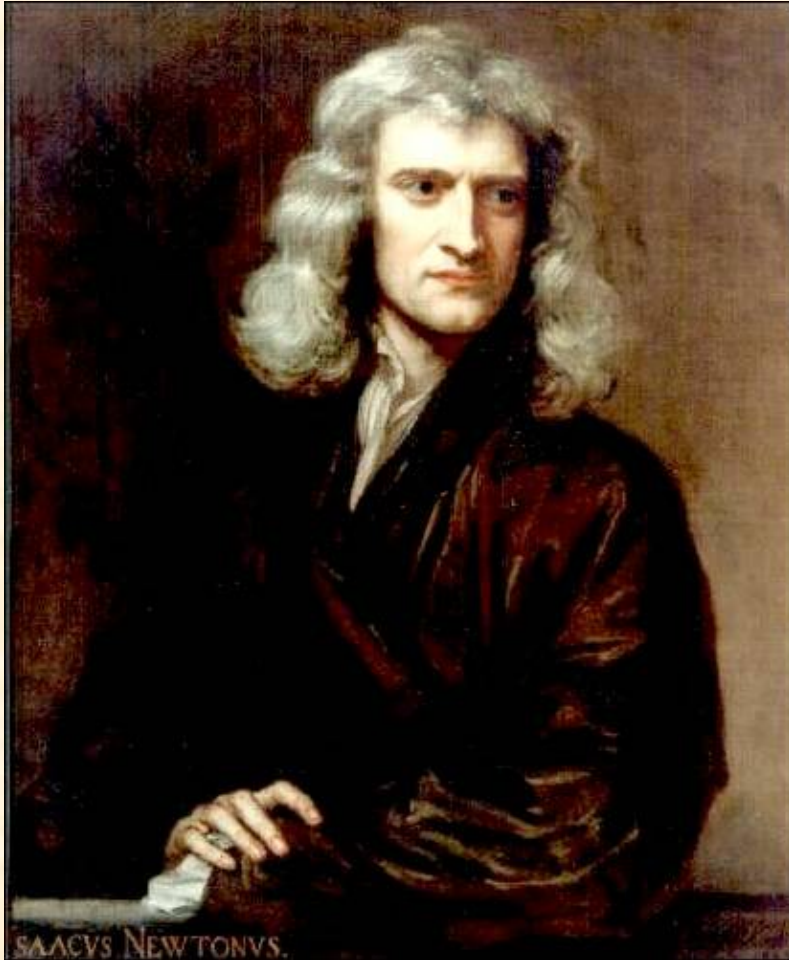


Newton, Shakespeare, van Gogh, and
Calvin & Hobbes: Creative Responses to
the End of the World

William Harris

Arts & Science Winter Lecture

Nov 27, 2005

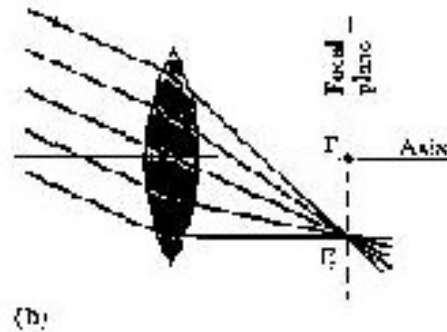
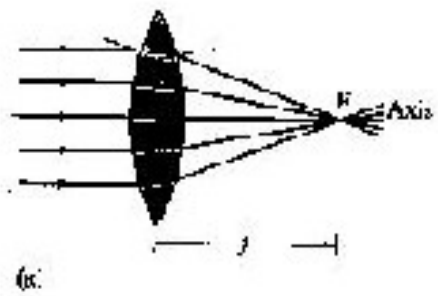
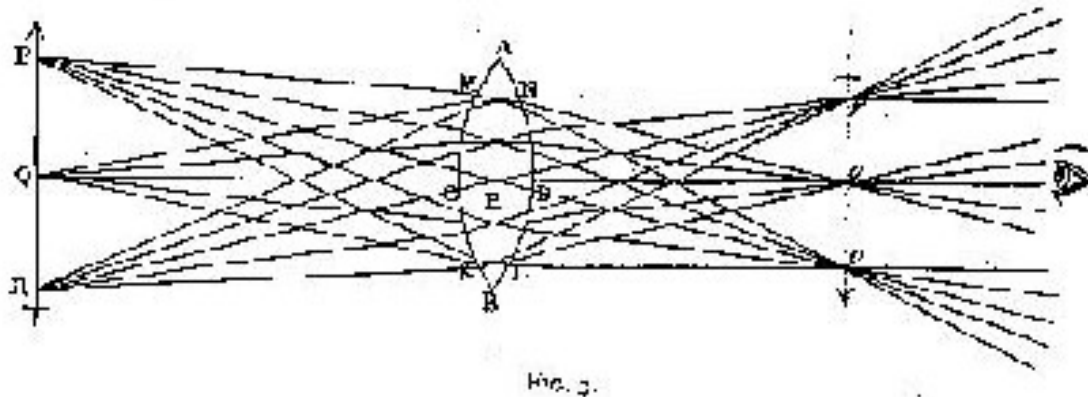


Newton's "Opticks"

In one person he combined the experimenter, the theorist, the mechanic, and not least, the artist in exposition. He stands before us strong, certain, and alone: his joy in creation and his minute precision are evident in every word and in every figure.

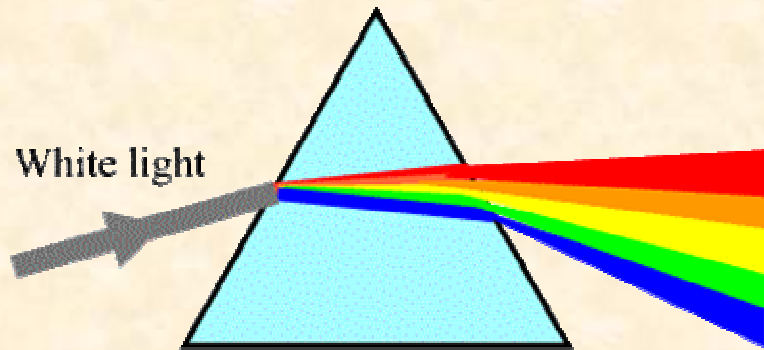
Albert Einstein (1931)

Newton's "Opticks"



Newton's "Opticks"

