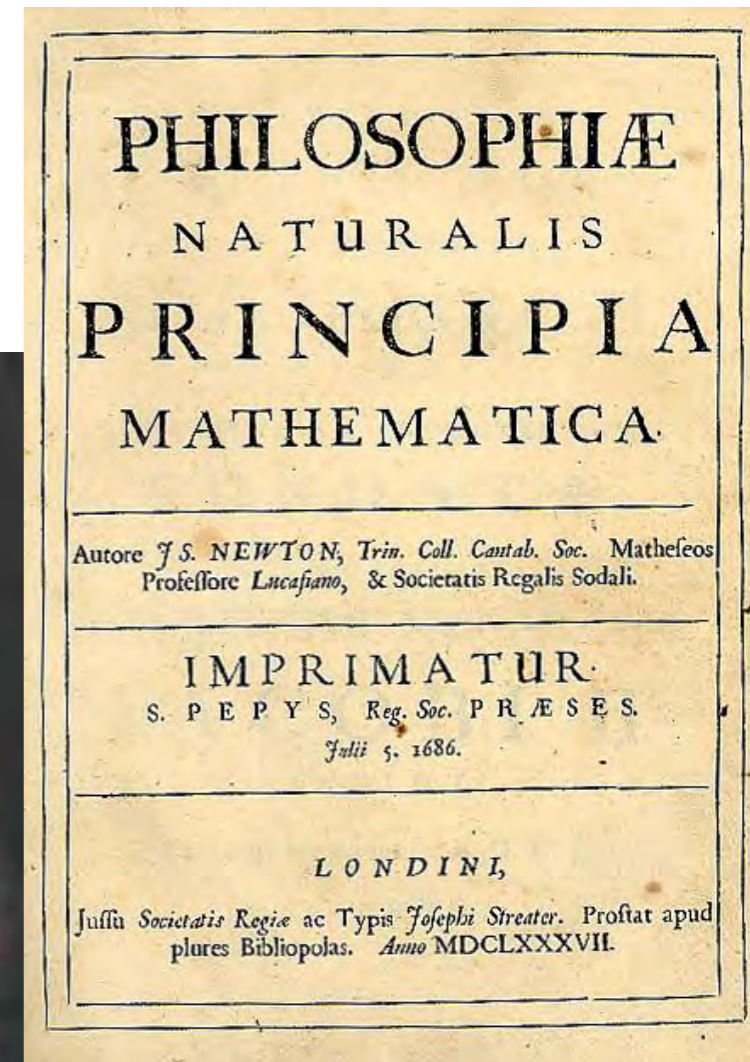
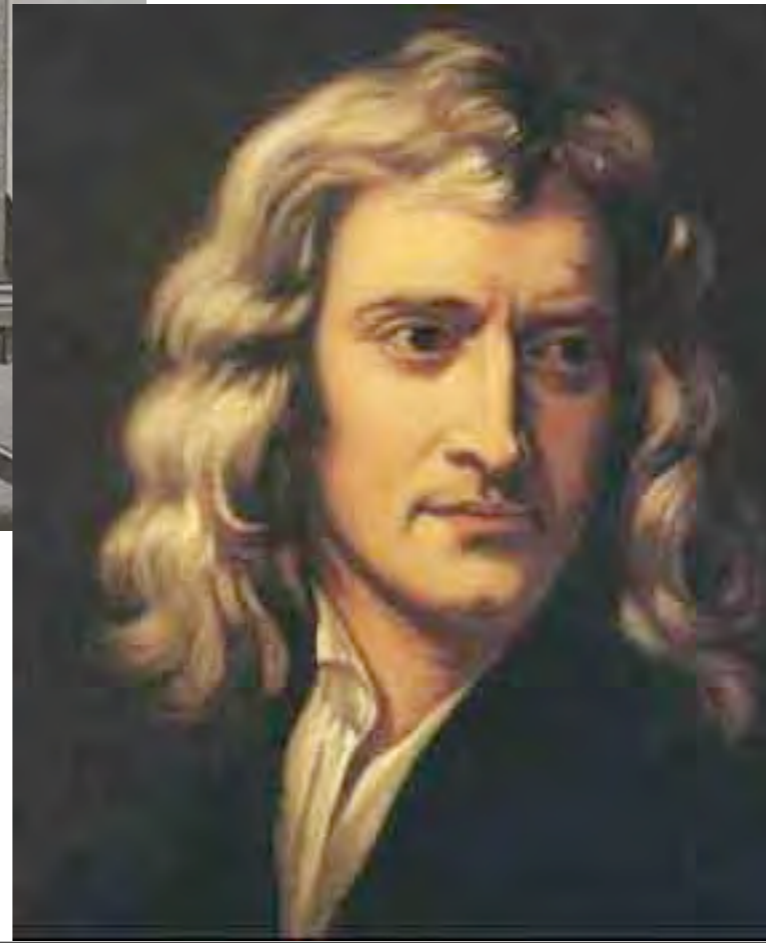
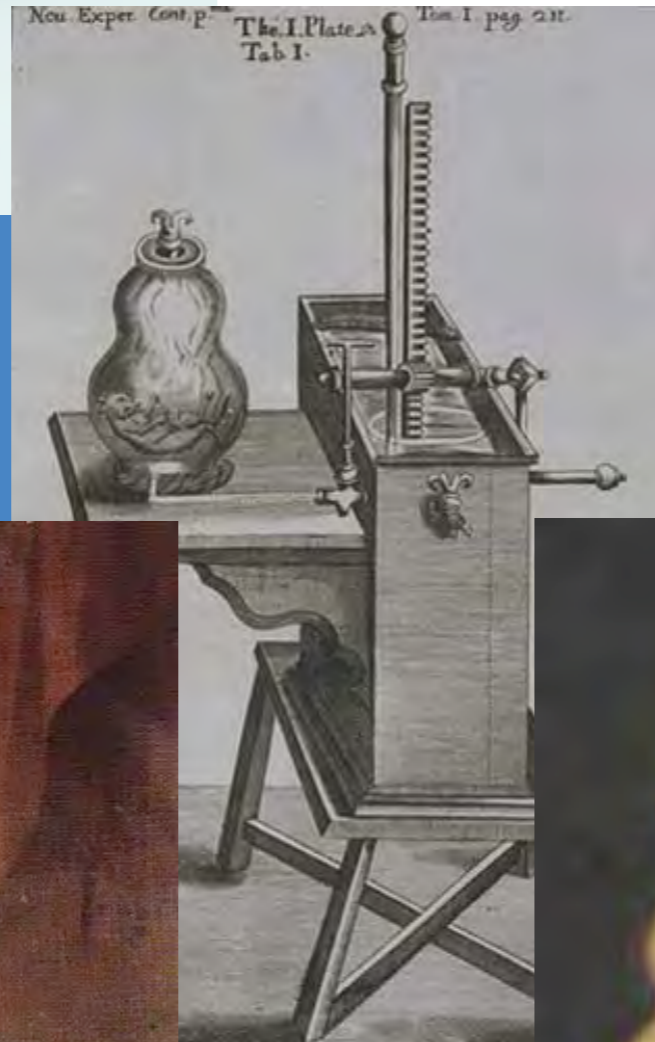




