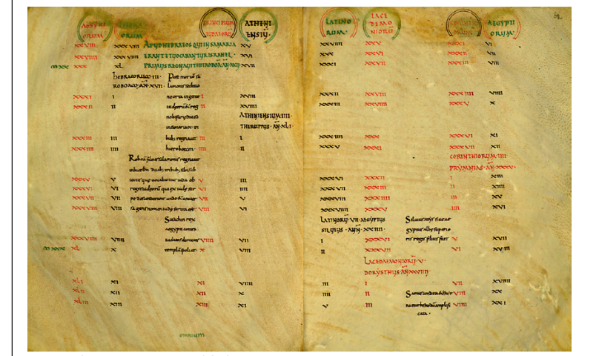
A TIMELINE OF TIMELINES

Scale: 1/5 in = one year

0 1 2 3 4 5 10 years

Timeline folds to maintain absolute scale

2nd CENTURY AD
Jewish scholar Jose ben Halafta calculates the exact length of time between Creation and the destruction of the Second Temple. By the Julian calendar, existence begins on Monday, 7 October 3761 BC at 10:10 pm.



Merton College, University of Oxford

ca. 325
In his *Chronicle,* Eusebius of Caesarea innovates a tabular system to coordinate events drawn from several distinct historiographic traditions. Abraham's life structures the chronicle; events are matched to the age of Abraham and then to the year of various monarchies. Eusebius calculates the beginning of time as 5,198 years before the Incarnation. Around the same time, Eusebius also creates a "canon table" aligning the gospels according to a chronological system. The Merton College copy of Eusebius's *Chronicle* depicted here, one of the oldest extant, comes from mid-fifth-century Italy.

ca. 415
Augustine's allegorical interpretation of the biblical chronology forms a framework for interpreting human history according to the "six ages of man."

527
Scythian monk Dionysius Exiguus introduces the convention of dating events *anno Domini*.

ca. 530
Rule of St. Benedict organizes devotional practice around the "canonical hours" measured by the clock.

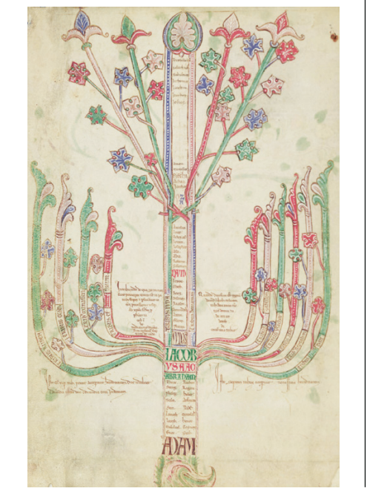
643
Year One of the Muslim calendar established by Caliph Umar I as 622.

725
In *On the Reckoning of Dates*, Bede calculates the beginning of time at 3,952 years before the Incarnation. In *The Ecclesiastical History,* Bede implements the "Dionysian system" of dating in relation to the birth of Christ.

10th CENTURY
An anomalous graph appears in an edition of Macrobius's commentary on Cicero's *The Dream of Scipio,* an analysis of physics and astronomy. The drawing, probably added to the text by a transcriber, plots planetary and solar movement as a function of time. Although the graph does not seem to convey accurate information, it is nonetheless a very early example of changing values measured against a time axis.

12th CENTURY
Moses Maimonides promotes use of the Mundane Era among Jewish scholars.

12–13th CENTURY
Jesse Trees, pictorial depictions of Christ's royal ancestry as given in Matthew, proliferate in medieval manuscripts, murals, and stained glass windows. Jesse, the father of King David and the claimed ancestor of the Virgin, is typically pictured at the base of the scene, the tree's trunk growing from his navel.

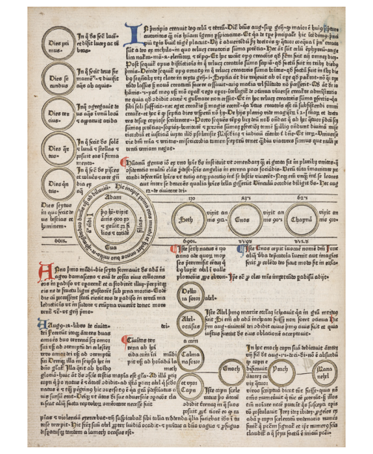


13th CENTURY
Franco of Cologne's (ca. 1240–ca. 1280) treatise *The Art of Measured Song* codifies a system of music notation that fixes the durational value of notes, while their relative value is measured against the breve, Franco's base unit of musical time.

