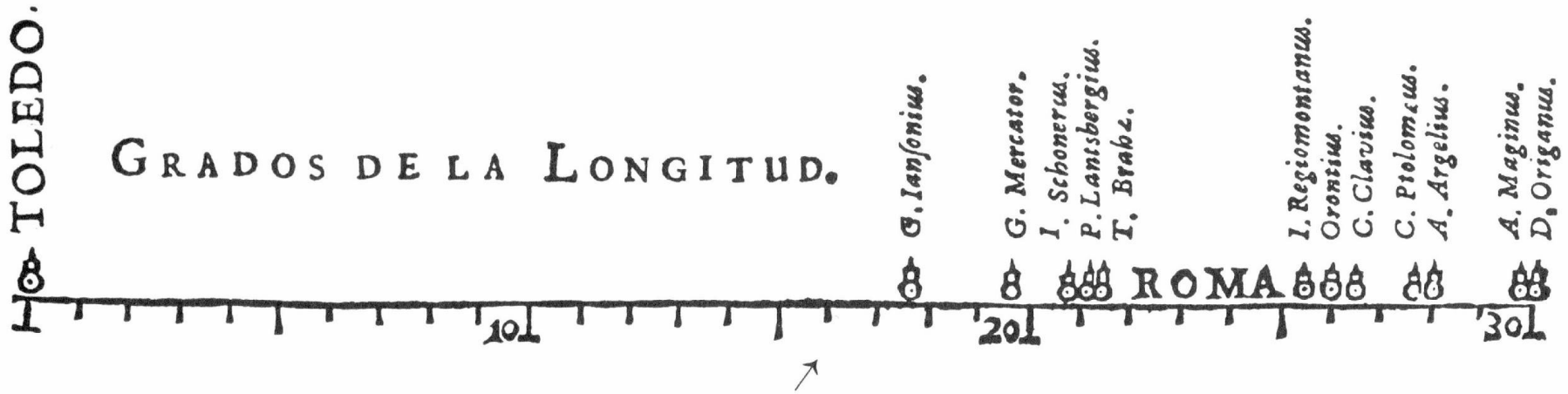
visualcomplexity.com



1644

Michael Florent van Langren

Rozdíly v odhadech zeměpisné délky



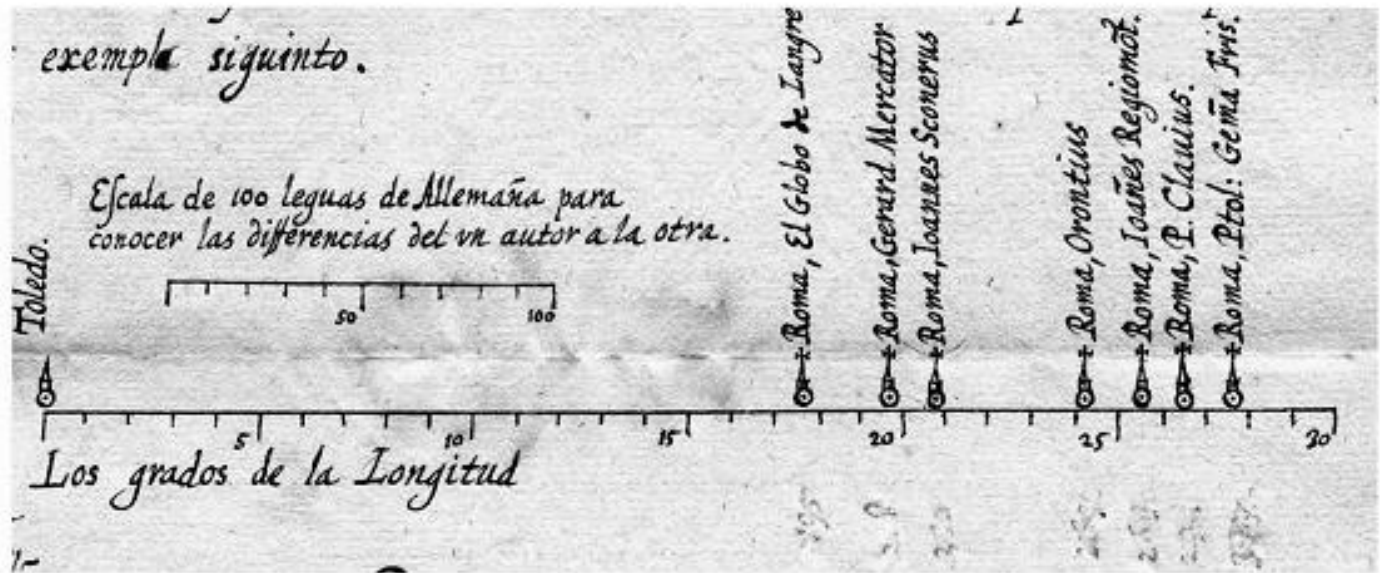
1644

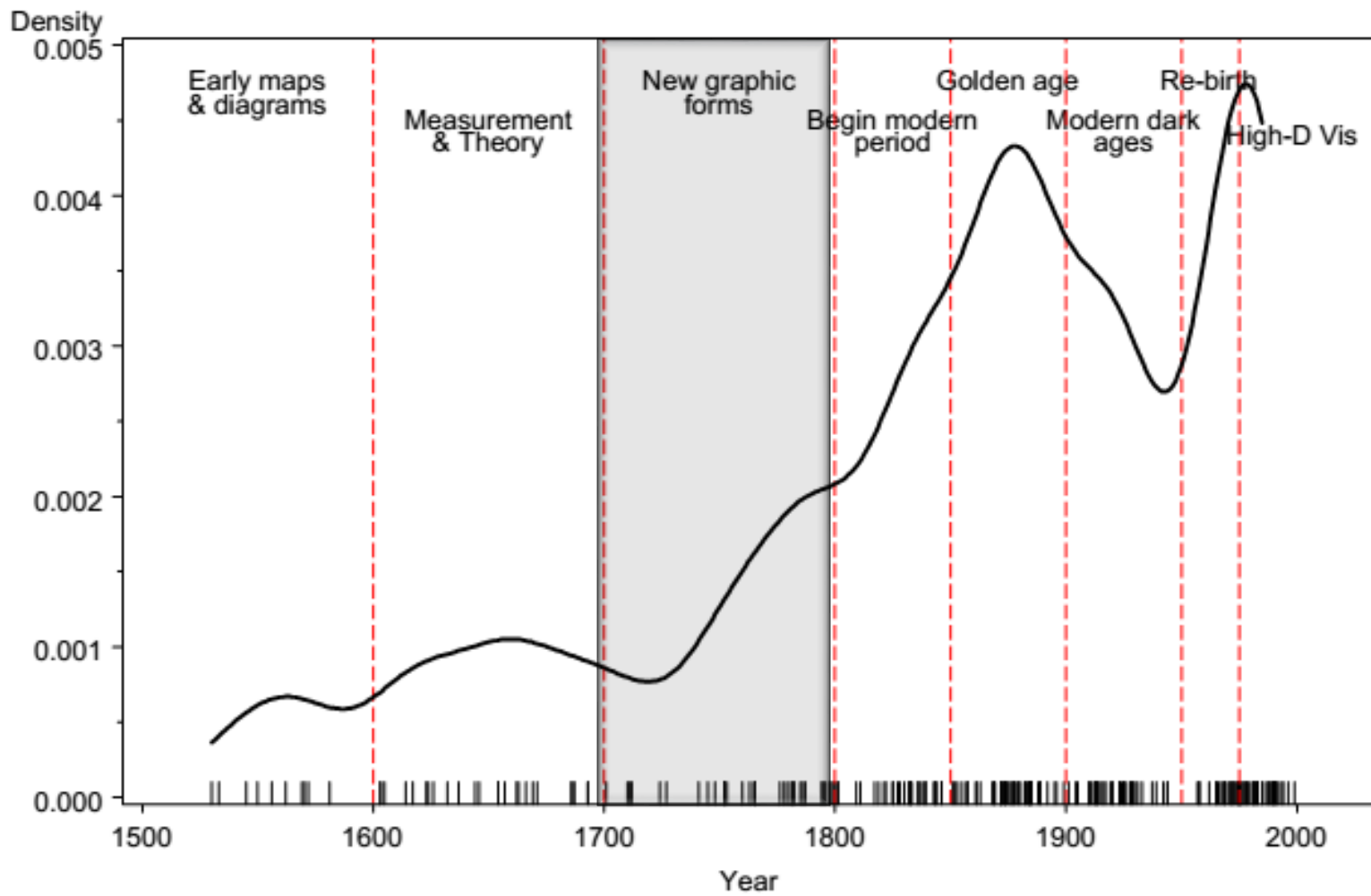
Michael Florent van Langren

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



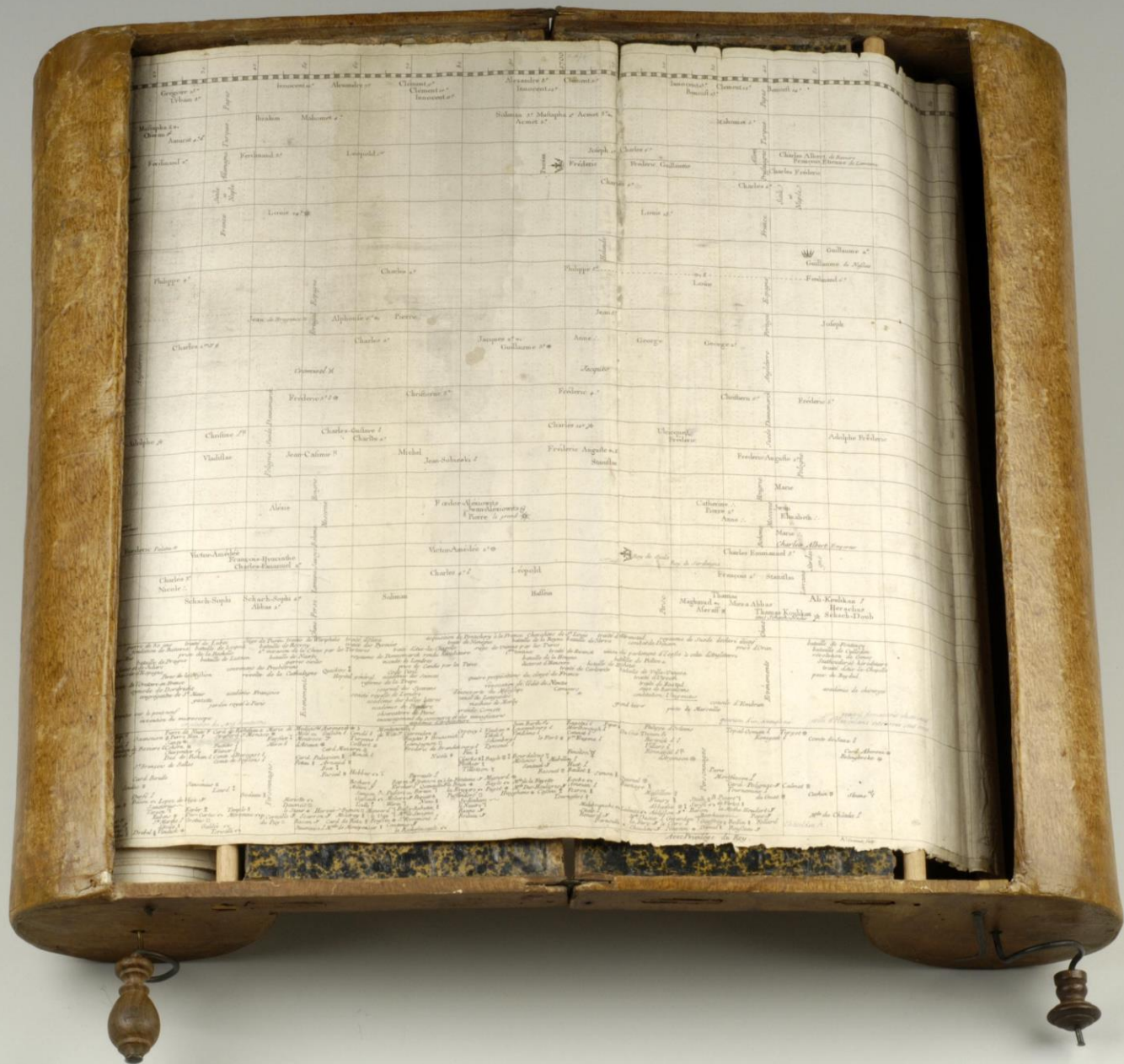


1753

Jacques Barbeu-Dubourg

Časová osa

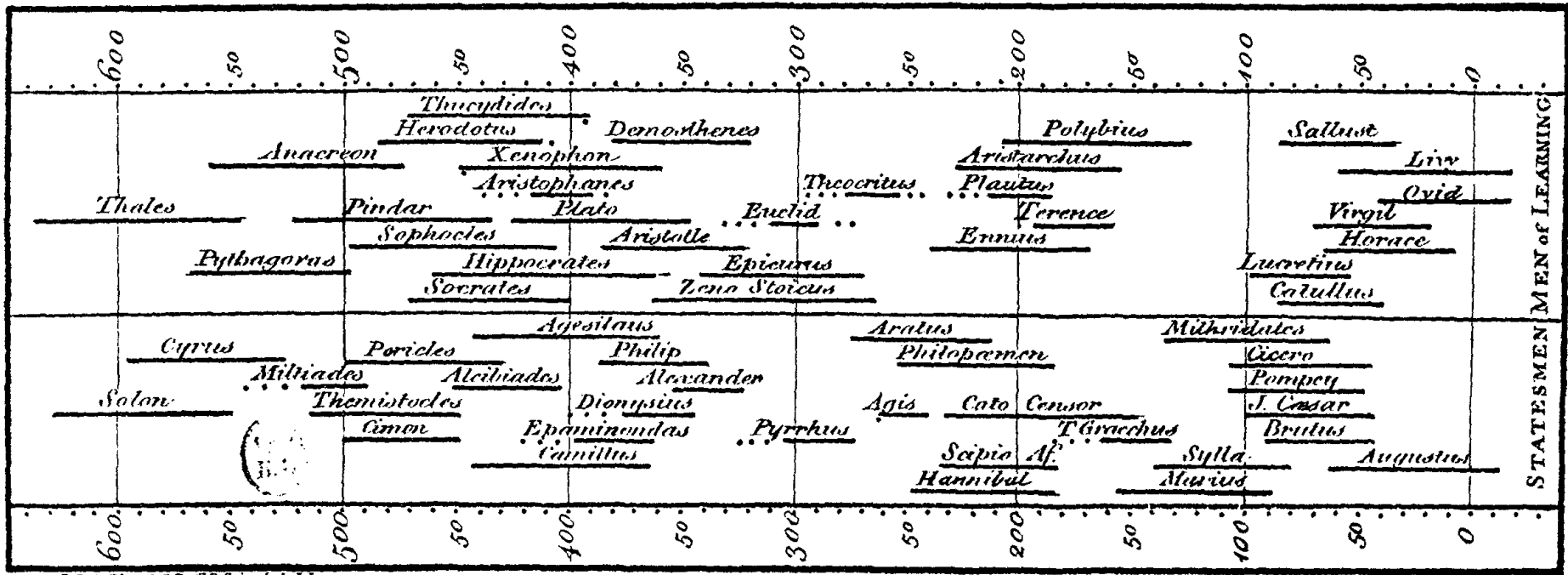




1765

Joseph Priestly

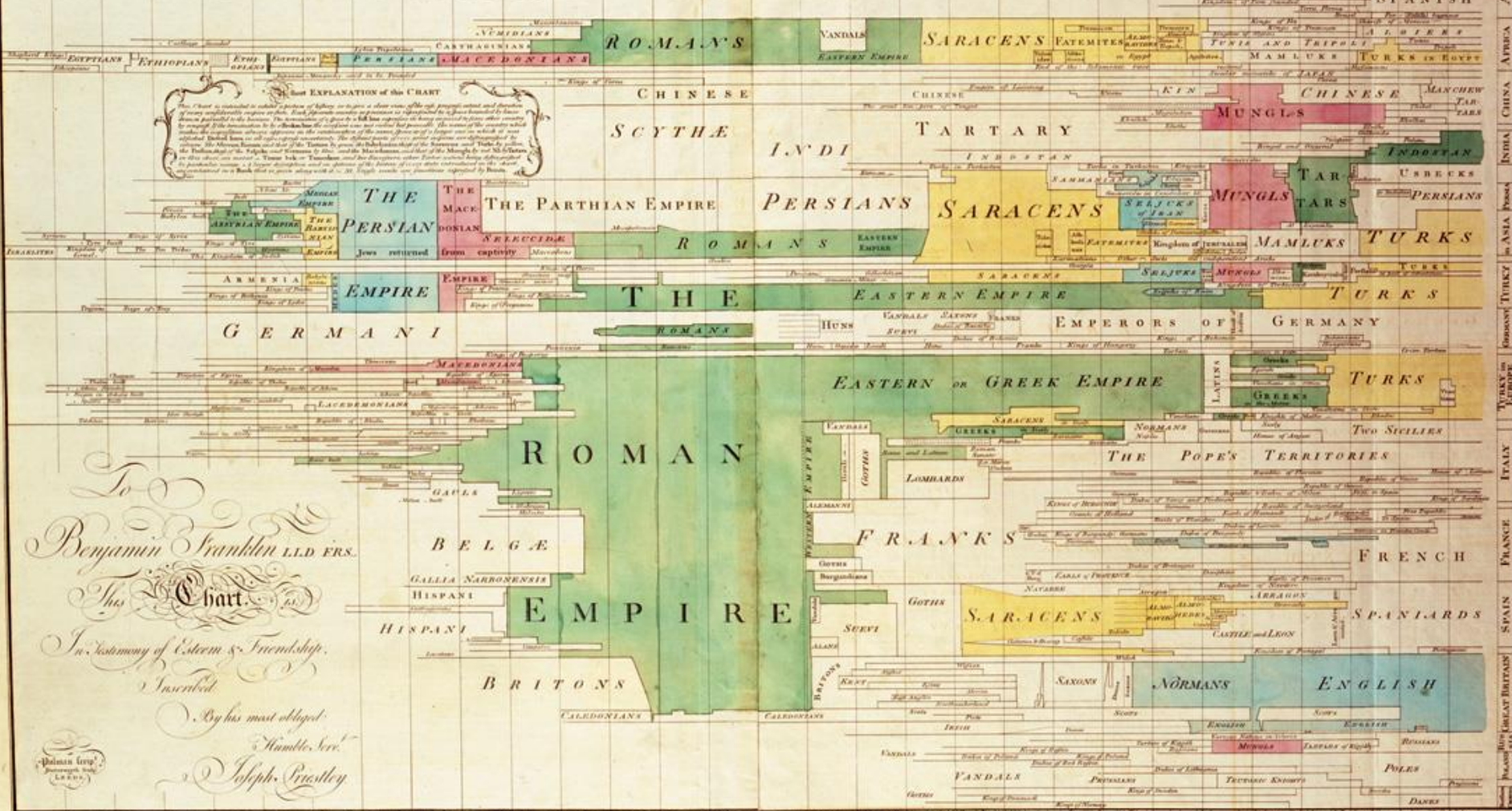
Časová osa



J. Priestly L.L.D. F.R.S. inv. et del.

Alumni in latere marmoreo scripti
Perpetuo serui. Roma.

A NEW CHART OF HISTORY.



EXPLANATION OF THIS CHART

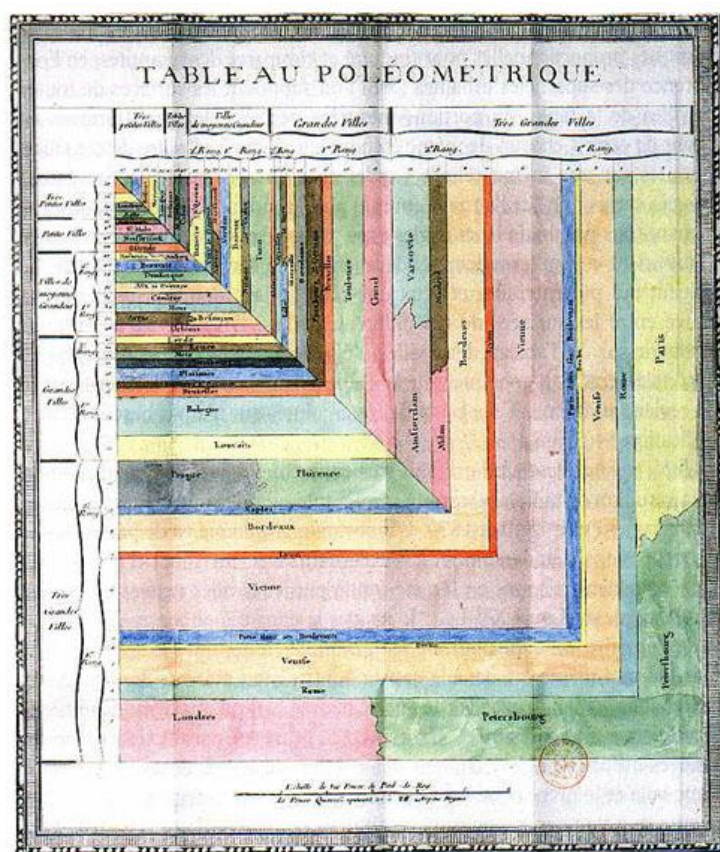
This Chart is intended to exhibit a picture of history in a clear view, after the most general and direct manner, and to show the progress of the human mind, from its first origin to the present time. It is divided into