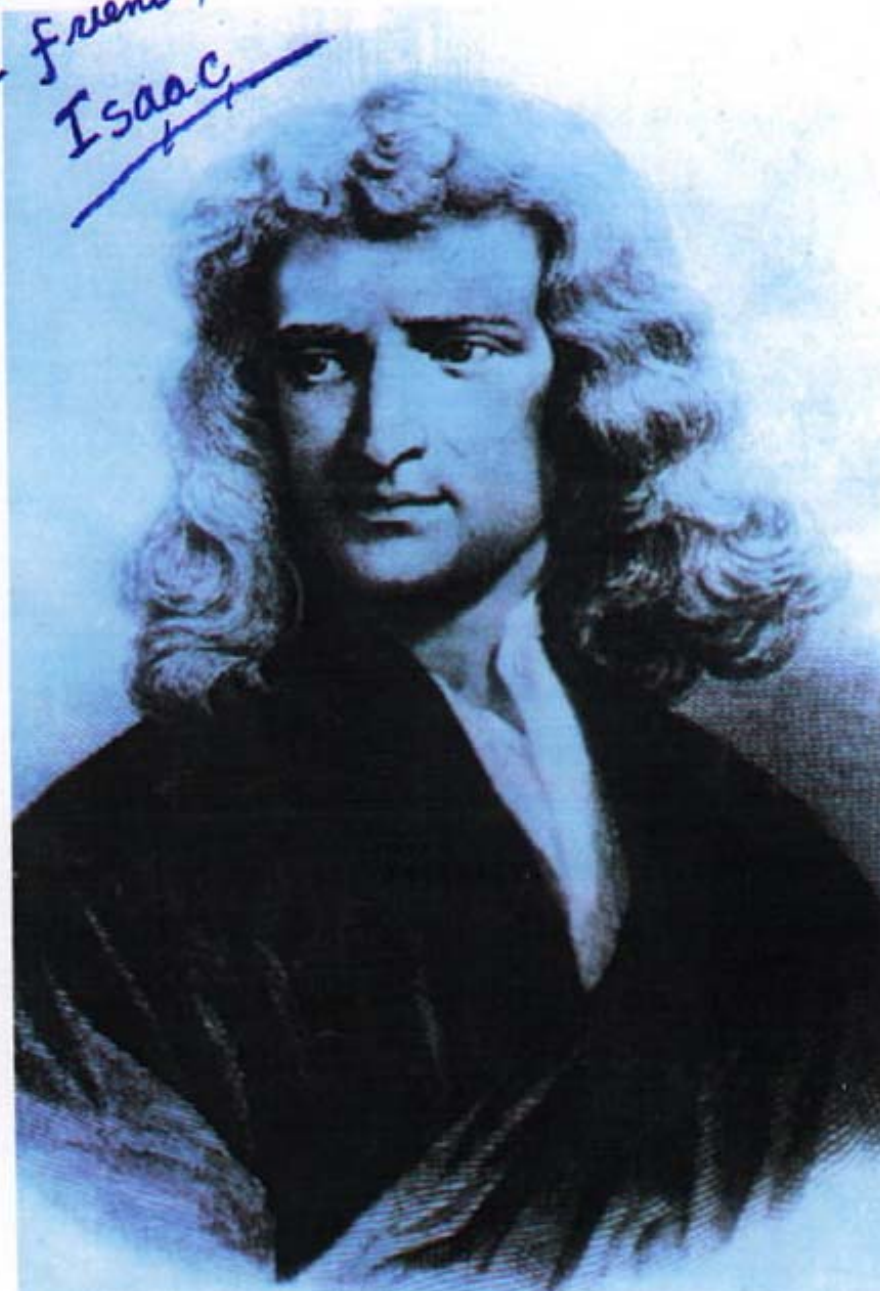


To Rocky,
Best wishes,
your friend,
Isaac



Isaac Newton

1642-1727

Insane in the Membrane?