1260
According to Joachim of Fiore (1135–1202), this was the pivotal year in humanity's transition to the third and final "state" of history. Twelfth- and thirteenth-century renderings depict Joachim's system of historical states *(status)* and phases *(aetates)* as trees, chains, and ladders.

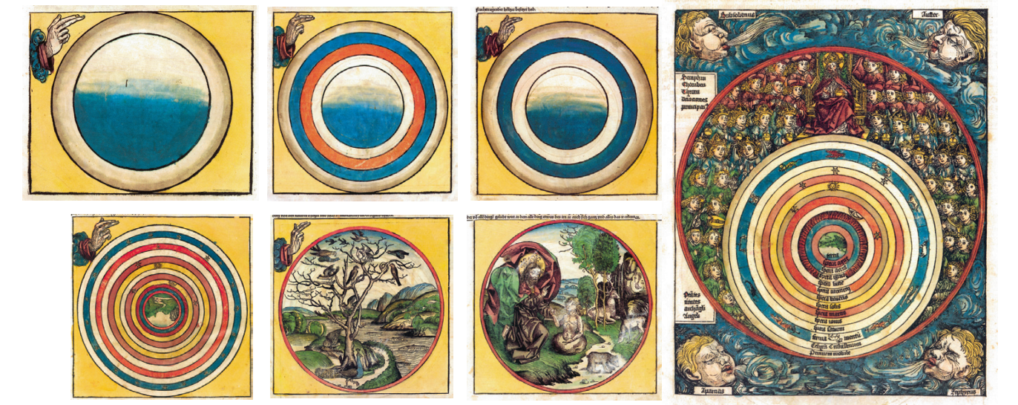
14–15th CENTURY
Books of Hours, illuminated private prayer books, contain the texts of prayers to be said at the canonical hours; the devotionals are often prefaced with a richly illustrated twelve-month calendar, depicting events common to each month or season.

1433
Leon Battista Alberti's *On the Family* insists on the importance of a literal accounting of the hours of one's day.



Huntington Library

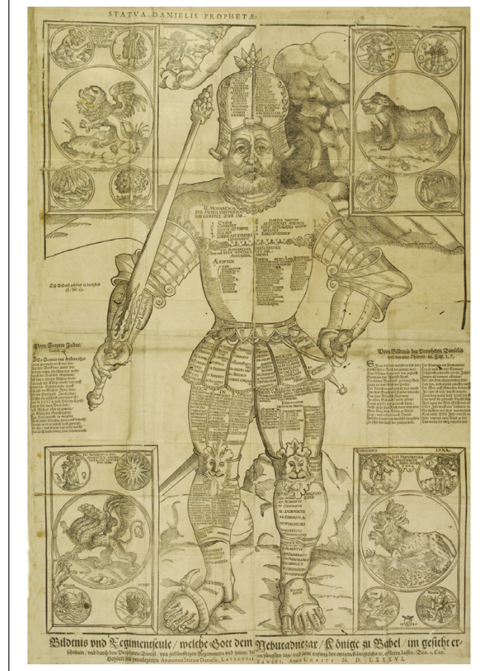
1474
Werner Rolewinck's popular *Bundle of Dates* structures a book-length chronology of the world around a single, horizontal line continuing from page to page.



1493
In his Nuremberg *Chronicle of the World,* Hartmann Schedel depicts the creation of the earth with seven concentric circles. Also of note, the *Chronicle* represents royal ancestry with portraits interconnected with vines to indicate marriage and parenthood, thereby participating in a broader tradition that associates genetic lineage and arboreal growth.

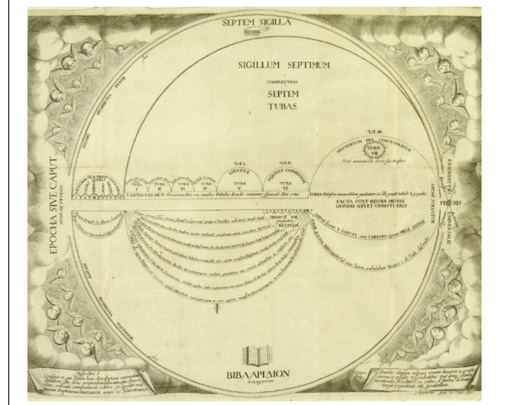
ca. 1500
Leonardo da Vinci is both the first to use rectangular coordinates to analyze the velocity of falling objects and the first to recognize a correlation between the particular climate and precipitation of a given time period and the shape of the resultant tree rings.