three parts, the first of which is the most ancient, the second the middle, and the third the most modern. The first part is divided into three sections, the first of which is the most ancient, the second the middle, and the third the most modern. The second part is divided into three sections, the first of which is the most ancient, the second the middle, and the third the most modern. The third part is divided into three sections, the first of which is the most ancient, the second the middle, and the third the most modern.

To
Benjamin Franklin LL.D. F.R.S.
 This Chart
 In testimony of Esteem & Friendship,
 Inscribed
 By his most obliged
 Humble Serv^t
Joseph Priestley

1782

Charles de Fourcroy

Předchůdce kartodiagramu



1780+

William Playfair

Skoro všechny základní statistické grafy

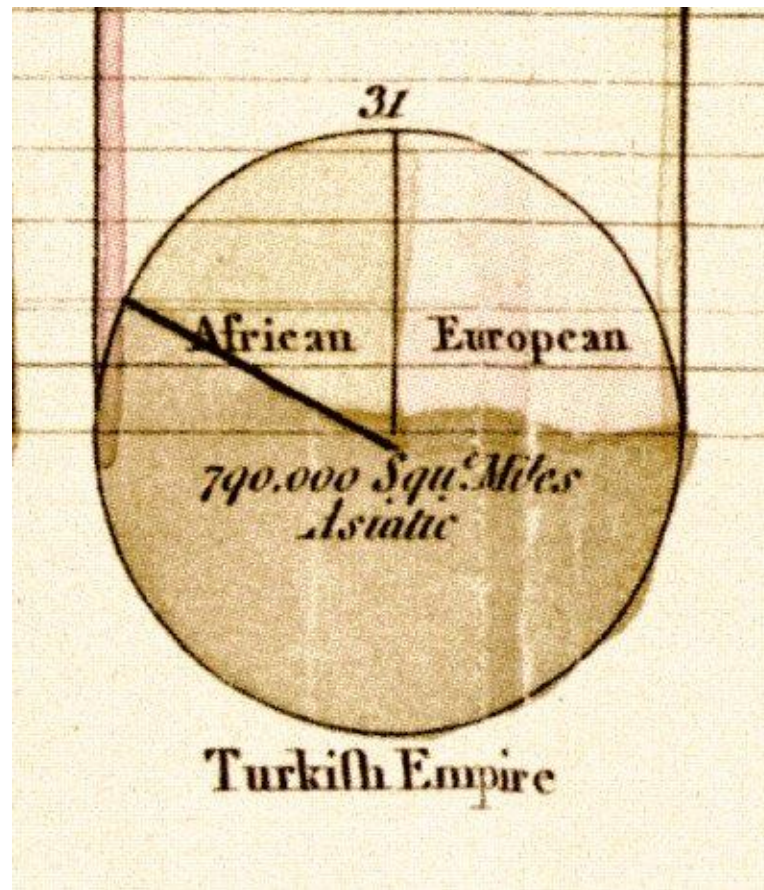
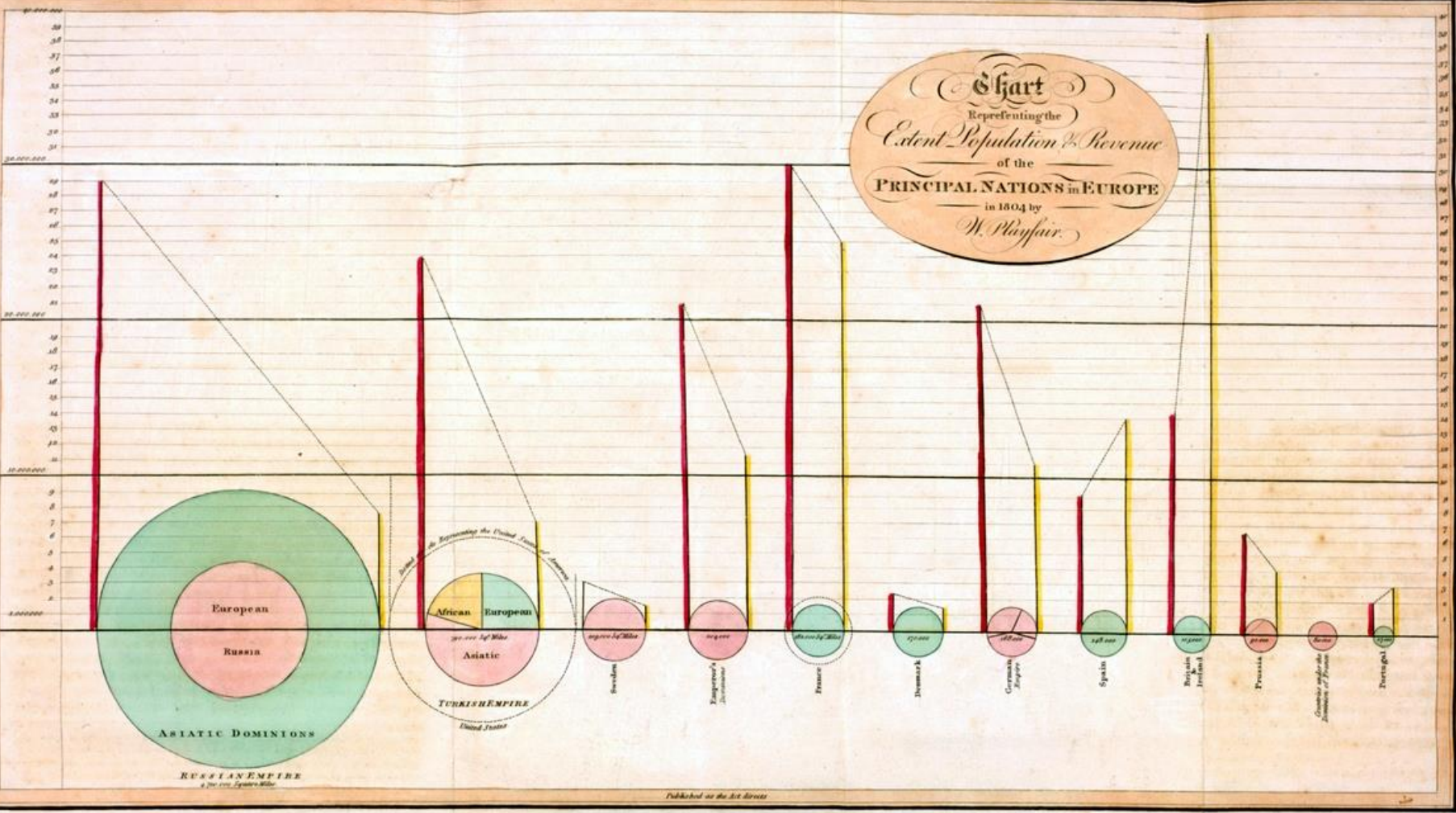
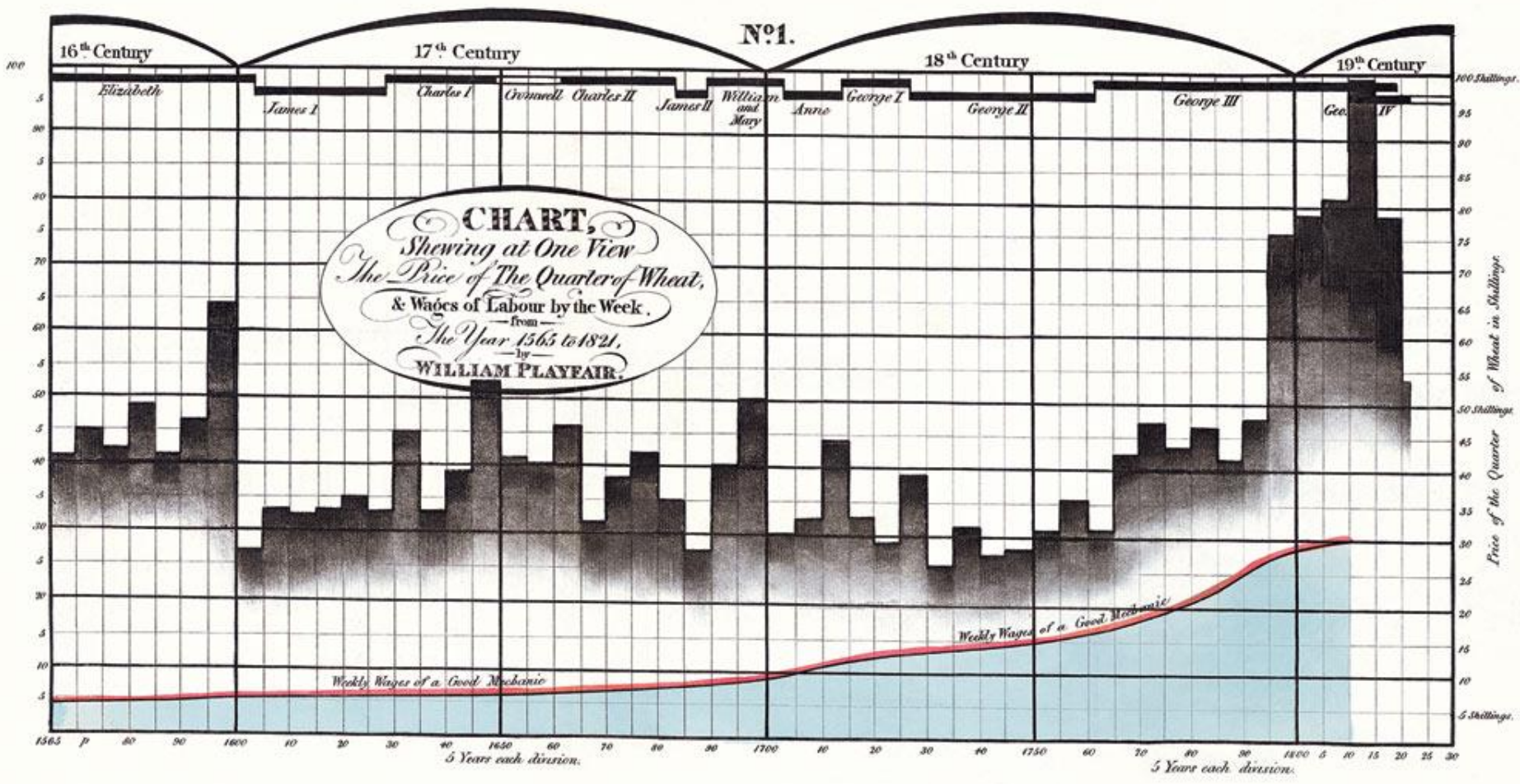