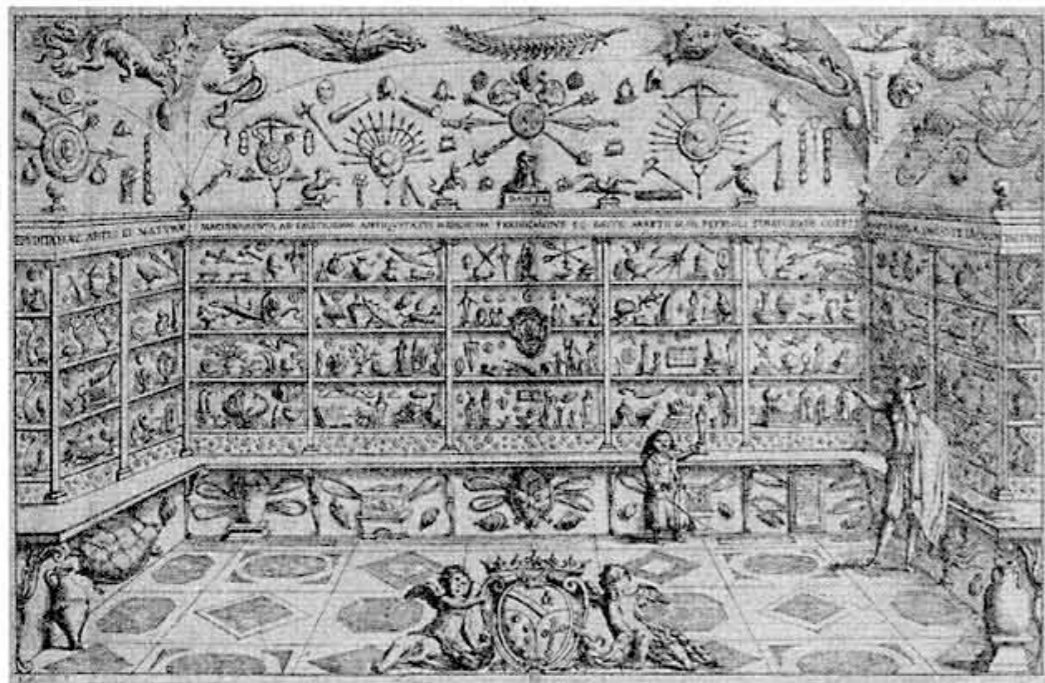
scientific information

History of Information Feb 17 2000





where we left off



a shortage of technology?

clubs and coffee houses

the virtuosi

cabinets of curiosities

the public sphere

"conversing in quiet one with another,
without being ingag'd in the passions,
and madness of that dismal Age."