1583
In *A New Treatise on Chronology,* Joseph Scaliger attempts to produce a complete and self-contained chronology of world history including translation tables for integrating all existing chronologies. His *Chronological Treasury* (1606) collects and arranges all of the available ancient chronological sources.



1585
The *Anatomy of Daniel's Statue* by Lorenz Faust gives graphic expression to the four-fold chronological figure in the prophecy of Daniel.

1608
Galileo plots the speed of a rolling ball on a time axis.



1627
Religious and political ferment in England produces numerous apocalyptic tracts including Joseph Mede's *Key of the Revelation*. The *Key,* translated from Latin into English in 1641 at the behest of Parliament, maps the end of history onto a complex graphical figure combining cyclical and linear forms.

1654
James Ussher, archbishop of Armagh, publishes a widely influential calculation of biblical chronology, placing the beginning of time at 23 October 4004 BC. Twenty-five years later, Thomas Guy begins printing Bibles annotated with Ussher's chronology; Bibles inscribed with Ussher's dates remain in print until the early twentieth century.

1655
In *Pre-Adamites,* Isaac Lapeyrère argues that Scripture authorizes belief in human existence prior to Adam.

1663
Christopher Wren's weather clock is one of a plethora of new mechanical devices that automatically register natural phenomena. Wren's clock, for example, indicates changes in temperature and wind direction with a continuous line.

1681
In an attempt to synchronize biblical history with new geological ideas, Thomas Burnet's *Sacred Theory of the Earth* argues that the great deluge was the result of waters underneath the earth's surface breaking through the earth's crust, thereby destroying what Burnet believed to be the earth's pre-flood state—a perfectly smooth, featureless surface, like that of an egg. The book's frontispiece is a series of drawings depicting the cycle of stages in the geological history of the earth beginning with Creation and culminating in Apocalypse.

1687
Isaac Newton's *Principia Mathematica* proposes a theory of absolute time. Newton's posthumous *Chronology of Ancient Kingdoms Amended* (1728) uses astronomical observations to argue that the history of Israel antedates those of Egypt and Greece.

1697
Pierre Bayle's *Historical and Critical Dictionary* treats figures from secular and religious sources within a single scholarly apparatus. The second edition concludes with an exhaustive ten-page "Chronological Table of all the Eminent Persons Treated in this Dictionary." The table begins with Adam and ends in 1700.

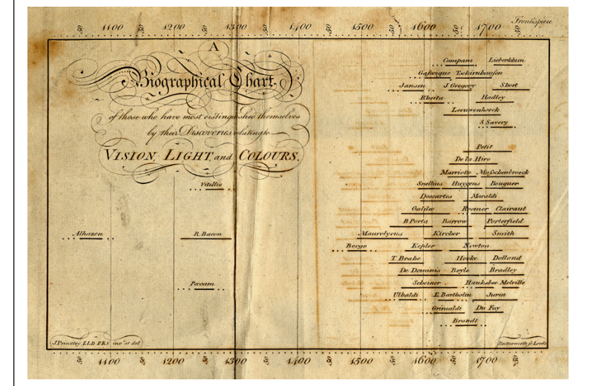
18th CENTURY
The convention of dating events BC becomes popular.

1724
In *The New Science,* Giambattista Vico criticizes both the astronomical and mathematical basis of seventeenth-century chronology and proposes a new universal chronology based on a theory of cyclical human progress. *The New Science* includes a chronological table that aligns the histories of the Hebrews, Chaldeans, Scythians, Phoenicians, Egyptians, Greeks, and Romans beginning with the Deluge.

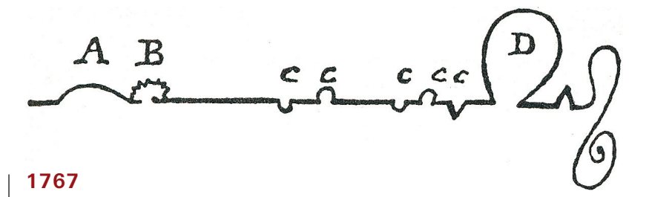
Princeton University Library

1753
Jacques Barbeu-Duborg, the French translator, physician, and disciple of Benjamin Franklin, creates his *Chronological Chart,* a fifty-four-foot timeline of history from Creation contained in a custom case.