NS102 Lecture #7

Opening: *Capoeira*

Sergio Mendes

Closing: *Insane in the Membrane*

Cypress Hill

Philosophiæ

Naturalis

Principia

Mathematica

(1687)

GnatSigh News

(all the news that fits)

Exam #1 Thursday April 21

- Readings (Kolb, Chapters 1-5)
- Class lectures
- Class images (website)
- Website <http://home.fnal.gov/~rocky/NS102/>
- Dialog Concerning Two Chief World Systems (website)
- Laboratory work (Moons of Jupiter)
- Little (if any) mathematics this time
- Review sessions:
 - Today at the end of class
 - Tue: 6-7: Alberto, Felipe, Erwin
 - Wed: 5.30-6.30: Tim, Carlos, Andrew

Lab this week: Temperature of the Universe

**Rocky Kolb-GnatSigh
Productions
Presents**

***The Dialogue Concerning the
Two Chief World Systems***

★ **April 14, 2005** ★

Salviati: Vanessa Tantillo
Sagredo: Talia Gorodess
Simplicio: Jeff Eisenberg

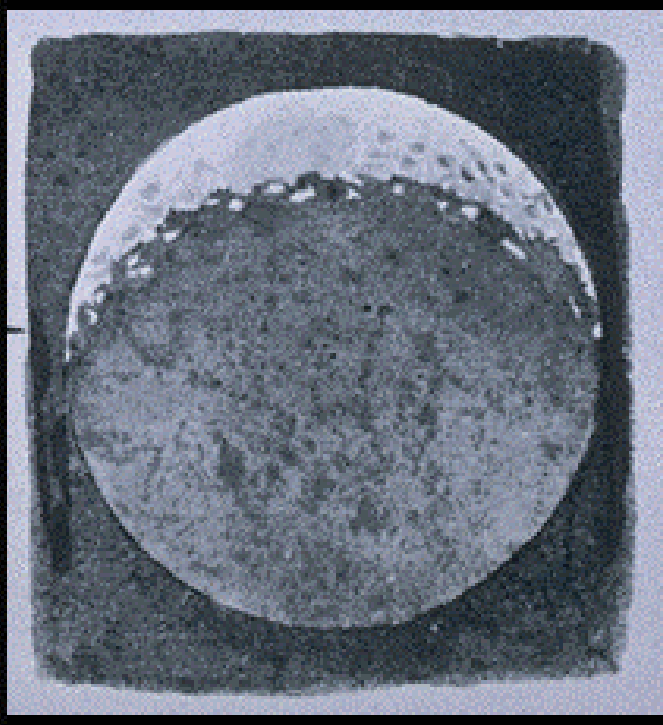
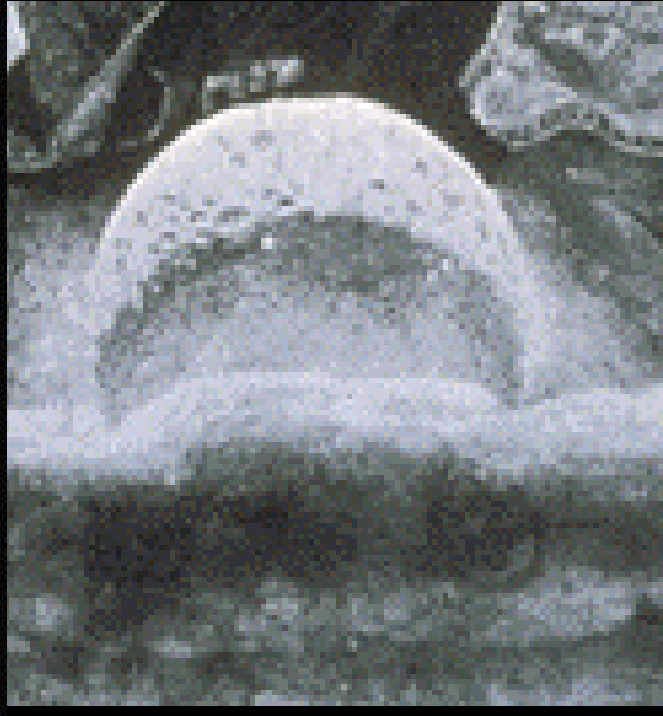
I Fantasmi: Alberto Vallinotto
Michele Liguori
Matteo Fasiello