Chart
 Representing the
Extent, Population & Revenue
 of the
PRINCIPAL NATIONS in EUROPE
 in 1804 by
W. Playfair.





C. J. Harris

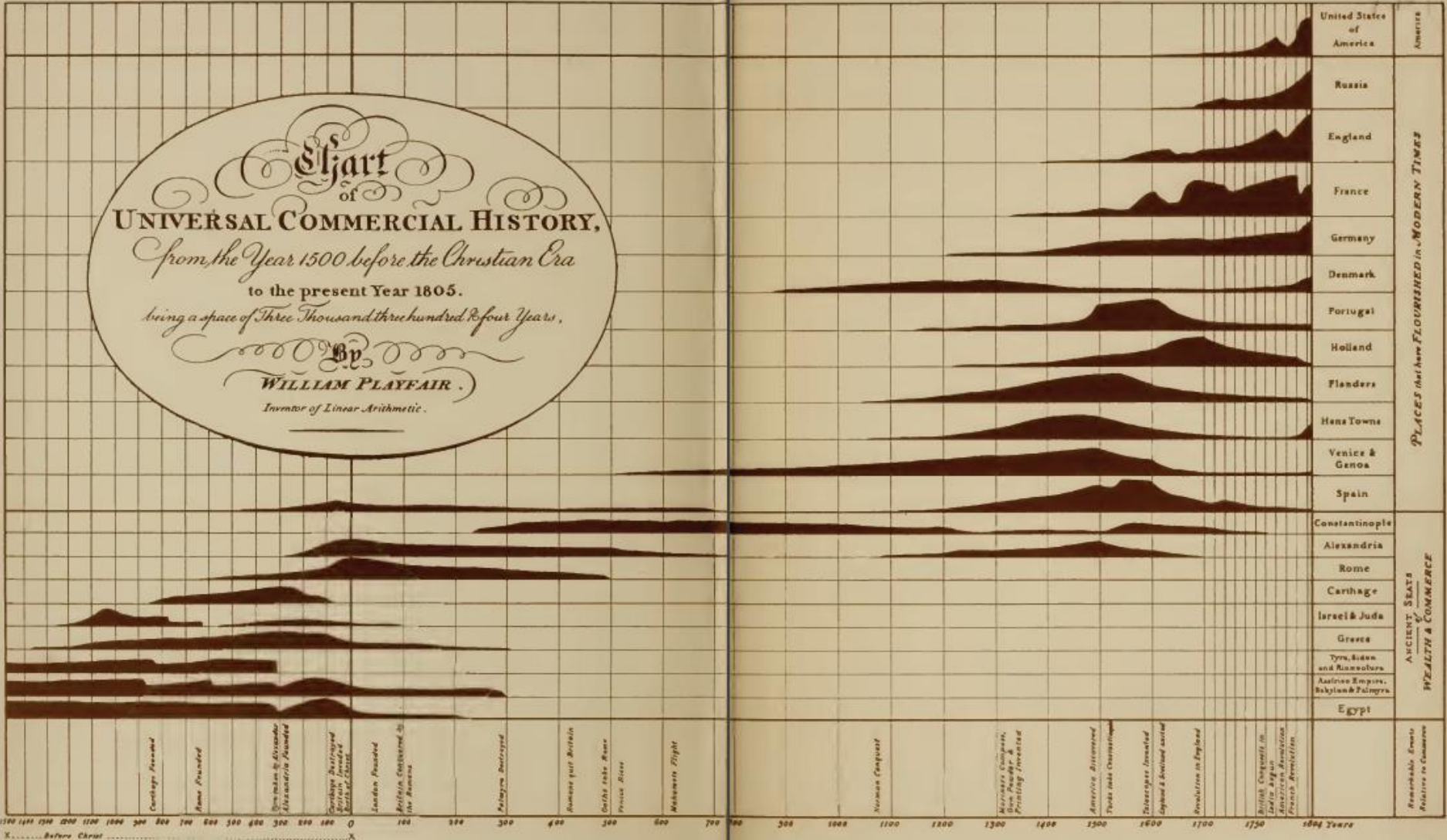
C. J. Harris

FC 11/91

581 PM

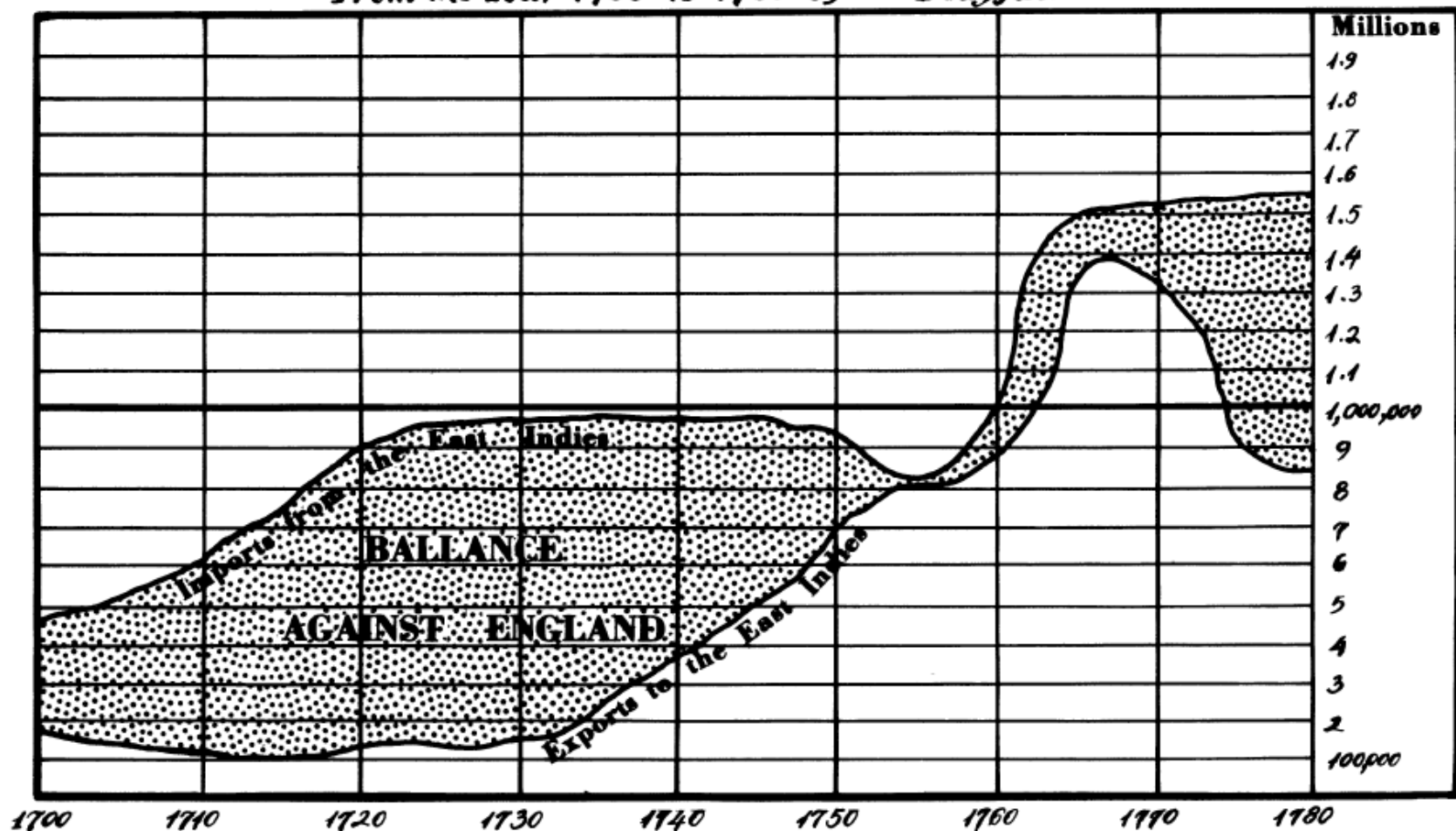


Start
 of
UNIVERSAL COMMERCIAL HISTORY.
From the Year 1500 before the Christian Era
 to the present Year 1805.
being a space of Three Thousand three hundred & four Years,
 By
WILLIAM PLAYFAIR.
Inventor of Linear Arithmetic.

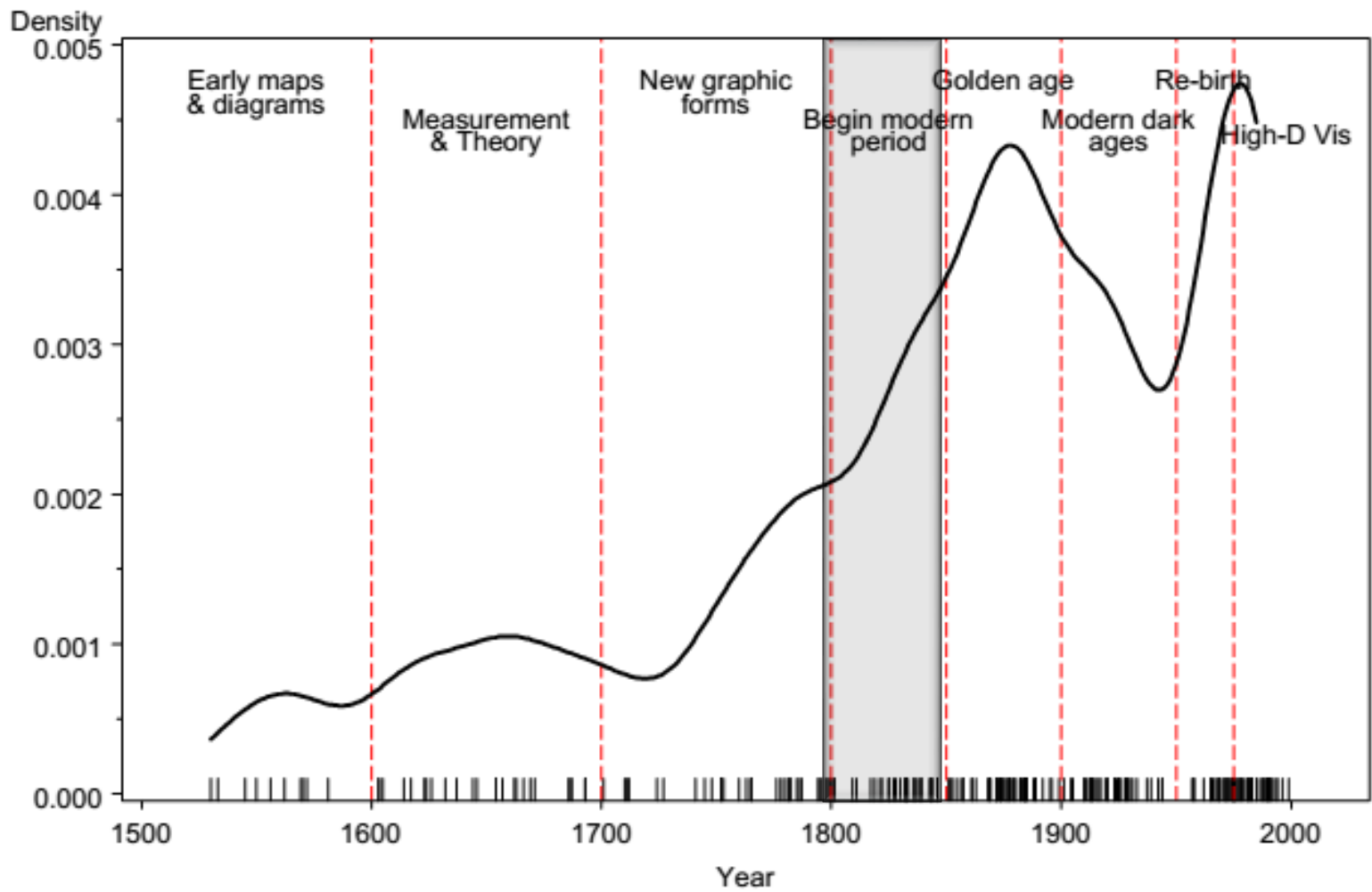


From Frontispiece of Book by WILLIAM PLAYFAIR, An Inquiry Into the Permanent Causes of the Decline and Fall of Powerful and Wealthy Nations, London, 1805.