1765
In scientific papers published over two decades, the German natural philosopher J. H. Lambert presents diagrams representing observational data on magnetism, temperature change, and other subjects. Already in 1765, Lambert promotes the use of graphs to detect both experimental and theoretical error, arguing that a diagram may in many instances perform "incomparably better service than a table."



1765
English chemist Joseph Priestley publishes the first of several timelines that contemporary audiences would recognize as such: *A Chart of Biography* compares the life spans of 2,000 celebrated men from 1200 BC to AD 1750, using bars set against a linear time axis to denote their life spans. Priestley employed the same format in his 1772 *History of Optics*, reproduced here.



1767
Laurence Sterne's novel *Tristram Shandy* includes a set of sketches indicating the non-linear path of a well-told story; narrative digressions appear as deviations from a straight line.

1769
Louis-Sébastien Mercier publishes perhaps the first future fiction. *The Year 2440* describes French society and culture after seven centuries of progress.

1778
In his *Epochs of Nature*, the French naturalist Comte de Buffon argues that the Earth may be as much as 75,000 years old. In unpublished manuscripts, he speculates that it may be more than three million years old.

1784
The *Encyclopædia Britannica* contains a fold-out chart designed by Adam Ferguson "representing at one view the rise and progress of the principal state and empires of the known world" from the Deluge in *anno mundi* 1656 to *anno Domini* 1900 (the years after the present are blank).

1786
Joseph Priestley's timeline was shortly followed by a group of innovative new diagrams by political economist William Playfair, including line graphs, bar charts, and pie charts. As a young man, Playfair worked in the shop of James Watt, the inventor of the steam engine, where he was likely acquainted with Watt's self-registering device for measuring steam pressure.

1791
Last volume of Johann Gottfried Herder's *Reflections on the Philosophy of the History of Mankind* published.

1793
Introduction of French Revolutionary calendar declaring September 1792 as the beginning of the new Year One.

1794
The patenting and marketing of graph paper attests to the growing use of Cartesian coordinates in scientific data analysis.

1795
Thomas Malthus's *Essay on the Principle of Population* argues that while human population tends to increase geometrically, the means of human subsistence can only increase arithmetically.

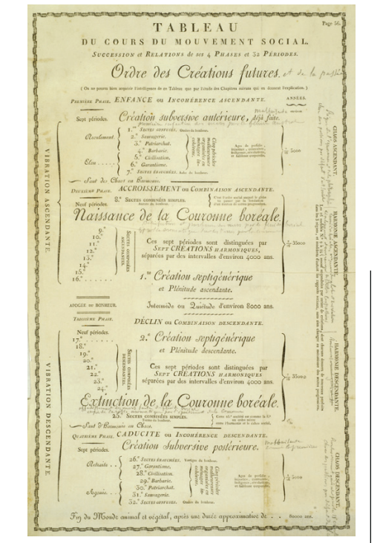


TABLEAU
DU COURS DU MOUVEMENT SOCIAL
Ordre des Créations futures
Naissance de la Couronne boréale
Extinction de la Couronne boréale

Princeton University Library

1808
Using a Ramist format familiar to readers of Diderot's *Encyclopédie* and other eighteenth-century scientific works, utopian socialist Charles Fourier depicts an eighty-thousand-year time frame for human history, passing through four great stages or "movements."

1809
Jean-Baptiste Lamarck publishes *Zoological Philosophy* containing an evolutionary family tree branching out from simpler to more complex organisms.

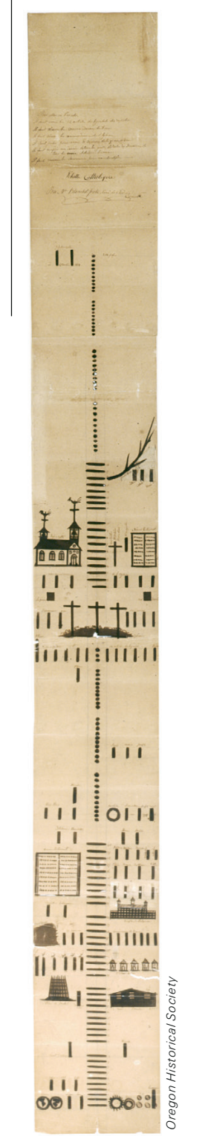
B.C. 333. EXHIBITING THE EMPIRE OF ALEXANDER.

