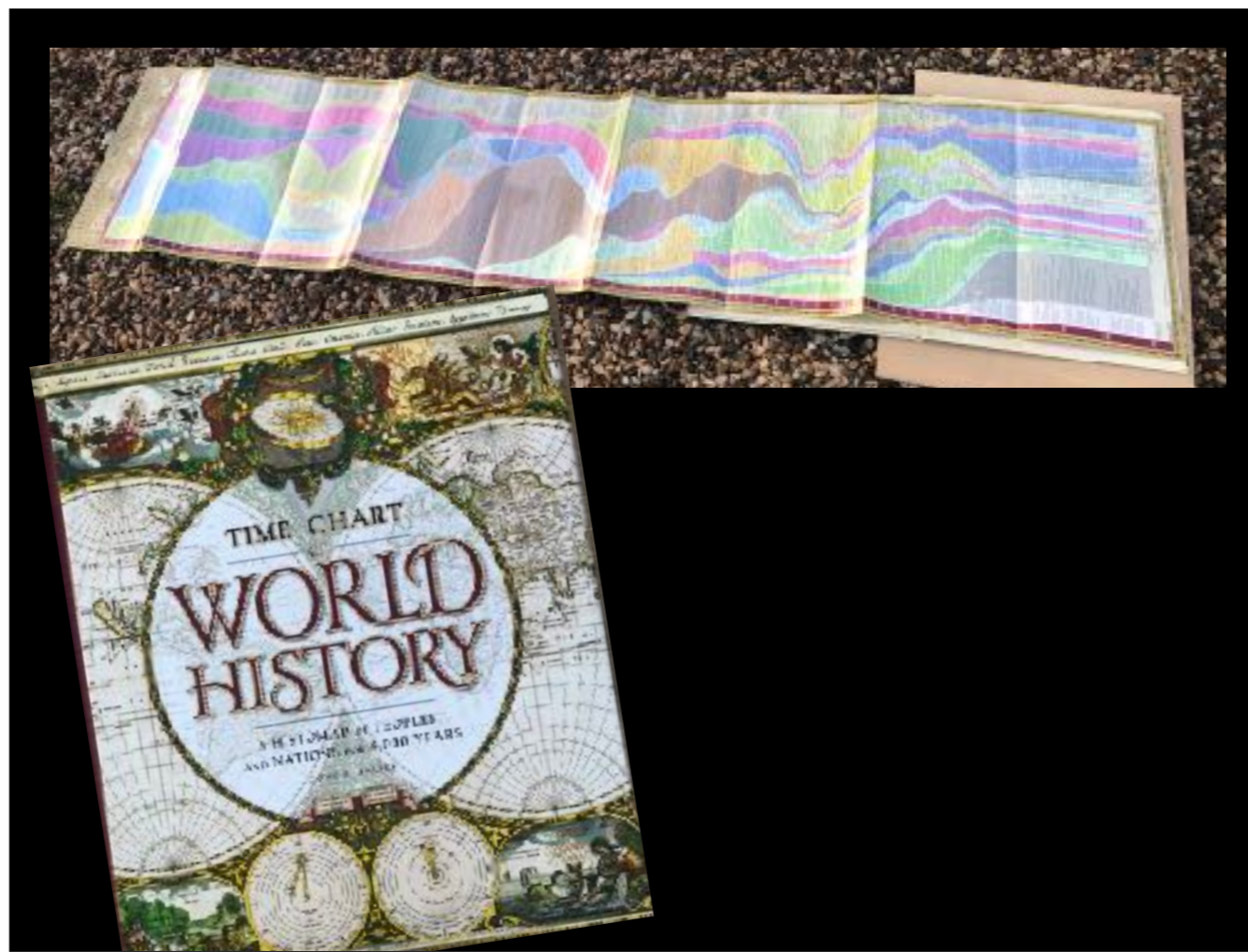


Telling Time

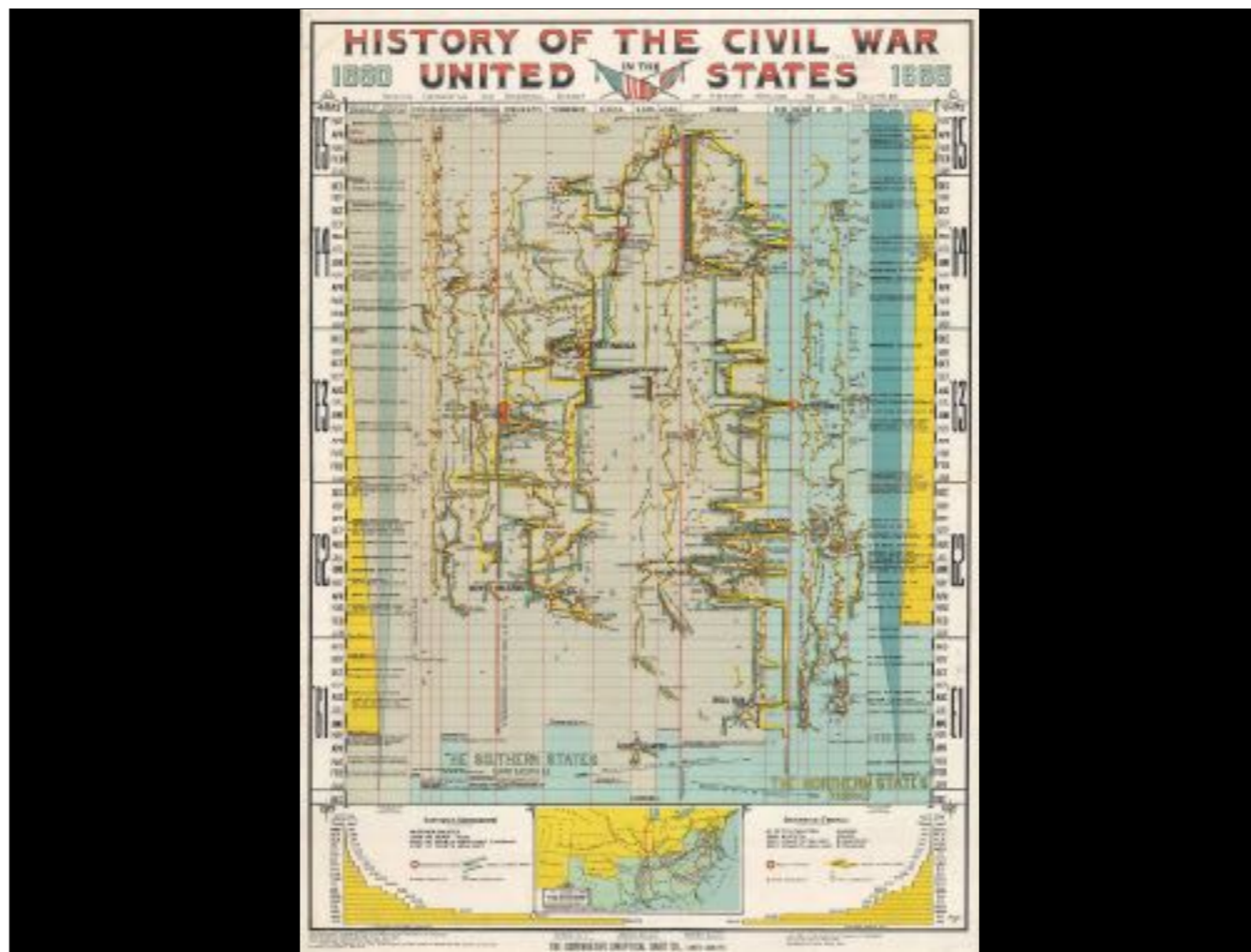
SPHEX CLUB PRESENTATION

October 7, 2021

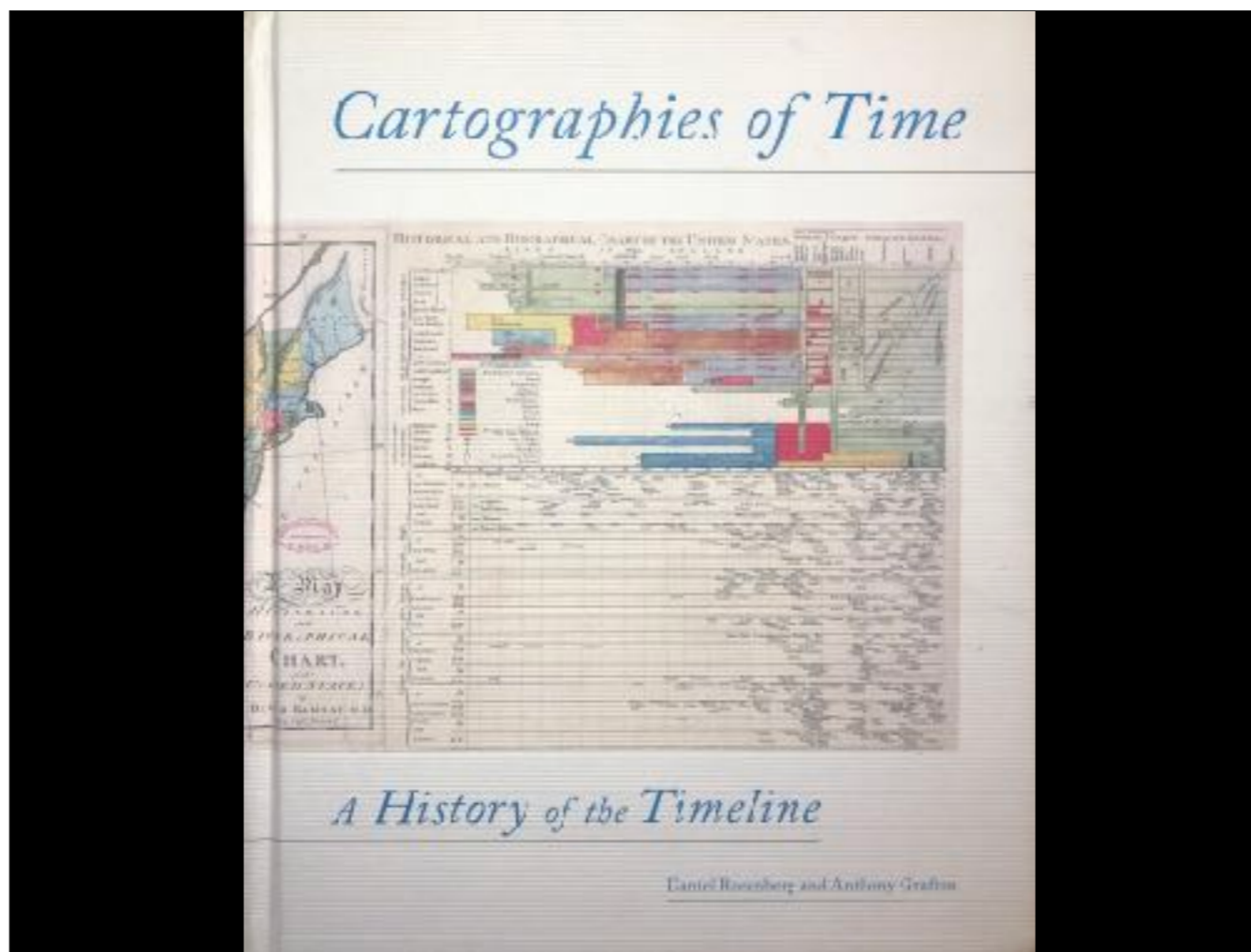
Nancy B. Marion



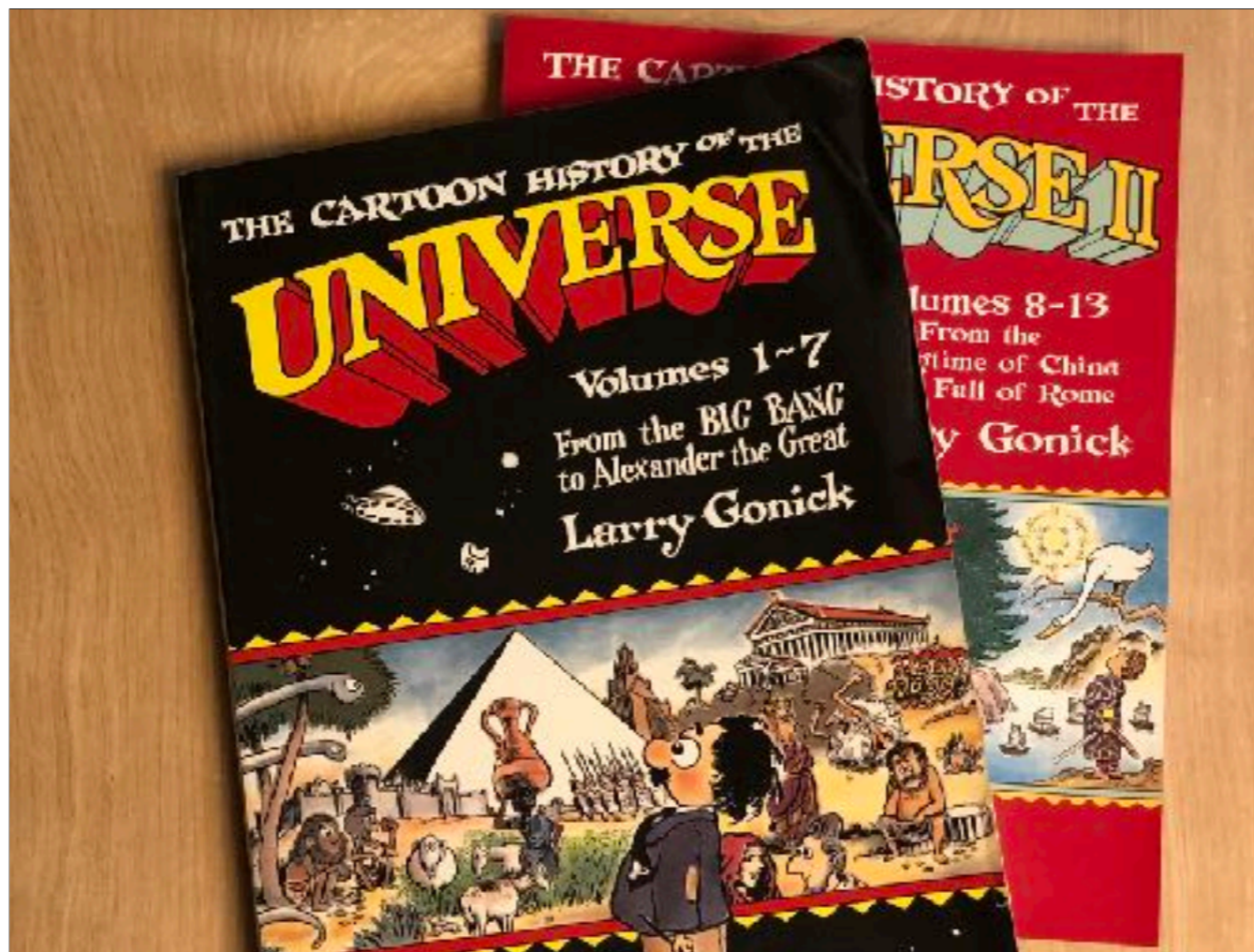
Several years ago my neighbor showed me a book she had gotten at Barnes & Noble with a 7-foot-long fold-out “histogram.” This was a chart of the history of the modern world that was masterfully done, showing parallel “rivers” of histories of civilizations over time. Imagine my surprise a couple of years ago when a local woman approached me about reproducing copies of her grandfather’s histogram—and it turned out to be the same work. That woman is Jacquie Glanz, who is here with us tonight.



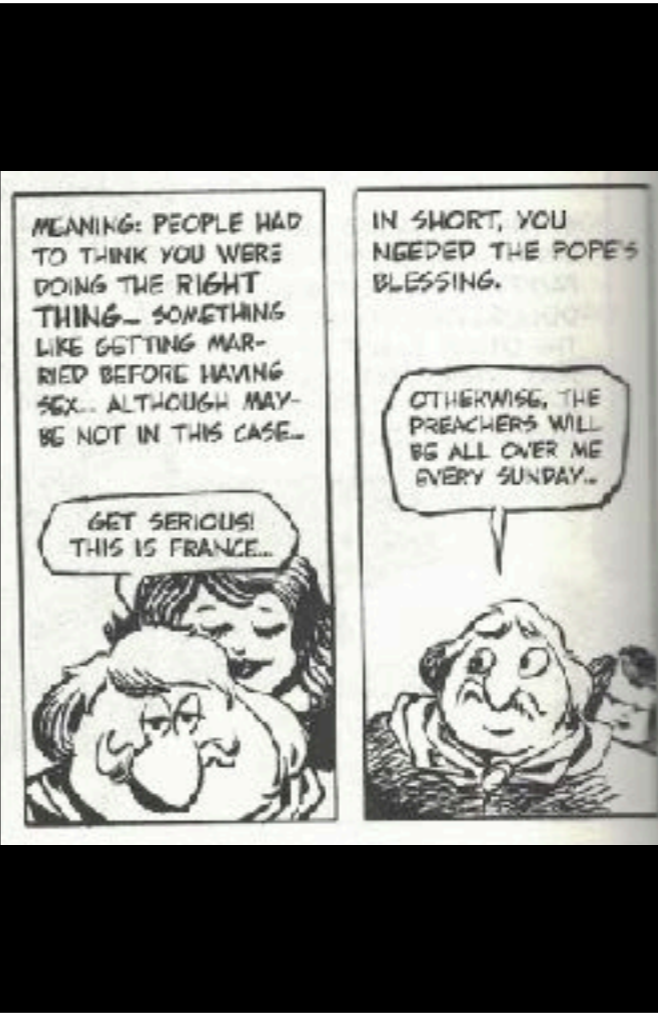
Last spring Christina Delzingaro sent me an email with a fascinating graph of the Civil War. All of this propelled me to ditch whatever else I was going to talk to you about and pursue these methods of “telling time.”



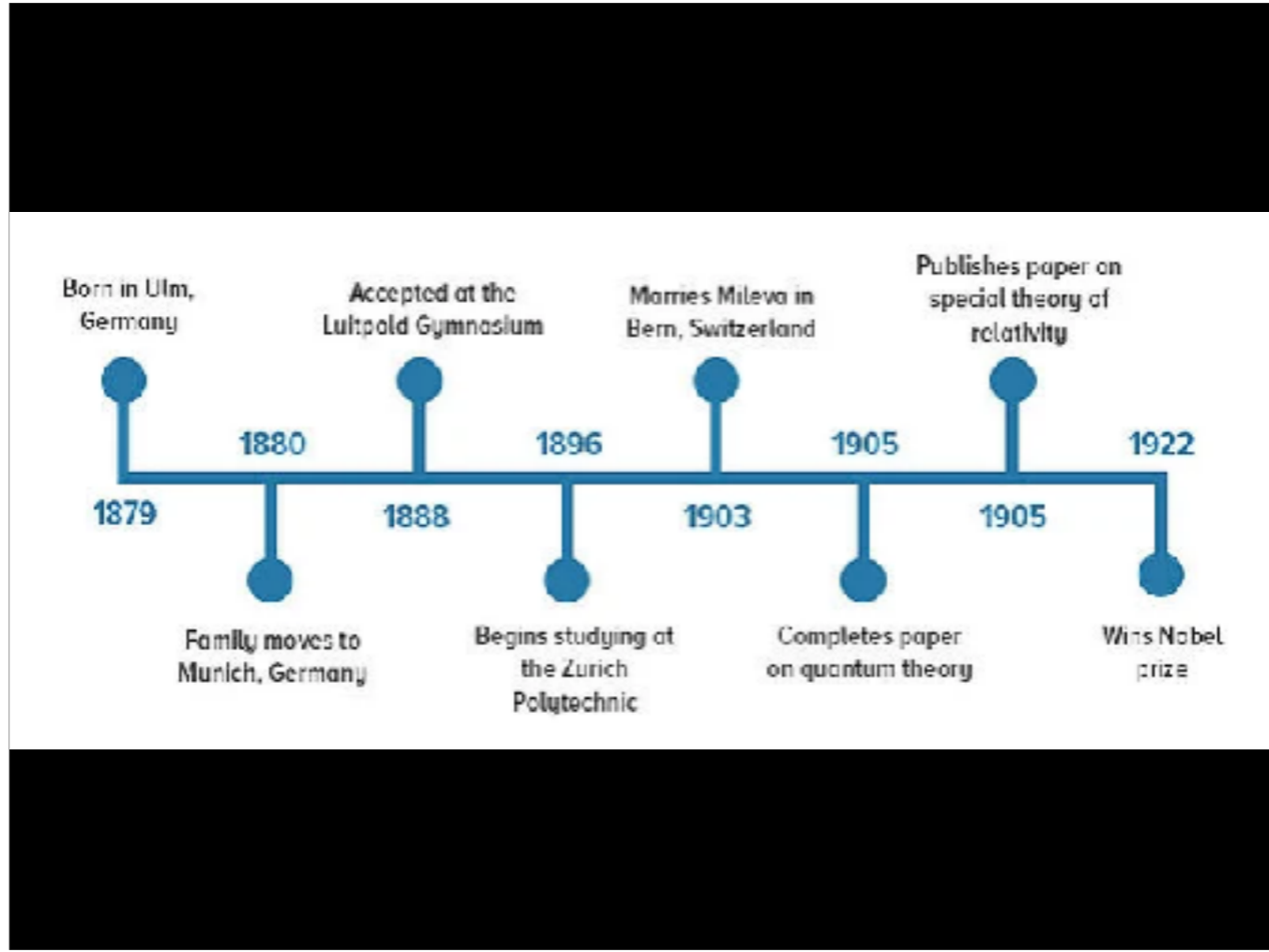
When I met with Jacquie she lent me a book called “Cartographies of Time” by Daniel Rosenberg and Anthony Grafton. Most of what I know about this subject is from this book, as are most of the examples I’ll show.



I think I already confessed in my last SPHEX paper that I hated history class in school and took Latin in the 8th grade to get out of having to take world history. I was never good with dates, and still am not. I'll confess to buying these books a few years ago to try to fill in some of the embarrassing gaps in my knowledge of world history. They actually helped a little, but a learned historian I am most definitely not. Be forewarned.



Here we see the slice of time in Gaul around 750 when Charles Martel (or Karl the Hammer) had just beaten the Moors. Now his son Pippin decides to take the throne for himself. And to have legitimacy, he needed to appeal to the Pope for his blessing.



So how do you draw time?