--Sprat, 1667



overview

the scientific revolution

the English experience

the background & the model

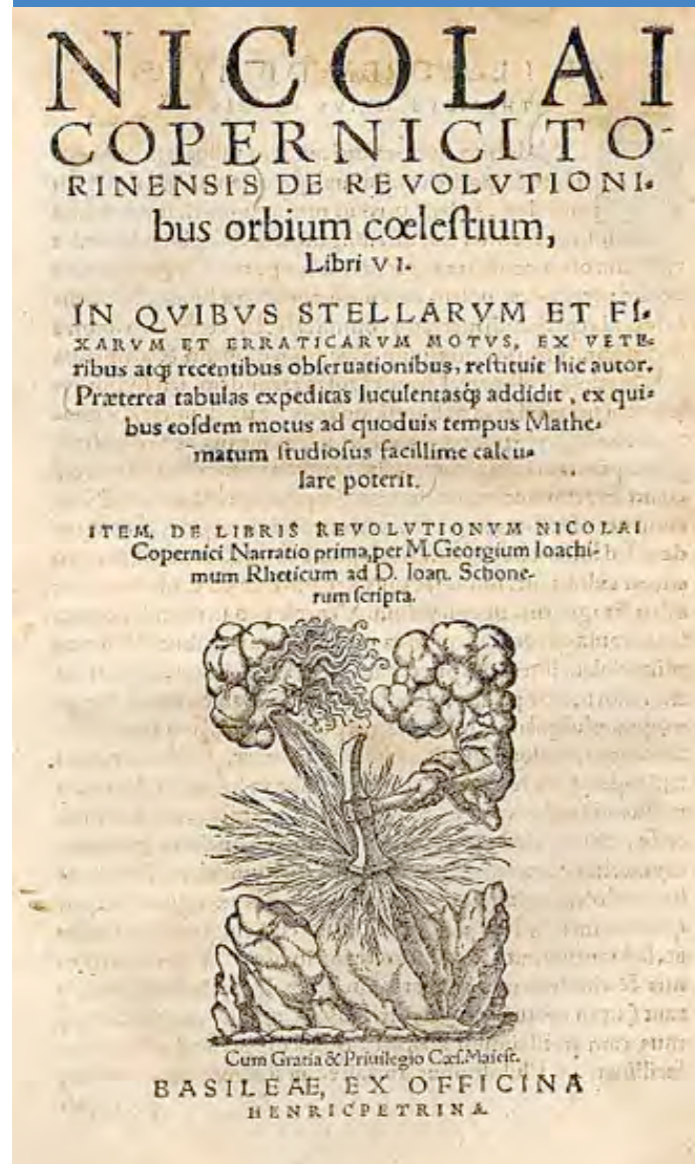
an example

kill or cure

problems with the model



change nonetheless



"The Scientific Revolution outshines everything since the rise of Christianity and reduces the Renaissance and Reformation to the rank of mere episodes, mere internal displacements within the system of medieval Christianity".

Herbert Butterfield,
The Origins of Modern Science, 1300-1800,
1948



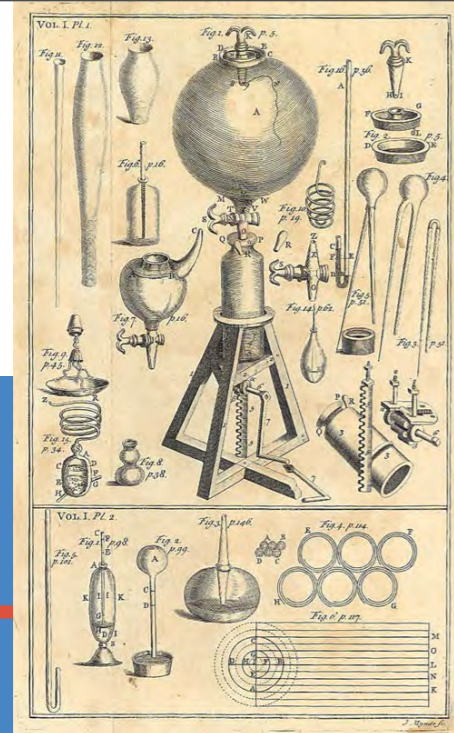
scientific revolution?

what happened

what came before

what came afterwards

who was involved



technological revolution?

"Printing ... the most useful invention ever found out ... make men Polite .. encrease the Knowledge of Letters ... all useful Arts and Sciences ... Perfection of Human Knowledge."

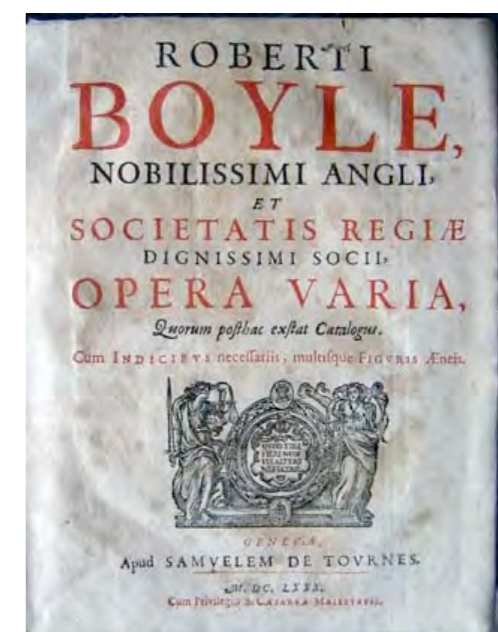
Defoe, *Regulation of the Press*, 1704

telescopes, microscopes

air pumps, pendulums

watches, springs

maps, books





political revolution

"Those dreadful
revolutions,
which cannot be
beheld upon
Paper, without
horror."