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



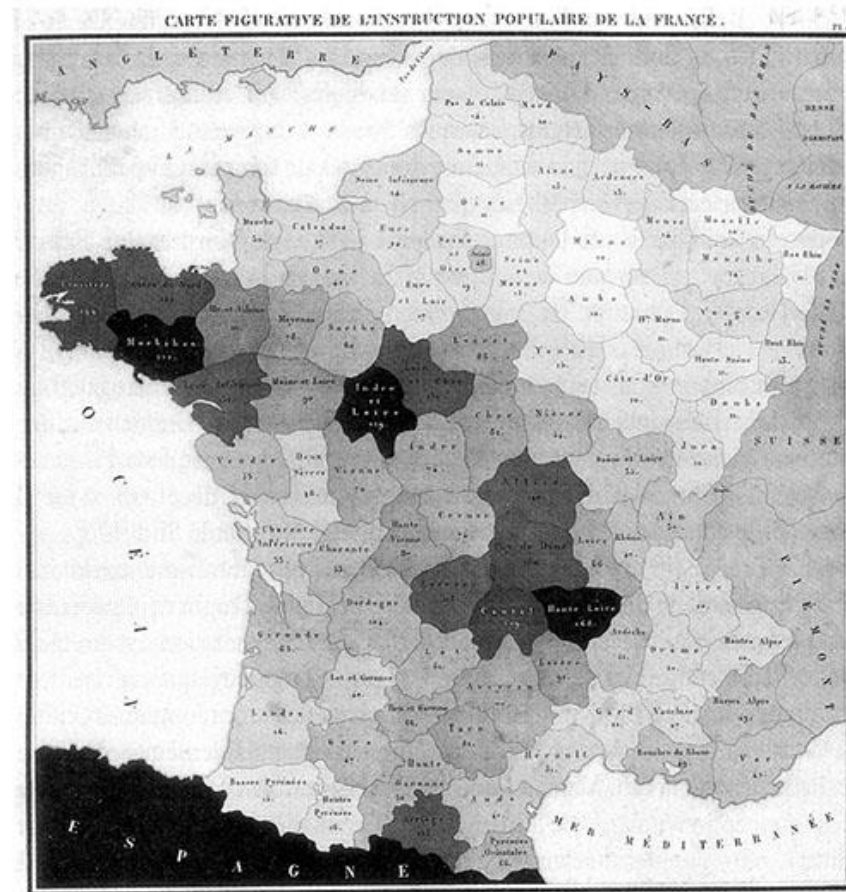
The Bottom Line is Divided into Years the Right hand Line into HUNDRED THOUSAND POUNDS
King of the Kings is for Page 31st Published in the Act Divine 16th Aug. 1785



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.“

STATISTIQUE COMPARÉE

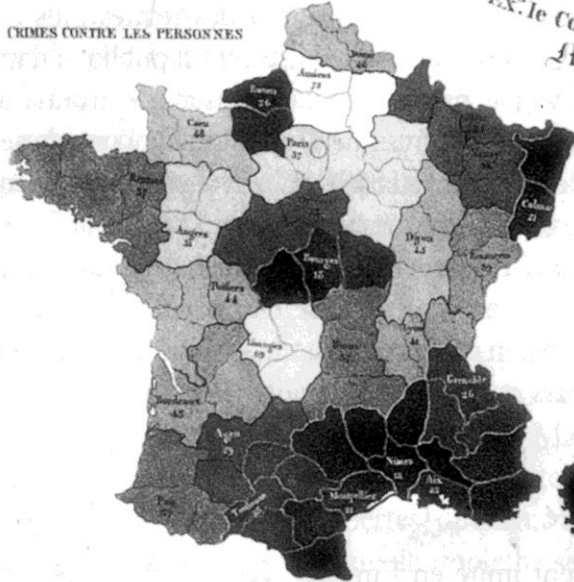
DE L'ÉTAT DE L'INSTRUCTION ET DU NOMBRE DES CRIMES

dans les divers Arrondissements des Académies et des Cours R^{de} de France

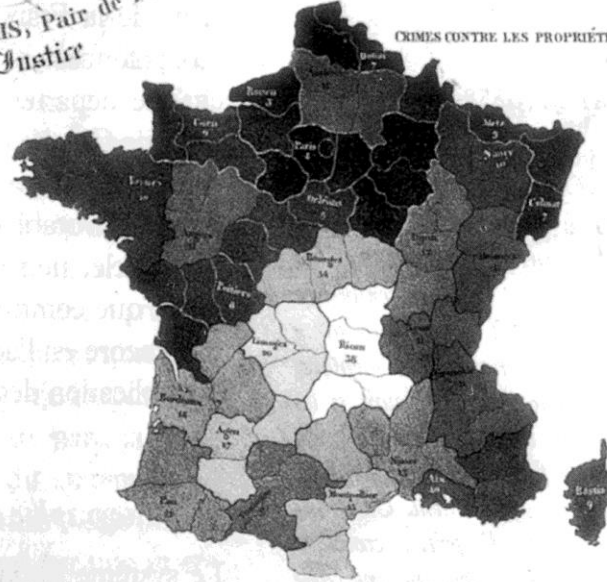
PAR A. BALBI & A. M. GUERRY, Avocat.

A Son Ex^{te} le Comte DE PORTALIS, Pair de France,
Ministre de la Justice

CRIMES CONTRE LES PERSONNES



CRIMES CONTRE LES PROPRIÉTÉS



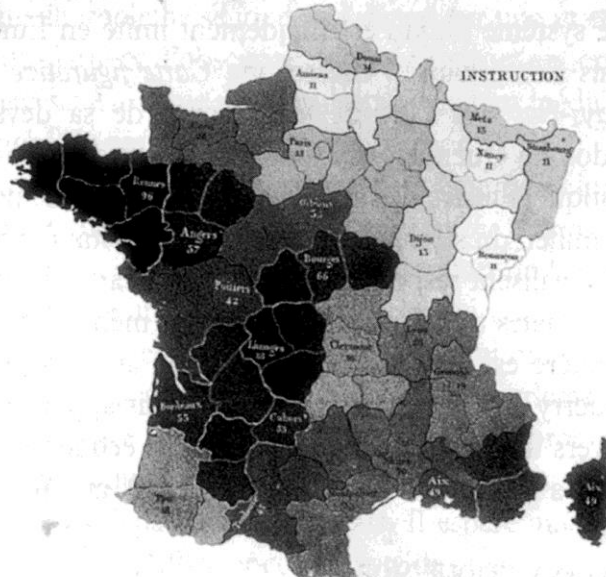
CRIMES

Contre les personnes		Contre les propriétés	
Nombre	Sur mille habitants	Nombre	Sur mille habitants
Alsace	3.367	Paris	8.474
Amiens	10.647	Paris	8.169
Angers	11.618	Paris	7.997
Bordeaux	10.218	Paris	7.739
Brest	11.100	Paris	8.104
Caen	11.100	Paris	8.191
Colmar	11.100	Paris	8.161
Evreux	11.100	Paris	8.161
Grenoble	11.100	Paris	8.161
Lyon	11.100	Paris	8.161
Marseille	11.100	Paris	8.161
Nantes	11.100	Paris	8.161
Nîmes	11.100	Paris	8.161
Orléans	11.100	Paris	8.161
Rennes	11.100	Paris	8.161
Strasbourg	11.100	Paris	8.161
Toulouse	11.100	Paris	8.161
Verdun	11.100	Paris	8.161
Yverdon	11.100	Paris	8.161
Alsace	3.367	Paris	8.474
Amiens	10.647	Paris	8.169
Angers	11.618	Paris	7.997
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Grenoble	11.100	Paris	8.161
Lyon	11.100	Paris	8.161
Marseille	11.100	Paris	8.161
Nantes	11.100	Paris	8.161
Nîmes	11.100	Paris	8.161
Orléans	11.100	Paris	8.161
Rennes	11.100	Paris	8.161
Strasbourg	11.100	Paris	8.161
Toulouse	11.100	Paris	8.161
Verdun	11.100	Paris	8.161
Yverdon	11.100	Paris	8.161

INSTRUCTION

Contre les personnes et les propriétés	
Nombre	Sur mille habitants
Alsace	3.367
Amiens	10.647
Angers	11.618
Bordeaux	10.218
Brest	11.100
Caen	11.100
Colmar	11.100
Evreux	11.100
Grenoble	11.100
Lyon	11.100
Marseille	11.100
Nantes	11.100
Nîmes	11.100
Orléans	11.100
Rennes	11.100
Strasbourg	11.100
Toulouse	11.100
Verdun	11.100
Yverdon	11.100
Alsace	3.367
Amiens	10.647
Angers	11.618
Bordeaux	10.218
Brest	11.100
Caen	11.100
Colmar	11.100
Evreux	11.100
Grenoble	11.100
Lyon	11.100
Marseille	11.100
Nantes	11.100
Nîmes	11.100
Orléans	11.100
Rennes	11.100
Strasbourg	11.100
Toulouse	11.100
Verdun	11.100
Yverdon	11.100

INSTRUCTION



Les deux premières cartes présentent d'après le Compté général de l'Administration de la Justice (publié par les annuaires 1815, 1816 et 1817, et d'après le tableau récemment, le rapport moyen du nombre des condamnés à la population dans les divers arrondissements de France, les chiffres indiquent le nombre des crimes contre les personnes, l'arrondissement de la Cour royale de Paris en compte 1 sur 2000 celui de la Cour royale d'Orléans 1 sur 75000.

La troisième carte, dressée par nous-mêmes d'après les renseignements nous les ont procurés par une des Cours royales, l'Administration de la Justice qui nous a communiqué les chiffres officiels des divers arrondissements de France, les chiffres indiquent sur quel nombre d'habitants il y a un élève. On voit que, dans l'arrondissement de l'Académie de Rennes, il n'y a qu'un élève sur 60 et 1 sur 2 dans les académies de Rouen et de Nancy.

— Prix 3 francs —

Paris, chez Jules Renouard, Libraire, rue de Turin, 17.

1833 / 1854

Robert Baker, John Snow

Mapy cholery (dot mapa)



1833 / 1854

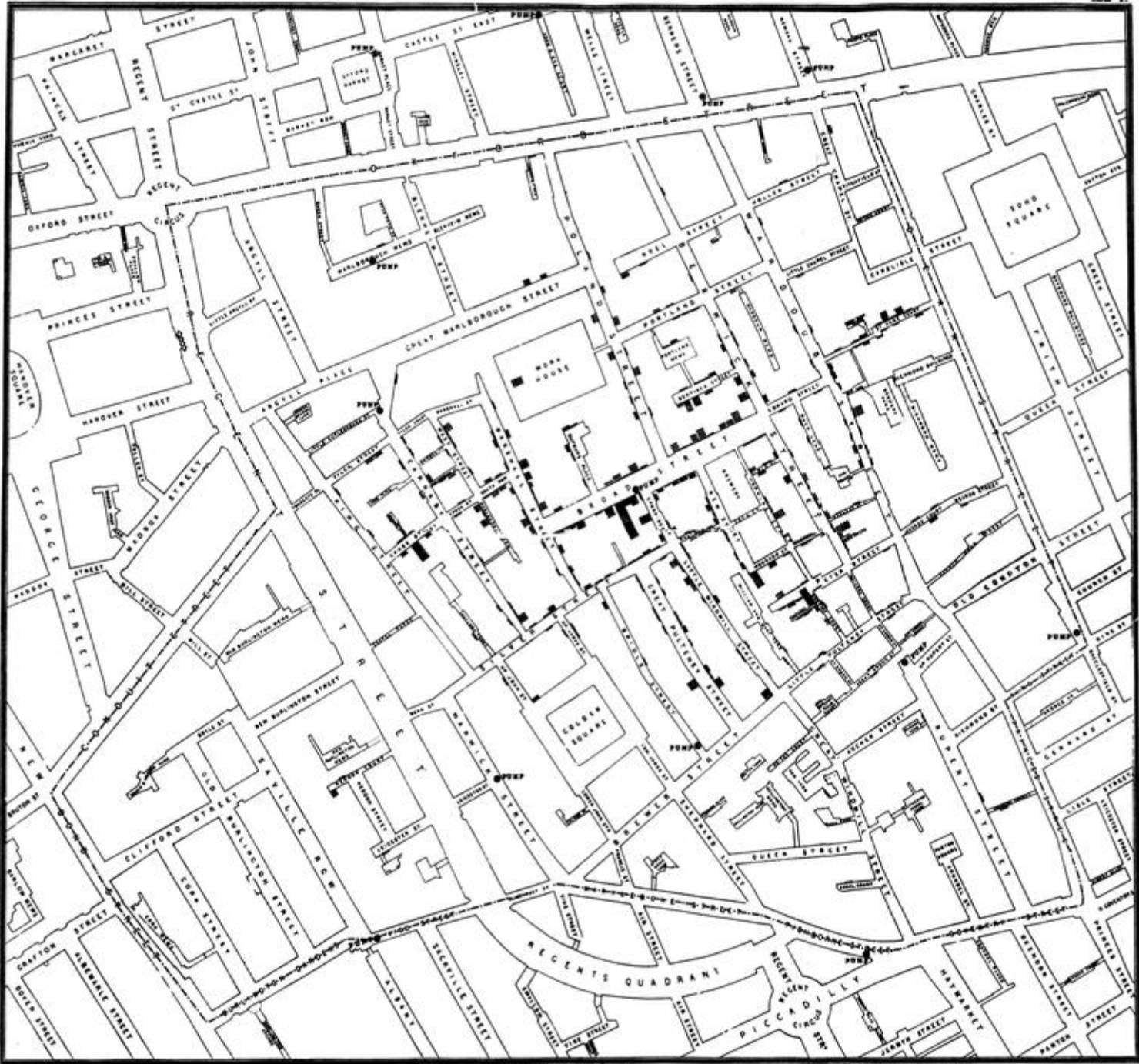
Robert Baker, John Snow

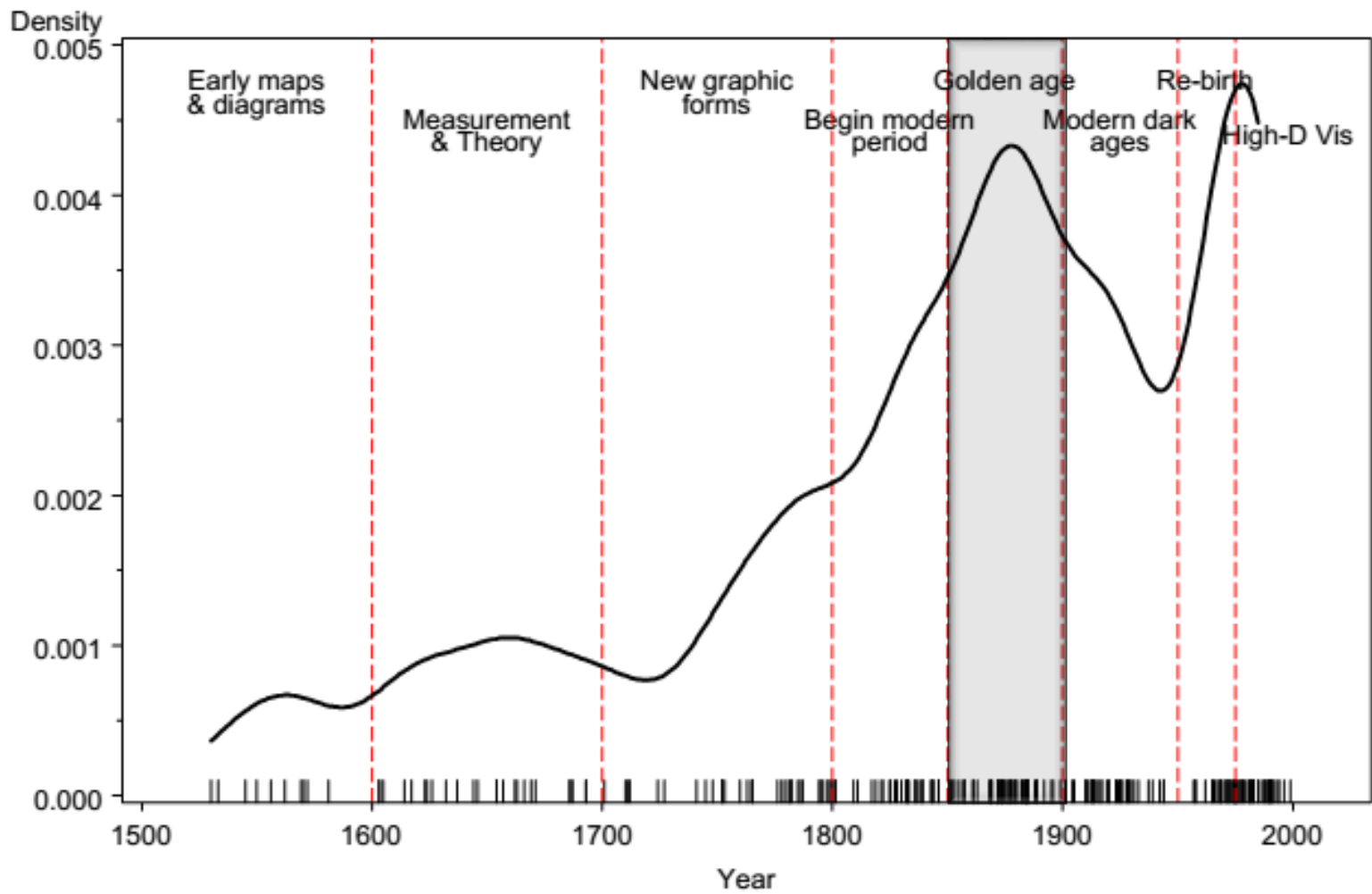
Mapy cholery (dot mapa)

„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 avoient été détachés sur Minsk et Mohilow et qui rejoignent vers Orscha et Witebsk, avoient toujours marché avec l'armée.