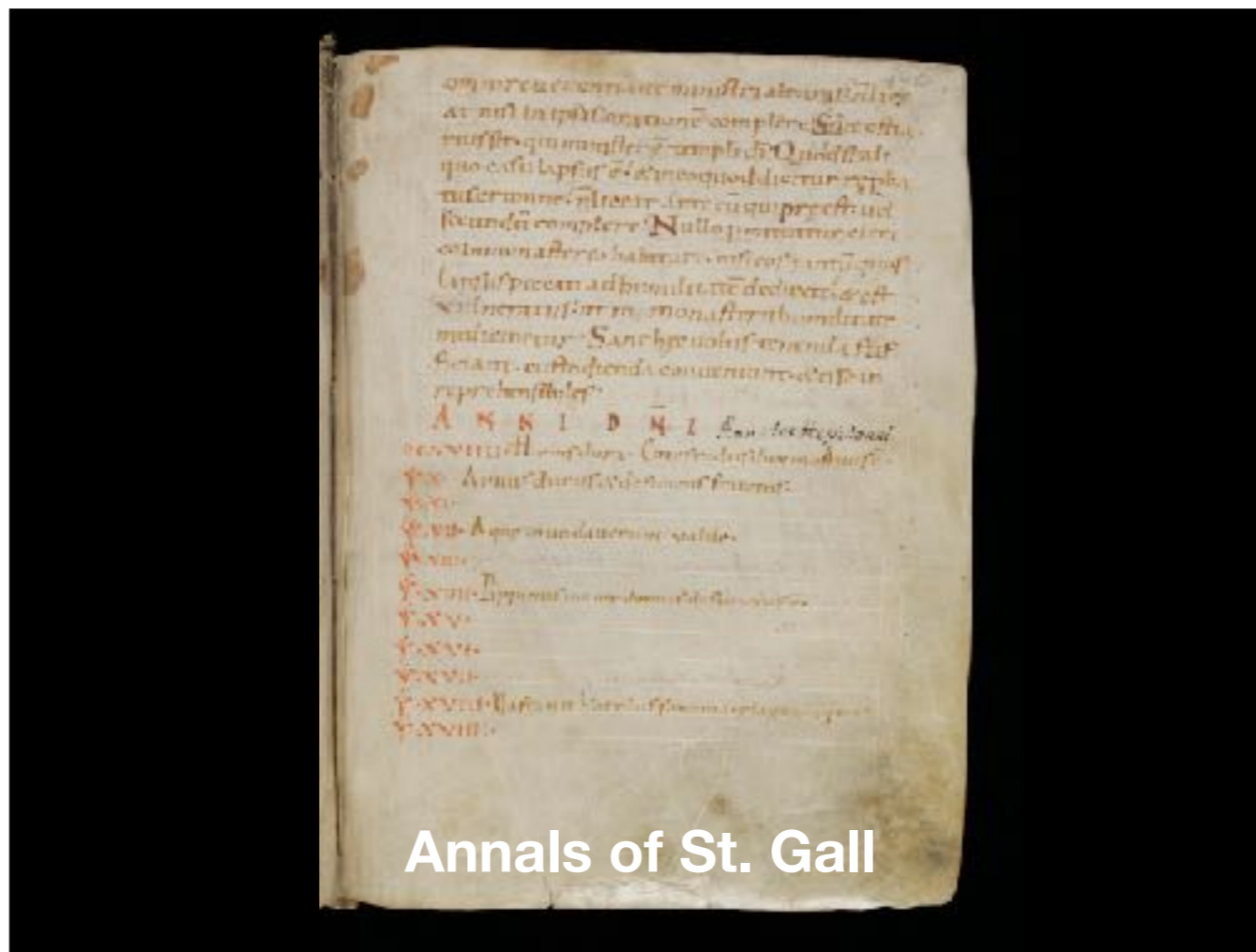
We are all familiar with “timelines.” They are great at distilling pages and whole chapters of history into a streamlined form, showing simple progressions through time. But most of us don’t know their history, or that the study of CHRONOLOGY was one of the most highly revered scholarly pursuits from the classical period to the Renaissance in Europe—even higher than the study of history itself.

According to Rosenberg and Grafton (authors of Cartographies of Time), “[f]or Christians, getting chronology right was the key to many practical matters such as knowing when to celebrate Easter and weighty ones such as knowing when the Apocalypse was nigh.”

This, by the way, is a timeline of Einstein’s life.

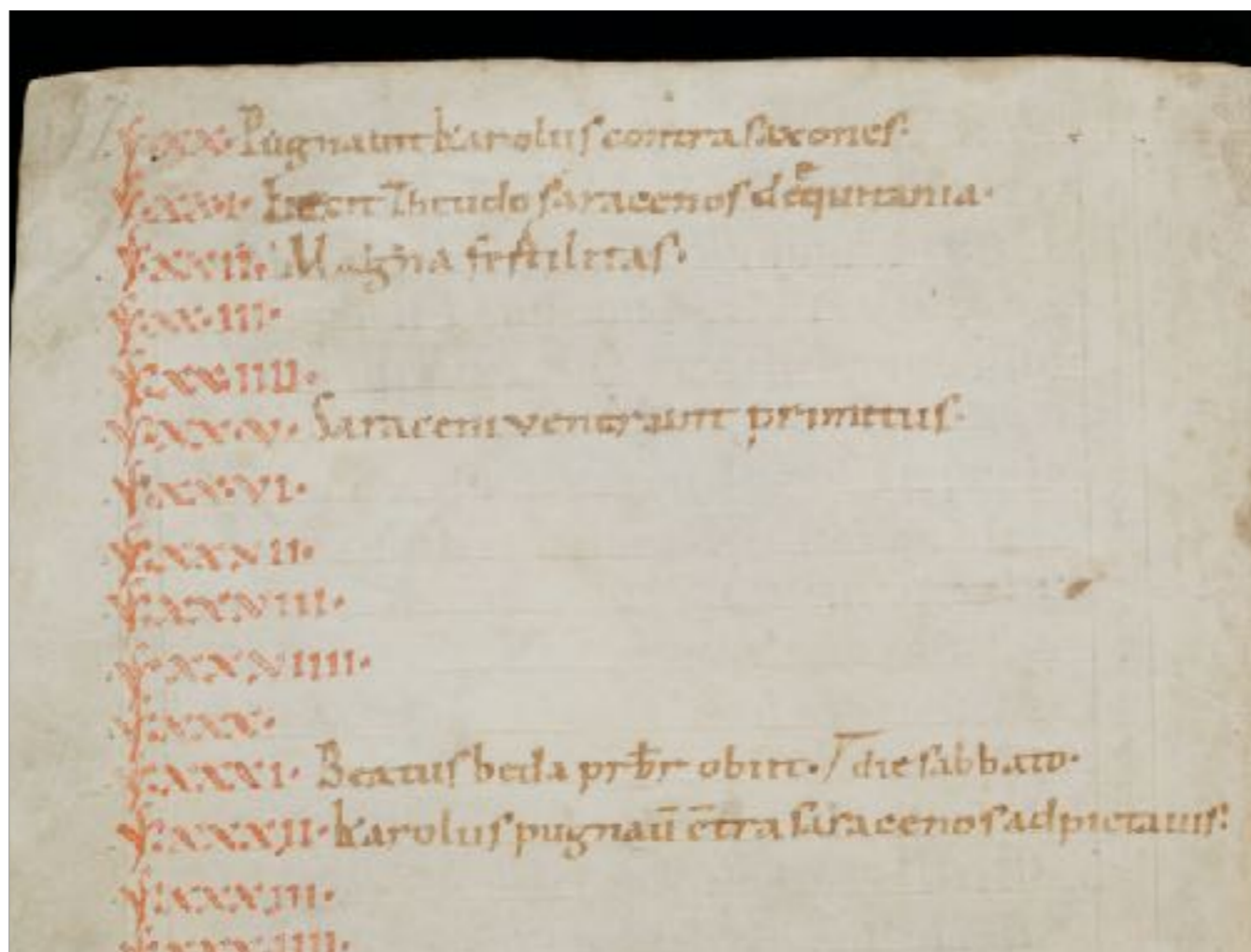
Regni	Latinorum	Arabum	Commanorum	Annus
4	4	21	25	4170
Regni				
1. Armeno	5	22	26	
2. phis. an. 9				
3	6	23	27	
4	7	24	28	
5	8	25	29	
6	9	26	30	
7	10	27	31	
8	11	28	32	
9	12	29	33	
10	13	30	34	
Regni				
1. Ochoz	1. Spania an. 2.	11	35	
2. an. 6.	2. Libanone	12	36	
3	3. Carpentibus	13	37	
4	4. a d r r m n ap	14	38	
5	5. pellana est n	15	39	
6	6. berl qui pu al	16	40	
7	7. bula trocobar	17	41	
Regni				
1. Spina	8	18	42	
2. res an. 9				
3	9. Sanna. 1. Ori	19	43	
4	10. Sanna Libani	20	44	
5	11. Sanna an. 20.	21	45	
6	12. Sanna lacina bi	22	46	
7	13. Sanna storia ad verbu	23	47	
8	14. Sanna scripta regim	24	48	
9	15. Sanna regna apud	25	49	
10	16. Sanna lacinos regna	26	50	
11	17. Sanna domer ignia	27	51	
12	18. Sanna clavis uicella	28	52	
Regni				
1. Pontico	19. Sanna tur Spolodo	29	53	
2. mes. an. 14.	20. Sanna cur Enpber	30	54	
3	21. Sanna tur bibon	31	55	
4	22. Sanna ante vibero	32	56	
5	23. Sanna manā con	33	57	

In the 4th century the Roman Christian Scholar Eusebius developed a table structure to organize chronologies. He laid out the important dates of Jewish, pagan, and Christian histories in parallel columns, allowing the reader to move through history seeing empires and kingdoms rise and fall until all of them came under Roman rule. Eusebius's tables turned out to be popular, and modern editions of his work were among the first printed books. They were some of the most important reference books of early modern humanist scholars. This Eusebian model of a simple chart with kingdoms listed across the top and years listed down the page was dominant until the mid 1700s.



Annals of St. Gall

A famous medieval (mid-eleventh century) manuscript called the “Annals of St. Gall” recording events in the Frankish kingdom in chronological order with dates in the left column and events on the right. But the facts are somewhat random, mixing battles and weather.



The next page continues with the year:

- 720 Charles fought against the Saxons
- 721 Theudo drove the Saxons out of Aquitaine
- 722 Great crops
- 723
- 724
- 725 Saracens came for the first time
- 730
- 731 Blessed Bede, the presbyter, died
- 732 Charles fought against the Saracens at Poitiers on Saturday

It reads like a diary—albeit with only one entry per year.

And which Saturday did Charles Martel (or Karl the Hammer) fight the Saracens?

Text in Gothic script at the top of the page, likely a preface or introductory text for the genealogical chart below.



Hartmann Schedel's Nuremberg Chronicle uses genealogical trees to connect Jewish patriarchs, the rulers of Greece and Rome, and others. This page shows the descendants of Noah's son Japheth.

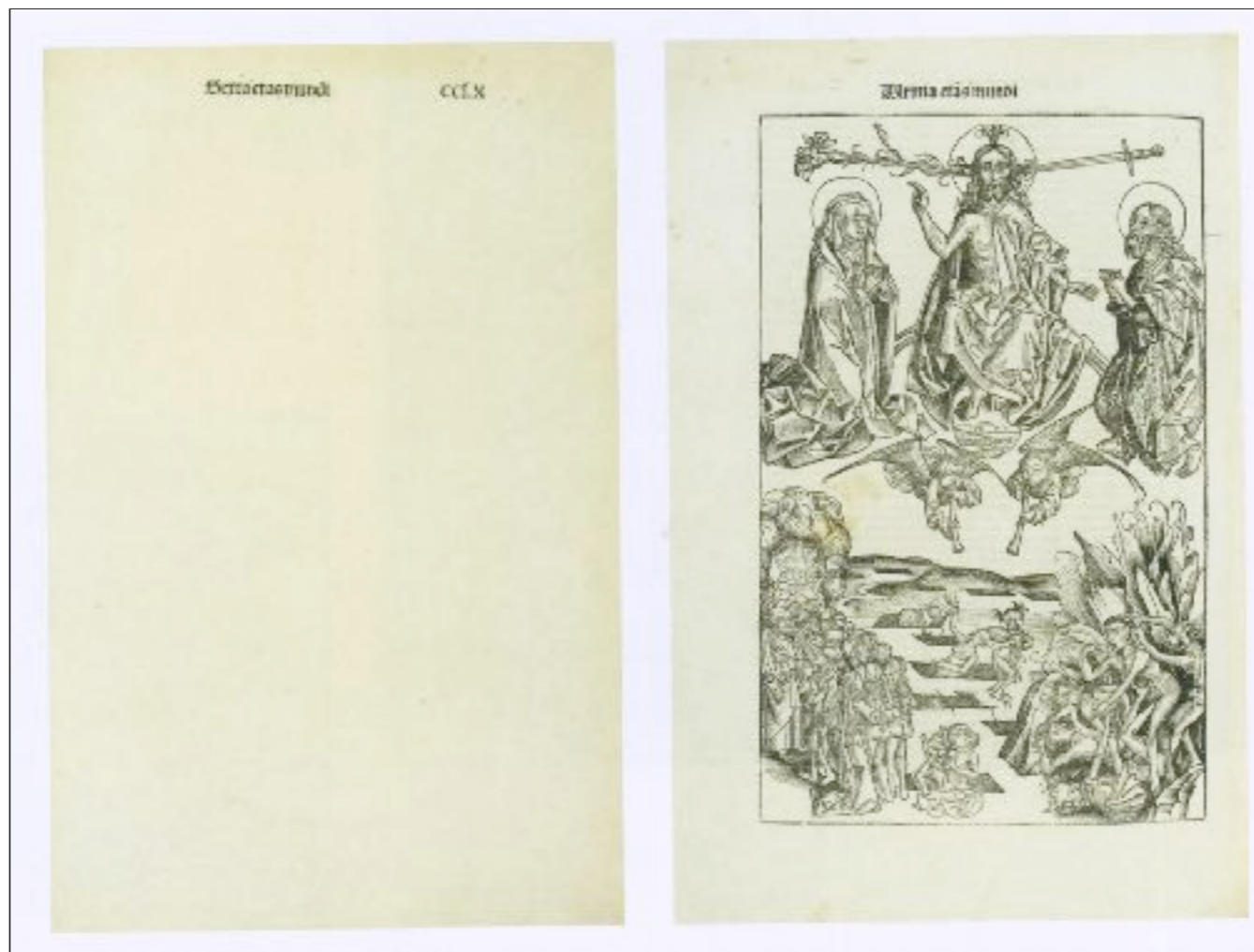


Quoniam in tracto ho-
 mines uniusq; se-
 cun-
 dū suū opus dicitur. Et
 tunc sacerdoti ei dicitur
 factis sacris eudamē ad
 egrotatem deferendū p-
 trāre. Illi incinorato ve-
 niturā cuius esse acrese-
 venturā adhibēta. postea
 frato in aqua dicitur. ad
 eos homines ajs abire
 p̄sunt atq; perierunt.




Mulier q̄dā nobilis in p̄fancisi dyocesi. cum pariter insulam p̄tū
 sit. Cum lecto vesu mirabiles hoc tempore peperit.
Mulnam quoc; in suam superiorē grad; oppidū q̄ling; et serē m-
 enit; ab unilico vsq; ad summitatē duob; abers pectora. ac capiti
 unē seipicmā brachia quos; kinnice; amplexentia; et duo fere ad. Illu-
 min post partum obiit.
Conites nobiles facie q̄ndācm sadere se p̄gantes. adolpho in
 hoc; m̄stetian q̄ plarimā; m̄stetian; inter q̄; p̄cipū facie omnia
 montōri. deiffenlein; et de w̄tender; ac Zochendurg. eorum; horis ac
 sicmb; vastitas. imperio s̄p̄icmōs p̄p̄eno cogit. Vnde castra p̄dōe
 germanis; et pleriq; locis ornatiss; ab alpibus ytalie vsq; ad britannia
 firmavit.
Constituerant ad d; vsq; t̄p̄otio veteri; et gemensēs belū p̄idē
 loci debent dūm; ad d; seram; seragēmas duob; castris; contenti. Ray-
 vero dicit. veneti dicit; et d̄m; quaginta m̄m̄m; ad h̄m; et m̄m; m̄m; q̄

Later pages of Schedel's Chronicle relate events that were dramatized in newsletters that spread information (perhaps fake news) from city to city in the early modern world. At lower left is a naked witch riding with the devil. At the top right you see the drowning of impious men and women. So you see that the tendency of some modern media to spread hate and disgust is not at all new.



Though the early parts of the Nuremberg Chronicle traced traditional world histories, the later pages included events foretold in the Book of Revelation. Schedel even gave the readers a few blank pages between their own time and the Apocalypse that they could fill in with what he thought would be the short remaining history of the world.

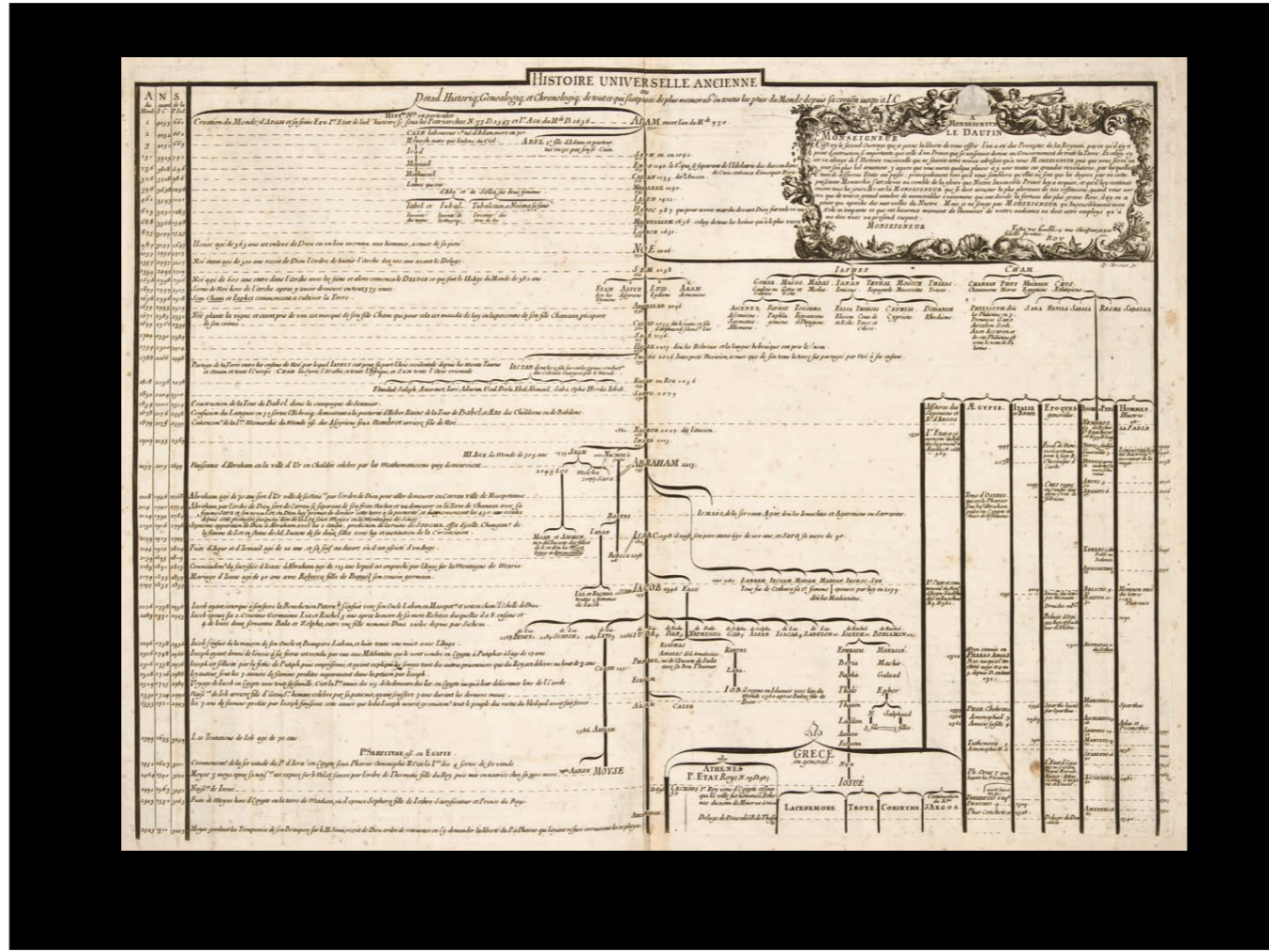
Tertia arbor posteritatis Iapeti.