Sprat, History

English Civil War, 1642-1651

Commonwealth & Protectorate, 1649-1659

Restoration, 1660

Great Plague, 1665

Fire of London, 1666

Glorious Revolution, 1688



social revolution

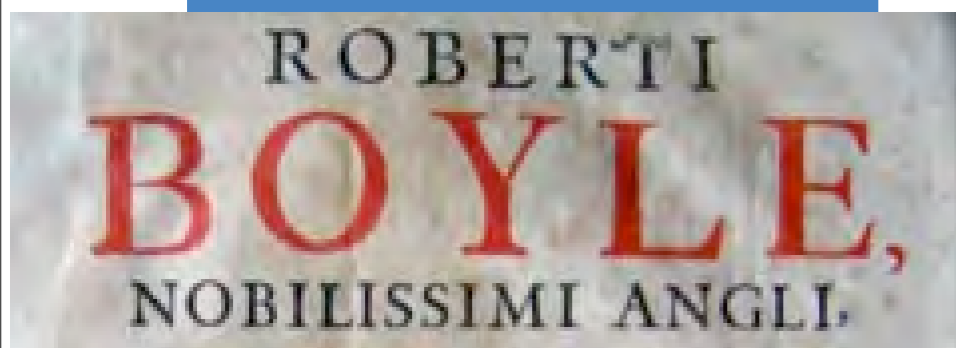
café society & the public sphere

This freedom therefore, which they use, in embracing all assistance, is most advantageous to them: which is the more remarkable, in that they diligently search out, and join to them, all extraordinary men, though but of ordinary

Trades.

--Spratt

the English gentleman





social revolution

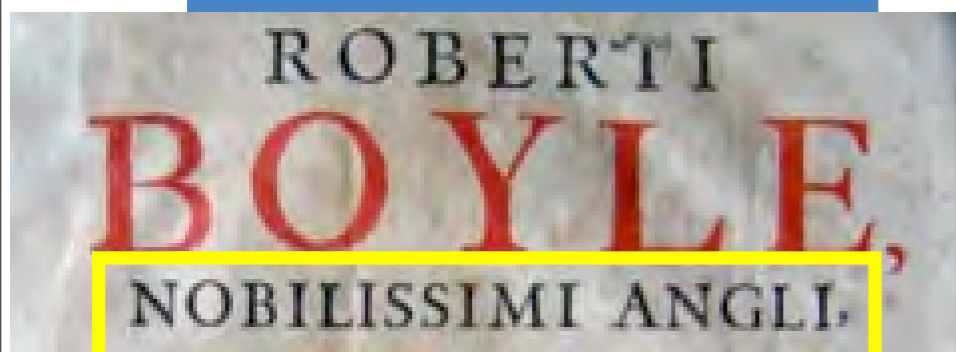
café society & the public sphere

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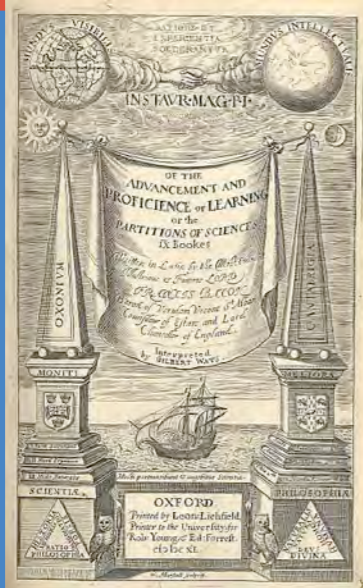
--Spratt

the English gentleman





Francis Bacon
1561–1626



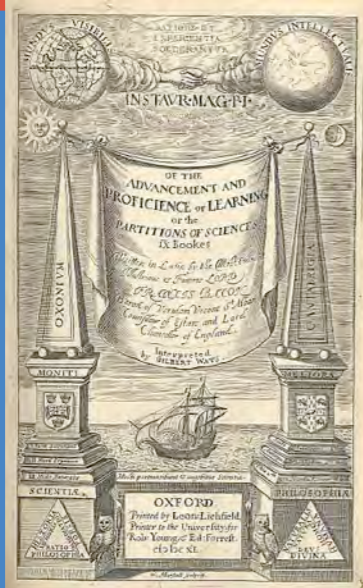
Thomas Sprat
1635–1713

what happened?

"the advancement of *Real Knowledge*"
--Sprat



Francis Bacon
1561–1626



Thomas Sprat
1635–1713

what happened?

"the advancement of *Real Knowledge*"
--Sprat

"reliable truth-generating
practices were put in place and
institutionalized"

Steven Shapin,
A Social History of Truth, 1994



a century of facts

"The Experiments
that be made at the
charge of the
Society. Two
Curators at least
shall be appointed
for the Inspection
of those which
cannot be perform'd
before the Society:
by them the bare
report of matter of
Fact shall be stated
and return'd."