Refraction through a prism





Canada-France-Hawaii Telescope

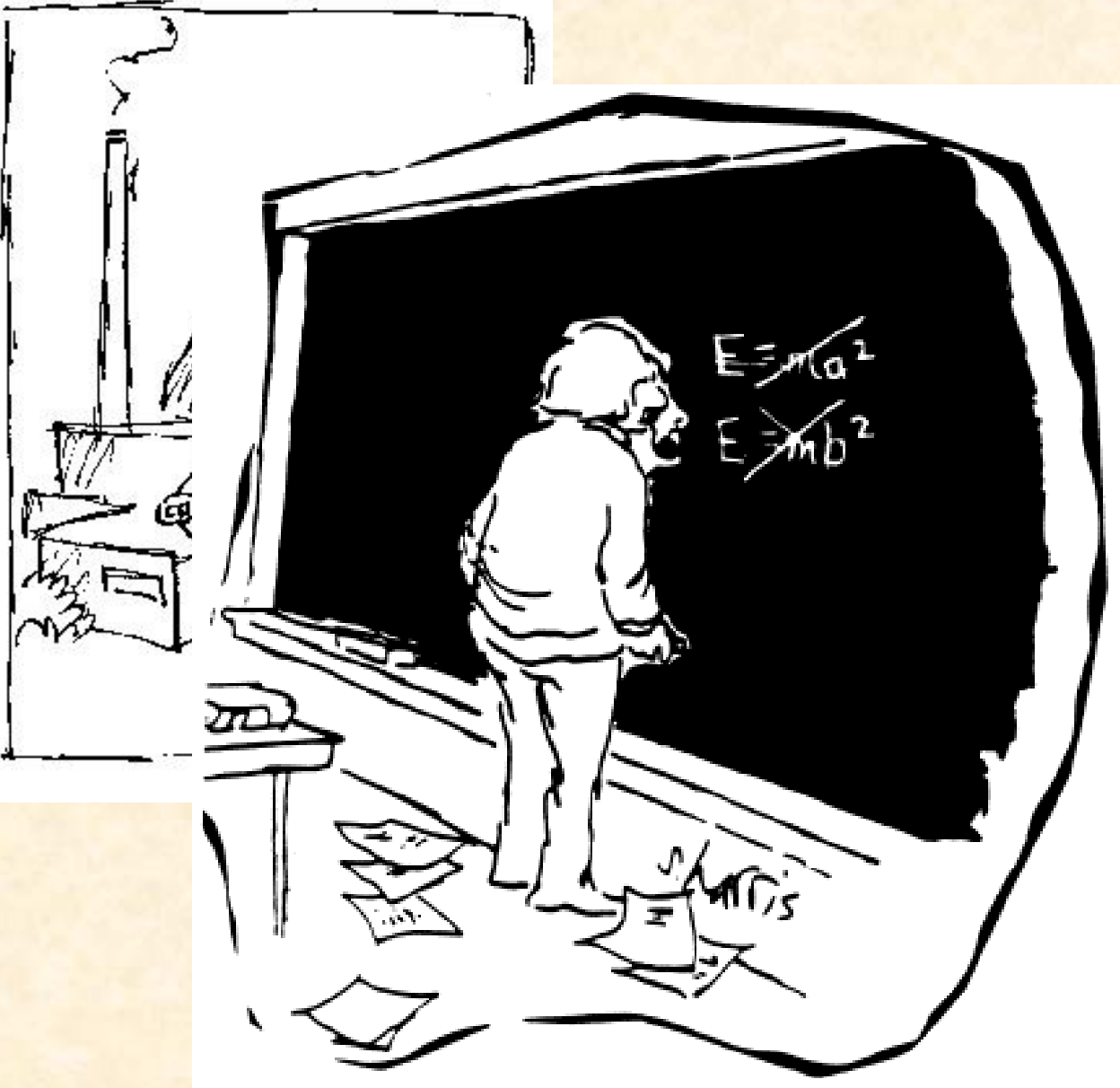
“The only Remedy is a most serene and quiet Air, such as may perhaps be found on the tops of the highest Mountains above the grosser Clouds.”

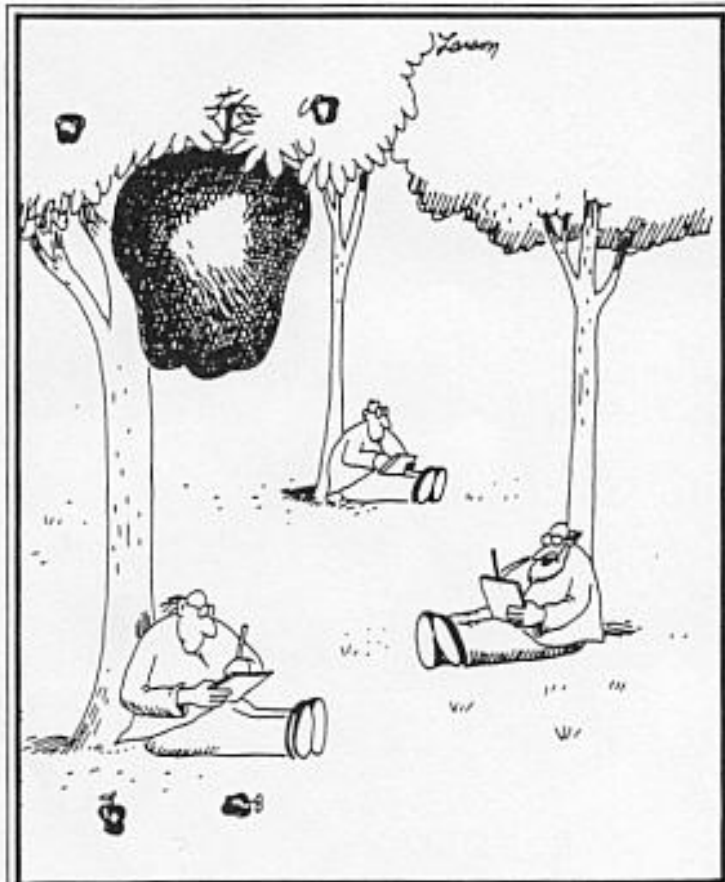
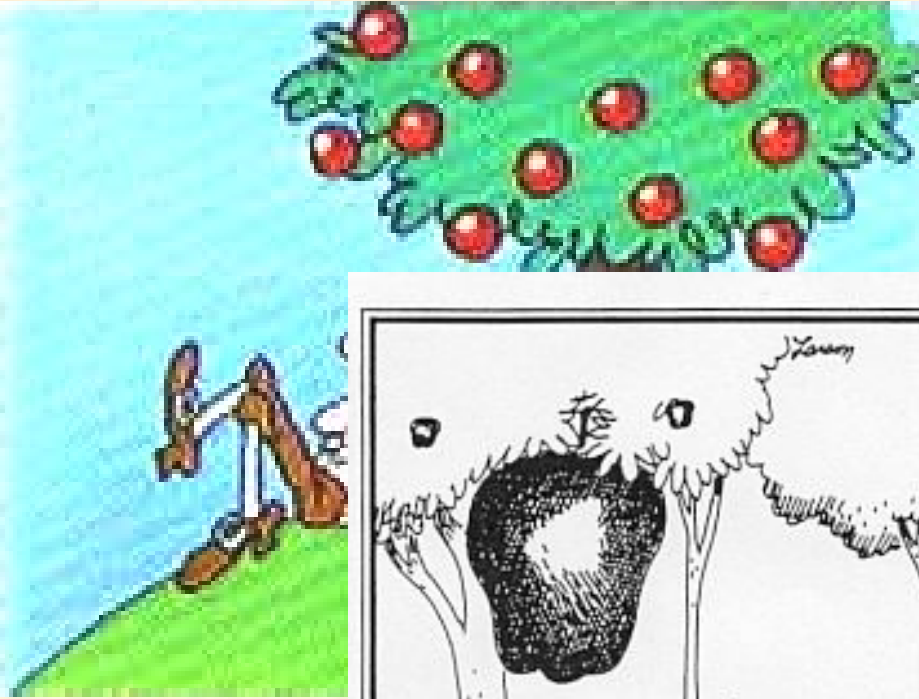
Isaac Newton (Opticks)