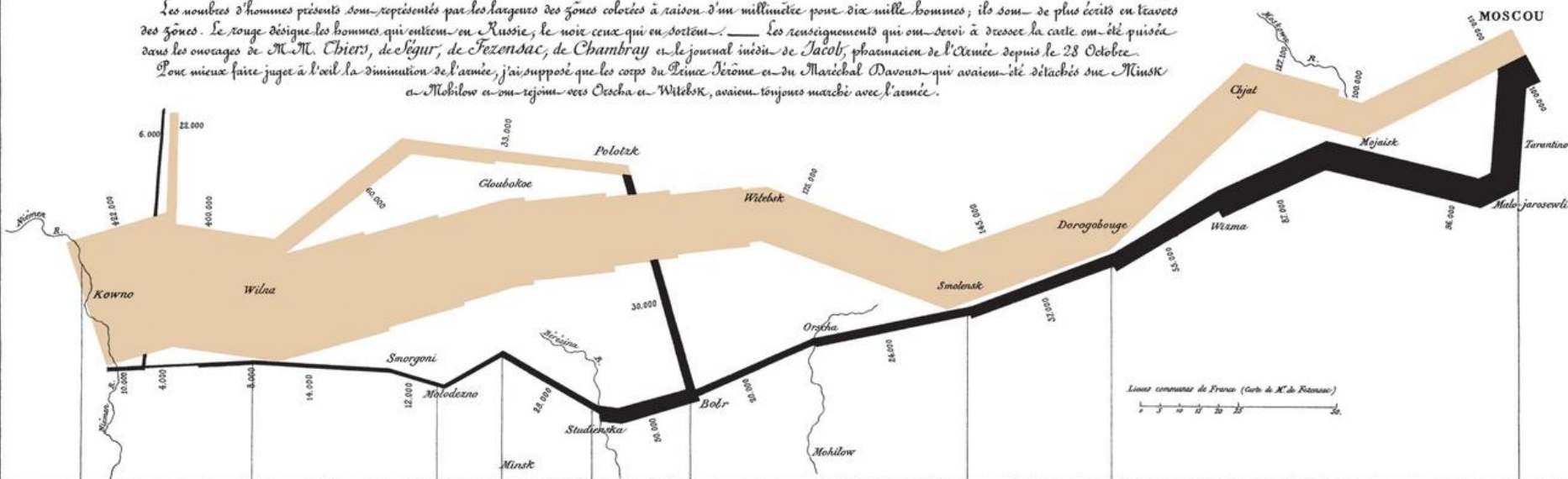
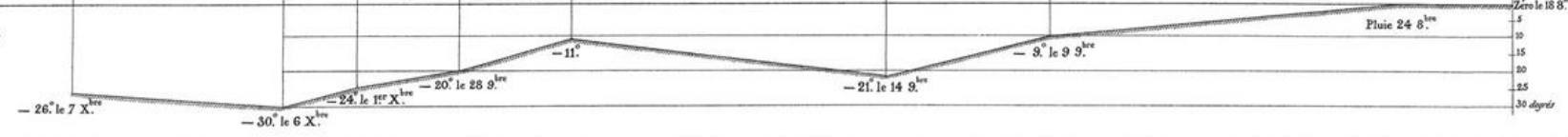


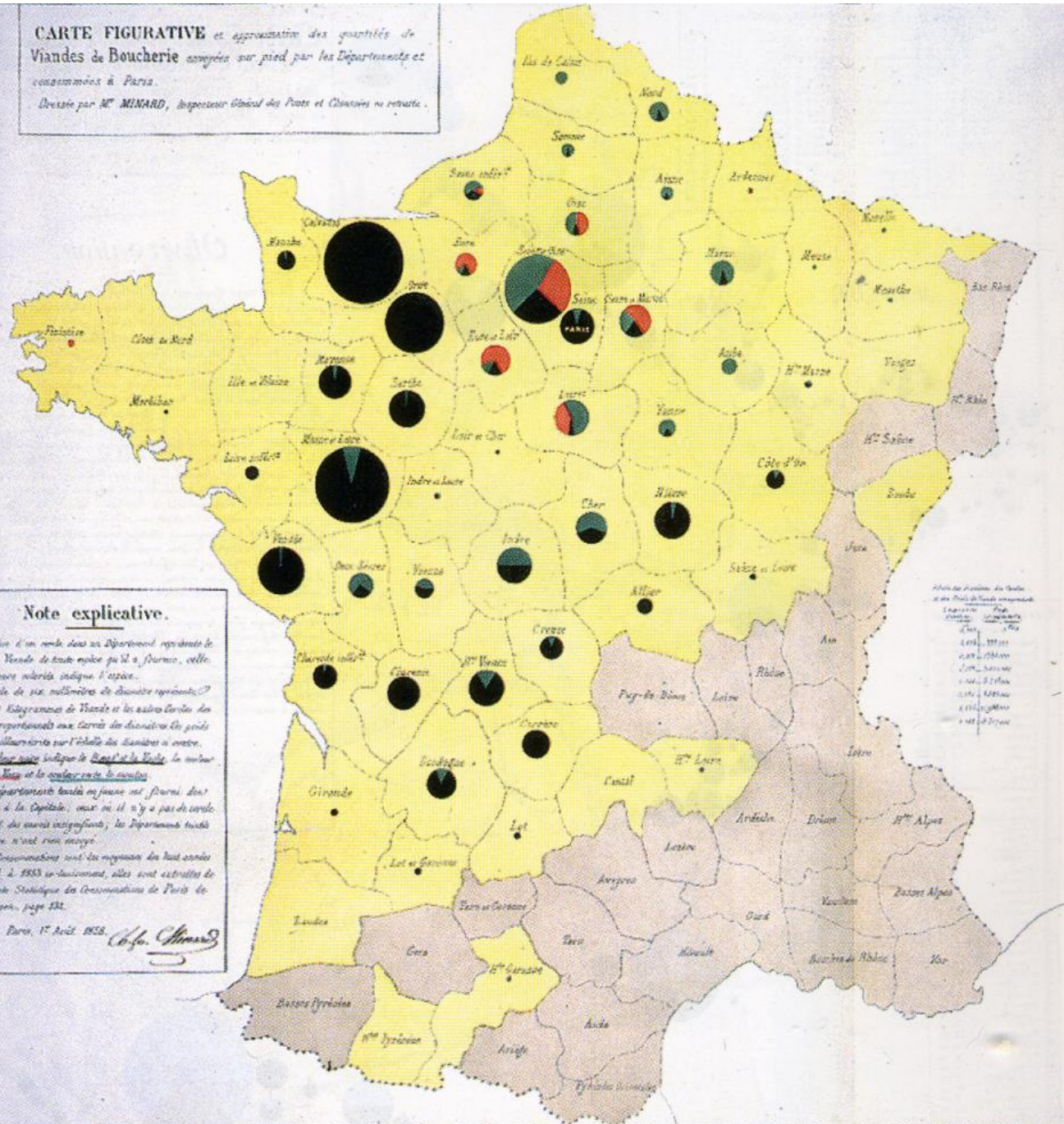
TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.



Les Cosaques passent au galop le Niémen gelé.

CARTE FIGURATIVE et approximation des quantités de
Viandes de Boucherie consommées sur pied par les Départements et
communes à Paris.

Dressée par M^r MINARD, Inspecteur Général des Ponts et Chaussées en retraite.



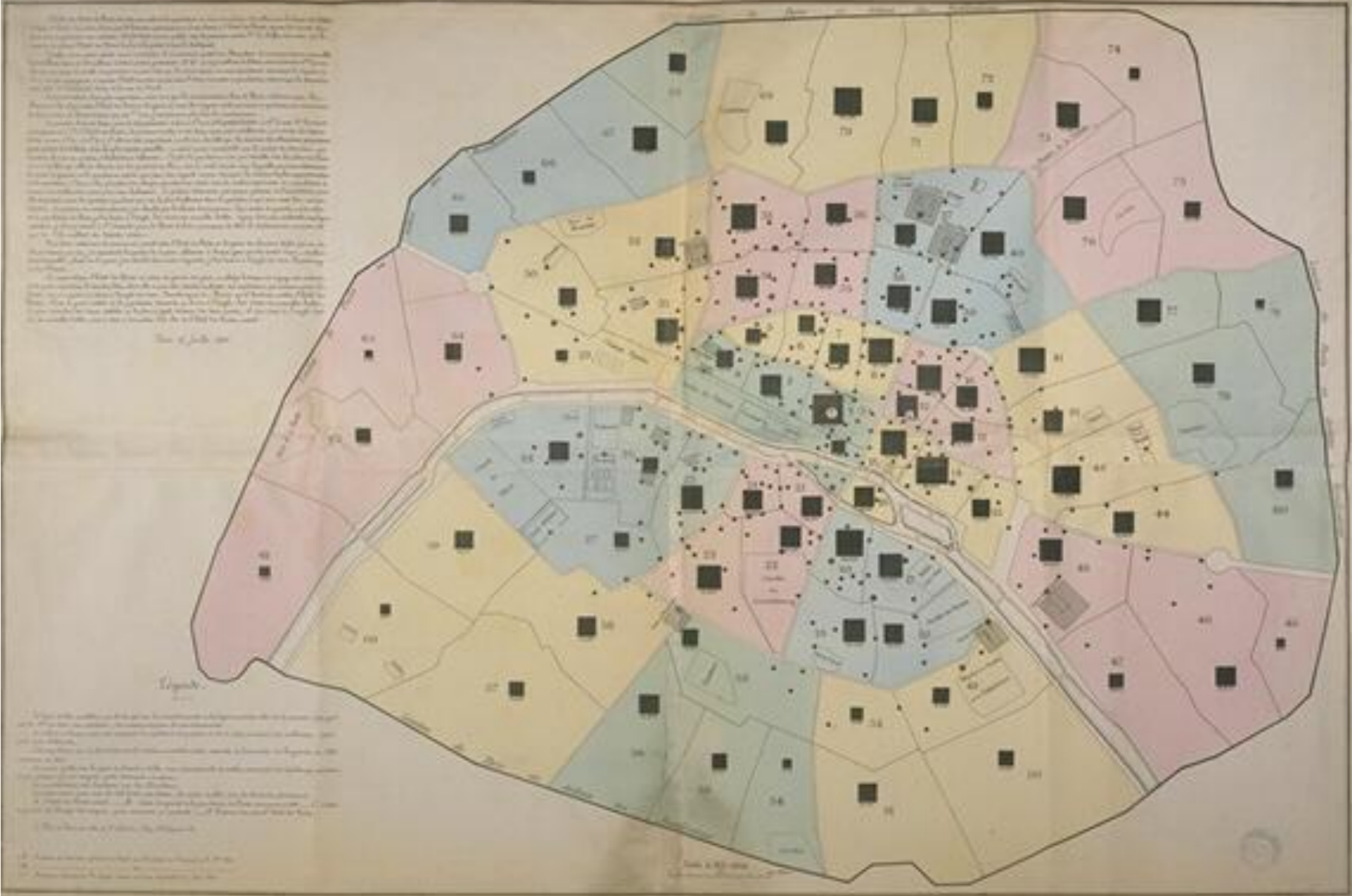
Note explicative.

La surface d'un cercle dans un Département représente le poids de Viande de toute espèce par 100 hommes, celle de Secteurs coloriés indique l'espèce.
 Un cercle de six millimètres de diamètre représente 333 333 kilogrammes de Viande et les autres cercles des poids proportionnels aux Cercles des dixième et centième.
 Les couleurs indiquent sur l'échelle des diamètres ci contre.
 Les Départements hachés en jaune ont fourni des Bœufs à la Capitale, ceux en il n'y a pas de cercle ont fait des envois insignifiants, les Départements hachés en laque n'ont rien envoyé.
 Ces Consommations sont les moyennes des huit années de 1845 à 1853 inclusives, elles sont extraites de l'Annuaire Statistique des Consommations de Paris de M^r Boyer, page 132.