Sprat, *History*

"Facts are stubborn
things"

Smollett, *Gil Bas*,
1749

the impulse to order things and facts
observation and description

experimentation

explanation

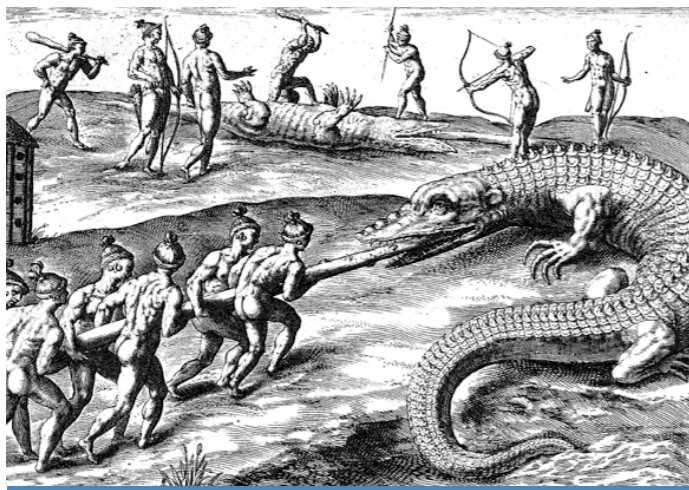
prediction

calculation

replication

not

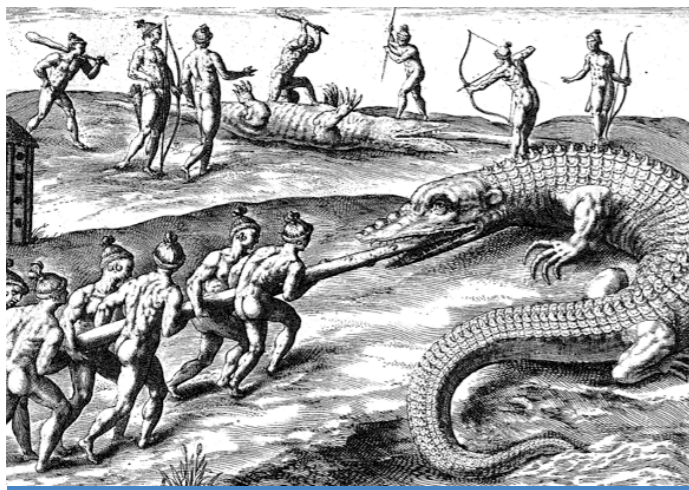
opinion, enthusiasm, fancy



before

tall tales

And of the Cannibals that each other eat,
The Anthropophagi, and men whose heads
Do grow beneath their shoulders.

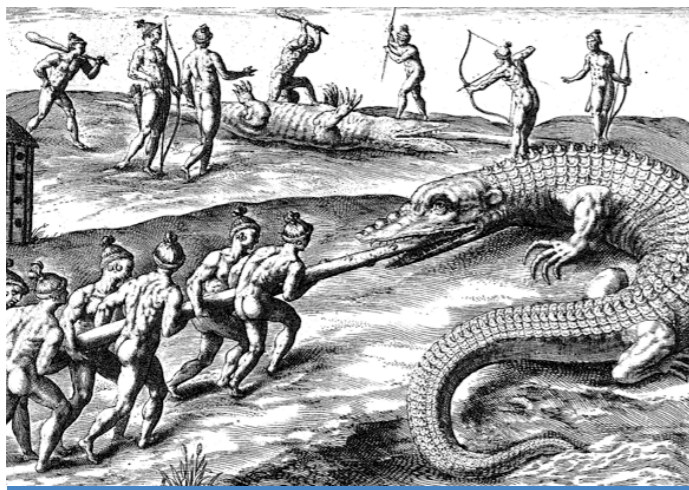


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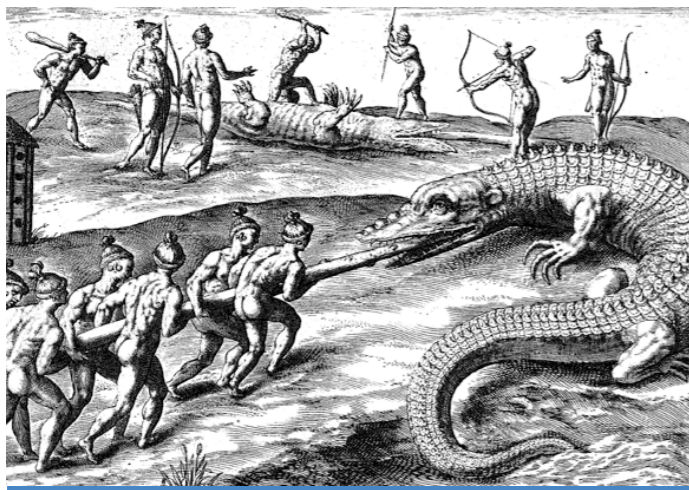
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Samuel Pepys
1663–1703



before

tall tales

And of the Cannibals that each other eat,
The Anthropophagi, and men whose heads
Do grow beneath their shoulders.