BIG SCIENCE



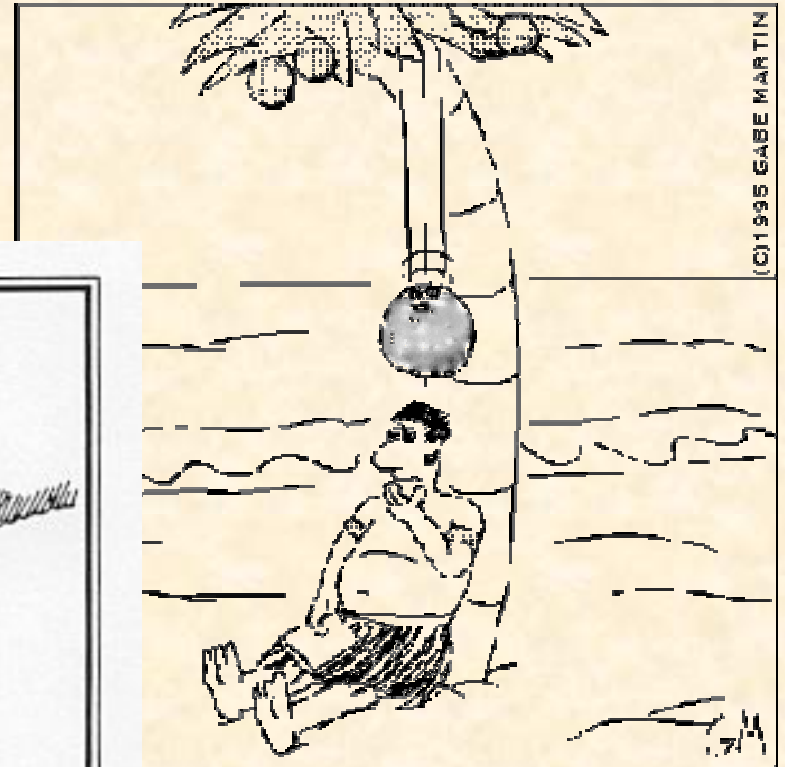
LITTLE SCIENCE





"Nothing yet. ... How about you, Newton?"

any others?



But what does
Newton's iconic
status *really* rest on?

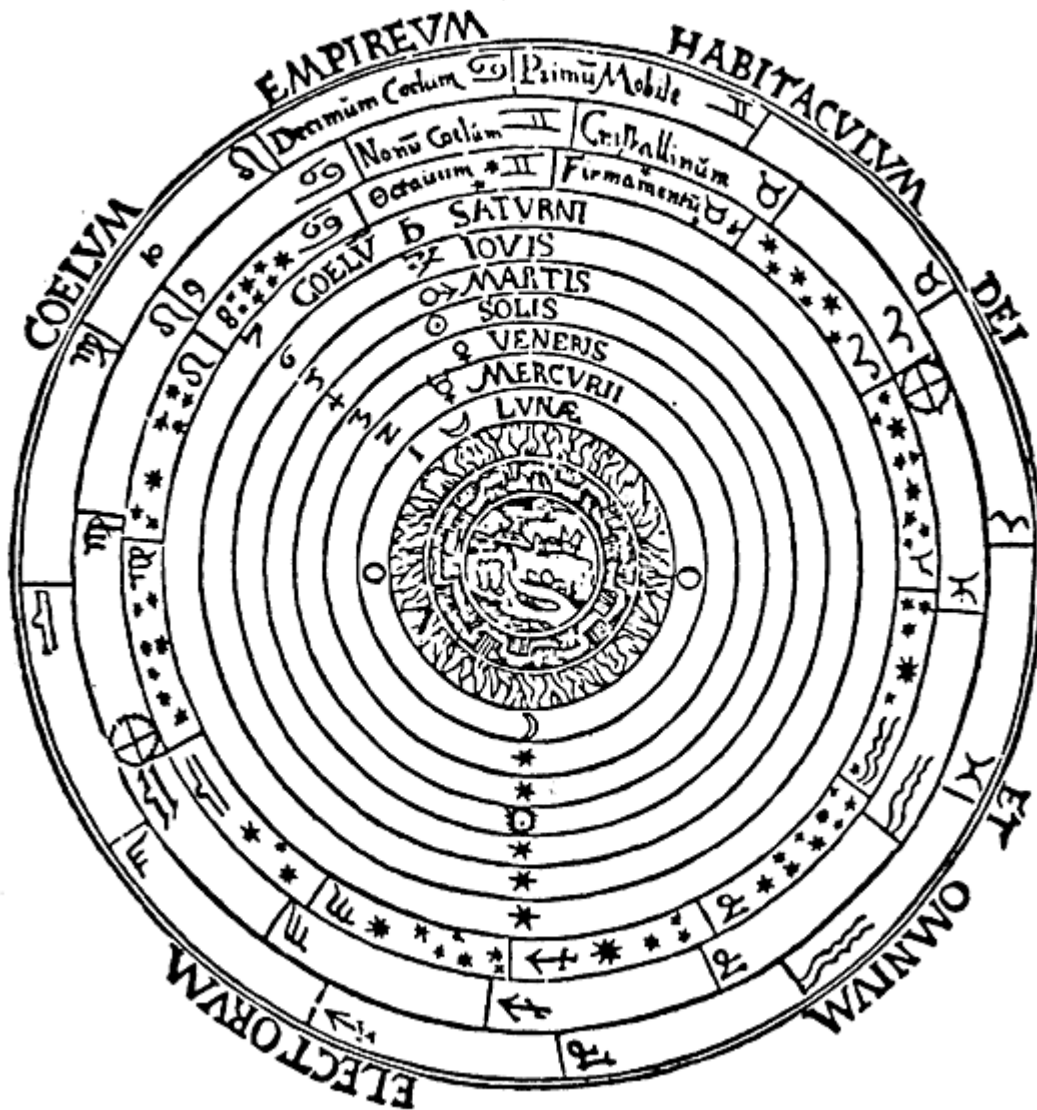


$$F_G = G \frac{mM}{r^2}$$

Nature and Nature's laws lay hid in night:
God said, Let Newton be! and all was light.

Alexander Pope (ca. 1730)

Schema huius præmissæ diuisionis Sphærarum.