Iapetus q̄ & Iope tus & Cep̄h ^o Ara lus prim ^o genuit duces octoq̄ sūt. Medus Ab hoc Iopen & Iaphi & primogenit ^o Co merus Gallus	ii. Comer ^o pri mogenit ^o ge nit tres hos duces.	iii. Andromada Magogus	iii. Samothēs Dis	v. Tubal & Iubal	vi. Mofcus Atalus	vii. Tyras Dodo neu ^s	viii. Ion Tartū Heli ^s fan ^s
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Italus cui nomē Kytin cognomē Ara lus: siue Athlas genuit	Hyam Moegetē Siculū Romā	Postteritas Itali Ex pleiade in Itali. vii. pleia des: Mutā: Celno Ameroēnc.	Postteritas Itali Gala- thea pel lex Her colis Galathas genuit
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Samothēs cognōis Dis cruas filius	Magus cur ^o fili ^o	Sarron cur ^o filius	Nam Dryiudes nes cur ^o fil. cur ^o fil.	Bardus cur ^o fil.	Longo cur ^o fil.	Bardus iunior cur ^o fili ^o	Cebes
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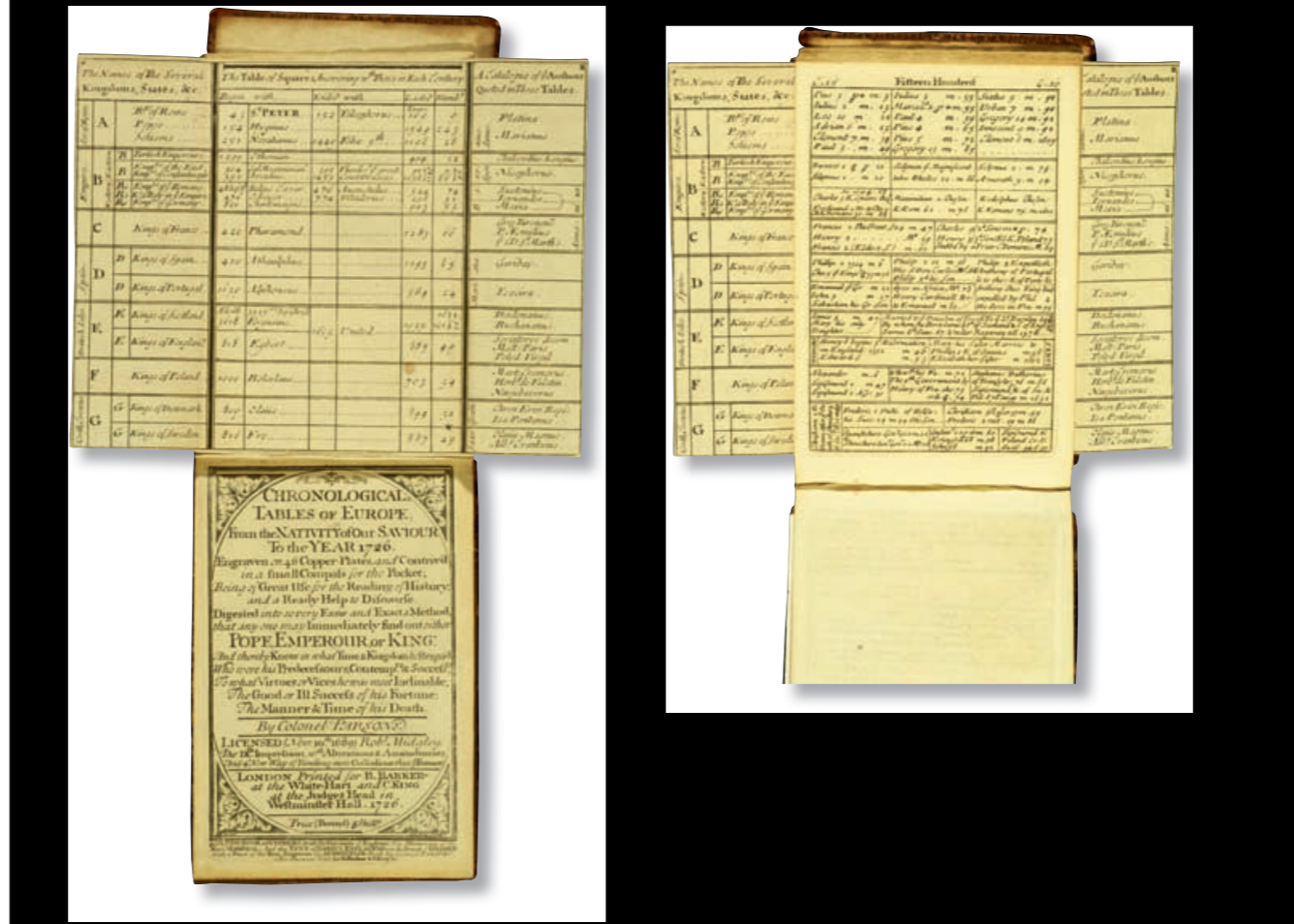
In 1498 a Dominican theologian, scholar, and con-man named Anniius of Viterbo, published a set of 24 ancient texts along with massive commentary. He composed the works claiming them to be ancient histories that Eusebius and others had quoted. His purpose was to show that his patrons, the Borgia Pope Alexander VI and the Catholic kings of Spain could trace their lineage back to Isis and Osiris



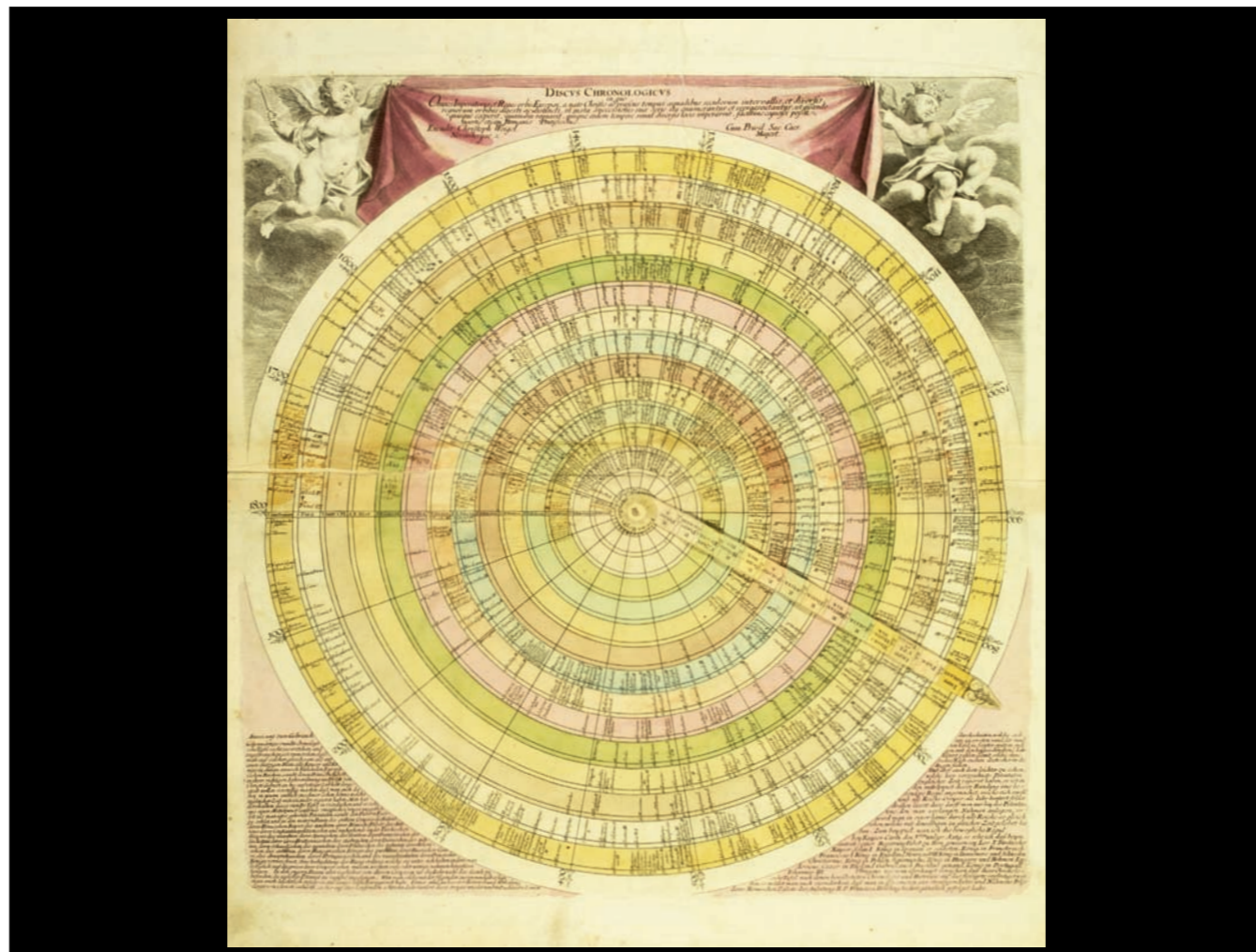
But it's not always easy being a chronologer.

An influential set of historical, chronological, and genealogical tables was published in the 1670s by the French protestant lawyer Jean Rou. His first volume, on ancient history, was a great success, but when he published volume two on modern history, including the Reformation, it was so controversial that it was banned and Rou had to flee to the Netherlands.

pages, as here, on the page for the sixteenth century.



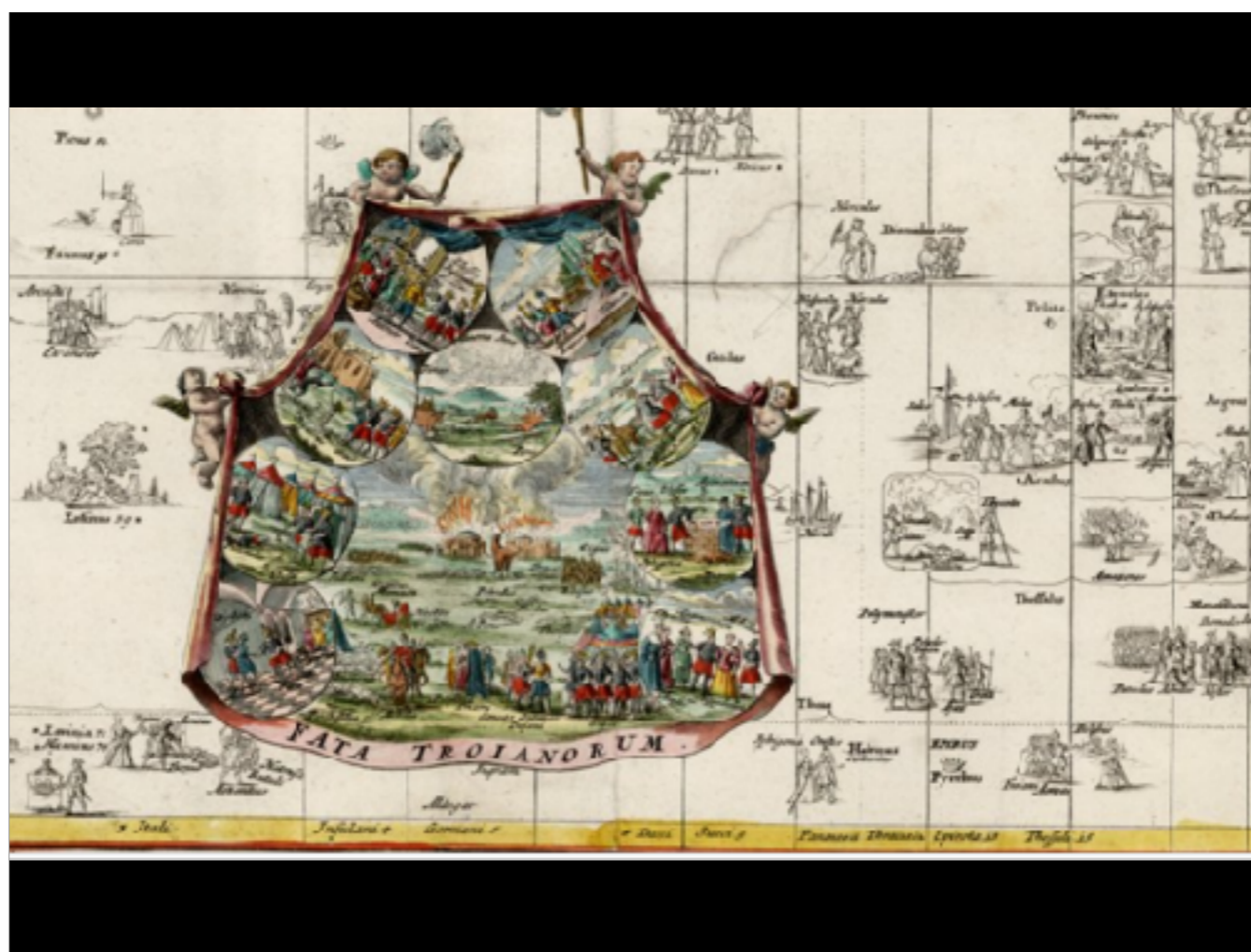
During the late 1600s fine engraving techniques made tiny fonts possible. William Parsons capitalized on the popular, portable, pocket-sized chronology cheat-sheet. This shows his Chronological Tables of Europe, from the Nativity of our Savior to the year 1703. It included a fold-out key inside the front cover to aid the reader in understanding the notations on interior pages.



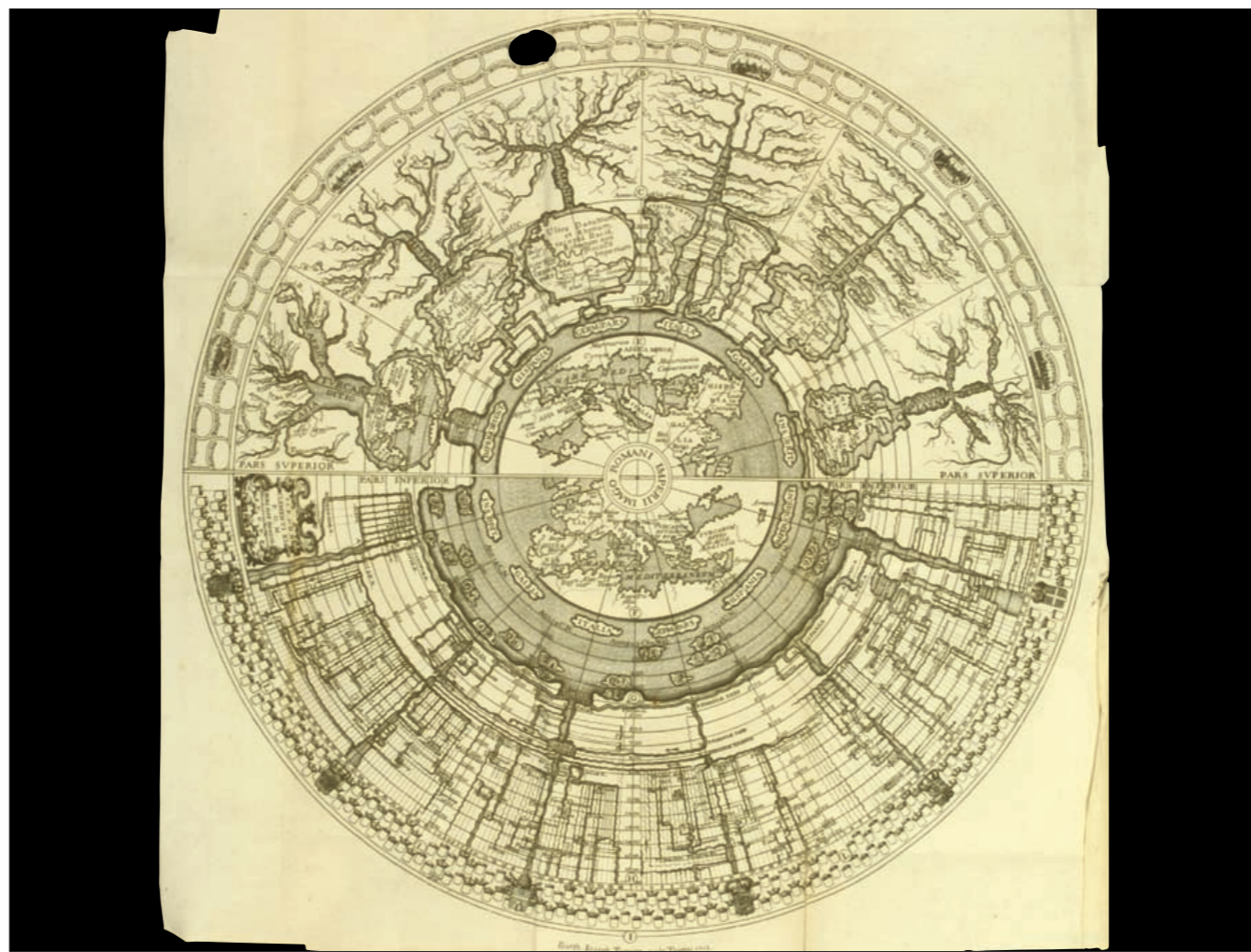
This Discus chronologicus from the early 1720s is a paper chart with a rotating central arm. The organization of the data is inherited from Eusebius, but the layout is circular, with rings representing kingdoms and radial wedges representing centuries. The names of the kingdoms are printed on the moveable arm. This was published by a German engraver named Christoph Weigel.



Since I am a very visual person, and as I said, without a head for dates, this Atlas Historicus published by the Frankfurt engraver Johan Hagalgans in 1718 appeals to me. This chart of the Creation and the first epoch of world history strives to illustrate history while still confining it to the familiar matrix. Here major events appear to be bursting through, or hanging from, the page.



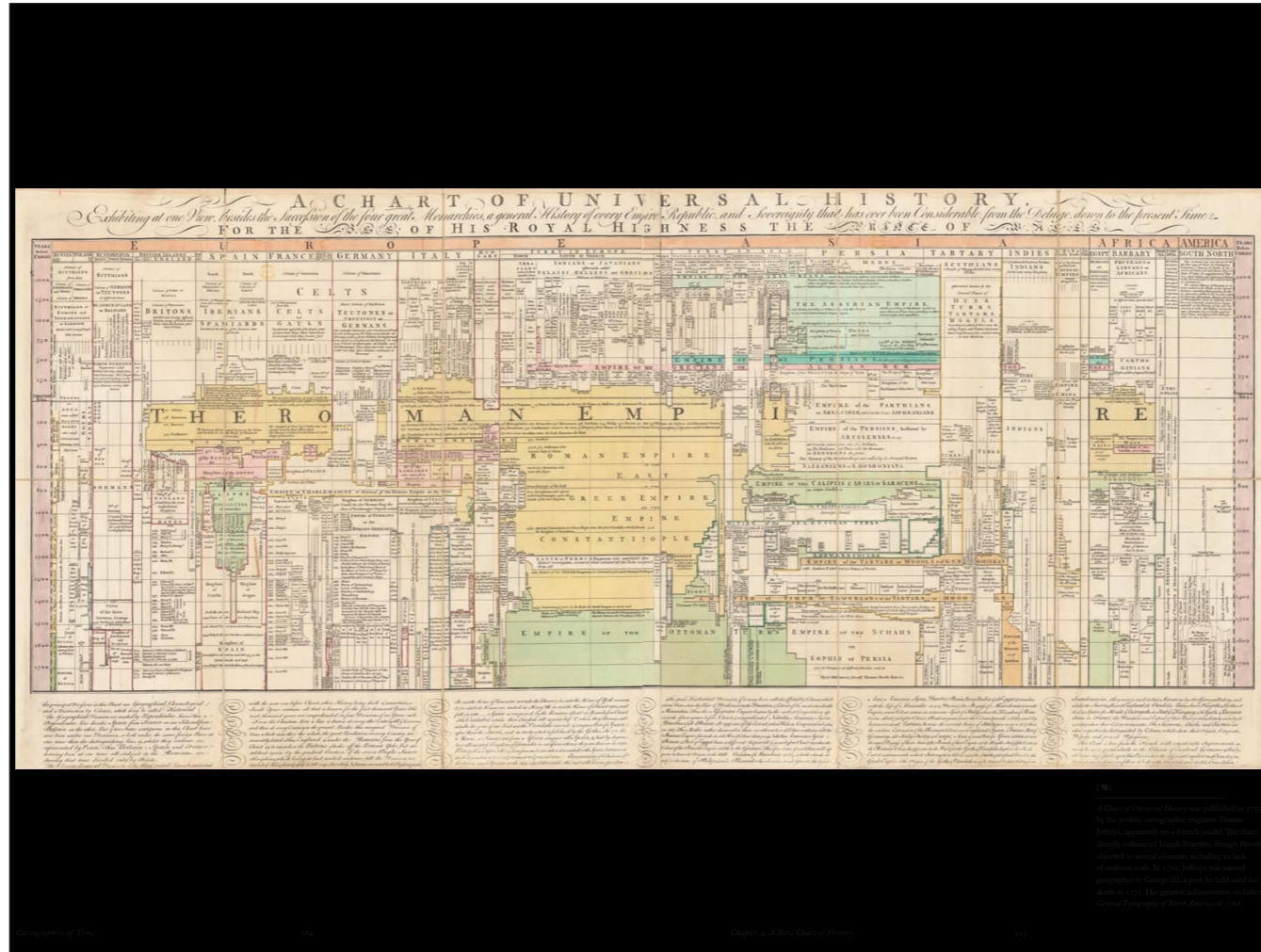
Here's a detail showing the Fate of the Trojans



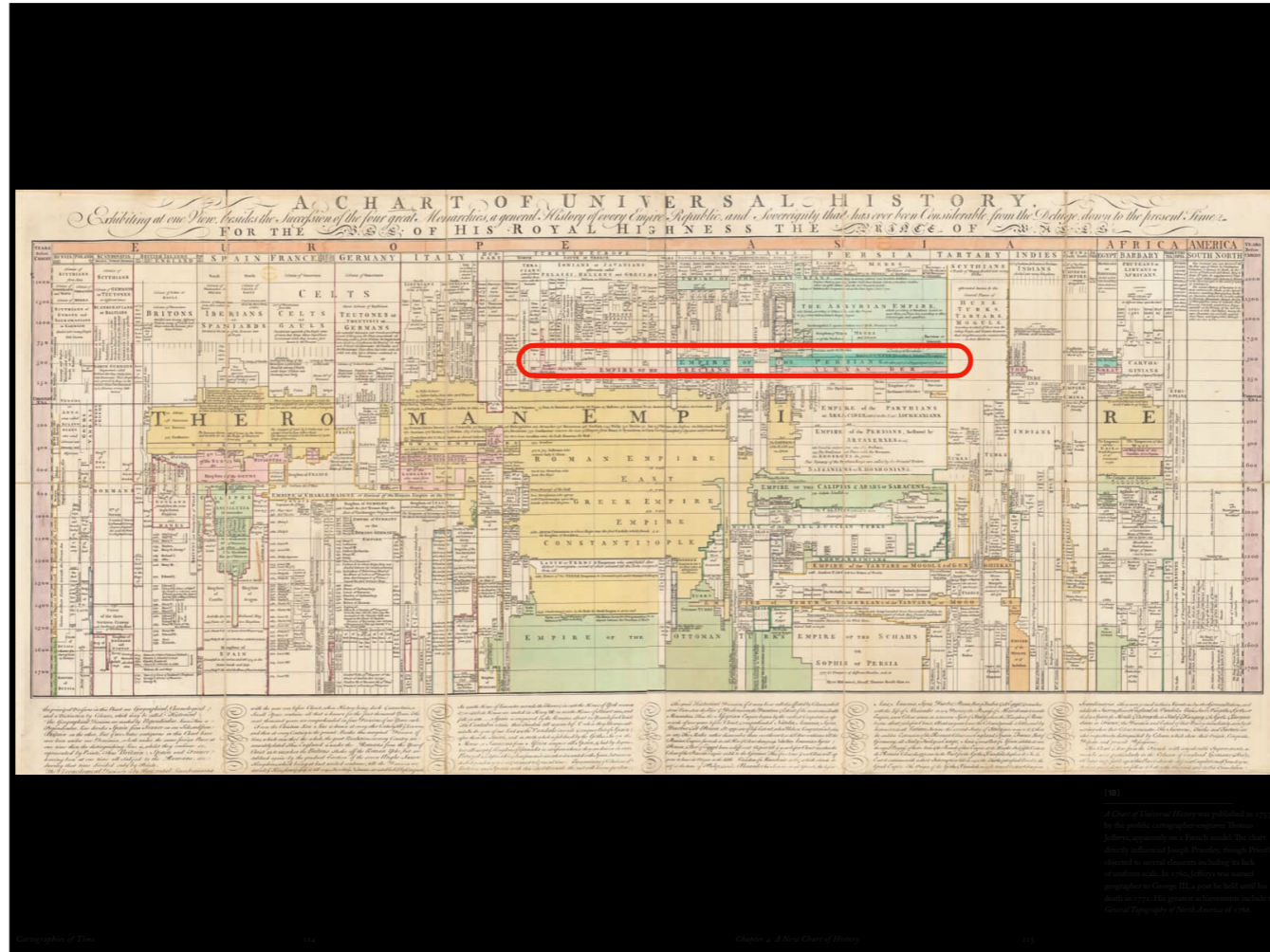
In this case, Italian scholar and poet Girolamo Martignoni dispensed completely with the Eusebian matrix in his Historical Map of Italy published in 1721. Though he called them maps, and in fact at the very center section is a map of the Mediterranean, the rest are not rivers and land masses but rivers of time and territories of history. The “rivers” at the top represent nations conquered by the Roman Empire; at the bottom the nations that emerged from it. The whole thing is quite confusing with rivers passing over other rivers, just as dynastic alliances and remarriages make history and genealogy hard to chart in a linear fashion.