Paris, 17 Août 1856. *C. Minard*

Table des Diamètres des Cercles et des Poids de Viande correspondants

Diamètre	Poids
6 mm	333 333 kg
12 mm	1 333 333 kg
18 mm	2 666 666 kg
24 mm	4 000 000 kg
30 mm	5 333 333 kg
36 mm	6 666 666 kg
42 mm	8 000 000 kg
48 mm	9 333 333 kg
54 mm	10 666 666 kg
60 mm	12 000 000 kg



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

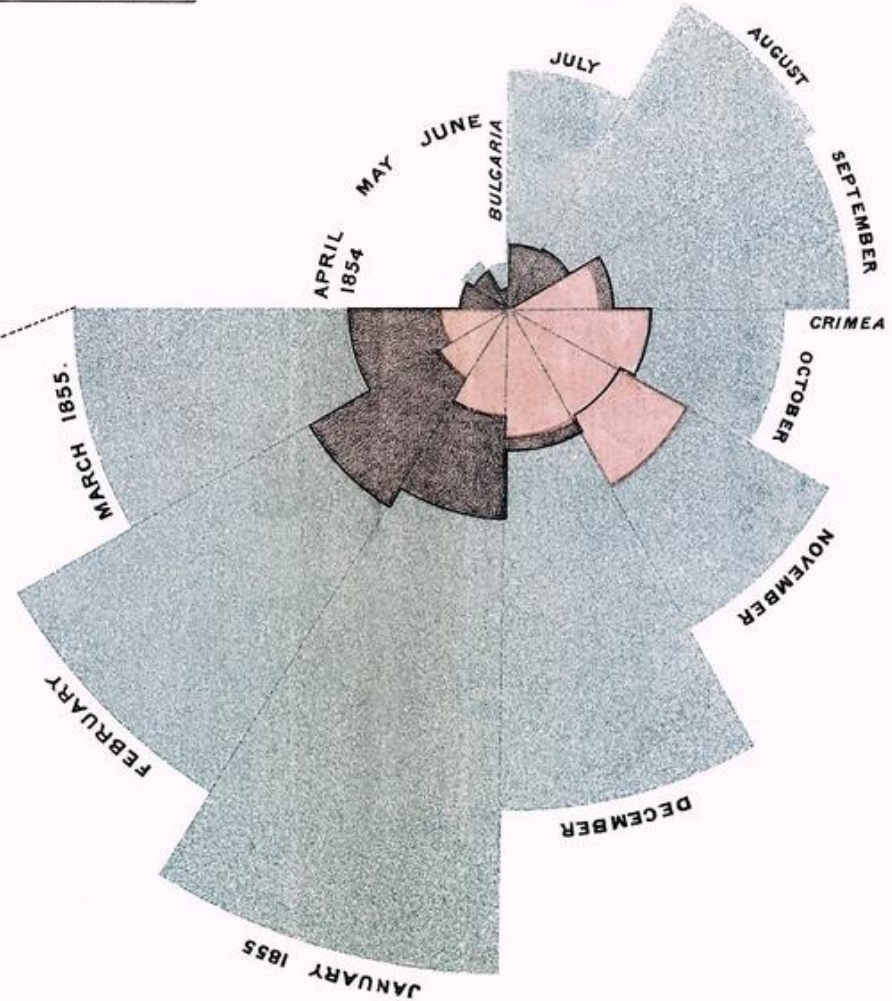
Florence Nightingale

Coxcomb

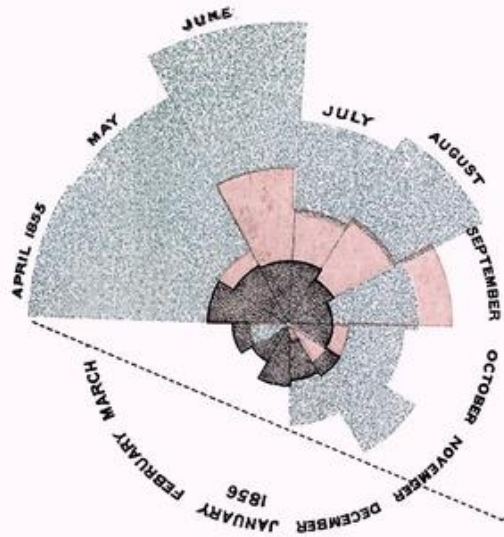


DIAGRAM OF THE CAUSES OF MORTALITY IN THE ARMY IN THE EAST.

1.
APRIL 1854 TO MARCH 1855.



2.
APRIL 1855 TO MARCH 1856.



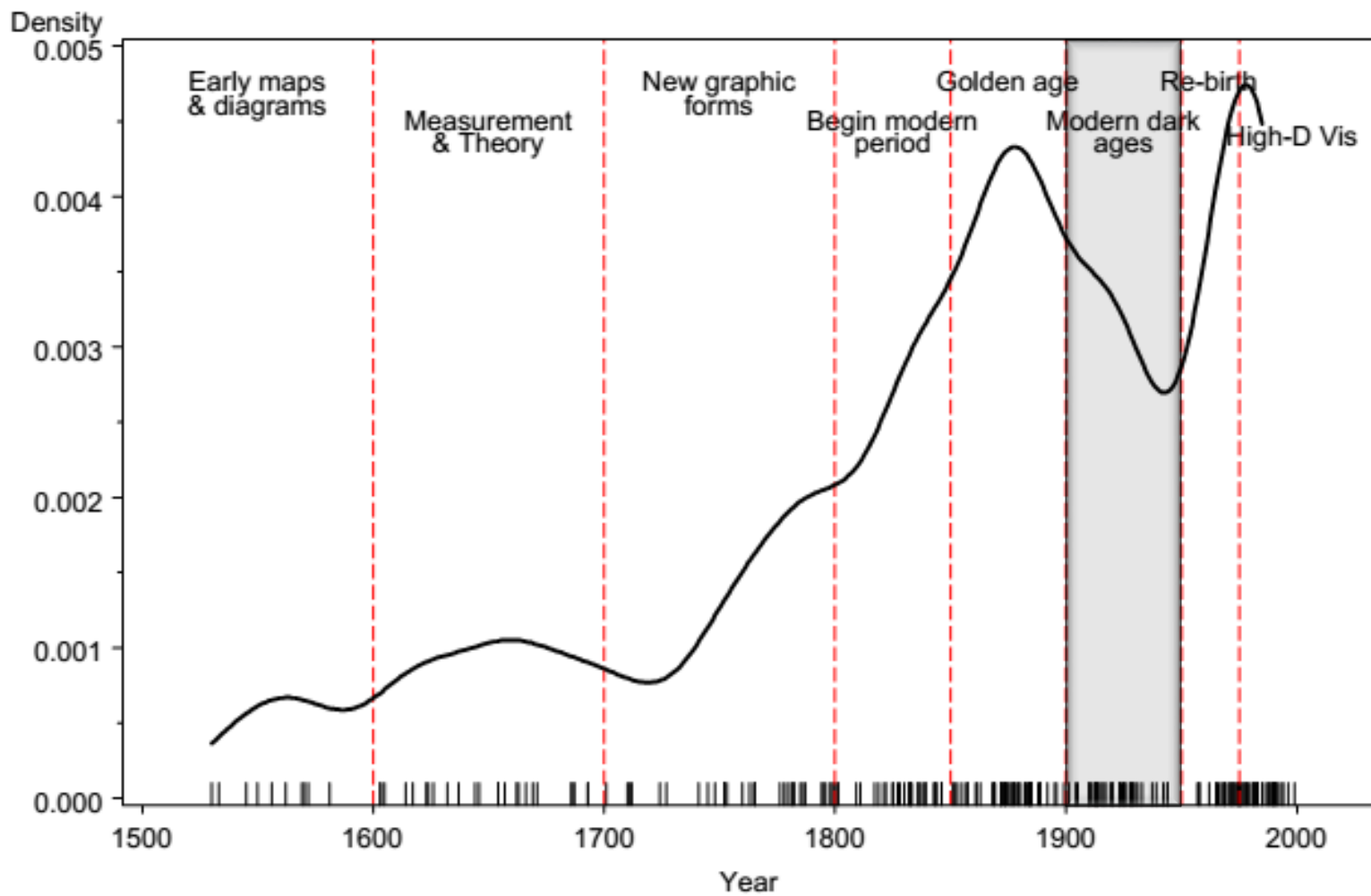
The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.

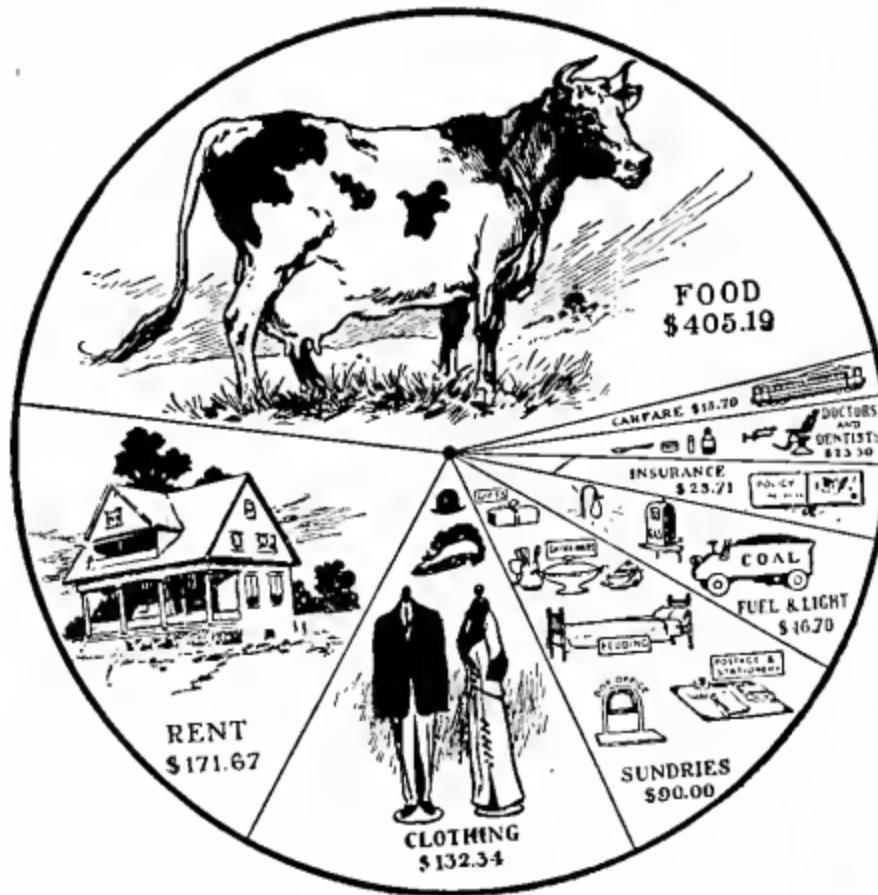
The blue wedges measured from the centre of the circle represent area for area the deaths from Preventible or Mitigable Zymotic diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes.

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.

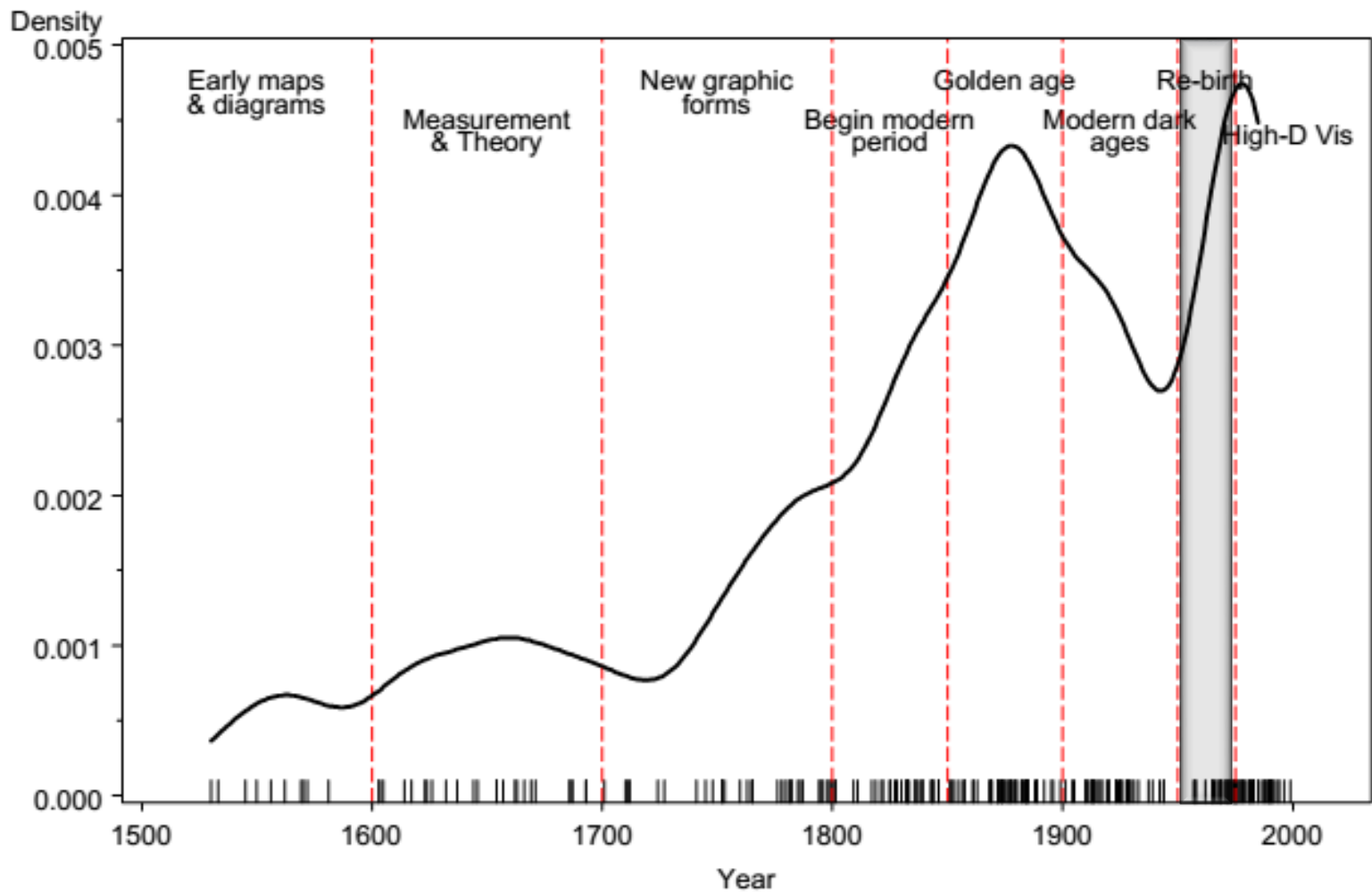




The Survey

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

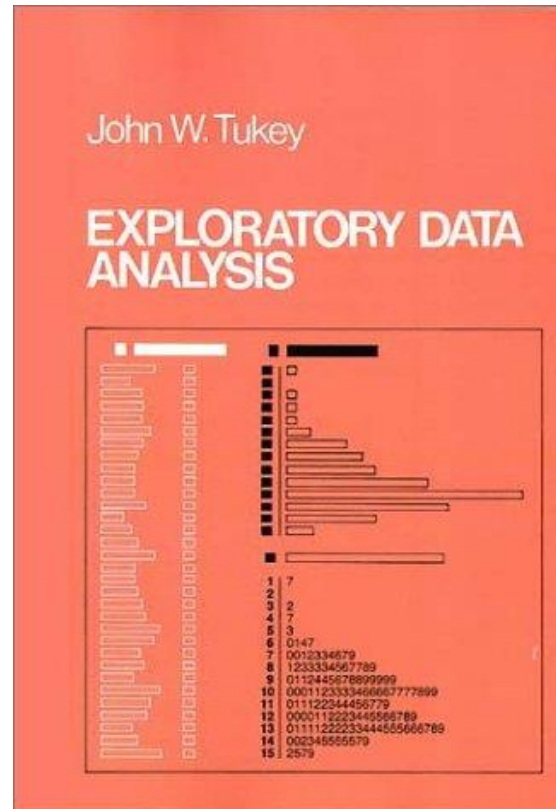
This cut shows an attempt to put figures in popular form. The eye is likely to judge by the size of the pictures rather than by the angles of the sectors