"Having in our company Captn. Minnes, with whom I was much pleased to hear him talk in fine language, but pretty well for all that. Among other things, he and the other Captains that were with us tell me that negros drowned look white and lose their blackness, which I never heard before"

Samuel Pepys, *Diary*, 11 April, 1662



Samuel Pepys
1663–1703



portents

A lioness hath whelped in the streets;
And graves have yawn'd, and yielded up their dead;
Fierce fiery warriors fought upon the clouds,
In ranks and squadrons and right form of war,
Which drizzled blood upon the Capitol;



"La sange du juste à Londres fera faute
Bruslez par foudre de vingt trois le six,
La dame antique cherra de place haute
De meme sute plusieurs seront occis"

conspiracy theory



"Sir Thomas Crewe hath heard at the
Committee for examining the burning of the
city,that it was done by plots ... it was
bragged by several Papists that upon such a day
in such a time, we should find the hottest
weather that ever was in England; and words of
plainer sense"

--Pepys, November 2, 1666


"We talked much of Nostradamus his prophecy of
these times, and the burning of the City of
London, some of whose verses are put into
Booker's Almanac this year My Lady Carteret
herself did tell us how abundance of pieces of
burnt paper were cast by the wind .. .she took
one up ... wheron there remained no more nor less
than these words: "Time is, it is done"

--Pepys, February 3, 1666/7



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--Pepys, February 3, 1666/7

An Almanack
for the yere. 16. D. 1611.
Composed by W. Michael
Rastradamus Doctour
in Physicke of Salbn of
Graue in Prouince.

Whā the Sonne faileth & fiers then shal
the monſter be ſcene in the playne day
then ſhall interprete it farre otherwiſe
death hath no reſpect none ſhall pro-
uide for it.



disgrace to reason

"It is indeed a disgrace to the Reason, and honor of mankind, that every fantastical Humorist should presume to interpret all the secret Ordinances of Heven; and to expound the Times, and Seasons, and Fates of Empires, though he be never so ignorant of the very common Works of Nature, that lye under his Feet. There can be nothing more injurious than this, to mens public, or privat peace. This withdraws our obedience, from the true Image of God the rightfull Soveraign, and makes us depend on the vain Images of his pow'r, which are fram'd by our own imaginations. This weakens the constancy of human actions. This affects men with fears, doubts, irresolutions, and terrors. It is usually observ'd, that such presaging, and Prophetical Times, do commonly fore-run great destructions, and revolutions of human affairs. And that it should be so is natural enough, though the presages, and prodigies themselves did signify no such events. For this melancholy, this frightful, this Astrological humor disarms mens hearts, it breaks their courage; it confounds their Councils, it makes them help to bring such calamities on themselves"

--Sprat



distancing

For there is mention made, both of Salt-peter and Aqua fortis, in the Writings of Geber, a Spanish Monk, and an Alchymist; but at what time he lived is unknown, though it be certain, some hundreds of years before Raimund Lully; who about the year 1333. published some of his Books, wherein he treats of Salt-peter and Aqua fortis. It is no ill conjecture of Maierus, that the foresaid Monk, being a skilful Alchymist, had a design to draw a higher Spirit from Peter than the common Aqua fortis, and that he might better open the body of Peter, he ground it with Sulphur and Charcoal, by which Composure he soon became the Inventour of Gun-powder.



building a movement

It was therefore, some space after the end of the Civil Wars at Oxford, in Dr. Wilkins his Lodgings, in Wadham College, which was then the place of Resort for Vertuous, and Learned Men, that the first meetings were made, which laid the foundation of all this that follow'd. The Vniversity had, at that time, many Members of its own, who had begun a free way of reasoning; and was also frequented by some Gentlemen, of Philosophical Minds, whom the misfortunes of the Kingdom, and the security and ease of a retirement amongst Gown-men, had drawn thither.

--Spratt
Hofl Science - 16



who?

"take the measure
of the *Royal
Society*, ... from
the honor, and
reputation, of
many of those Men,
of whom it is
compos'd

--Spratt

scientific revolutionaries

Boyle (1627-1691)

Wren (1632-1723)

Locke (1632-1704)

Hooke (1635-1703)

Newton (1642-1727)

Halley (1656-1742)

Huygens (1629-1695)

Mercator (1620-1687)

Moxon (1627-1691)

Graunt (1620-1674)

Petty (1623-1687)



"I have sent one to weigh Air at the Picque of Teneriff that's the lightest Air. I shall have a considerable Cargo of that Air. Sheerness and the Isle of Dogs Air is the heaviest. Now if I have a mind to take Countrey Air, I send for, may be, forty Gallons of Bury Air, shut all my windows and doors close and let it fly in my Chamber.."

Shadwell, *Virtuoso*

serious problems

"the King came and stayed an hour or two laughing at Sir W. Petty, who was there about his boat; and at Gresham College in general; at which poor Petty was, I perceive, at some loss; but did argue discreetly, and bear the unreasonable follies of the King's objections and other bystanders with great discretion; .. but the King ... cried him down with words only. Gresham College he mightily laughed at, for spending time only in weighing of ayre, and doing nothing else since they sat."