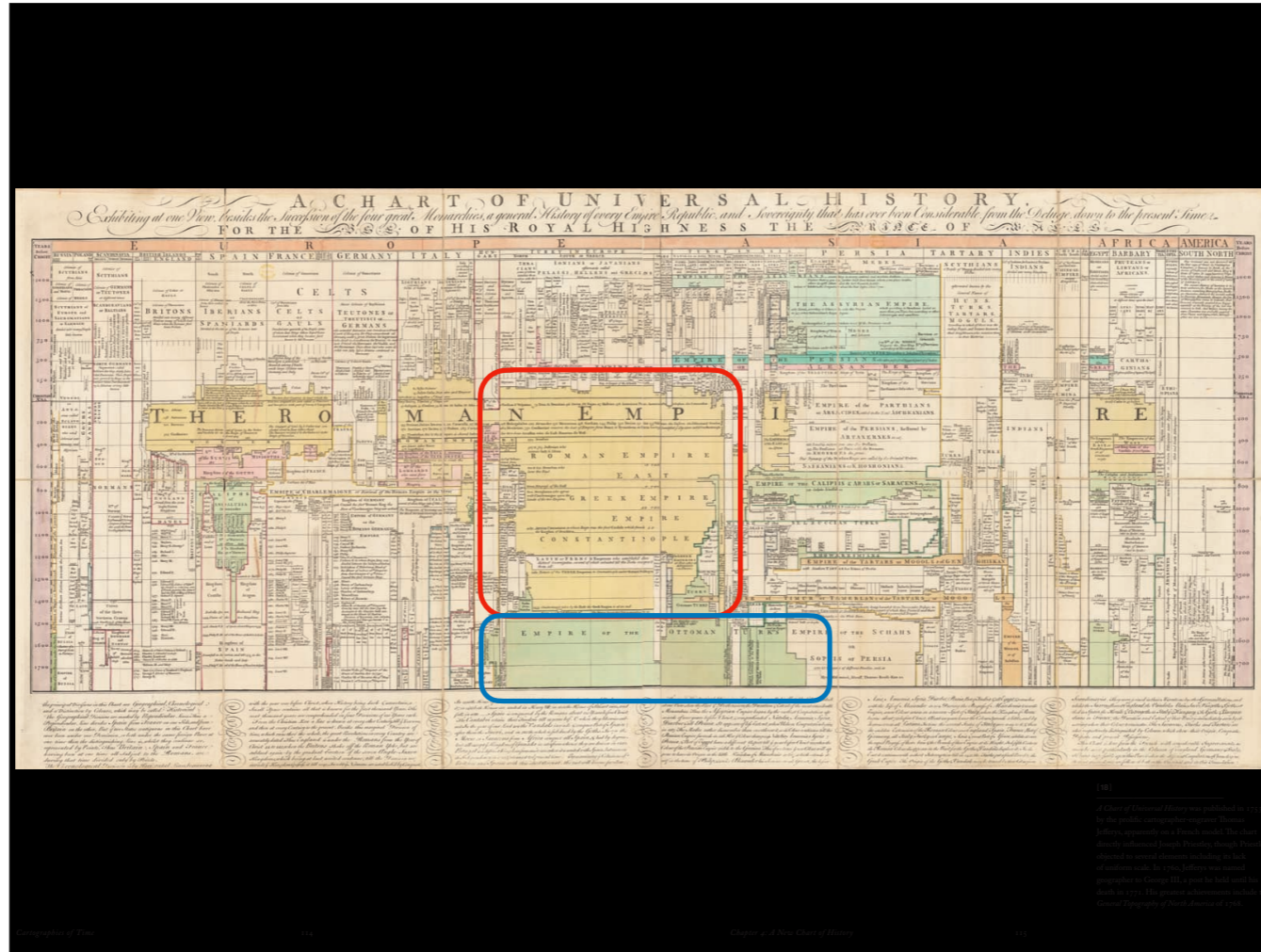
Jacques Barbeu-Dubourg—a friend of Benjamin Franklin—published his Universal Chronography. He returned to Eusebius’s matrix and allowed the reader to measure time with great precision, but it was huge. While he sold an accordion-fold version that was 54 feet long, he also invented a “chronographic machine”—an odd-shaped wooden box complete with metal scrolls and cranks. Cranking from left to right, the scroll revealed a timeline of history from the Creation to the present day—at the time 1753.



Thomas Jeffreys published A Chart of Universal History in 1753. Like the table of Eusebius, the nations are named in a row across the top and dates go down a column on the side. But Jeffreys made the space of the chart a continuous field. This method calls one's attention to the temporal boundaries of historical entities and events. The chart not only gives dates, but it shows them in a graphical format.

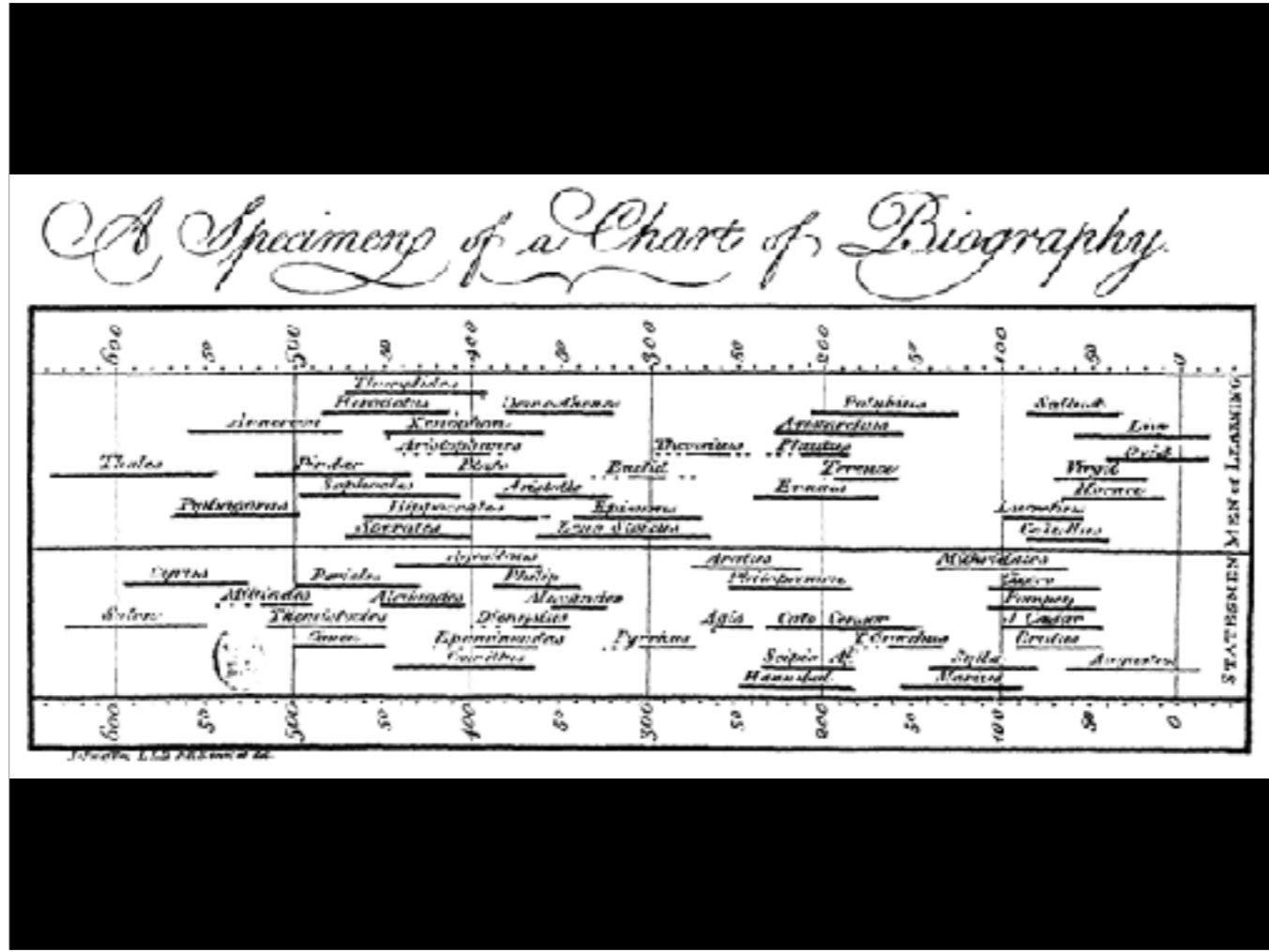


The empire of Alexander the Great which was geographically vast but short-lived, looks like a pancake.

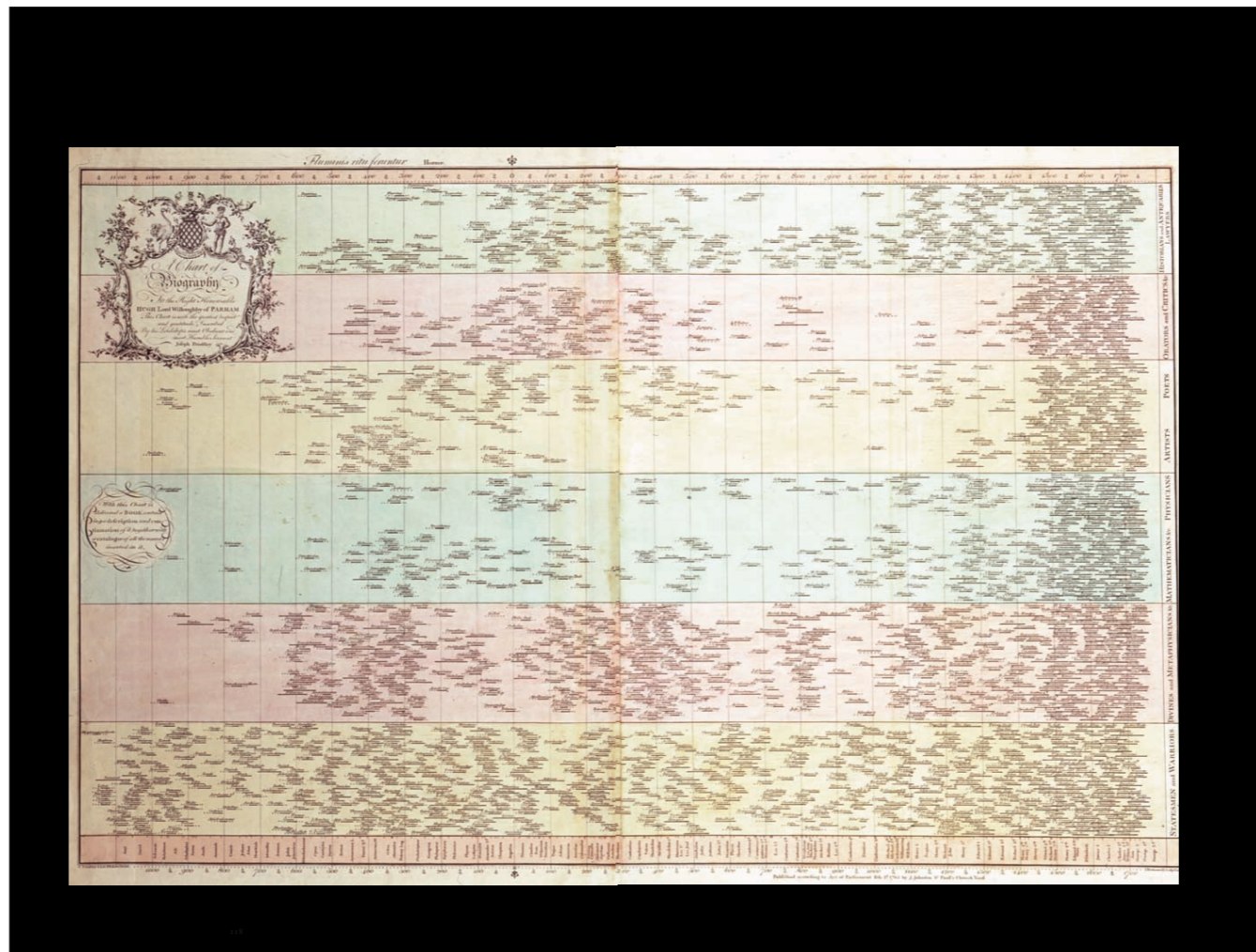


The Byzantine empire on the other hand, was geographically compact but long-lived and is tall and thin.

The Roman and Ottoman empires are large blocks.



In 1765 Joseph Priestley, English scientist and theologian, published *The Chart of Biography*. It is a simple chart with dates running across the top and short lines indicating the lives of influential people placed in categories, such as “Men of Learning” and “Statesmen” on this chart. This method was the first to compete with the matrix to represent regular chronology. While the matrix was a better aid to understanding intersecting trajectories of history, the timeline emphasized the big story. Priestly himself admitted that the timeline was “a most excellent mechanical help to the knowledge of history” but not an image of history itself.



Priestley's full chart of Biography, at 3 feet wide and 2 feet tall, was large enough to record the births and deaths of more than 2,000 famous figures—nearly all men—across 3,000 years of history.



Amateur cartographer Edward Quinn attempted to show temporal flow with his 1830 Historical Atlas. He cleverly implies the growth of historical knowledge by showing clouds gradually revealing more lands as they are discovered.

In the first panel only the Garden of Eden is visible in the plate called

B.C. 2348. The Deluge.

B.C. 1491. The Exodus Of The Israelites.

B.C. 753. The Foundation Of Rome.

B.C. 529. Exhibiting The Empire Of Cyrus.

B.C. 323. Exhibiting The Empire Of Alexander.

B.C. 301. Exhibiting The Partition Of The Empire.

B.C. 146. At The End Of The Third Punic War

A.D. 1. The Roman Empire In The Augustan Age.

A.D. 337. At The Death Of Constantine.

A.D. 395. The Division Of The Roman Empire.

A.D. 476. The Dissolution Of the Western Empire.

A.D. 814. Exhibiting The Empire Of Charlemagne.

A.D. 912. Dissolution Of The Empire Of Charlemagne.

A.D. 1100. Period Of The First Crusade.

A.D. 1294. Exhibiting The Empire Of Kublai Khan.

A.D. 1498. The Discovery Of America.

A.D. 1551. At The Death Of Charles V.

A.D. 1660. At The Restoration Of The Stuarts.

A.D. 1776. Independence of the United States.

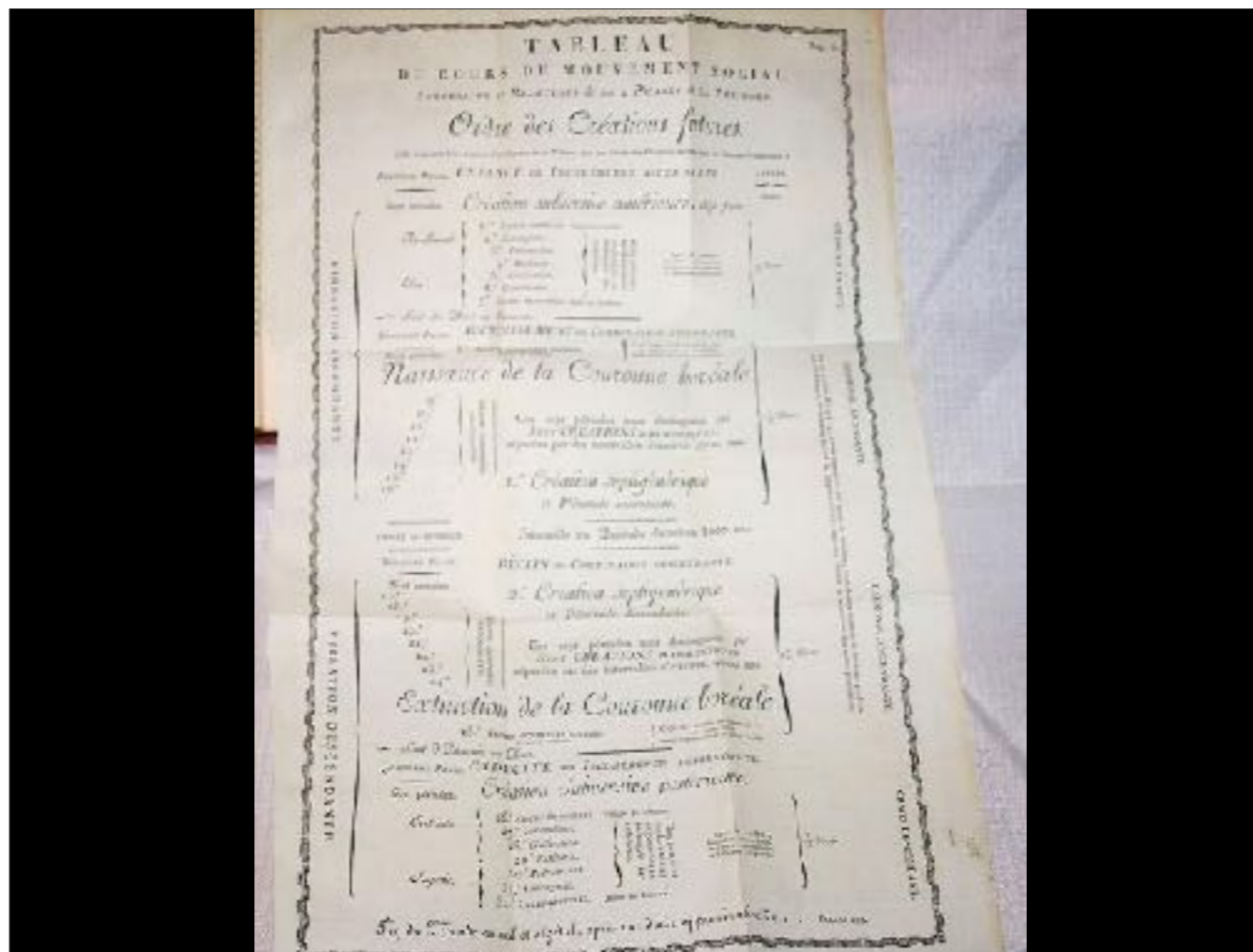
A.D.1811. Empire of Napoleon Bonaparte.

A.D. 1828. End Of The General Peace.

Quinn's atlas was published in 1830, two years after his death.

B.C. 1366. THE DELUGE.





In 1808 the French utopian socialist Charles Fourier first published his Theory of four movements, declaring his objectives for a world government and economy.

Fourier posited that human history would last 80,000 years, going through 4 stages—the first and last would be periods of misery and the 2nd and 3rd, of enjoyment.

“The immensity of our suffering can only be assessed when one understands the excess of happiness in store for us, to which state we shall rapidly pass.”

According to Cartographies of time, this state would bring social and sexual harmony, and human industry so powerful that it would literally melt the polar ice caps.

We did not have long to wait, said Fourier, before the climate in St. Petersburg would resemble that of Sicily. Sadly, of all of Fourier’s predictions (seas full of lemonade, zebra taxis) this one seems to be coming true.



In 1804 Austrian chronologer Friedrich Strauss published an influential chart called Stream of Time. This is an 1866 English translation of it, updated to 1865.

According to the web site of James E. Arsenault & Company, which had this map for sale:

Strass depicts history as a great flood of intermingling streams springing from storm clouds at the top and flowing to the bottom of the sheet. The map commences with nine streams, "Jews," "Egyptians," "Phoenicians," "Syrians," "Assyrians," etc. and ends with 37 individual streams, all featuring events in the history of the nation represented and the populations of each at the time of publication. The smaller streams attached to the sides of larger streams show, by flowing upwards, conquests; downwards, losses.

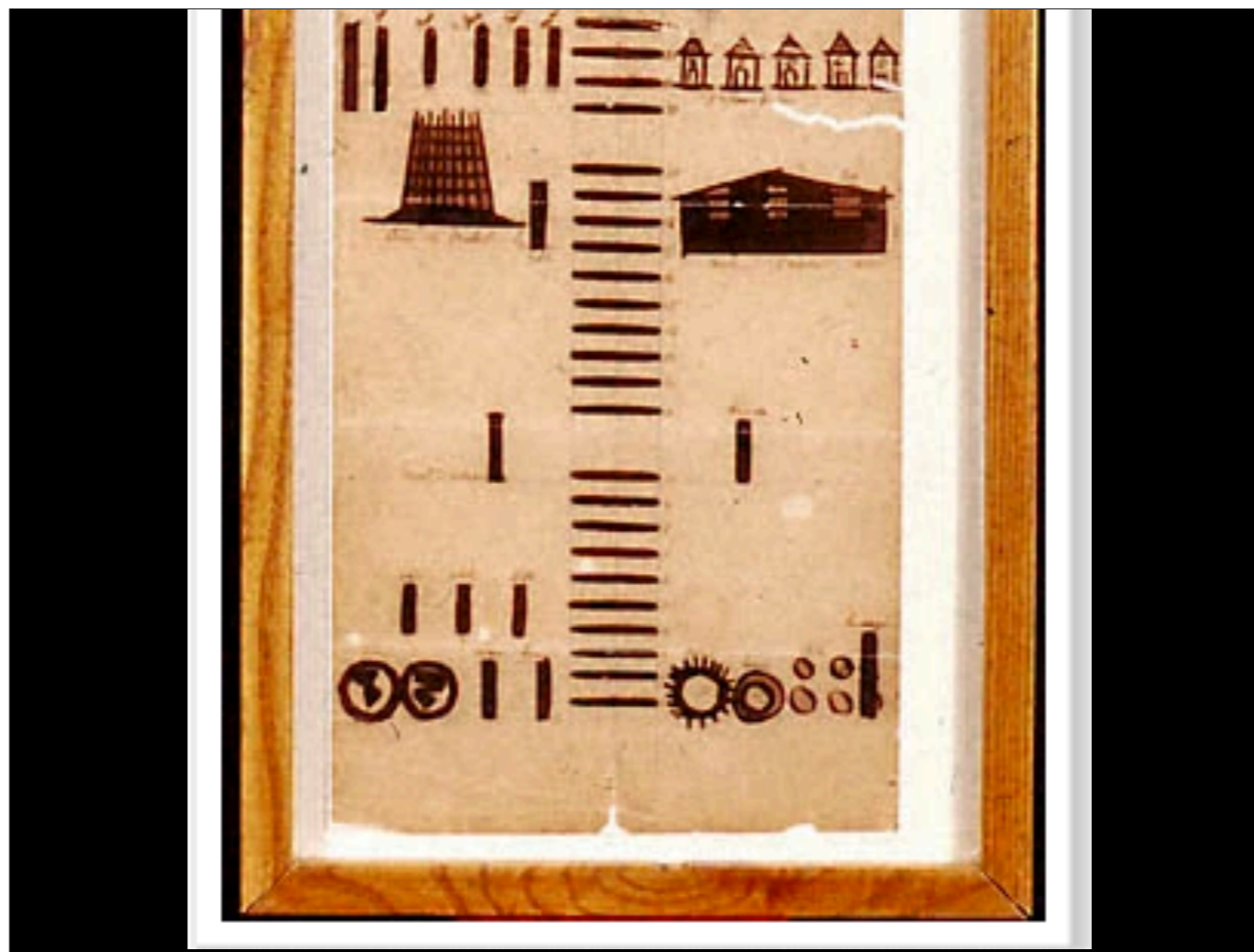


In this detail you can see nations being consumed by the Persian Empire (approx 559 BC) which in turn is incorporated into the Macedonian Empire (approx 323 BC), and ultimately into the Roman Empire (168 BC).