Huntington Library

1820
An historical atlas published by Edward Quin depicts the widening European understanding of world geography through a series of plates depicting clouds dispersing over a world map.

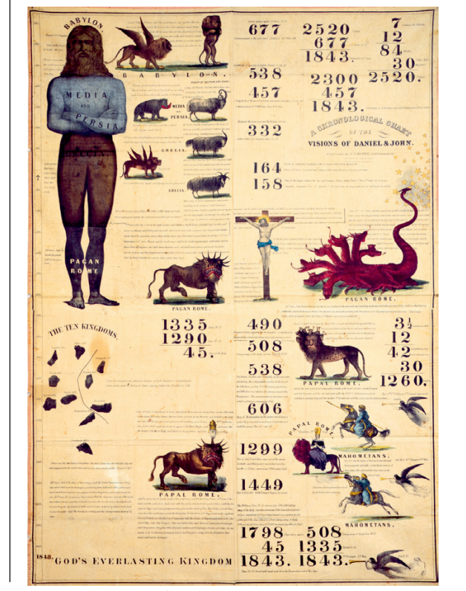
1834
Felix Bodin's *Novel of the Future* gives the first historical account of futuristic fiction.

1839
Evangelizing to native American tribes in the Oregon Territory from 1839, Catholic missionary Francis Norbert Blanchet employs a chronological device carved in wood. The popularity of later manuscript and print versions of the "Catholic Ladder" sets off bitter sectarian competition with Protestant missionaries, who devise their own "Protestant Ladder" in response.

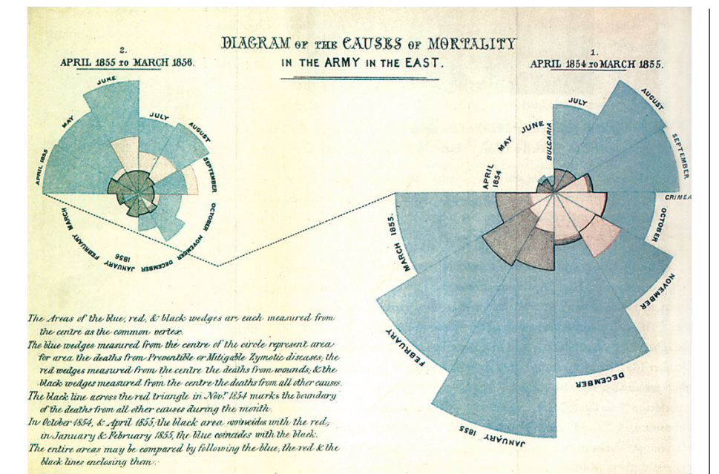


Oregon Historical Society

1842
In anticipation of the coming rapture predicted for 1843, followers of New England preacher William Miller produce and popularize a panoply of apocalyptic time charts.

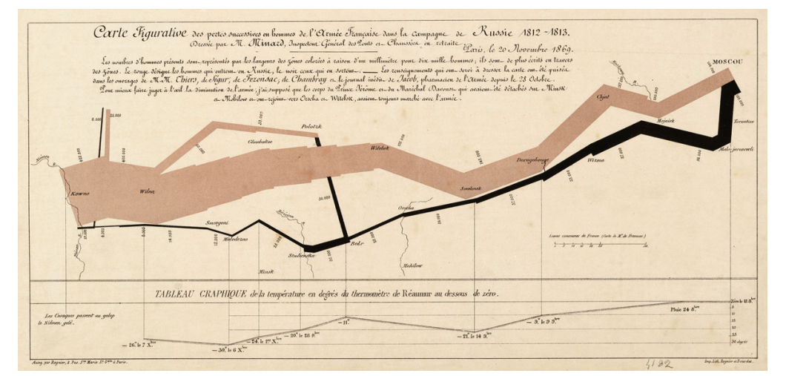


American Antiquarian Society



1858
Florence Nightingale, a major innovator of statistical graphs, publishes *Mortality of the British Army*. Her diagrams demonstrate that over the course of the Crimean War, British deaths owe principally to "preventable or mitigable" diseases rather than battlefield wounds.

1859
Charles Darwin's *Origin of Species* traces species' genealogies back more than three hundred million years. Darwin's work contains a single illustration, a branching evolutionary tree. His first known presketch appears in his notebooks of 1839.