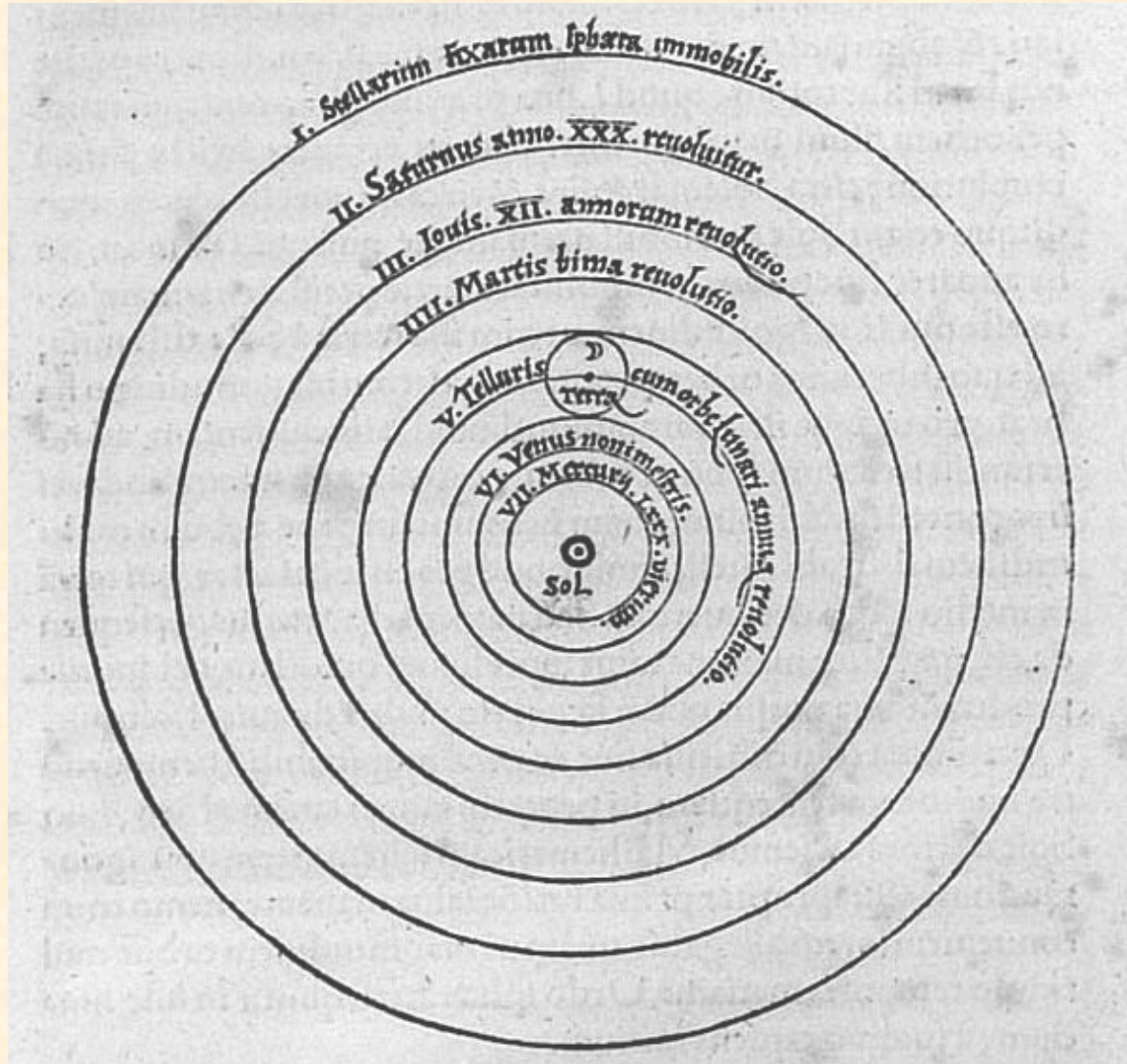
The medieval world system

(the “Ptolemaic system” or geocentric universe)

In general and official use until Galileo’s time (ca. 1600)

The collision with Newton’s Laws ...

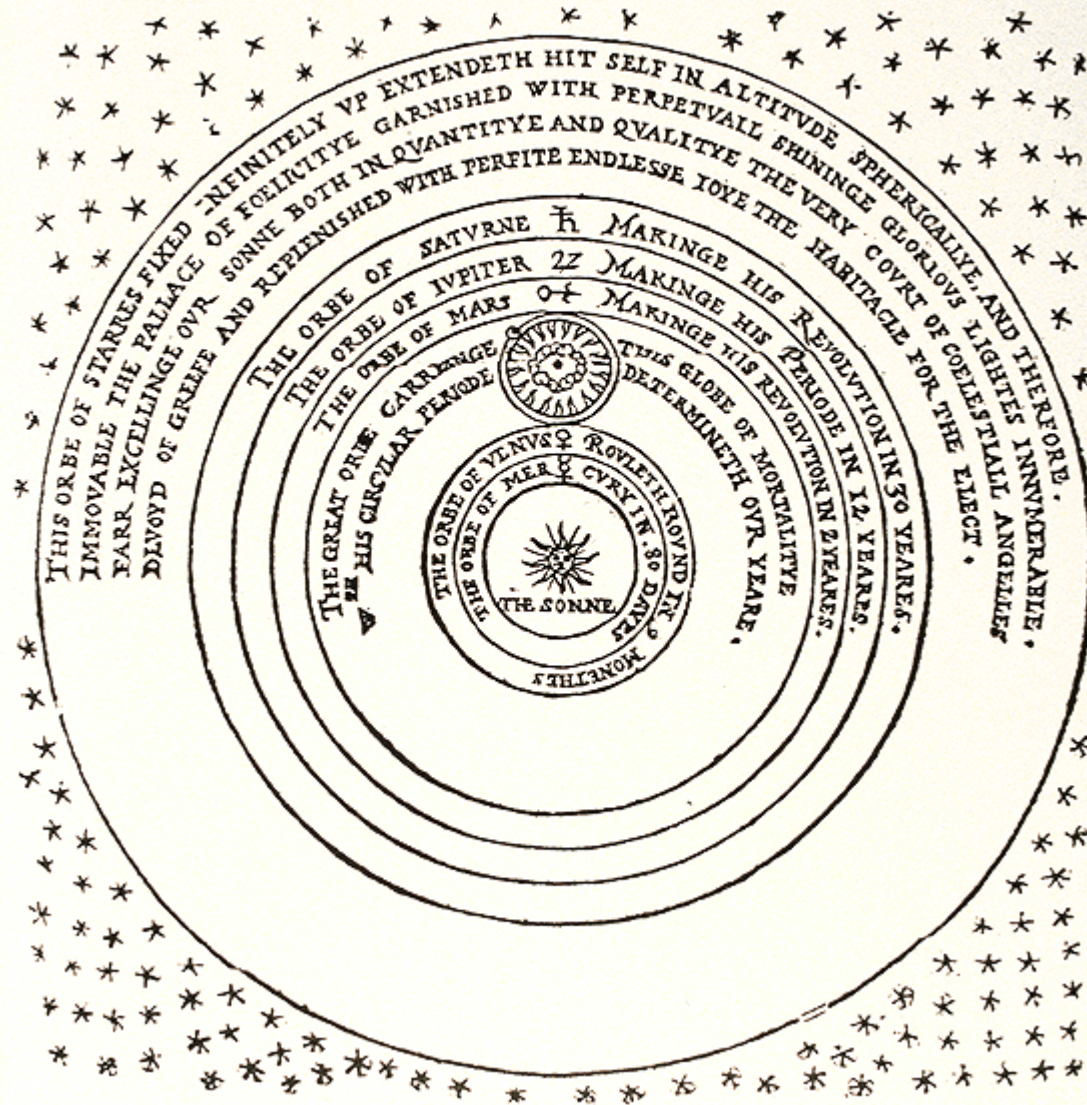
The universe according to Copernicus (1543)



... and Aristarchus and Pythagoras?