The Sahale Stick (“spirit stick” in Chinook)

was designed by French Canadian Catholic priest François Blanchet. He described it as a “visual catechism” to teach basic Christian concepts and used it in his missionary work with the local Native American tribes in the Oregon Territory. He may well have gotten the idea of the stick to tell stories from the natives themselves. The popularity and success of the stick led to a more elaborate Catholic Ladder from 1840.



At the bottom are symbols for the Creation including sun, stars, and earth.

Higher up are the tower of Babel, Noah's Arc, and the Old and New testaments, and the Catholic Church.

The horizontal bars represent centuries since the Creation. The dots show the years of the life of Christ, then, of course, the crucifixion.

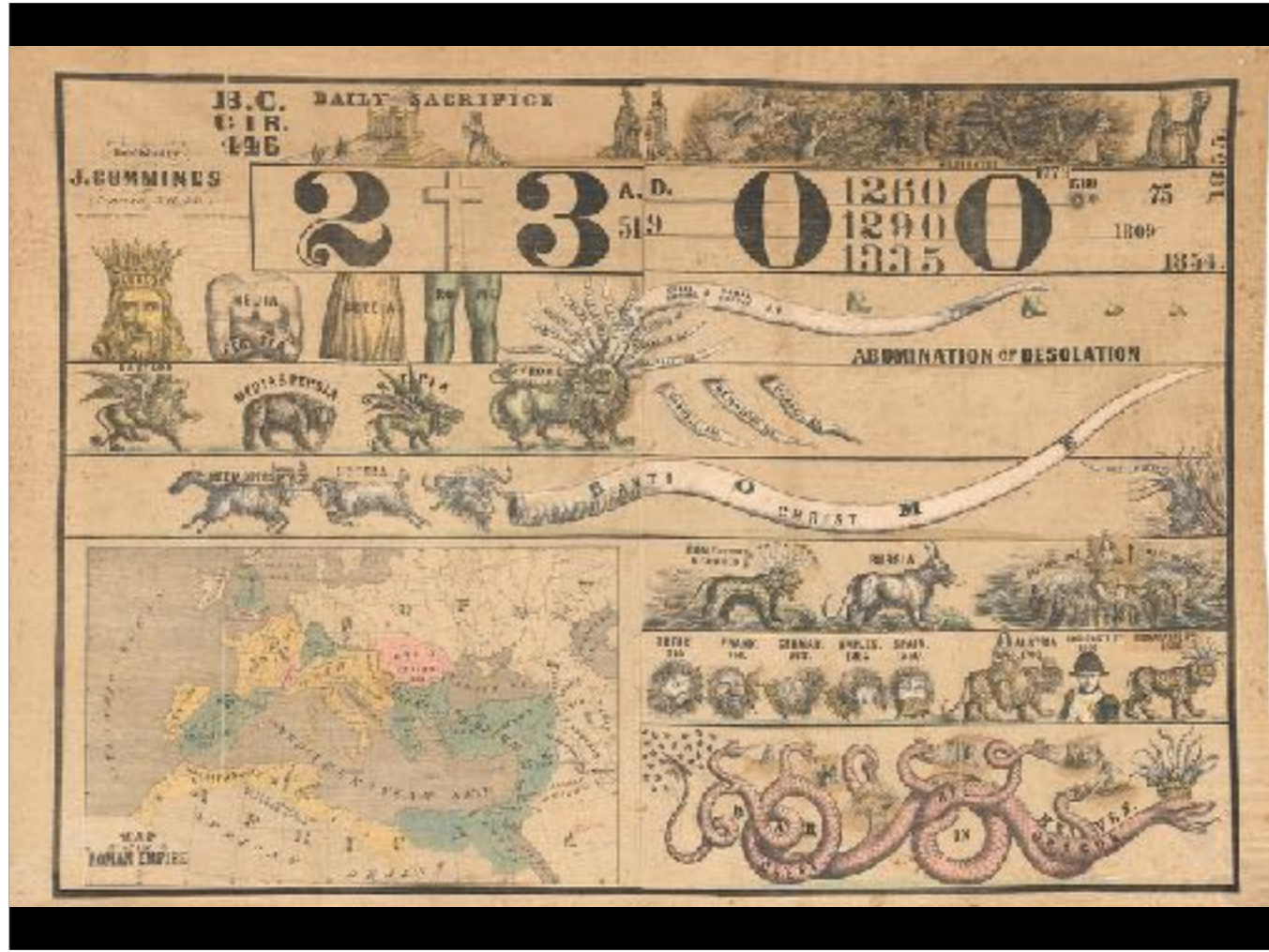
A branch above vertical bars for Luther, Calvin, and Henry VIII represents the protestant reformation. That branch created much controversy among protestants who considered it an insult and thought that it was used as a tool among Native American to incite hatred and suspicion toward Protestant missions.



The Pope was shown as the Antichrist, falling into the flames of perdition.

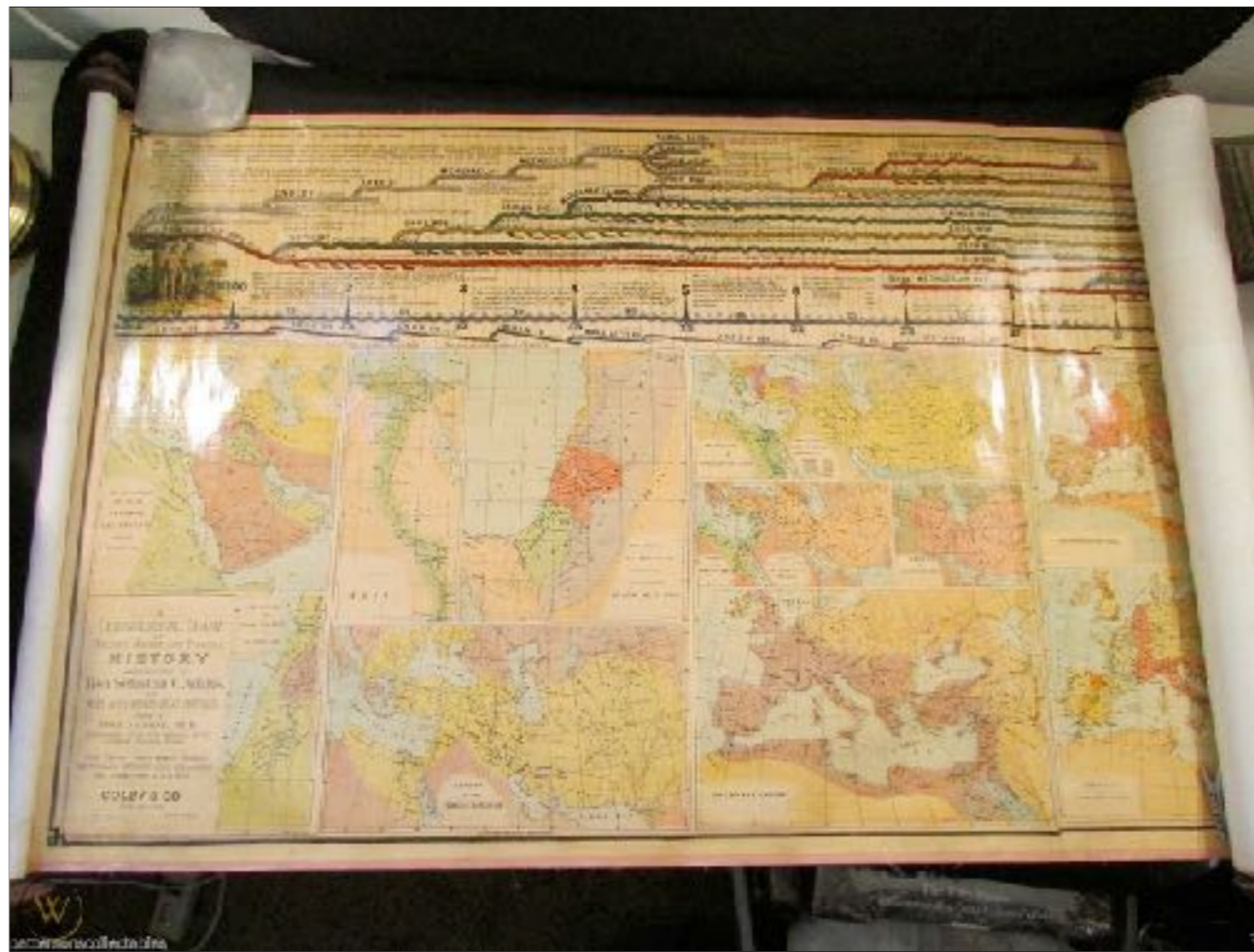


Not all of the chronographers were European in origin. In the Dakotas, the Lakota people made “winter counts” on hides.



Some of the most inventive work by chronographers in nineteenth-century America was done by millennialists. (Not to be confused with Millennials, millennialists believed that a Golden Age or Paradise will occur on Earth prior to the final judgment and future eternal state of the "World to Come.") While "Millerites," followers of New England minister William Miller, believed his prophesy that the Apocalypse would occur in 1843, that (spoiler alert) didn't happen and the non-event became known as "The Great Disappointment." Adventist minister Jonathan Cummins recalculated the date and predicted that Christ would return in 1854, as seen on his chart here. I really can't understand or explain a single symbol on this piece, so please don't quiz me on it.

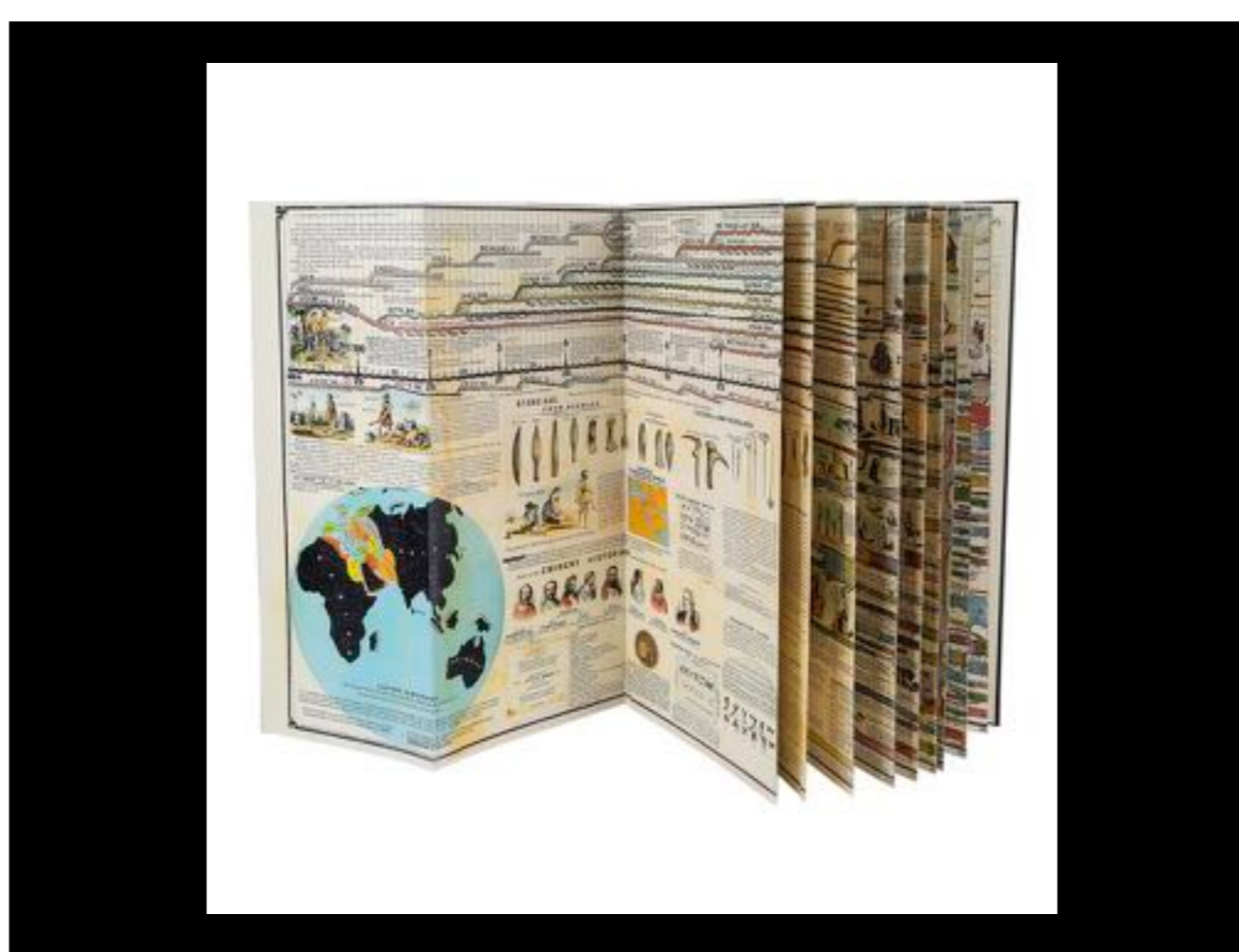
This chart alone could probably be the subject of an entire talk, if you were that into it, but trust me, I'm not.



Sebastian Adam's charts were organized around a measured timeline. This edition from 1878 was sold on rollers.



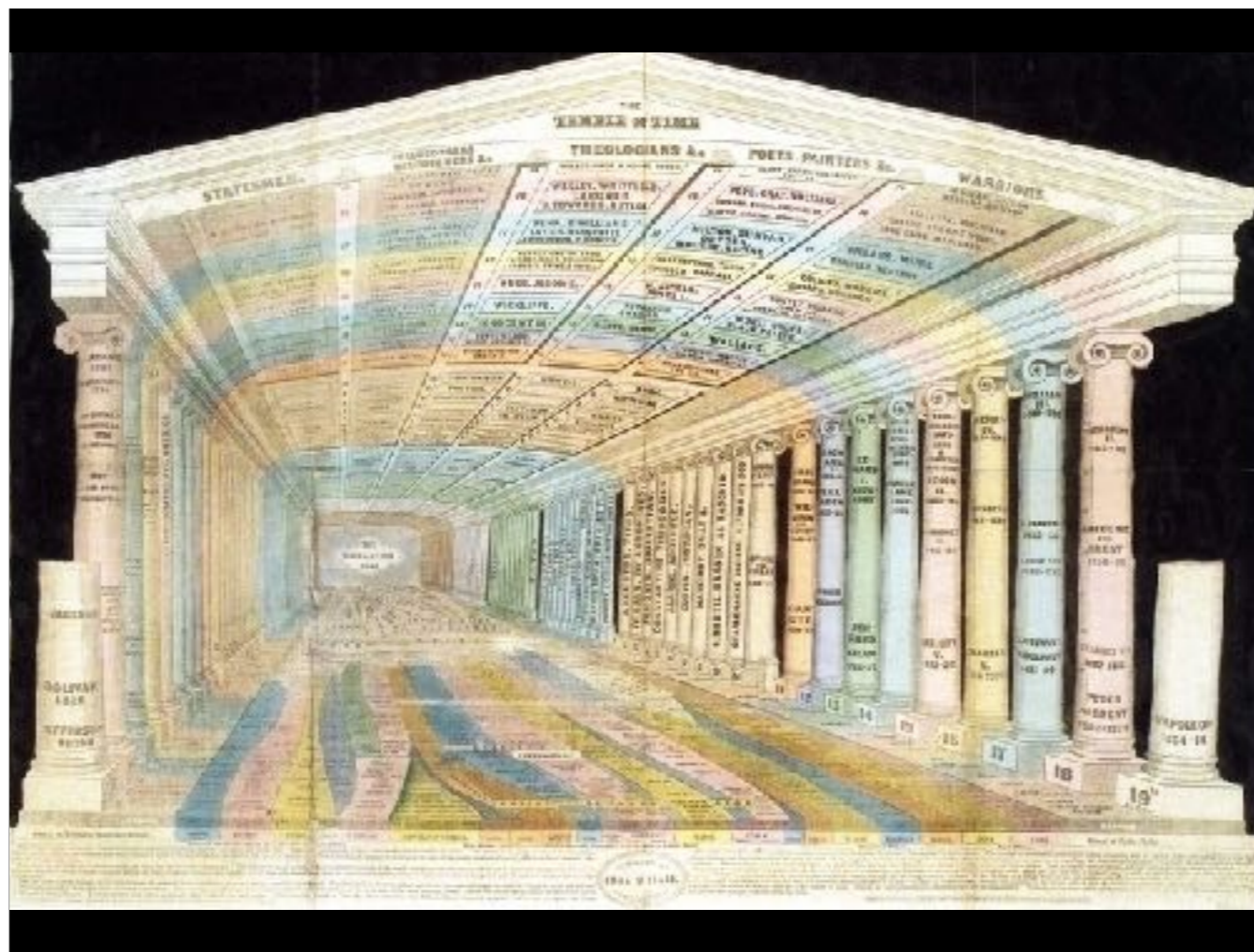
Here it is fully open.



But usually it was sold as an accordion-fold book.

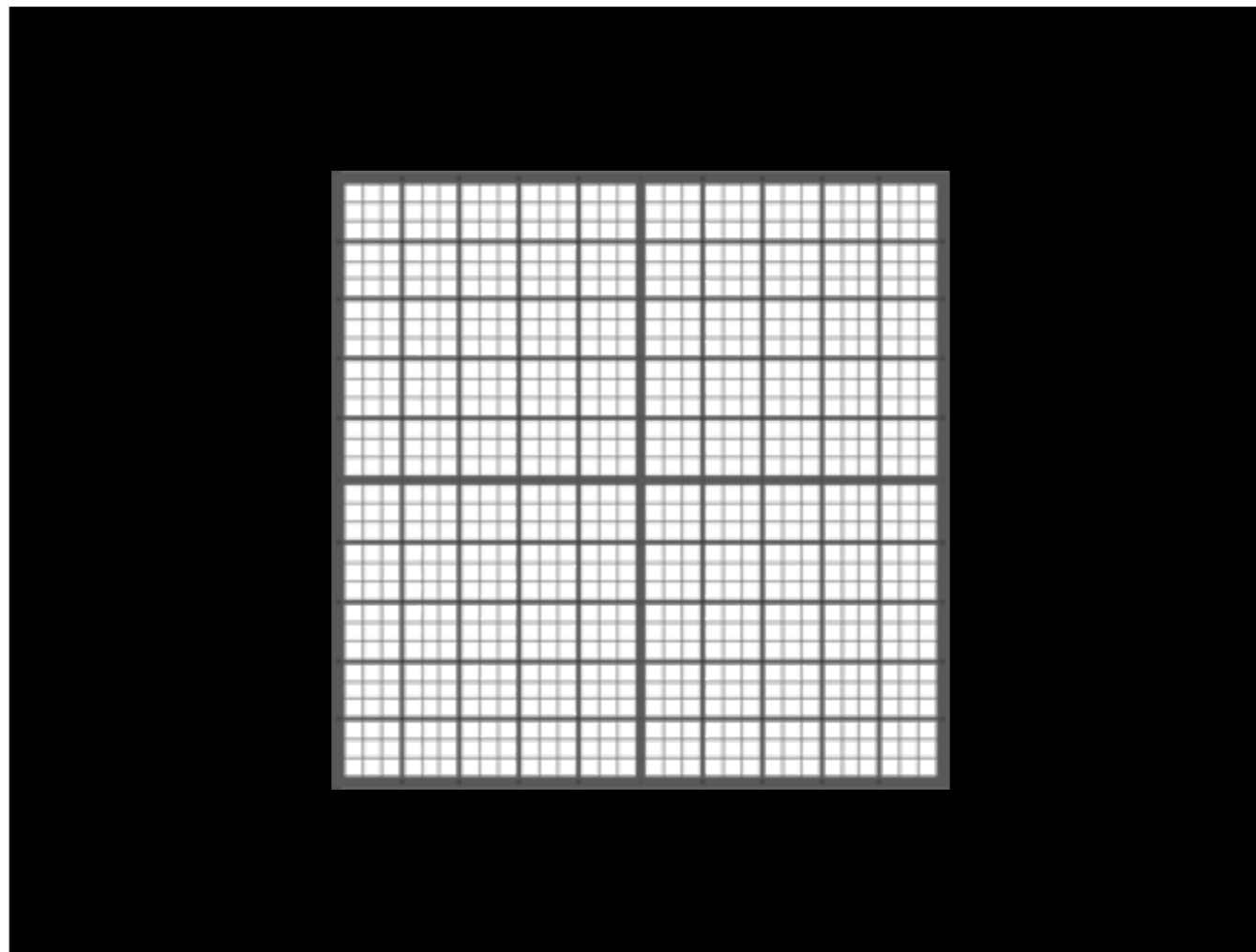


In 1885 James Ludlow's Concentric Chart of History used a novel method of a "radially-folding synchronous chart" to allow users to easily juxtapose events from different parts of the world. His publishers, Isaac Funk and Adam Wagnalls, also published a blank version of the chart that users could fill with new content.