--Pepys, February 1, 1663/4



Sprat in 3 parts

I shall divide into three Periods of Time, according to the several Degrees of the preparation, growth, and compleat Constitution of the
Royal Society.

The **First** shall consist of the first occasions of this Model, and the Men, who first devis'd to put it in execution: and shall end, where they began to make it a form'd, and Regular Assembly.

The **Second** shall trace out their first attempts, till they receiv'd the publick assistance of Royal Authority.

The **Third** shall deliver, what they have done, since they were made a Royal Corporation



Sprat's *wonderful model*

Nature alone, which could pleasantly entertain them ... Trials in Chymistry,
or Mechanicks ... their intention was more to communicate to each other
their discoveries ... [as now in Paris], where they have at last turn'd
their thoughts, from Words to experimental Philosophy

Their purpose is, in short, to make faithful **Records**, of all the Works of
Nature, or Art, which can come within their reach: that so the present Age, and
posterity, may be able to put a mark on the **Errors**, which have been
strengthened by long prescription: to restore the **Truths**, that have lain
neglected

to separate the knowledge of Nature, from the colours of **Rhetorick**, the devices
of **Fancy**, or the delightful deceit of **Fables**



Sprat's *model*

They have labor'd to inlarge it, from being confin'd to the **custody of a few**; or from servitude to **private interests**.

They have striven to preserve it from being over-press'd by a confus'd heap of vain, and useless **particulars**; or from being straitned and bounded too much up by **General** Doctrines

They have studi'd, to make it, not onely an Enterprise of one season, or of some lucky opportunity; but a business of time; a steddy, a lasting, a popular, an **uninterrupted Work**.



Sprat's *model*

They have attempted, to free it from the Artifice, and Humors, and Passions of Sects; to render it an Instrument, whereby Mankind may obtain a Dominion over Things, and not onely over one anothers Iudgements.

And lastly, they have begun to establish these Reformations in Philosophy, not so much, by any solemnity of Laws, or ostentation of Ceremonies, as by solid Practice, and examples: not, by a glorious pomp of Words; but by the silent, effectual, and unanswerable Arguments of real Productions.

Members ... different Religions, Countries, and Professions ... not to lay the Foundation of an English, Scotch, Irish, Popish, or Protestant Philosophy; but a Philosophy of Mankind. ... the Church of England ought not to be apprehensive to settle a constant Intelligence ... the general Banck, and Free-Port of the world ... receive strangers from all countries, into its number



**Does Sprat seem to you to be talking about
science as we think of it today?**

readers' responses

YES: 67%

NO: 27%

DIVIDED: 3%



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: NO

science was more secretive

"we view science to be a very accessible field. Breakthroughs in the medical field are immediately reported, field research yielding fascinating results are publicly speculated upon, and so on. In the beginning days of the Royal Society, science was not only secretive, but also taboo to a profusion of people." – RAJAT

"the Royal Society does not like the spread of quick information to the common man... information gathering was pretty much for their own benefit... Even if the secrets were superstitions or real cures for ailments, almost none were tested to be proven valid or invalid as mentioned by Henry Stubbe." – ANDREW SY



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: NO

science is used differently

"Although sects of science today focus on observing nature (some biology), a lot of science is dedicated to furthering technologies that manipulate nature (for human health or otherwise). I believe that most "scientists" today would argue that they not only study the world around them, but transform it." - SARAH

"Throughout the essay he mainly talks about their philosophy, theory, social policies etc. ... he talks about church and religion.. glorifies members of Royal Society and says how only the biggest minds can be a member of the prestige society, but he does not talk about science and improvements and developments in people's lives." - Nikola



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: NO

science today does not compete with religion

"First, he says that many view science in direct opposition of religion. In some ways this is still true today, but for many, science is seen as a completely different realm of thought from religion." - DYLAN

the definition of scientific expertise has changed

"science and the knowledge of it is left to the experts, not just open to anyone, that deal with numbers, chemicals, hard facts, or complicated equations. Science today requires extensive studying and schooling, and preferably a lab coat. Sprat's model comes closer to today's description of studies in humanities." - Andrea



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: NO

Sprat does not define the modern scientific method

"Contemporary science is a method, yet Sprat defines none. His first argument, that it "naturalizes men of all countries" by admitting men of any religion/profession, is commendable but idealistic, and no means a sufficient ground for science (diversity of religion is no substitute for a viral/bacterial theory of disease)." - ROY

Sprat defines an ideal that never existed

"put into practice one can not usually separate the truth from the political motivations from those that pursue it. Science as we think of it today strives to meet this goal but falls short.

... what is thought of as scientific truth is simply what the majority of the scientific community believes to be the truth...