Thomas
Digges
(1576)

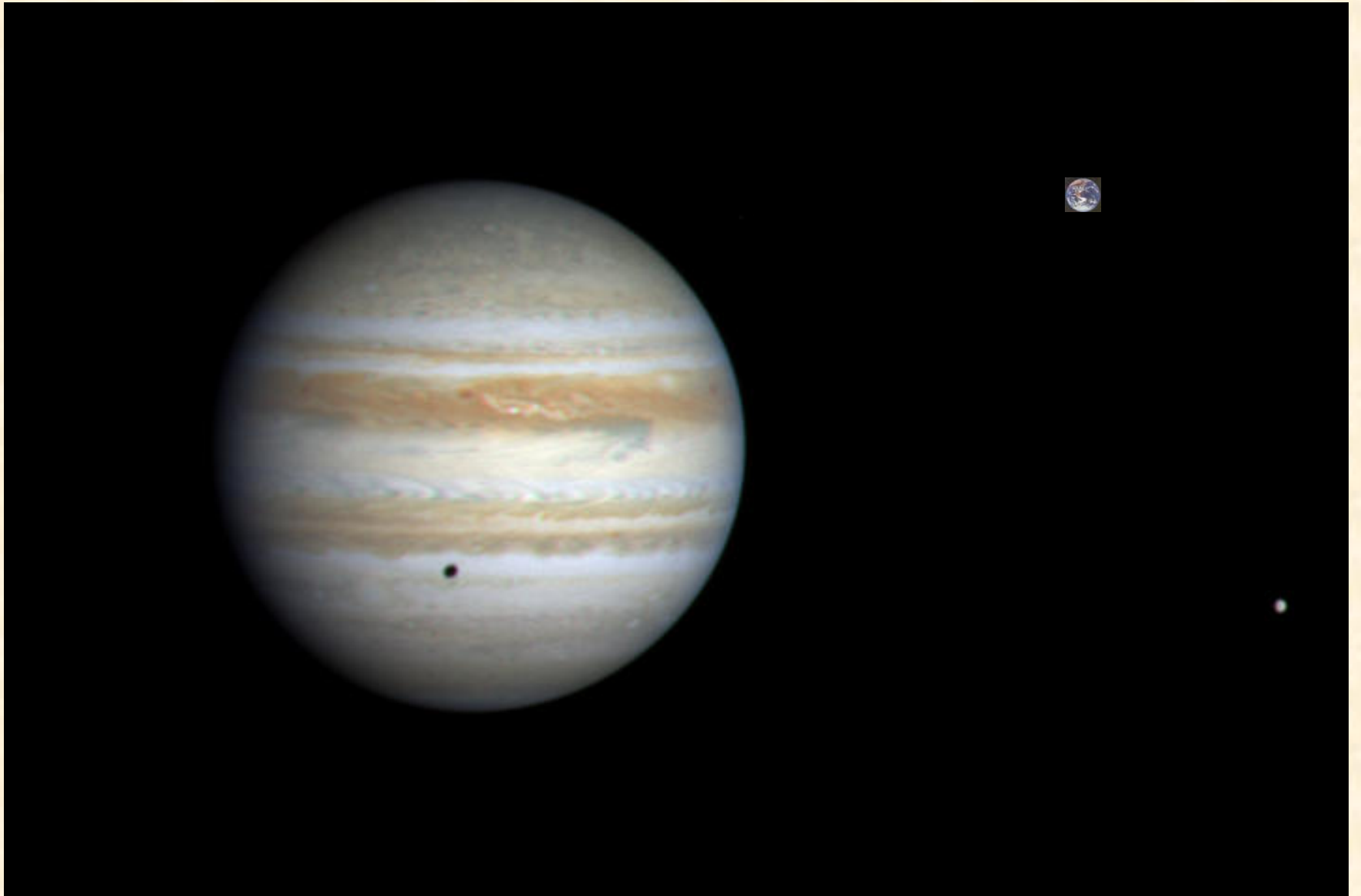
A perfit description of the Coelestiall Orbes,
according to the most auncient doctrine of the
Pythagoreans, &c.