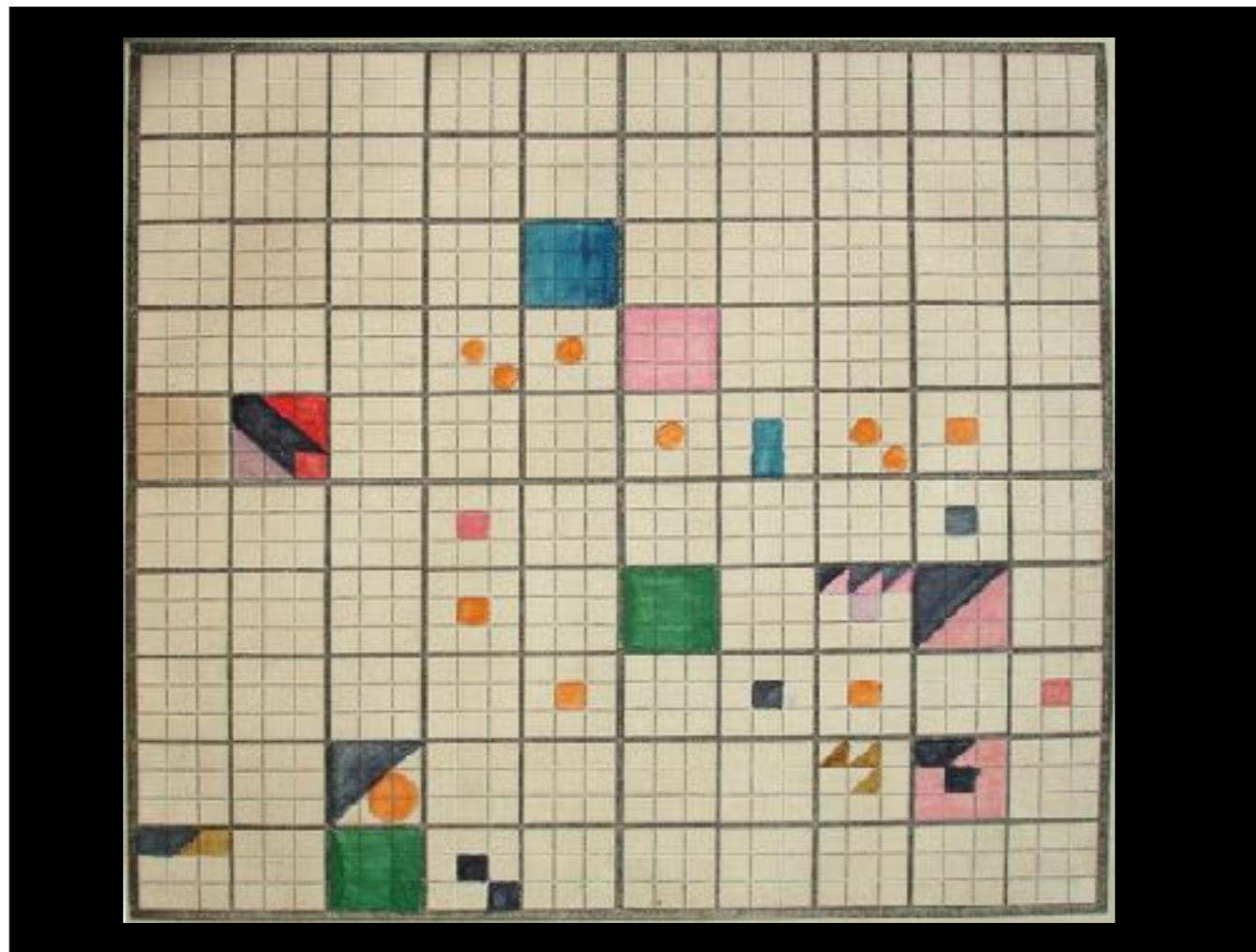


The pioneering American educator Emma Willard placed the stream of history in the space of a Renaissance memory theater. With Willard's "Temple of Time," students began by memorizing the elaborate building façade, then placing the dates and facts to be memorized on the façade.

This would never have worked with me. Pretty as it is.



Another popular mnemonic method was called the Polish System. It was a ten-by-ten grid mnemonic chart filled with simple colors, developed in the 1820s.



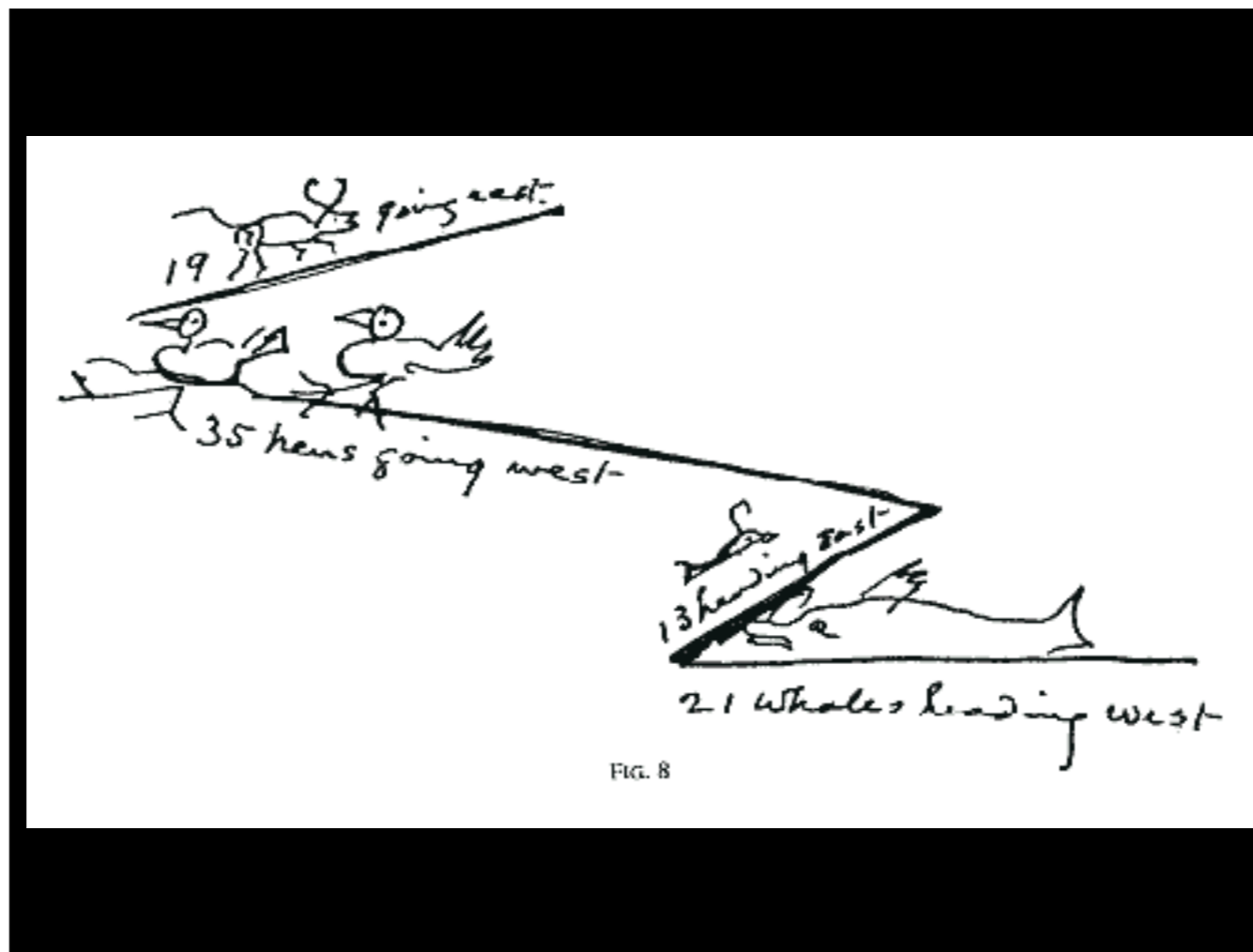
Now, reading from “Cartographies”:

First the student needs to be familiar with the grid itself, since no dates are given on the charts. to figure out when an event took place, the novice student counts boxes (one box can signify a year, a decade, or a century, depending on the scale used); ...

Next the student needs to understand the meaning of the small three-by-three grids embedded in each square. Placement on the small grids determines the type of event (battle, treaty, marriage, and so forth.) then the student needs to be familiar with three simple symbols, a square, a triangle, and an X. Finally she or he has to know what colors are assigned to what countries....

So basically the placement on the large grid gives the date; on the small grid, the type of event; and color gives the nations involved.

In the 1850s and '60s Elizabeth Palmer Peabody, an education reformer and pioneer of the kindergarten movement promoted the system and even sold a little paint set for filling in the squares.

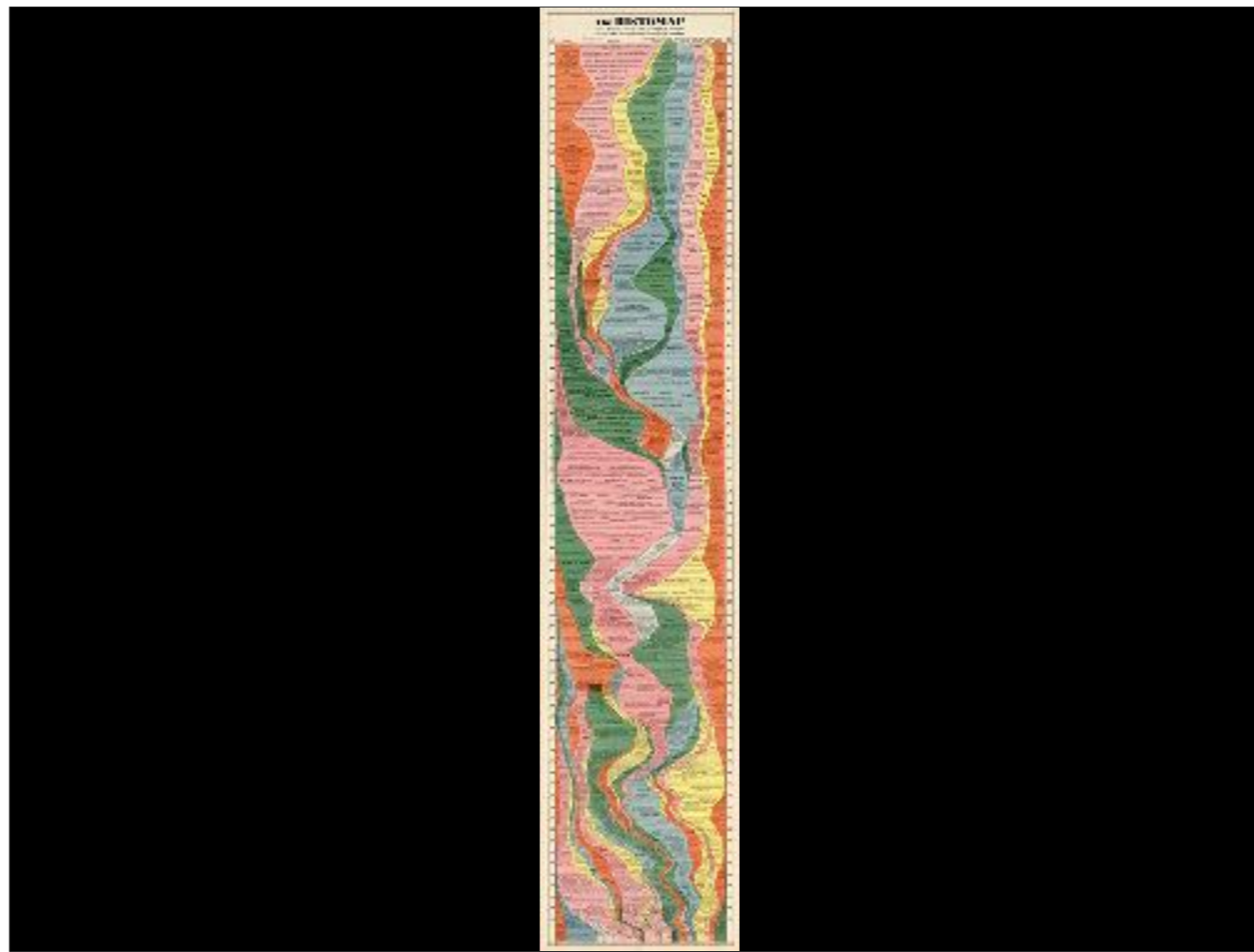


Mark Twain invented games to learn history, as well as using this mnemonic device: to lay down a strong visual association and commit that to memory.

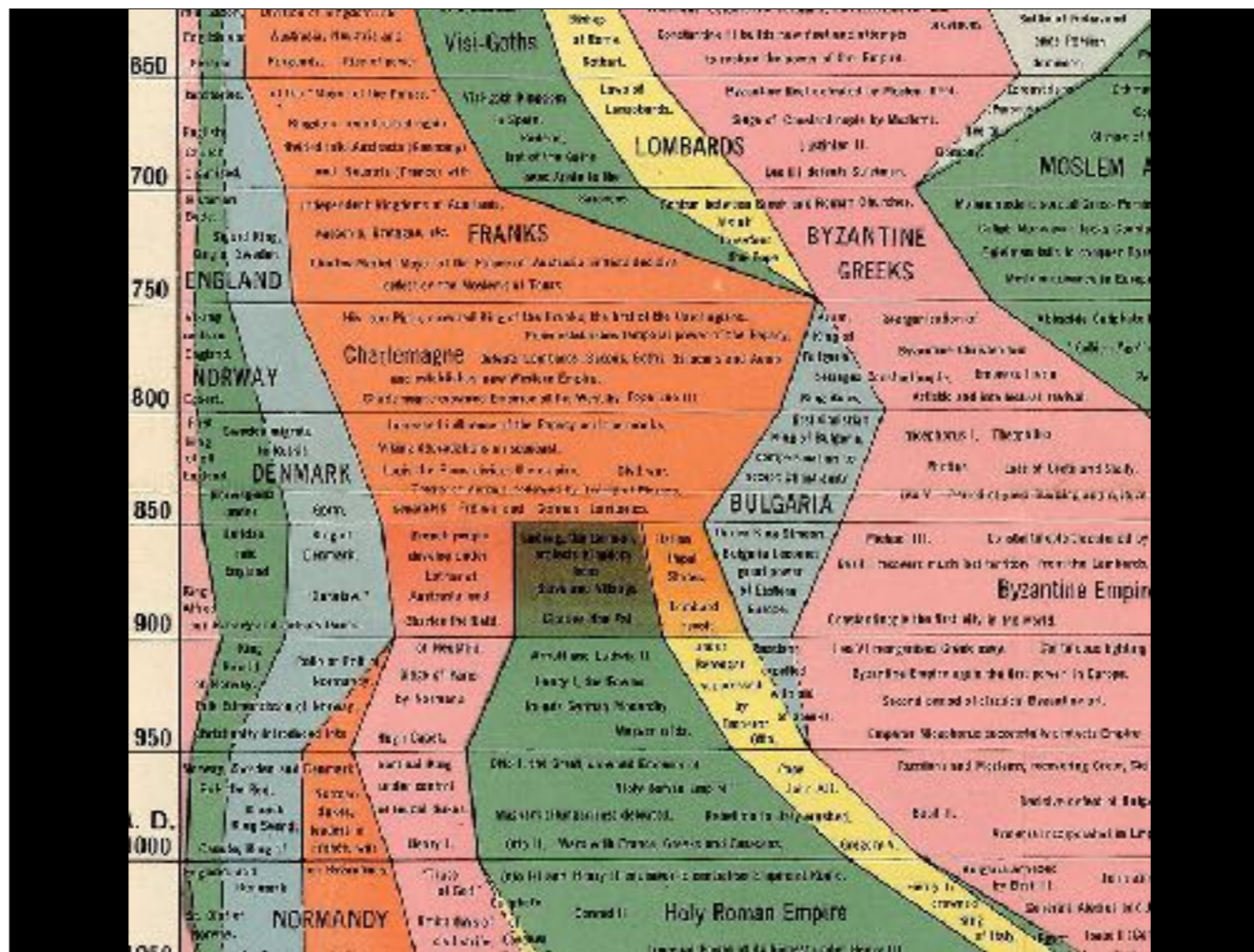
In his 1899 article, "How to Make History Dates Stick," he offered a series of pictographs to help remember the English kings. Most were based on linguistic associations:

hen for Henry,
whale for William,
steer for Stephen, etc.

These were laid on a timeline that reversed course at each regime change.



This "Histomap" was made by Jacquie Glanz's grandfather, John Sparks in 1931. Sparks was the American plant manager for Nestlé Corporation, whose work required much long-distance travel by train. On his trips he filled notepads with names and dates, and on his return, cut them into strips and pasted them onto a huge chart for reference. The result was this huge histomap, about 6 feet long.

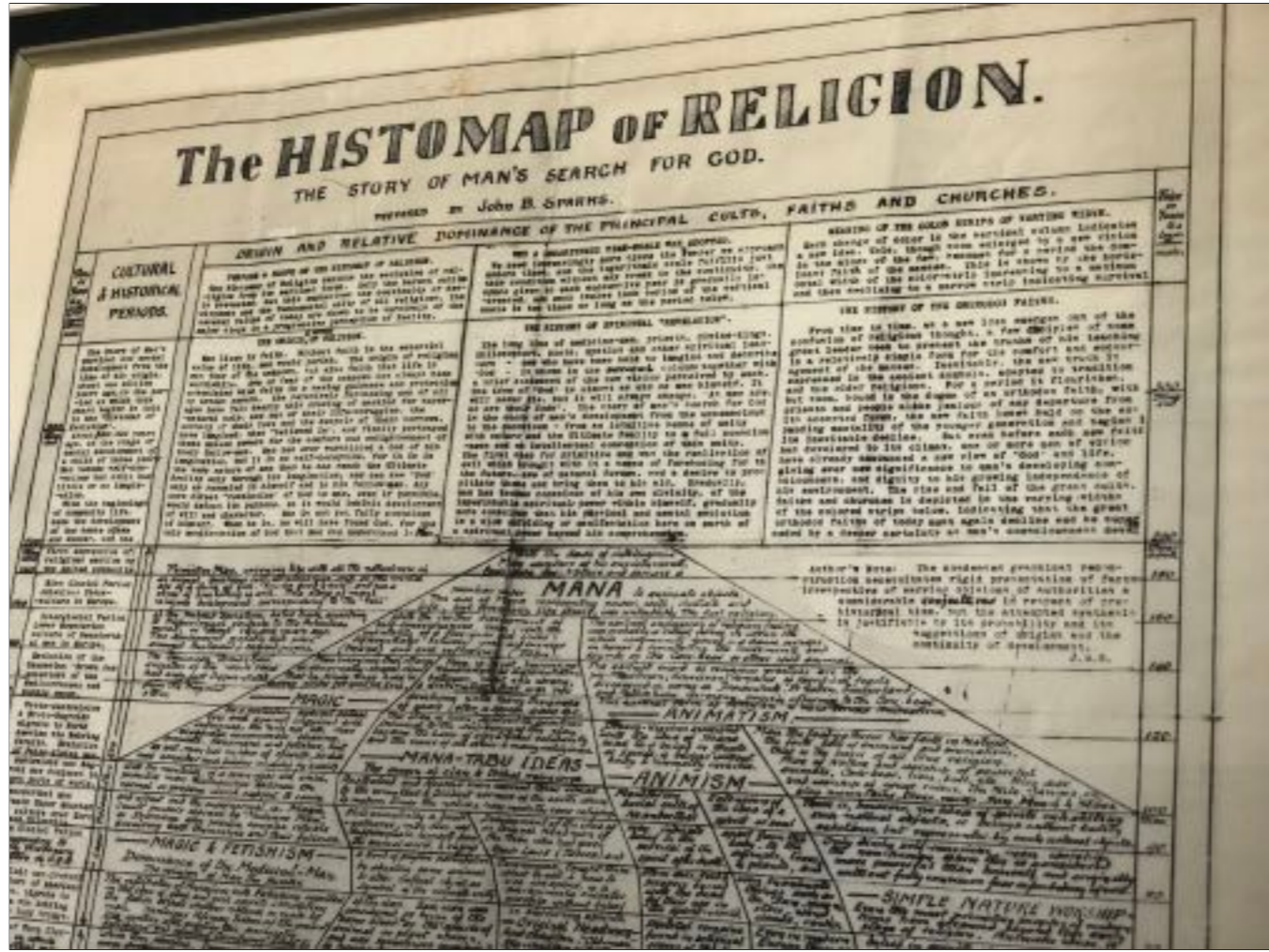


The beauty of Sparks's maps are that they not only provide an easy-to-read synopsis of history by the ages, but they inform the viewer of the importance of each country through time. The widths of the countries are not determined by population and wealth so much as by their influence in the world. So as we see here, between 700 and 750 the Visi-Goths and the Lombards petered out with the rise of the Franks and Charlemagne. (Charles Martel is defeating the Saracens at Tours—on Saturday we presume)

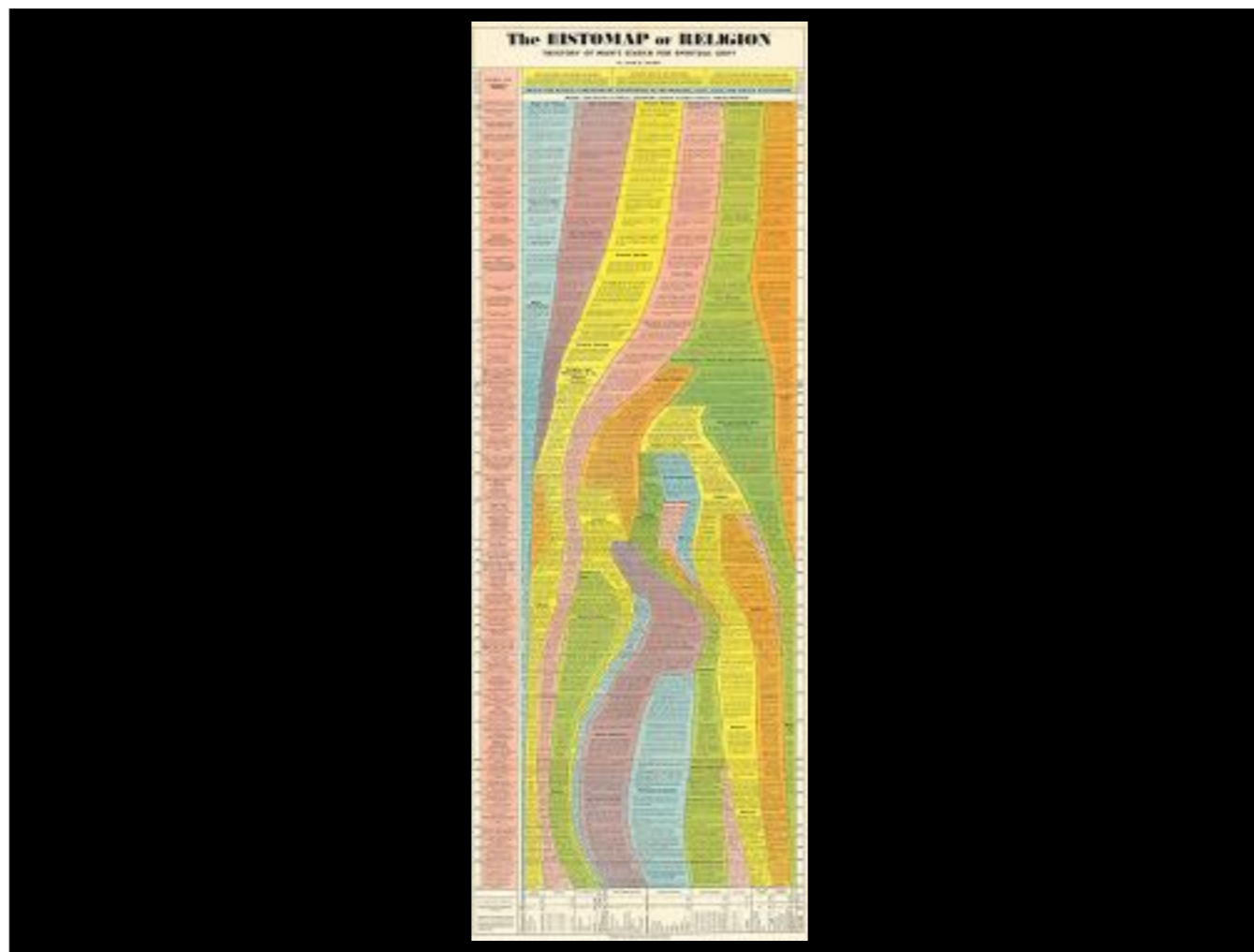
Sparks's Histomaps of 4,000 years of world history has been published many times, most recently by Barnes & Noble in book form, as I showed at the beginning of this talk.