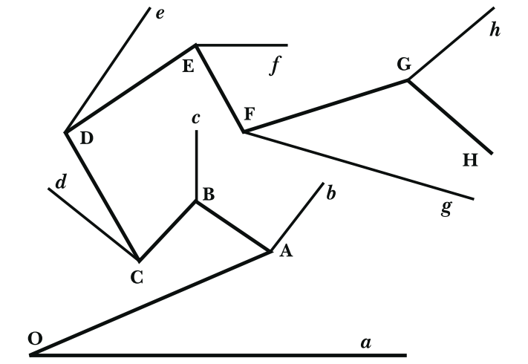


La Bibliothèque nationale de France

1869
Charles Joseph Minard's *Thematic Map of the Successive Losses of French Soldiers in the Russian Campaign, 1812–1813.* Among the finest of Minard's graphical works, this chart plots the catastrophic loss of men in relation to place, time, and temperature during Napoleon's march to Moscow.

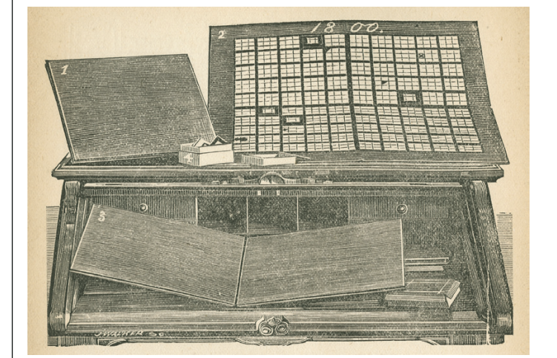
1870s
Eadweard Muybridge and E. J. Marey each begin work in "chronophotography." In coining the term, Marey explicitly refers to the older tradition of "chronography," that is to say, timelines.

1871
Oregon minister Sebastian Adams publishes his *Synchronological Chart,* a seventeen-foot-long chromolithograph of all of world history grounded in Ussher's dating system. Adams's vivid chart remains in print today in various editions, including *The Wall Chart of World History.*

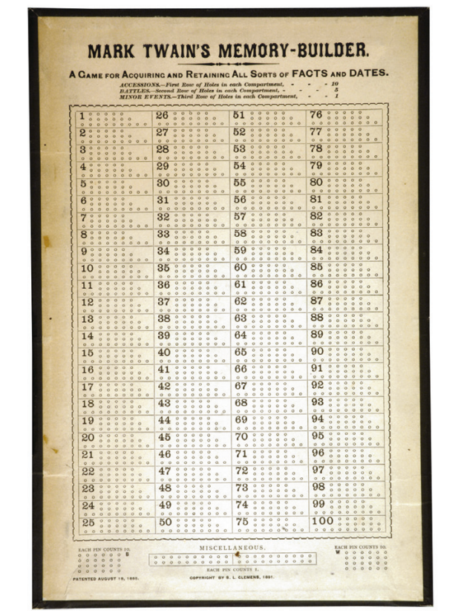


1876
Charles Renouvier's counterfactual *Uchronia* includes a chart depicting the theoretical relationship between the actual course of history and possible alternative paths.

1878
The word *graph* is first used by the English mathematician James Joseph Sylvester. (Lambert referred to his graphs as *figuren*, Watt as *diagrams*, and Playfair as *lineal arithmetic*.)



1882
Nineteenth-century pedagogical reformers patent dozens of games and devices for teaching chronology, including Nelson Loverin's 1882 Centograph, based loosely on a mnemonic system popularized in the 1840s by the Polish war hero Josef Bem. Loverin's device came in a desktop and free-standing version.



MARK TWAIN'S MEMORY-BUILDER.
A GAME FOR ACQUIRING AND RETAINING ALL SORTS OF FACTS AND DATES.