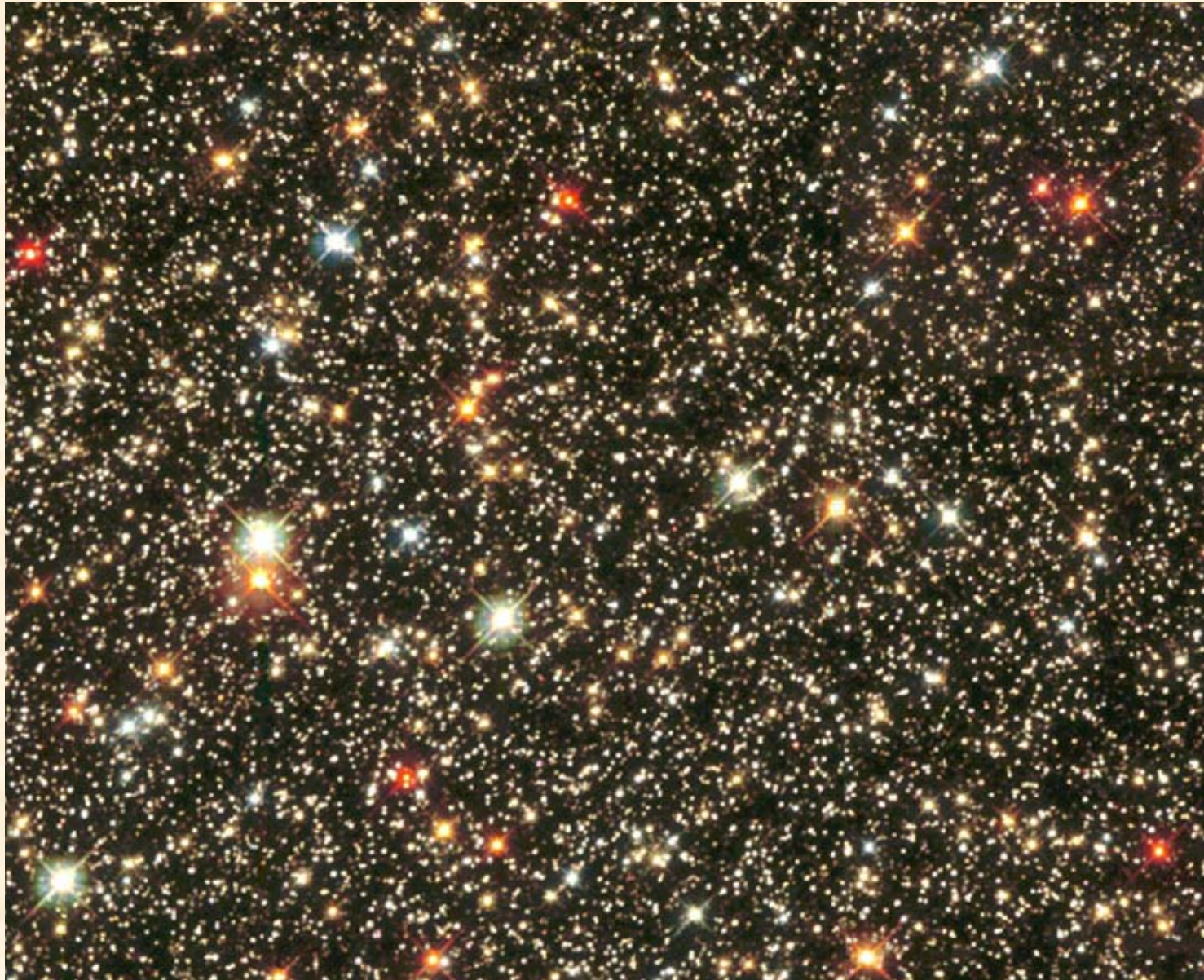


Hubble Telescope "Ultra-Deep Field"





Jupiter (Cassini spacecraft photo)



Hubble Space Telescope image

*And new Philosophy calls all in doubt ...
The Sun is lost, and th'earth, and no man's wit
Can well direct him ...*

'Tis all in peeces, all cohaerence gone.

[John Donne, *Anatomy of the World*, 1611]

*When I consider the short duration of my life, swallowed
up in the eternity before and after, engulfed in the infinite
immensity of spaces of which I am ignorant ... Who has
put me here? The eternal silence of these infinite spaces
terrifies me.*

[Blaise Pascal, 1623-1662]

Life of Pi

*We are afraid of pain
but more afraid of silence; for no nightmare
of hostile objects could be as terrible as this Void*

[W.H.Auden, *For the Time Being* (1942)]

*I had a dream, which was not all a dream.
The bright sun was extinguished, and the stars
Did wander darkling in the eternal space,
Rayless, and pathless, and the icy earth
Swung blind and blackening in the moonless air ...*

Byron, "Darkness" (ca. 1816)



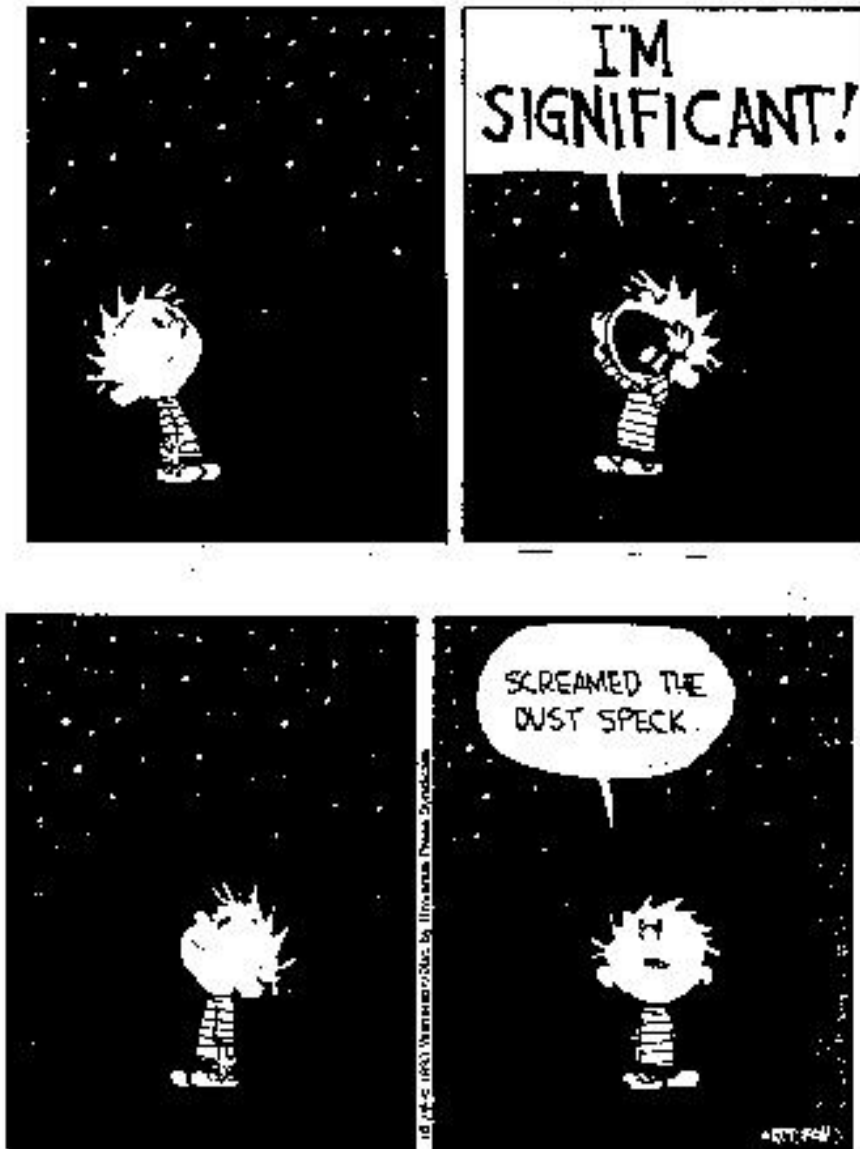
Thomas Hardy, “Two on a Tower”:

There is a size at which dignity begins; further on there is a size at which grandeur begins further on, a size at which awfulness begins; further on, a size at which ghastliness begins. That size faintly approaches the size of the stellar universe.

.... Imagine [the stars] all extinguished, and your mind feeling its way through a heaven of total darkness, occasionally striking against the black invisible cinders of those stars ... If you are cheerful, leave the study of astronomy alone. Of all the sciences, it alone deserves the character of the terrible.

Have we contributed *anything* different in modern times?