**Assumption of the Virgin (1610-1612) Lodovico Cigoli
Santa Maria Maggiore**



**Siderius Nuncius
Galileo 1608**



1613: Letters to Castelli and Christina

1615: Bellarmine wrote Galileo, advised him
Copernicus should be thought of as a hypothesis

1615-1616: Galileo learned he was “under suspicion”

1616: Galileo went to Rome-disaster
Father theologians: Earth doesn't move, involves heresy
Paul V ordered Bellarmine to warn Galileo

1623: Barberini → Urban VIII

1624: Galileo travels to Rome-6 audiences with Urban

1630: Galileo finishes *Dialog*

1632: *Dialog* is published-5 months later banned

1633: Galileo faces Inquisition



Napoleon, by Jacques Louis David 1801



The Trial of Galileo, Robert Fleury, Musée du Louvre



Santa Maria Sopra Minerva





**Maffeo Barberini
(1568 - 1644)**

**Urban VIII
(1623 - 1644)**

**Caravaggio 1599
Private Collection, Firenze**

DIALOGO

DI

GALILEO GALILEI LINCEO

MATEMATICO SOPRAORDINARIO

DELLO STUDIO DI PISA.

E Filosofo, e Matematico primario del

SERENISSIMO

GR.DVCA DI TOSCANA.

Doue ne i congressi di quattro giornate si discorre
sopra i due

MASSIMI SISTEMI DEL MONDO
TOLEMAICO, E COPERNICANO.

*Proponehdo indetèrminatamente le ragioni Filosofiche, et Naturali
santo per l'una, quanto per l'altra parte.*

CON PRI



VILEGI.

IN FIORENZA, Per Gio:Batista Landini MDCXXXII.

CON LICENZA DE' SUPERIORI.

*Imprimatur si videbatur Reuerendiss. P. Magistro Sacri
Palatij Apostolici.*

A. Episcopus Bellicastensis Vicesgerens.

Imprimatur

Fr. Nicolaus Riccardius

Sacri Palatij Apostolici Magister.

Imprimatur Florentia ordinibus consuetis servatis.

21. Septembris 1630.

Petrus Nicolinus Vic. Gener. Florentia.

Imprimatur die 21. Septembris 1630.

Fr. Clemens Egidius Inqu. Gener. Florentia.

Stampis adì 12. di Settembre 1630.

Niccolò dell'Alcella.



St. Roberto Cardinal Bellarmine
1542-1621
canonized 1930



René Descartes

(1596 - 1650)

*DISCOURSE ON THE
METHOD OF RIGHTLY
CONDUCTING THE
REASON, AND SEEKING
TRUTH IN THE SCIENCES
(Discours de la méthode
pour bien conduire sa
raison, et chercher la vérité
dans les sciences)*

1637

“COGITO ERGO SUM”