Princeton University Library

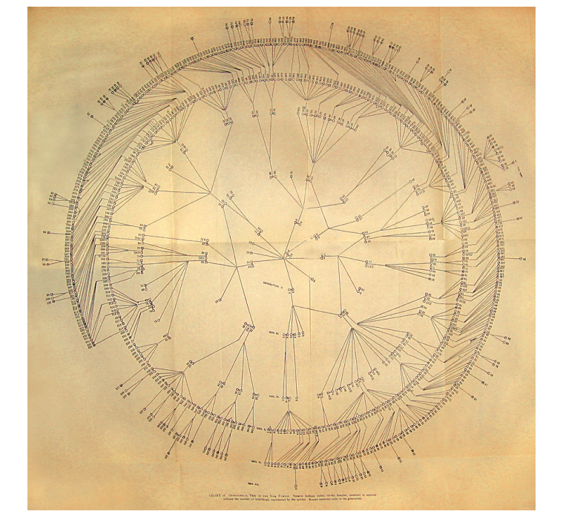
1884
Mark Twain patents and markets a chronological "Memory-Builder" game.

1889
In *Time and Free Will,* Henri Bergson argues for a distinction between the homogeneous mathematical conception of time and heterogeneous experience of duration. He insists that the experience of time should not be represented in a linear fashion.

1895
H. G. Wells's *Time Machine.*

1905
Albert Einstein's special theory of relativity.

1913
In their nineteenth-century notebook sketches, evolution theorists represented cross-generational reproduction with concentric circles. In this diagram, eugenicists Arthur Estabrook and Charles Davenport aim to convey the danger posed by the unchecked reproduction of "degenerates."

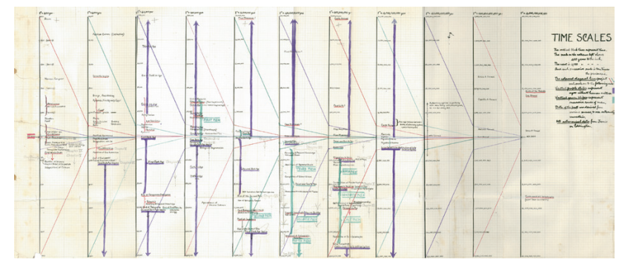


American Museum of Natural History

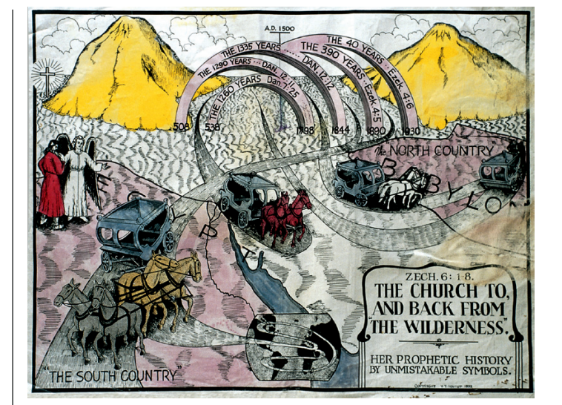
1929
In *National Geographic*, Andrew Ellicott Douglass announces his discovery of a "Rosetta Stone" for American archaeology in the chronological reading of tree rings, to become known as "dendrochronology."

1929
Invention of the quartz clock.

1930
English philosopher Olaf Stapleton investigates the future of the human race through fiction. Stapleton's two-billion-year narrative, *Last and First Men,* includes a series of timelines dramatizing the vertigo of viewing conventional human history against the background of evolutionary time. In each section of Stapleton's chart, the time scale increases by a power of ten.



1930–1932
Victor Houteff publishes his religious philosophy in the two-volume work *The Shepherd's Rod;* his illustrative timelines convey the fast-approaching end of the world. Followers of his teachings include David Koresh.



ZECH. 6:1-8.
THE CHURCH TO, AND BACK FROM, THE WILDERNESS.
HER PROPHETIC HISTORY IN UNMISTAKABLE SYMBOLS.
THE SOUTH COUNTRY
NORTH COUNTRY