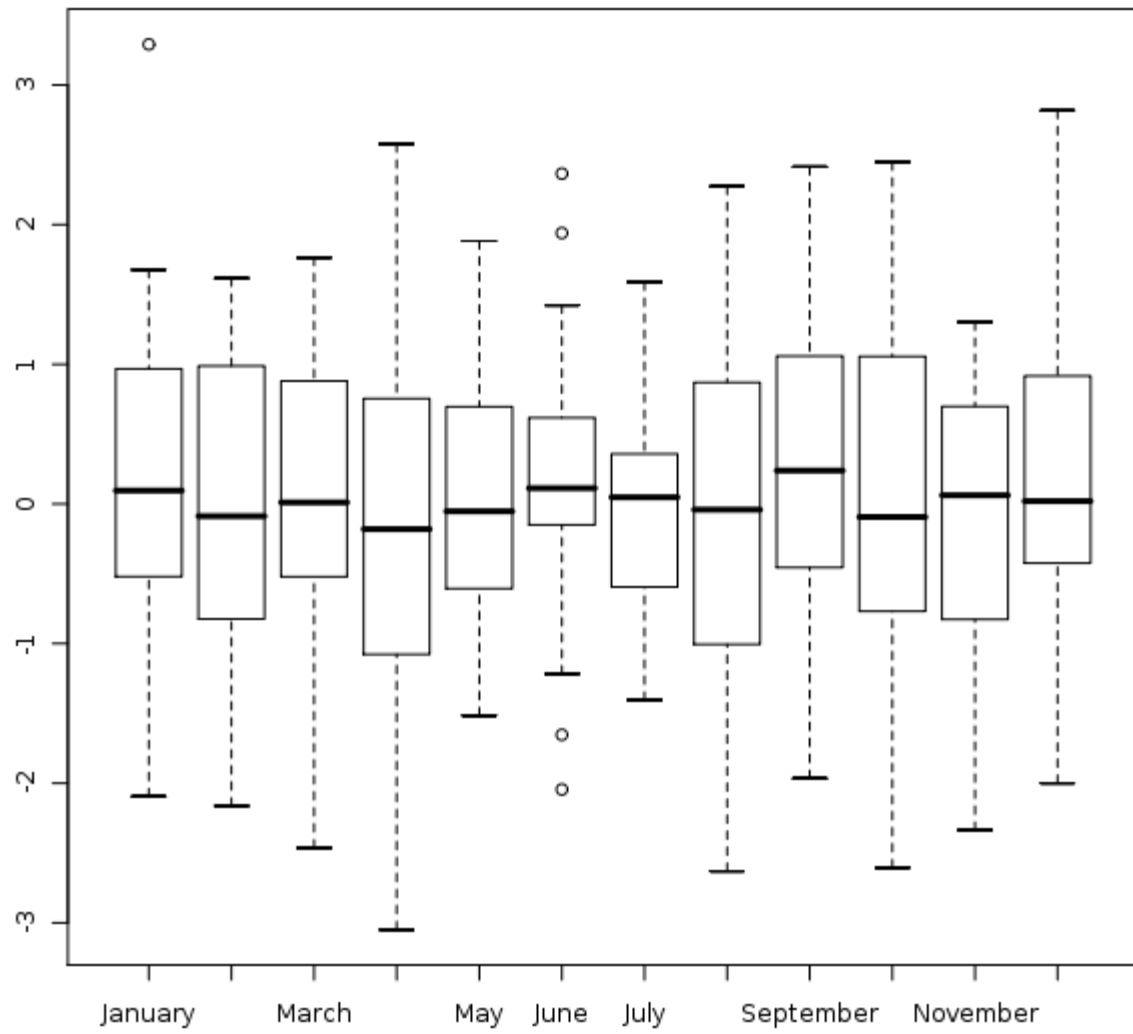


●
1962

John Turkey

Exploratory Data Analysis

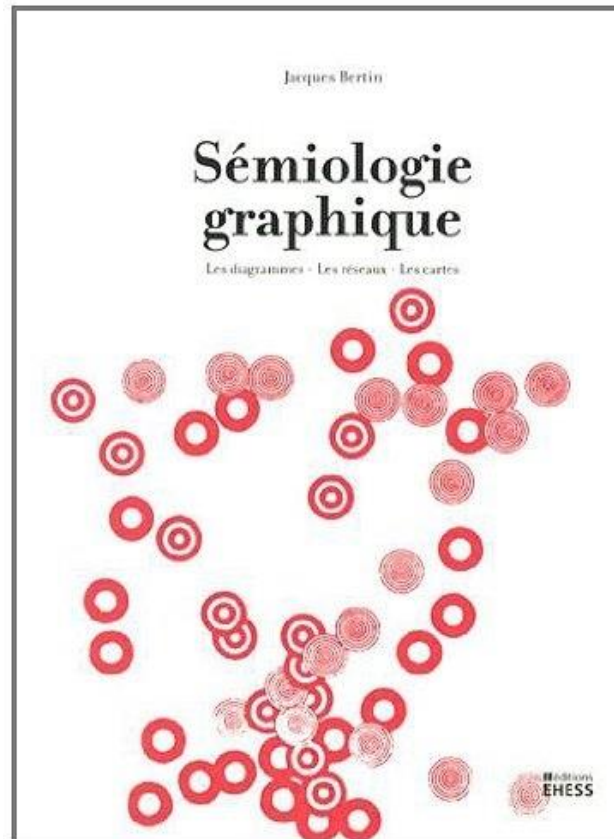




1967

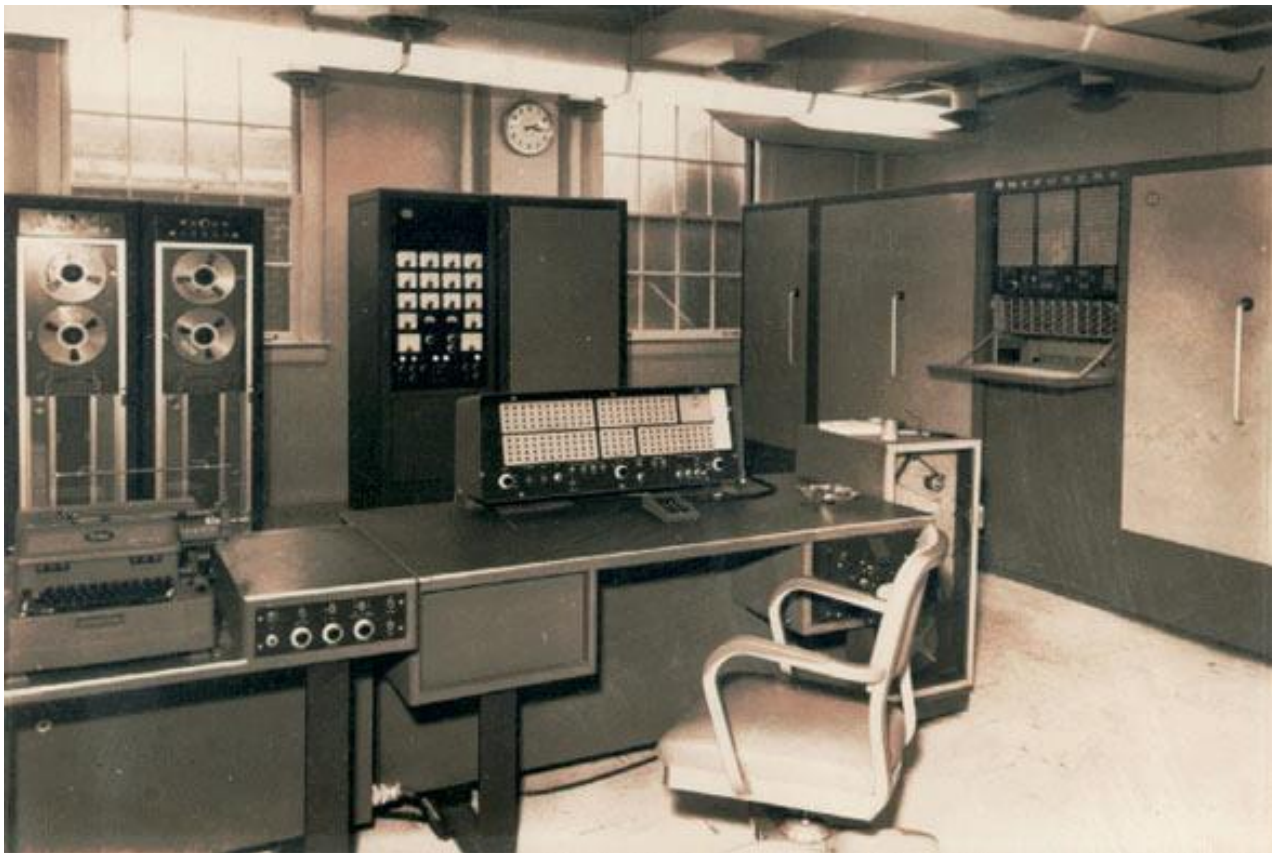
Jacques Bertin

Sémiologie Graphique



1950+

Počítače



Přesvědčování

Argumentace

Ilustrace

Vhled

Po roce 2000

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



1. 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

2. Dostupnost nástrojů

Demokratizace, laicizace

Naklikávačky

Tableau; D3.js,...

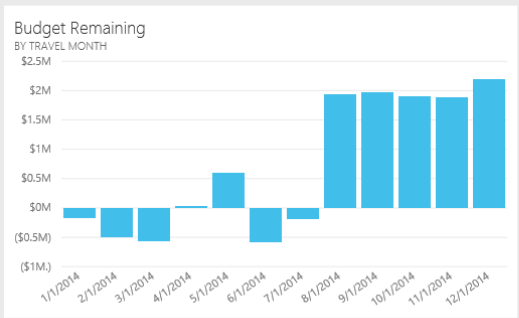
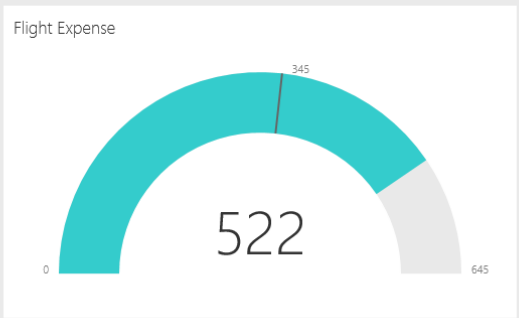
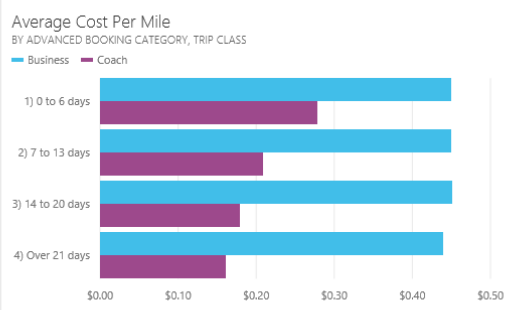
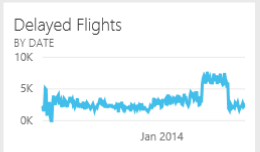
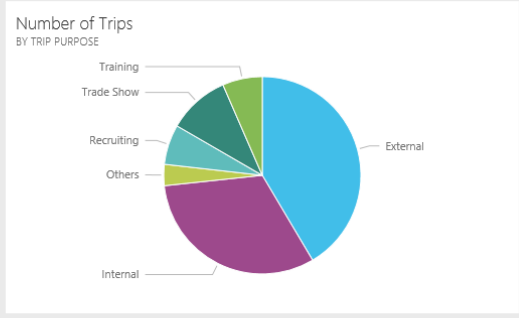
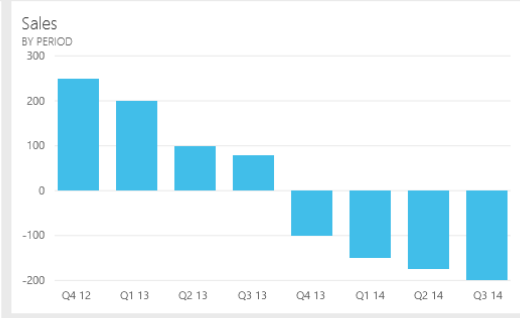
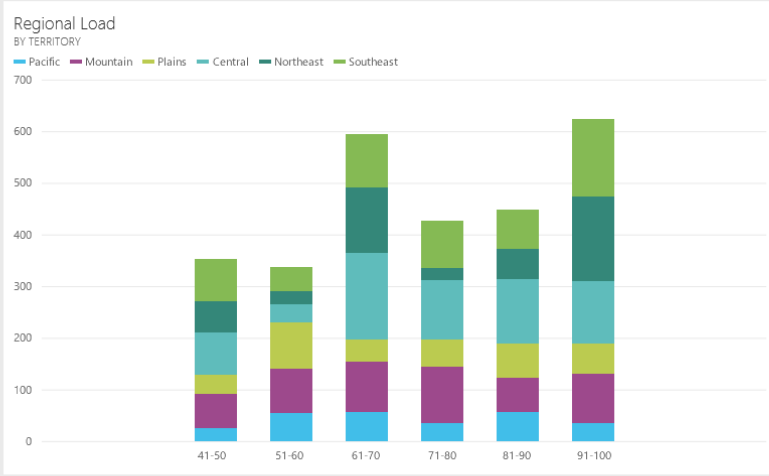
Gephi, NodeXL - sítě

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

3. Web 2.0 a spolupráce

Sdílení

Inspirace

Spolupráce

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

<http://helpmeviz.com/>

4. Otevřené vzdělávání

Knihy zacílené na “nevědce”.

Nathan Yau - Data Points

Nathan Yau - Visualize This!

MOOC



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.