Sprat's model ... is not representative of modern science, and probably does not completely represent the scientific community at the time." - Jesse Harrison



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: NO

science then was more universal in its ambition

"Sprat's manifesto presents the founding of the Royal Society as a sort of scientific Grail quest to unveil the Mysteries of Nature. ... these appeals seem designed to attract governmental and aristocratic funding... Most scientists, the reasonable ones anyway, have abandoned the idea of inventing some sort of definitive model, and see science as a dynamic system of conceptual evolution, catalyzed by peer review." – KONSTANTIN



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: NO

the Royal Society is too insular

Sprat considers science to be an elitist privilege... He also notes the great diversity in the Royal Society, noting the abundance of "English, Scotch, Irish, Popish, or Protestant Philosophy." This abundance, however, is limited to the ideas of thinker of the United Kingdom. Sprat cannot fully represent the modern definition of science because his elitist views prevent him from doing so accurately. – STEVEN WHITE

The Royal Society is painted as an exclusive group which may not include a well rounded grouping of people, therefore leading to flawed scientific opinions, before actual scientific methods are even explored. – GREGORY



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES

Sprat depicts aspects of the scientific method

"Certainly Sprat's description that the Society aimed to make "faithful Records...unreveal'd" sounds exactly like the aims of modern science." - PRATIKLAL

"Although he does not use any of the vocabulary normally associated with the scientific method (hypothesis, theory, etc.) or any modern science buzz-words, his idea of science seems to be fairly similar to mine." - JOHN KEESLING

"Sprat explains how the goals of the Society are to record natural observations, expose errors in knowledge, and restore truths that are false. ... Science today stresses the importance of objective observations, scientists test previous assumptions, and also attempt to find further uses for their findings." - Danae



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES

Sprat depicts aspects of the scientific method

"... a theory is only valid if its predictions can be experimentally verified. Sprat expresses a similar ideal when he says that the society achieves its goals "not, by a glorious pomp of Words; but by the silent, effectual, and unanswerable Arguments of real Productions." – NED

"This method is similar to today's ... "peer reviewed" research. A researcher today submits their academic work to journals that review it. The result is that unerring work is published and weak arguments are sent back for re-analysis. – LUIS



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES

Sprat reflects science's universal ambition

Science is trying to find the universal truth for not just one nation, but for all humans. Just like science today, the Royal Society's methods is the study of the physical earth and everything within it. --Paul

"the search for and the fruits of the inventions are for the purpose of allowing man to "obtain a Dominion over Things", or, in modern terms, to tame and control mother nature" – Yiding



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES

Sprat sees science as secular

"...Sprat's science as being identical to our science lies in his explanation of how Divinity should not be mingled with experiments; he claims the realm of Divinity should stay with the "Natural Philosophers." – CHRISTOPHER

"He believes that science is something that is universal and proven, unlike religion. Although religion is very prominent in society, it cannot be proven by fact and numbers, unlike science." – JUSTIN

"One major aspect of his view that is part of modern science is that men must "separate knowledge of Nature from"(62) fantasy and rhetoric" – BRANDON

"At the beginning of scientific thought, everything was explained using religion and God. People were killed because their line of thought went against the Gods." – PRANEETH



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES

Sprat's science is borderless ... among nations

science today can be viewed as a borderless process, meaning that nation-state pride and motives are eliminated in the scientific community. Politics are not "supposed" to impose on scientific research in more ways than one because it is simply about the discovery of truth. - NIKKI

Sprat wanted to extinguish borders between different nations and share knowledge freely amongst each other, in order to record the most accurate scientific accounts possible. -KATRINA

He lauds the breaking of national barriers when he states that their philosophy is one of "mankind," as opposed to one of the English, Scottish, or Dutch. - WILLIAM

Similar to today's world where religion, nationalism, and science simply do not mix, Sprat states that the members of the scientific community must be "freely admitted Men of different Religions, Countries, and Professions of Life."- Ray Bao



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES

Sprat's science is borderless ... among disciplines

scientific inquiry is not something that has to be limited to "philosophers" and that in fact mechanics, farmers and merchants have just as valuable information that should be shared to help create a more complete observation. – NICHOLAUS

His chief concern is the cultivation of a wide and diverse variety of membership. He claims that with an "equal balance of all professions, there will no one particular of them overweigh the other –Alex Bigman

Sprat seems to be interested in science as a meritocracy where knowledge is advanced by a person's "largeness of their intentions, [rather than] the narrowness of their beginnings." – DAVID BELFORD



Does Sprat seem to you to be talking about science as we think of it today?

readers' responses: YES, but

the politics of science are still the same

"Sprat's piece consists of a great deal of Christian tribute... Similarly, scientists today must engage in a great deal of politically nuanced rhetoric as well, since much of the funding available is from the state and the state is not likely to fund a project in contradiction to its own ends or beliefs." - JOSH

"the emphasis on truth coming from respected witnesses, science as a savior from social and moral problems (not just physical) ... Science is still "discovering" truth, as established by those "most" believed witnesses. It is not the sanitary, asocial element we wish (and pretend) it is, but a socially created and motivated entity." -Andrew Blum

"Henry Stubbe contradicts the assertion that everything Sprat has set out has passed the scientific method. He points out the example that the 'almost Infallible medicine' (30) for Sweating-sickness, published in Sprat's history, completely failed to cure people with the same symptoms barely a decade later. Thus, corruption and falsehood still managed to sneak into the Royal Society." - Diane Moh