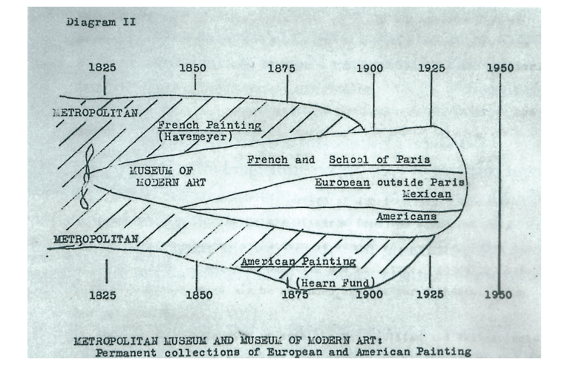


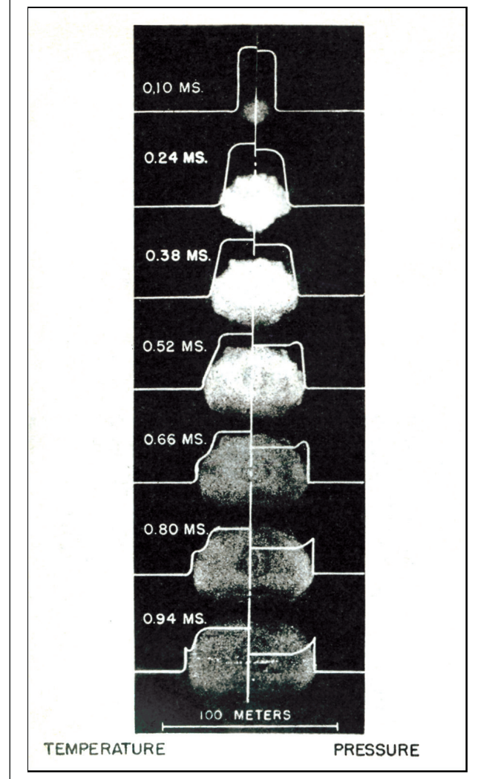
Diagram II
1825
1850
1875
1900
1925
1950
METROPOLITAN
French Painting (Havemeyer)
MUSEUM OF MODERN ART
French and School of Paris
European outside Paris
Mexican
American
American Painting (Hearn Fund)
METROPOLITAN MUSEUM AND MUSEUM OF MODERN ART:
Permanent collections of European and American Painting

Museum of Modern Art

1933
In a presentation to the Board of Trustees at the Museum of Modern Art, Alfred H. Barr, the museum's founding director and an amateur military historian, outlines the (soon abandoned) collection plan of MoMA with sketches of time as a torpedo. As the torpedo moves ahead through time, the work positioned at the back of Barr's torpedo passes from MoMA's collection to that of the Metropolitan, allowing MoMA to stay on the cusp of the modern.

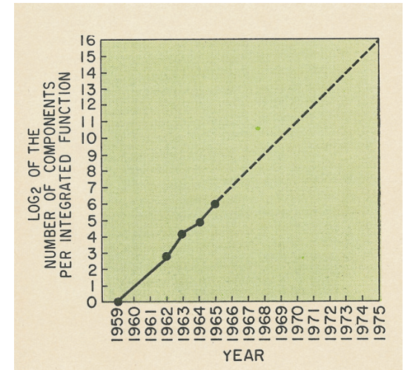
1948
The Olympic Games in London make use of Omega's photofinish camera.

1948
Invention of the atomic clock. In 1967, the length of the second will be redefined by use of this device.



1950
Studies of the damage wrought by atom bombs prompt timelines broken into ever smaller increments of time.

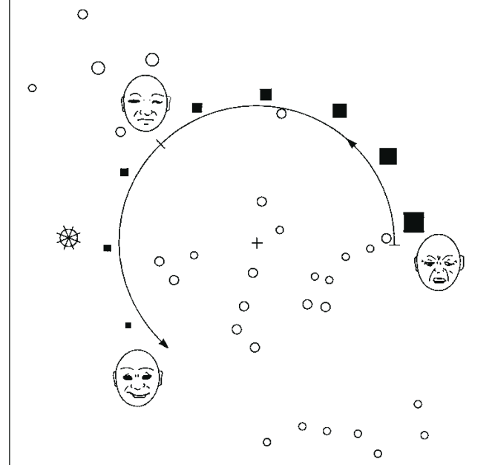
1965
Electronics Magazine publishes a logarithmic graph depicting what would become known as "Moore's Law," the still-durable prediction of increasing miniaturization and speed in computing devices.



Intel Corporation

1968
Electronic time-keeping devices replace live judges in certifying race winners at the Olympics in Mexico City.

2000
Throughout the late twentieth century, professional semioticians struggle with the problem of constructing an iconographic language capable of communicating radiation dangers long after the death of current languages. Several of these symbolic systems are prepared for nuclear facilities, including the US government nuclear waste storage facility at Yucca Mountain, Nevada.



2000
The year 2000.

A POSTER FOR CABINET MAGAZINE
CREATED BY Daniel Rosenberg **RESEARCH BY** Sasha Archibald
DESIGN BY Tal Schori, Brian McMullen, Alexandra Zsigmond, and Anya Kaplan-Seem