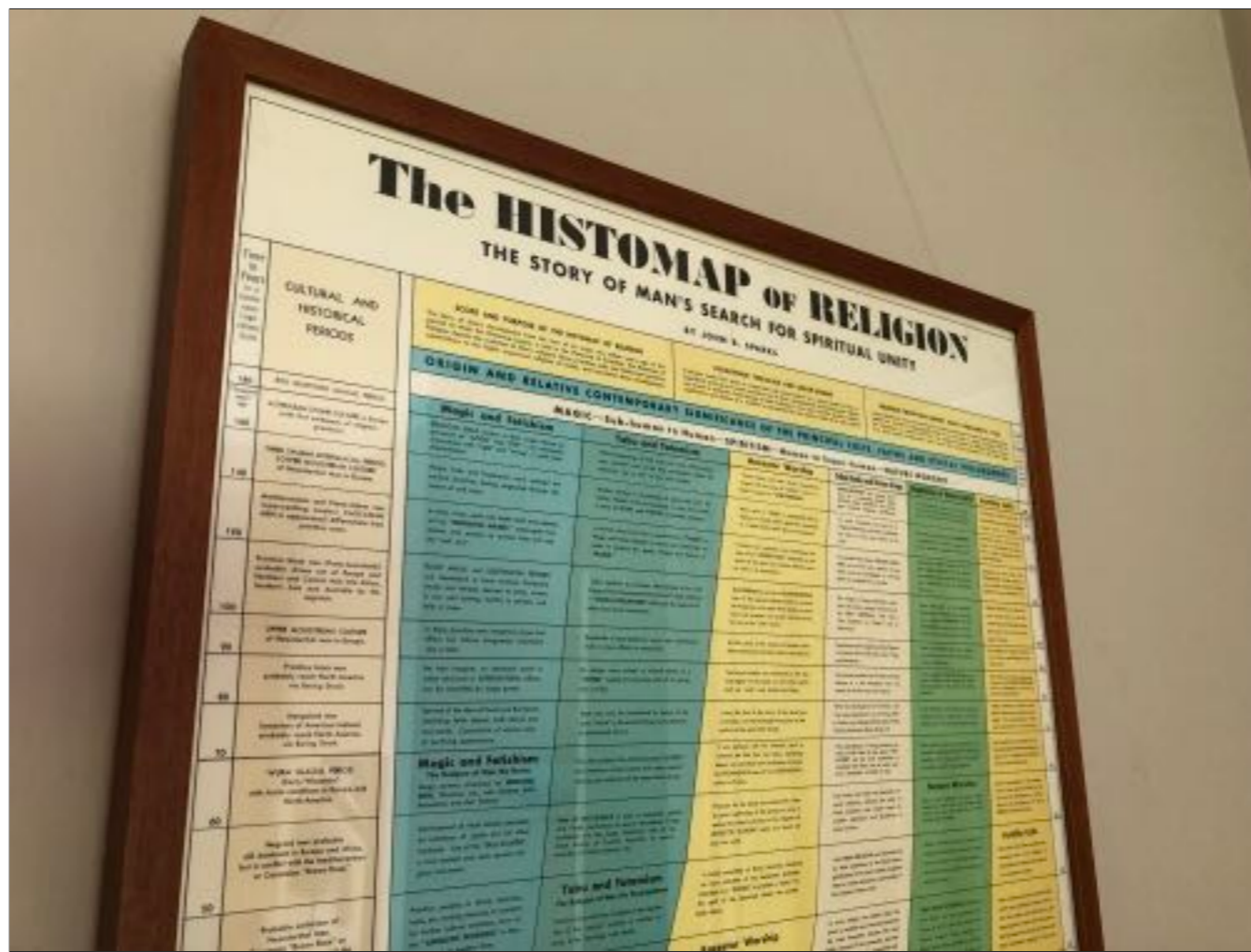
Mr. Sparks did three other "histomaps" as well. This is one of religion.



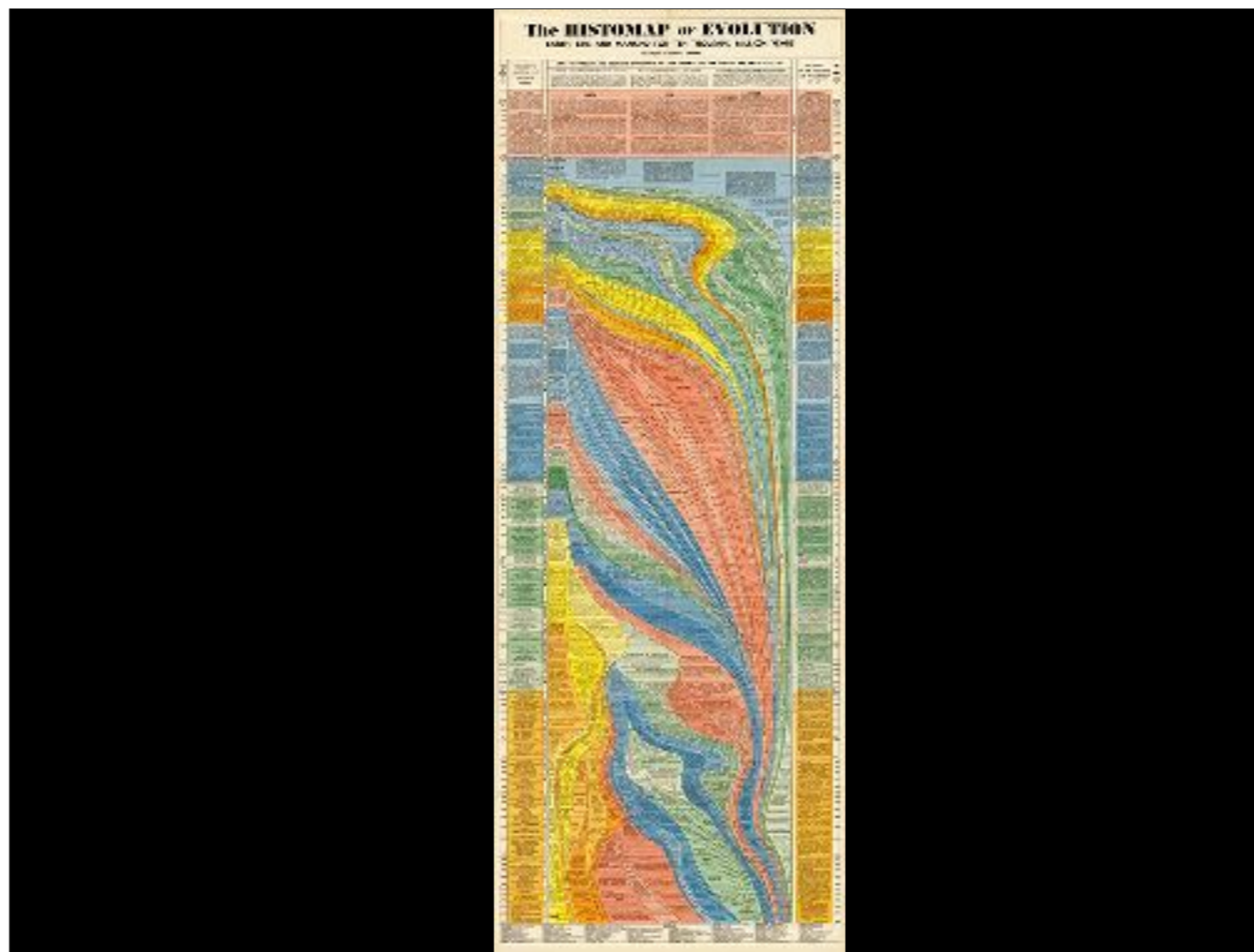
He subtitled it "The Story of Man's Search for God." This is an early cut-and-paste and handwritten version.



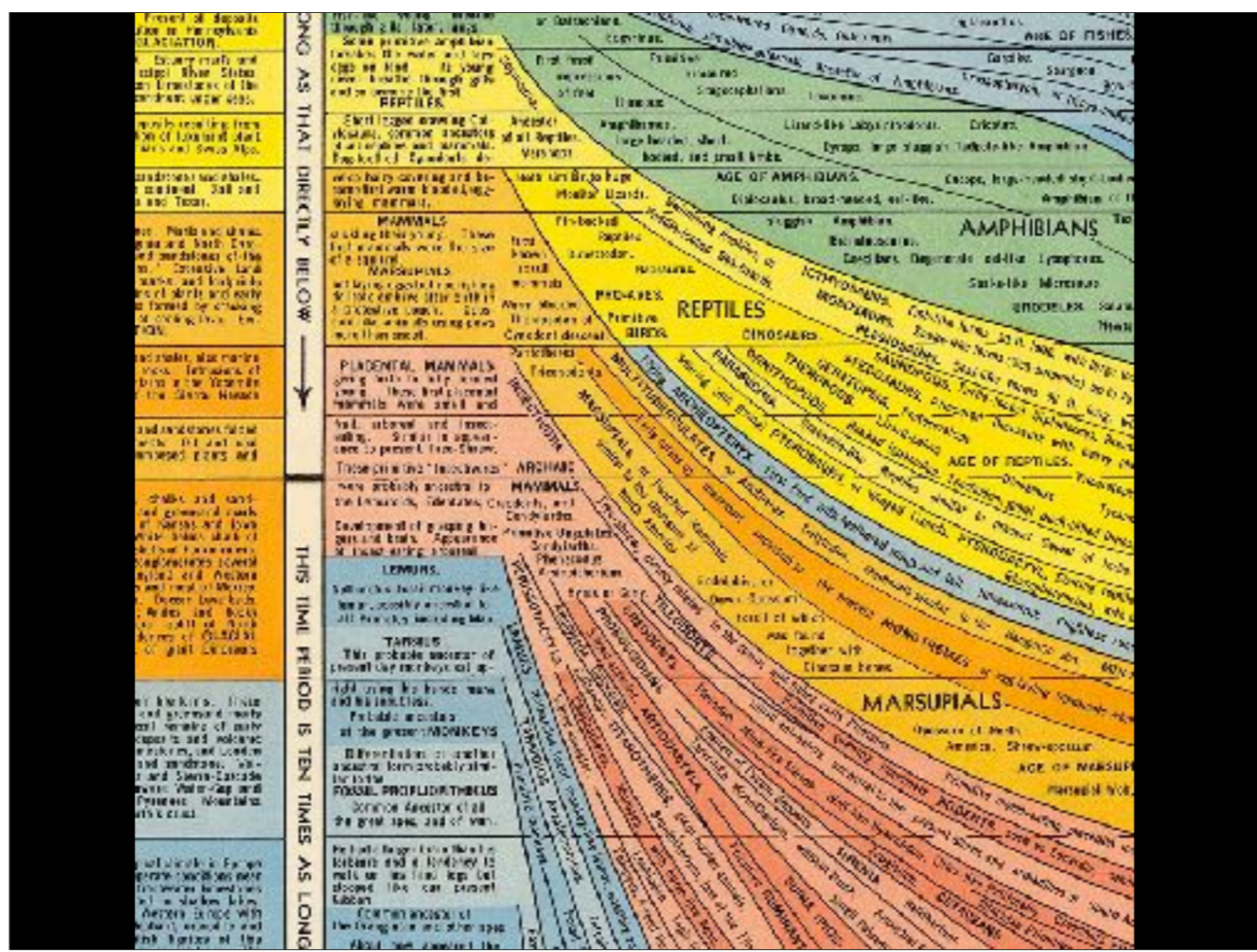
As published it was in color.



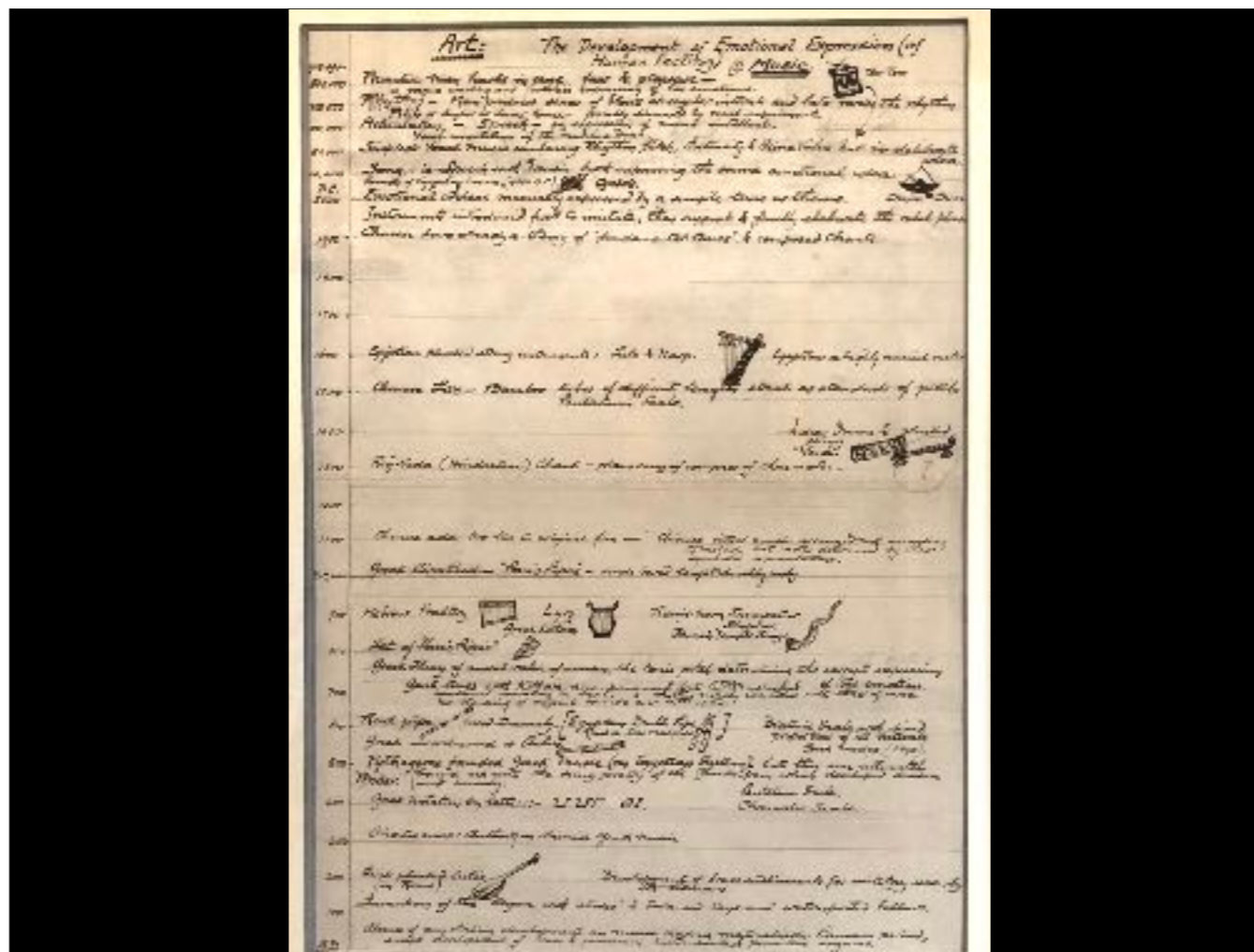
And the subtitle was changed to “The Story of Man’s Search for Spiritual Unity,” instead of “God.”



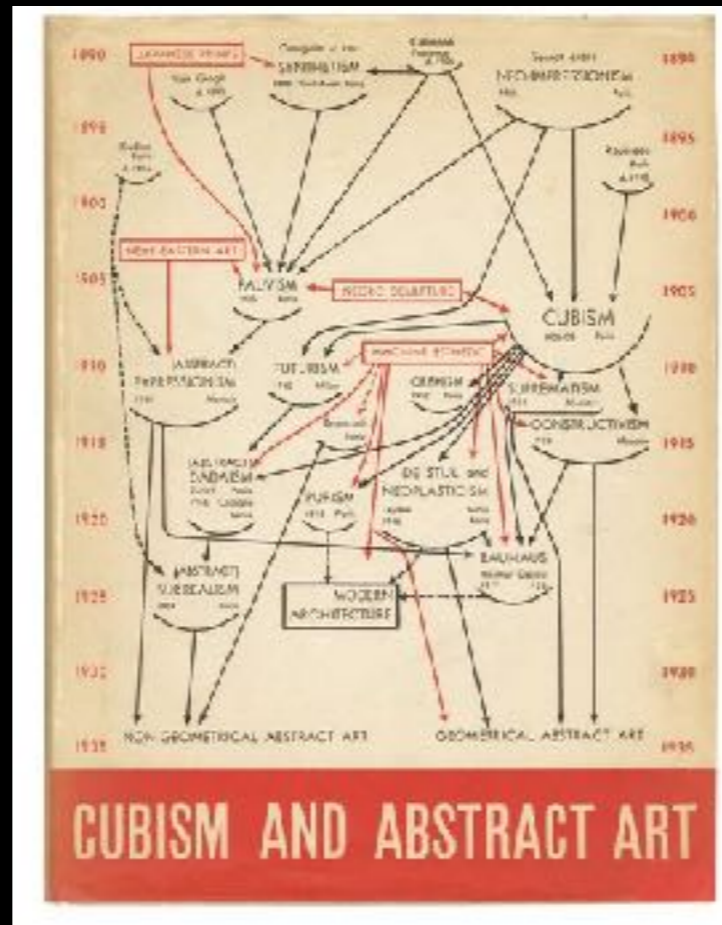
A third histomap that he published was “The Histomap of Evolution, Earth, Life and Mankind for Ten Thousand Million Years” (wouldn’t that be 10 billion years?) At any rate, this one, by necessity, used a logarithmic scale.



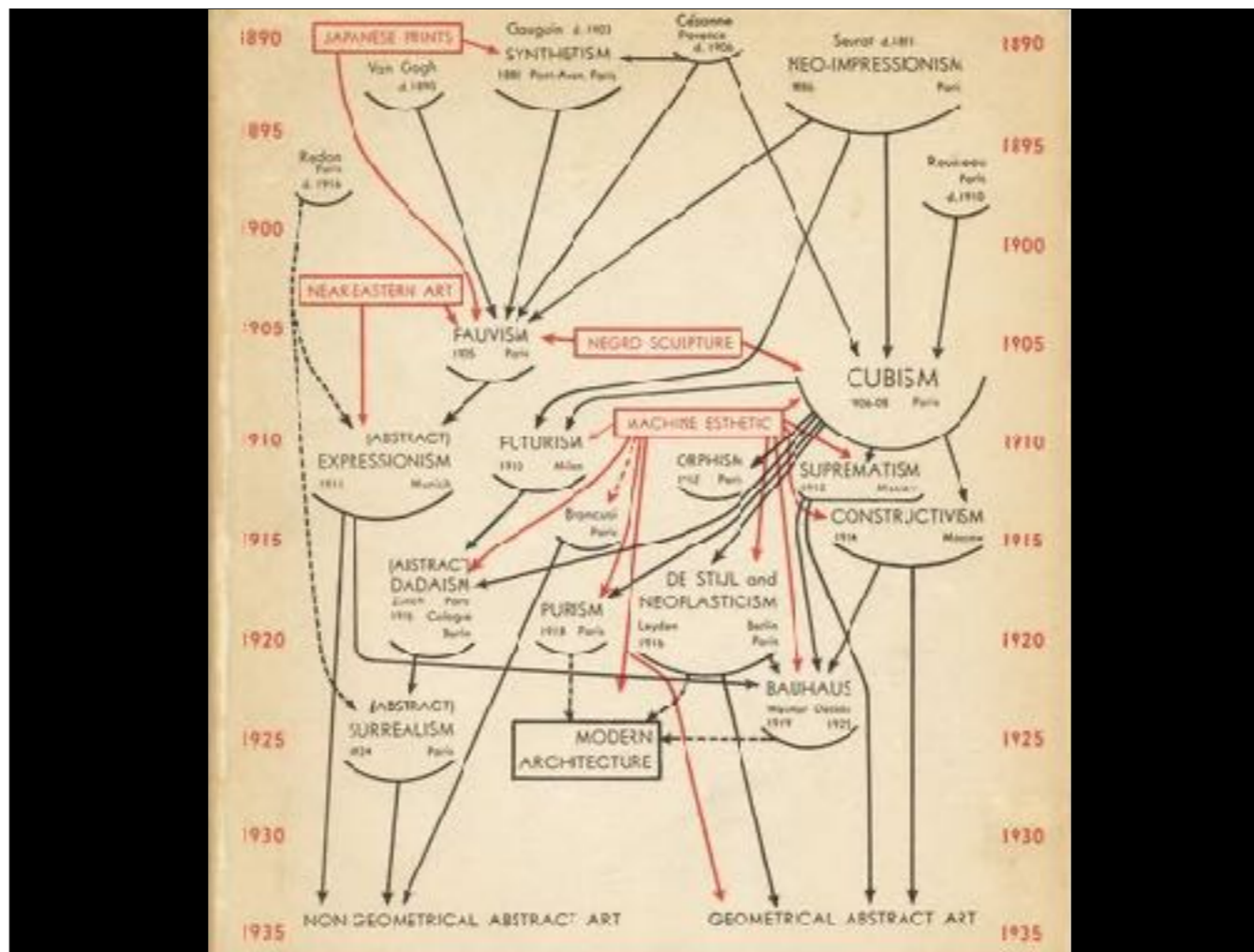
Here is a sample of that logarithmic timeline.