Calvin and Hobbes



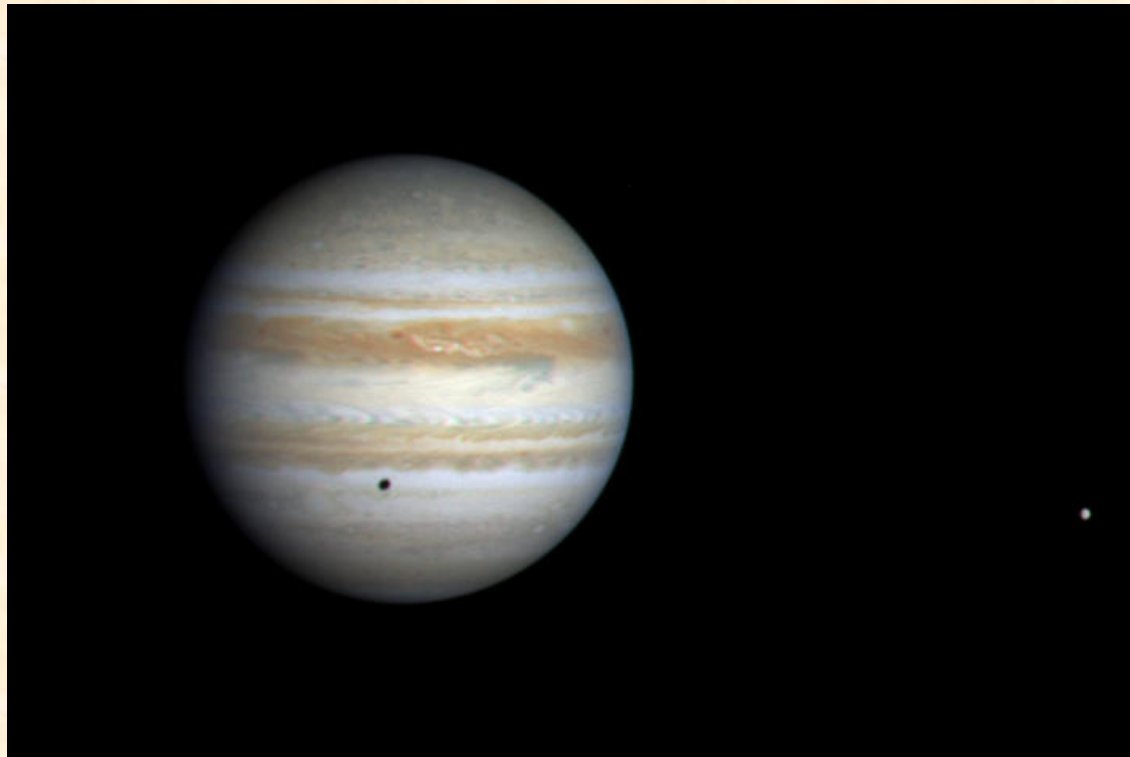
Bill Watterson

*A man said to the universe:
"Sir, I exist!"
"However," replied the
universe,
"The fact has not created in me
A sense of obligation."*

[Stephen Crane (1899)]

How vast these Orbs must be, and how inconsiderable this Earth ... A very fit consideration for those Kings and Princes who sacrifice the lives of so many People, only to flatter their Ambition in being Masters of some pitiful corner of this small Spot.

Christiaan Huygens, ca.1690



Cassini
image

*There is nothing like astronomy to pull the stuff out of man,
His stupid dreams and red-rooster importance: let him
count the star-swirls.*

Robinson Jeffers (1963)



Hubble
Space
Telescope
image

This part of the talk used examples of art with astronomical themes as central elements. For copyright reasons, they are not reproduced here. However, all of them are easily found on the Web. Just do a Google Image Search on the title of each painting and the artist's name.

“Starry Night”, Vincent van Gogh

“Starry Night Over the Rhone, Vincent van Gogh

“Evening Star”, Corot (1864)

“Moonrise”, Vincent van Gogh, 1889

“New Moon”, Maxfield Parrish, 1958

“Hot Summer Moonlight”, Tom Thomson, 1915

“Dovedale by Moonlight”, Joseph Wright, 1784

“The Sheep Meadow”, Jean-Francois Millet, 1870

“Cymon and Iphigenia”, Frederic Lord Leighton, 1884

The “Lunar Men” (1760’s)

included (among others)

Matthew Boulton, industrialist

James Watt, inventor and engineer

Erasmus Darwin, philosopher

Joseph Priestley, chemist

Josiah Wedgwood, porcelain maker

Shakespeare

*And when I shall die
Take him and cut him out in little stars
And he will make the face of heaven so fine
That all the world will be in love with Night
And pay no worship to the garish Sun.*

[Romeo and Juliet, III.2]

*Look, how the floor of heaven is thick inlaid with
patines of bright gold; there's not the smallest
orb but in his motion like an angel sings.*

[Merchant of Venice V.1]

*This most excellent canopy, this brave o'erhanging
firmament, this majestical roof fretted with golden fire....*

[Hamlet II:2]

Shakespeare

*The heavens themselves, the planets, and this center
Observe degree, priority, and place ... in all line of order ...
But when the planets in evil mixture to disorder wander ...
what discord follows!*

[Troilus and Cressida, I.3]

*I am constant as the northern star,
Of whose true-fix'd and resting quality
There is no fellow in the firmament.*

[Julius Caesar, III.1]

*Last night of all,
When yond same star that's westward from the pole
Had made his course to illumine that part of heaven
Where now it burns ...*

Hamlet, I.1

What are they talking about?

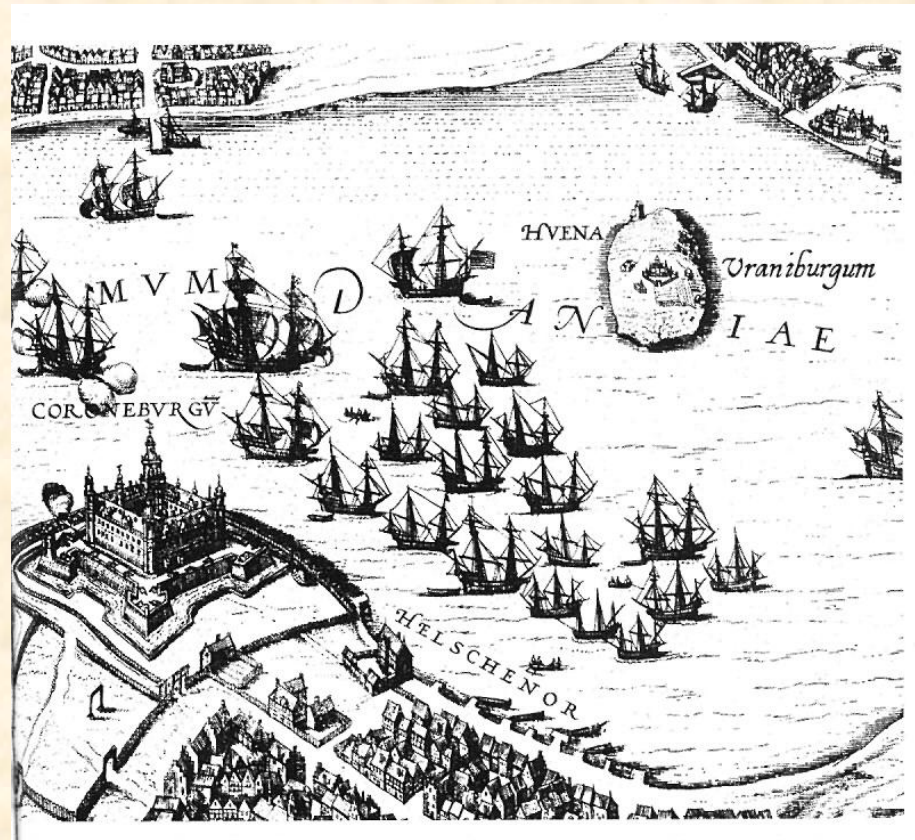
Tycho's Supernova! Exploded 1572



Tycho Brahe (1546-1601)