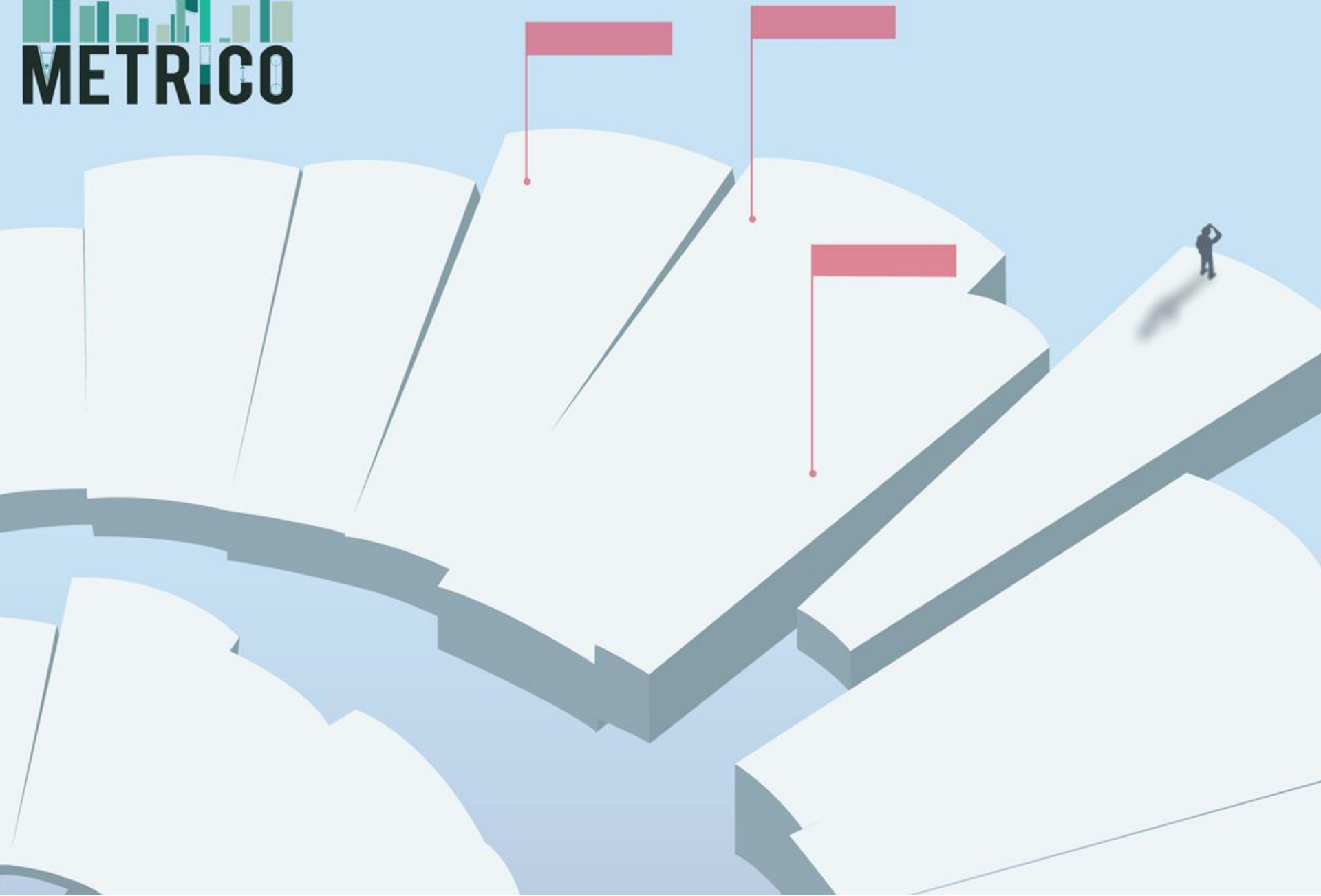
“Umělecké vizualizace jsou vizualizace dat
vytvářené umělci s účelem tvořit umění,”

Viégasová a Wattenberg

+SUMEDICINA

Sumedicina infects parts of the population worldwide and makes profit with the sale of the serum.

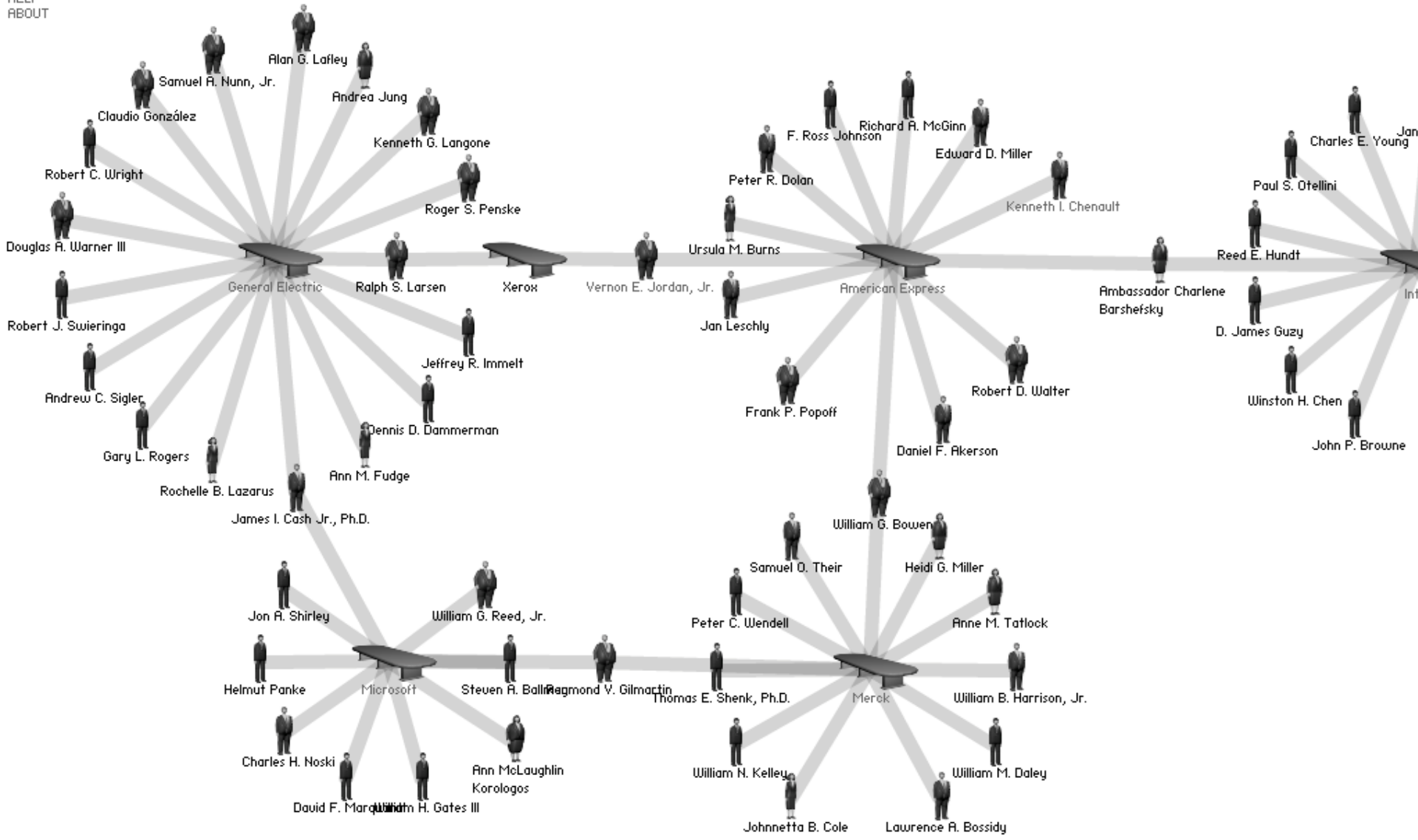




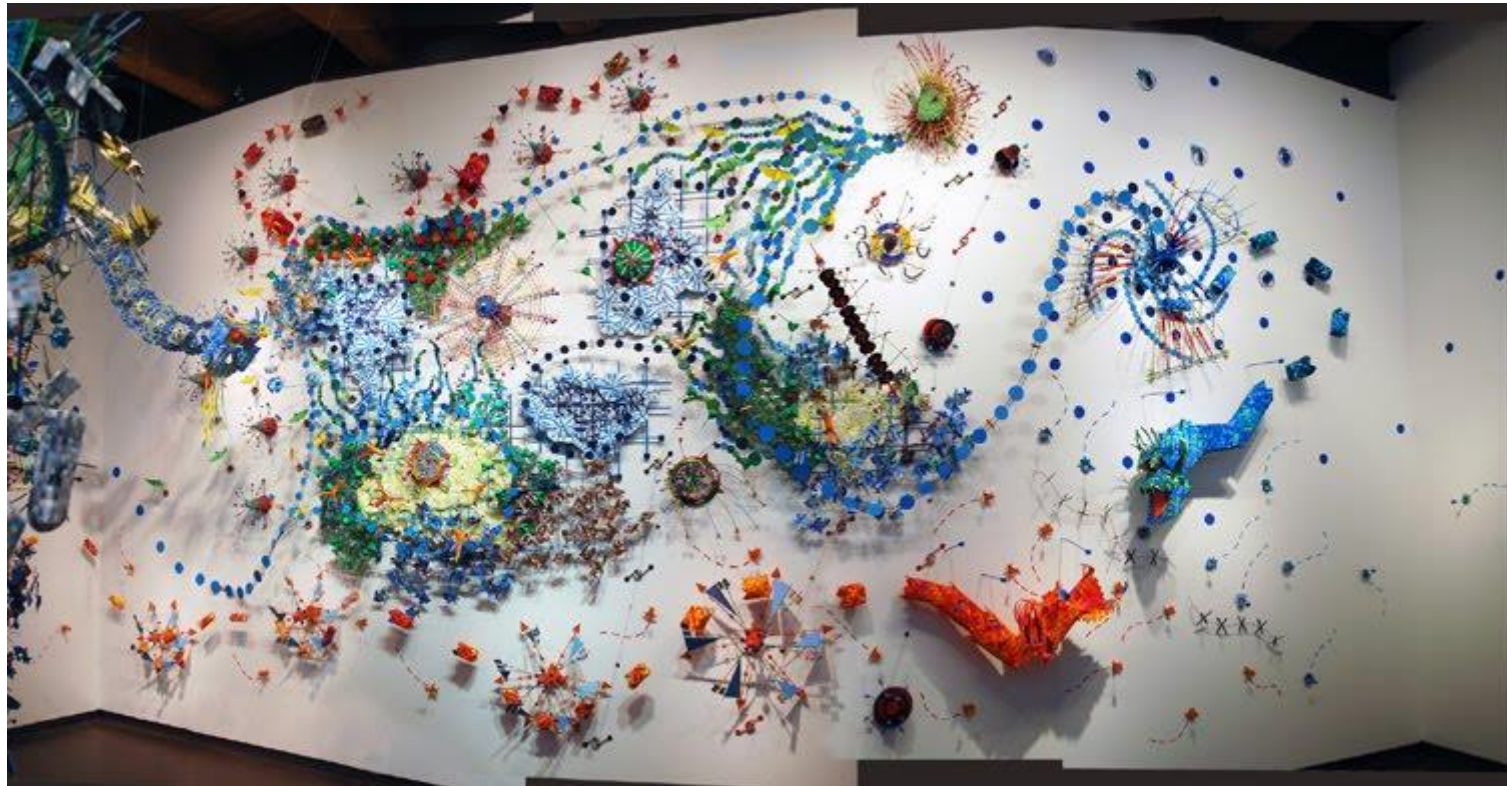
- COMPANIES
- DIRECTORS
- INSTITUTIONS
- LOAD MAP
- SAVE MAP
- CLEAR MAP
- FIND CONNECTION
- ADD NOTE
- LOG-IN | SIGN-UP
- PRINT MAP
- HELP
- ABOUT

Umělecká vizualizace nemusí být nutně nefunkční.

<http://www.theyrule.net/>



Ale někdy nefunkční z hlediska pragmatického vhledu
opravdu je... http://www.ted.com/talks/nathalie_miebach





<https://www.youtube.com/watch?v=4kvTKh3rAJs>



<http://vimeo.com/71044541>



<http://vimeo.com/67714066>

Umělci se skrze vizualizaci dat vyjadřují kriticky ke společnosti a světu. <https://www.youtube.com/watch?v=iDWcuBygAUw>



Umělci se skrze vizualizaci dat vyjadřují kriticky ke společnosti a světu. <http://anf.nu/a-week-in-the-life/>



Hledají a vyprávějí příběhy nad daty. <http://www.wefeelfine.org/>



Vyjadřují myšlenky skrze metafory nad daty.

https://www.youtube.com/watch?v=bJyBy_cgTtA



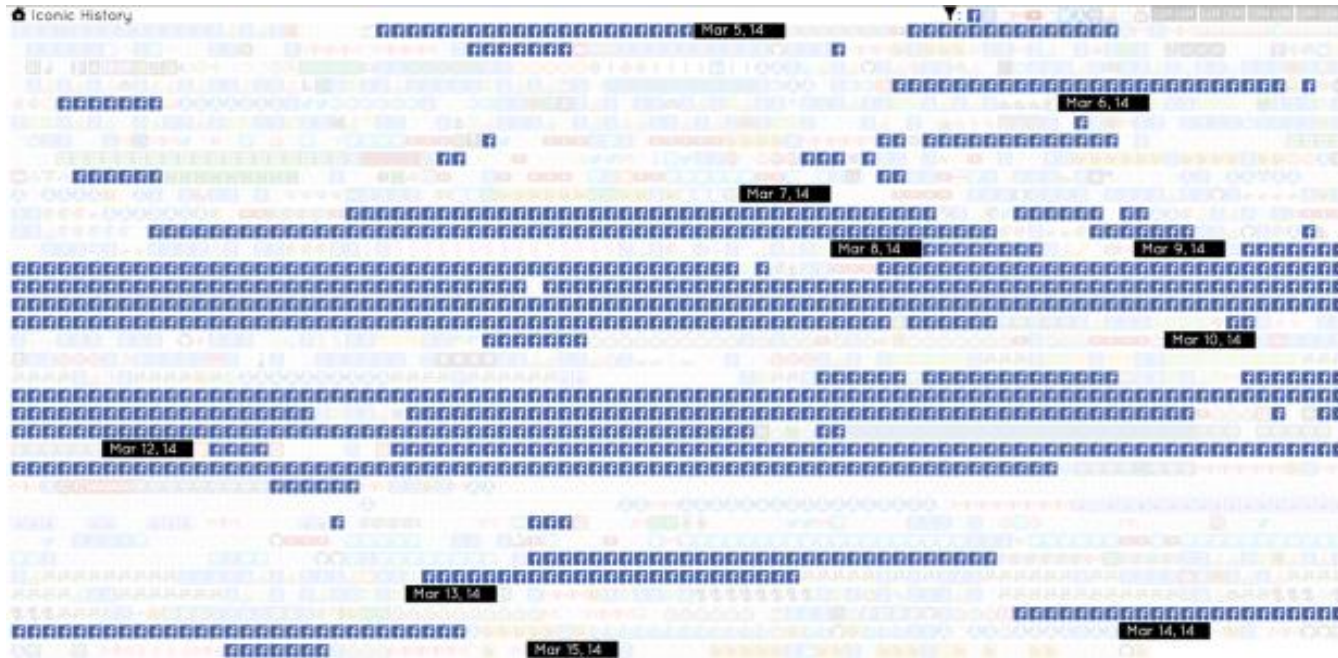
Experimentují <http://visualisingmillroad.com/>





A často z experimentů vznikají použitelné postupy

<http://vimeo.com/89219632>
<http://shan-huang.com/browserdatavis/>



Mimo vizuálno