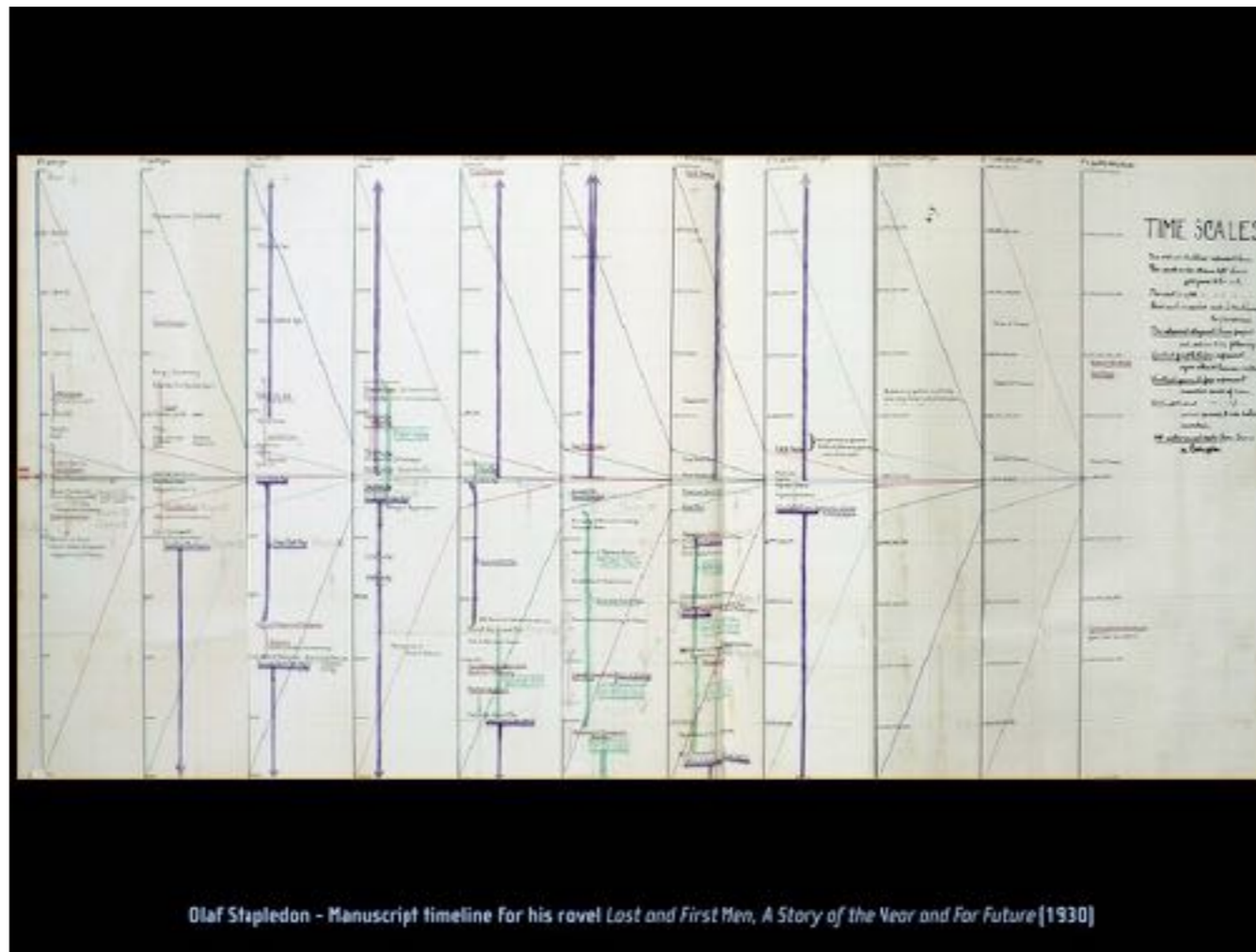
John Sparks also worked on a timeline of art: this one called “The Development of Emotional Expression (of Human Feeling). This was never published but is another one in the possession of Jacquie Glanz. This particular one deals with music beginning 500,000 years ago (“Primitive man howls in rage, fear & pleasure”)



The cover design by Alfred Barr Jr. for the catalog of an exhibit on Cubism and Abstract Art was done about the same time as Sparks was working on his charts in the 1930s.



This is quite good at showing not only the timeline, but the relationships between various artistic movements.

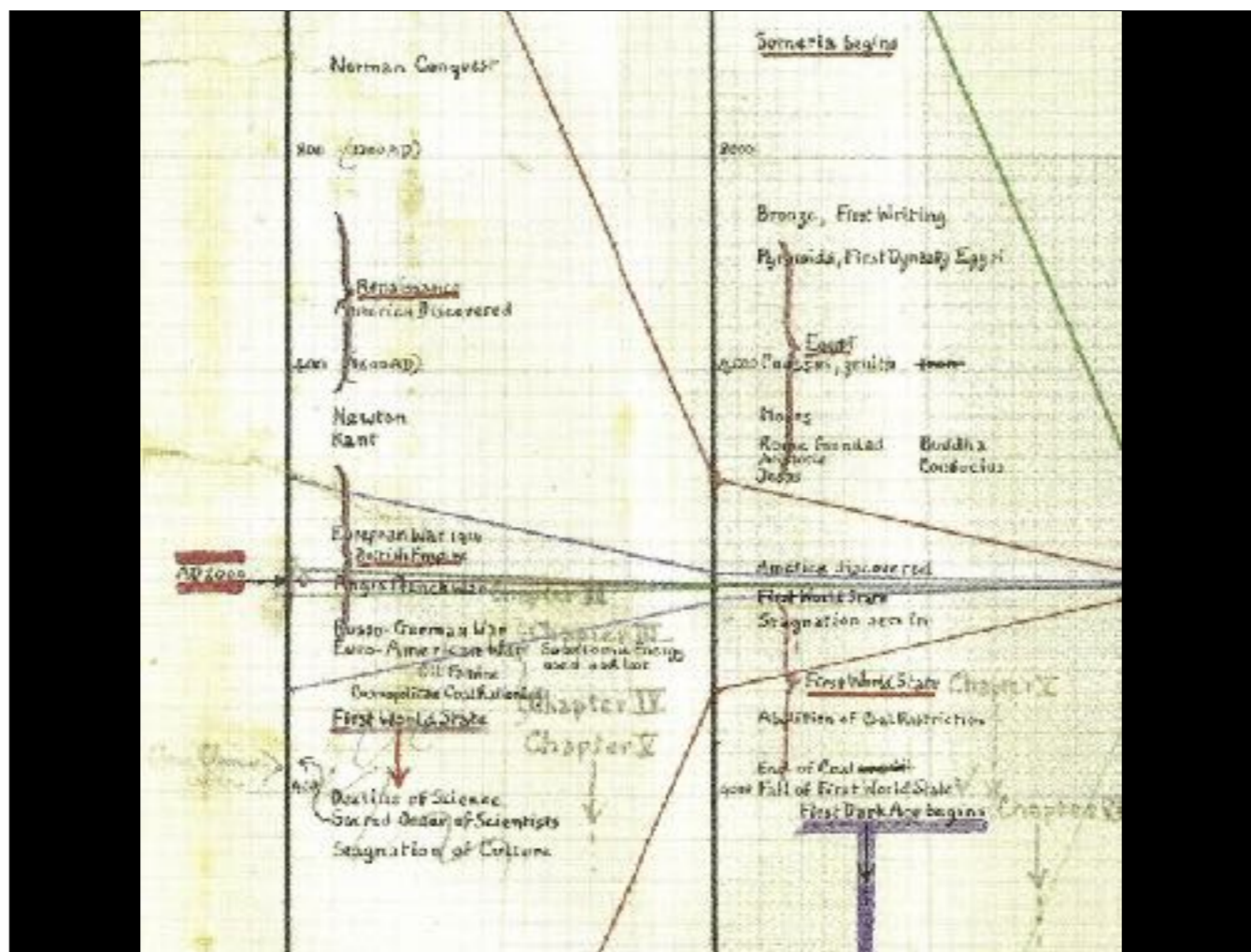


Olaf Stapledon - Manuscript timeline for his novel *Last and First Men, A Story of the Near and Far Future* [1930]

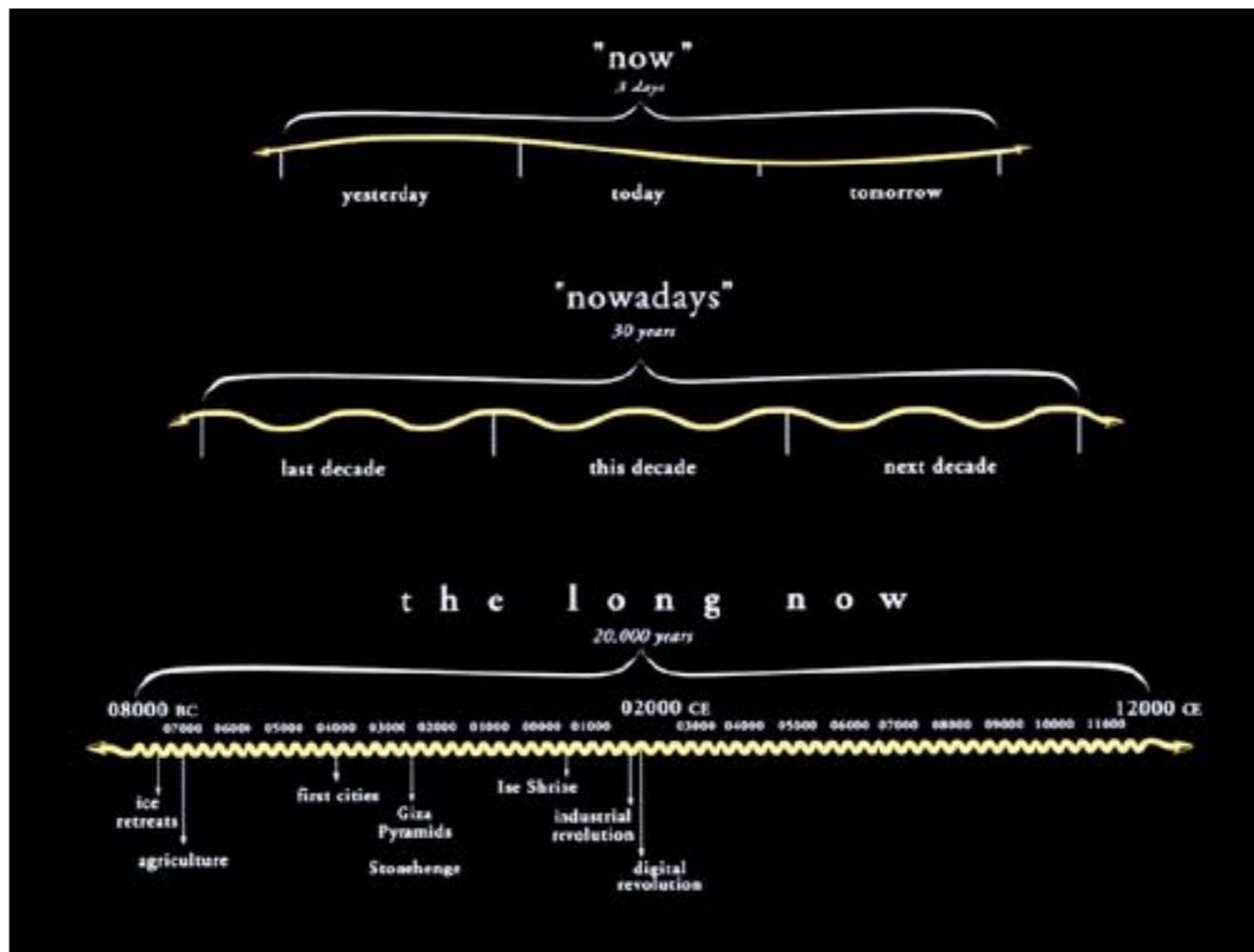
In 1930 Olaf Stapledon published his science fiction novel, "Last and First Men: A Story of the Near and Far Future." It gives an evolutionary history of humanity over two billion years.

This shows his manuscript timeline drawn to different scales: the line at the far left is drawn at 400 years to an inch, the next is 4,000 years to an inch, and each line is ten times the previous. The diagonal lines project the last scale onto the next.

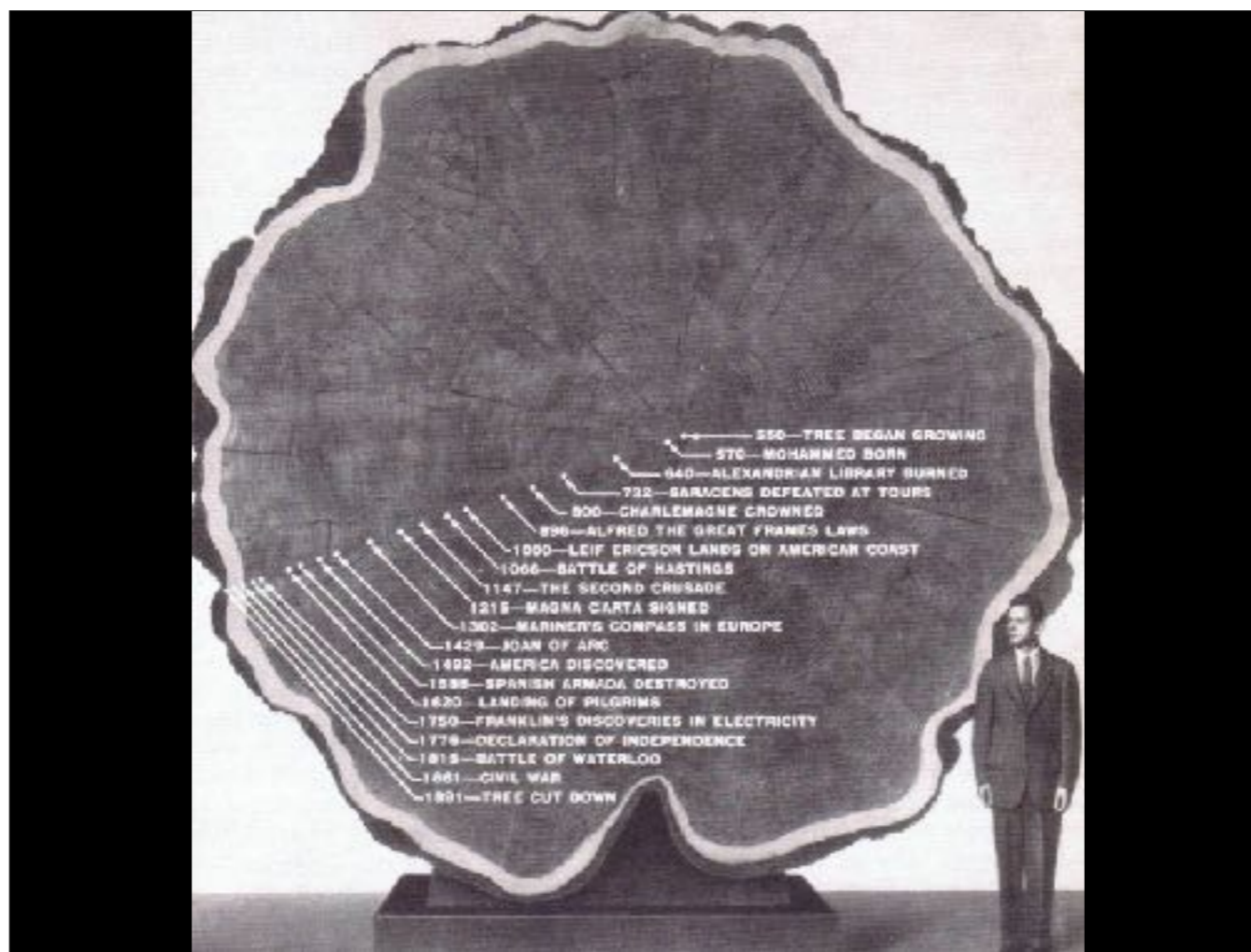
So in this case, Jesus is at the top of the first line, and the center represents the year 2000. Vertical purple lines represent ages without human culture. Vertical green stripes indicate successive races of men.



Here is a zoomed-in section of interest.



Like Stapledon's futuristic look at history, similar methods have been used by environmentalist groups such as the Long Now Foundation. This chart is from 1999.



One of my favorite timelines is this giant sequoia that was exhibited at the American Museum of Natural History in New York. When felled in California in 1891, it was 331 feet tall and measured 90 feet around at the base. This section contains 1,342 rings dating the tree to the mid-sixth century. It is marked with events happening during its life, such as Mohammed born in 570, Saracens defeated at Tours in 732, Charlemagne crowned in 800, Battle of Hastings in 1066, America discovered in 1492, and the Civil War in 1861.



I have attempted a few timelines of my own, though as with most things I do, they are more visual. This is my timeline of Lynchburg, in a box.



Inside are 6 panoramic views of Lynchburg taken approximately every 50 years. You've probably seen many of them. I certainly can't claim credit for being the photographer of any save the last one.



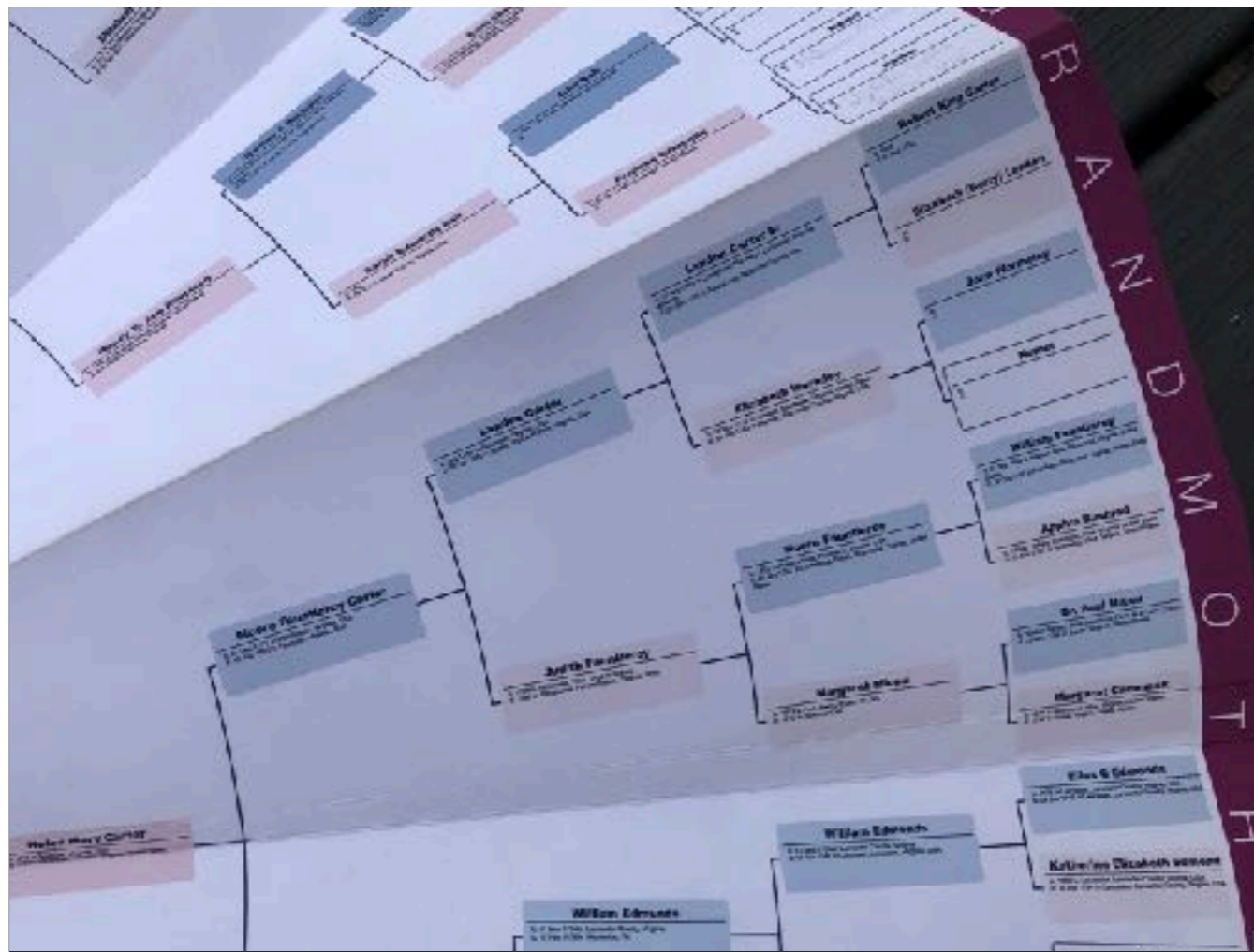
When folded as accordion books, they give a clear picture of the changing city, with each panel showing the same view, but in a different time.



This poster, for instance, shows the section from each photo focused on the building where Amazement Square is now.

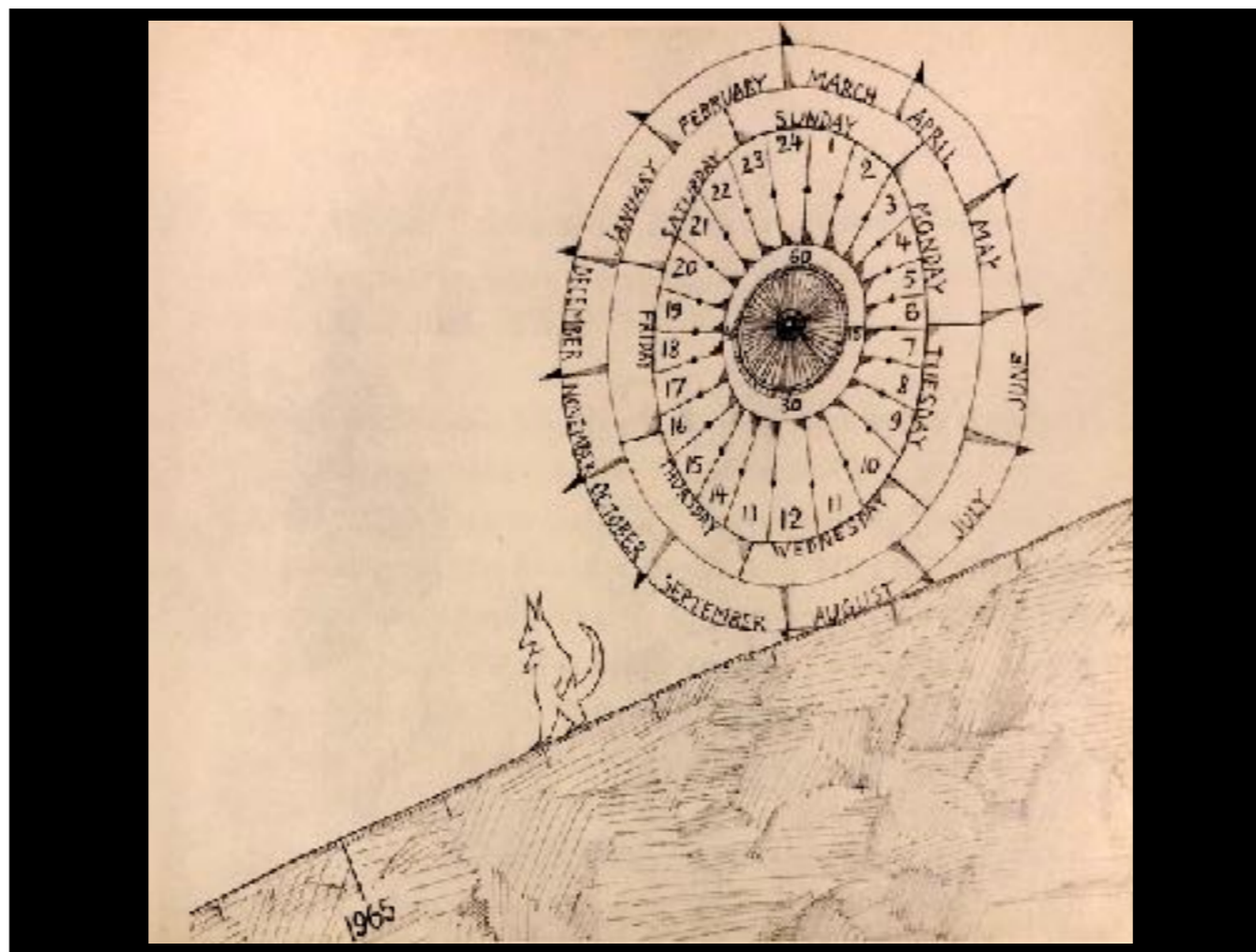


Another attempt at organizing history that I've done is kind of like a poodle skirt. You've probably seen genealogical wall charts that go back for centuries. This is one I made for my family, but I've folded it as an accordion fold to make it easier to view like a book.



Here's a detail of the chart unfolded.

And..



I'll close now with a graphic interpretation of time by Saul Steinberg in 1965.