Danish nobleman and astronomer

Uraniborg on Hven Island, Denmark Sound, near Elsinore



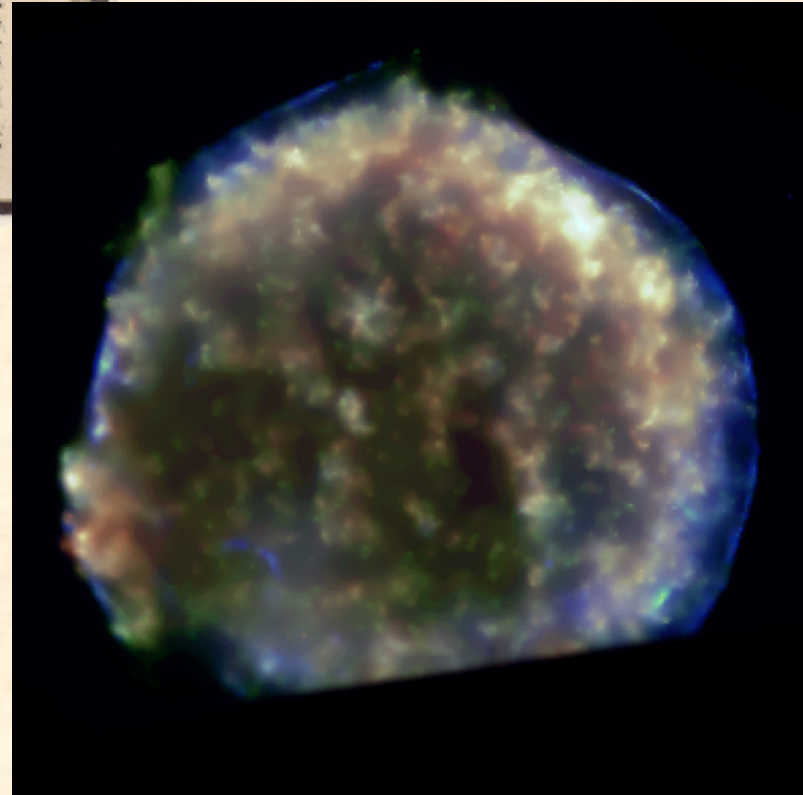


Tycho's book

CHANDRA

X-ray satellite multicolor
image of SN1572 shell

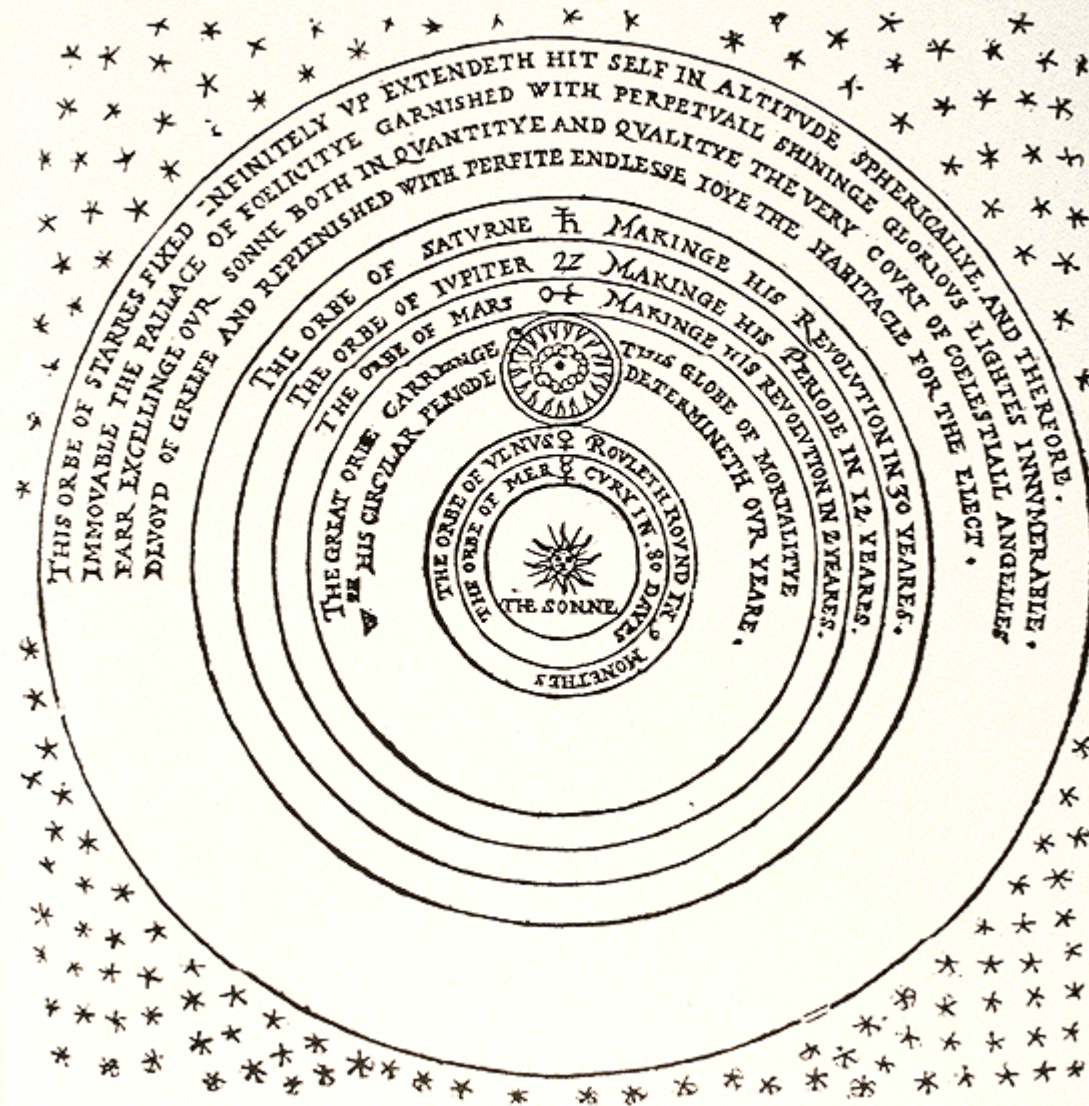
Stellar debris clumps +
surrounding hot shock wave





Thomas
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A perfit description of the Coelestiall Orbes,
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$$F_G = G \frac{mM}{r^2}$$