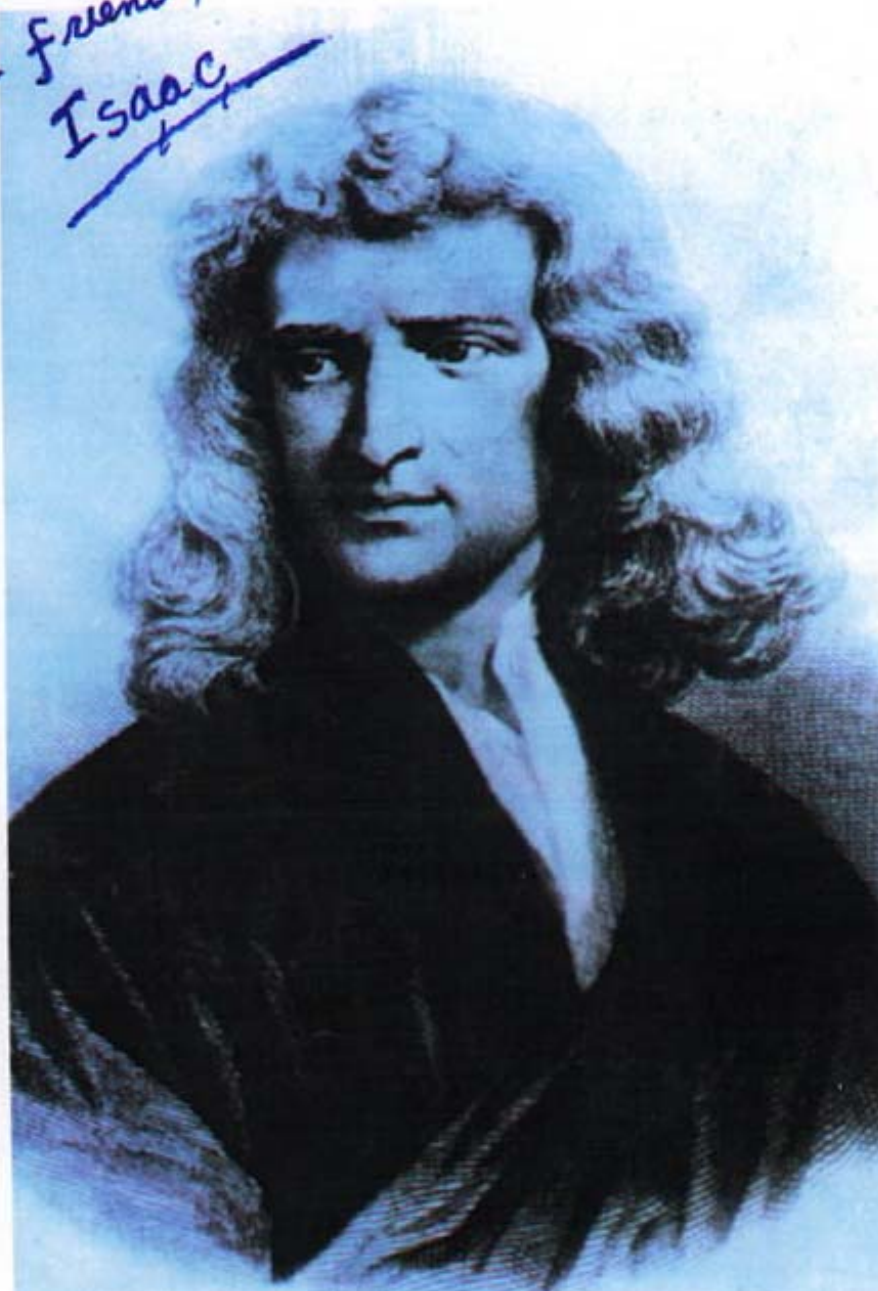
©IMSS - Firenze

Museo di Storia della Scienza



©IMSS - Firenze

To Rocky,
Best wishes,
your friend,
Isaac



Isaac Newton

1642-1727

Insane in the Membrane?

*Philosophiæ
Naturalis
Principia
Mathematica*

(1687)

- 1. Astronomers were doing more than “saving the appearances.”**
- 2. The same laws of physics operate on Earth as in the heavens.**
- 3. The heavens are comprehensible by humans.**
- 4. Crystalline spheres, mechanical gears, and other sundry devices were replaced with a simple mathematical force law.**
- 5. The physics of Aristotle and the astronomy of Ptolemy were relegated to the dust bin.**

PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA.

Autore *J. S. NEWTON*, *Trin. Coll. Cantab. Soc. Matheseos*
Professore Lucasiano, & Societatis Regalis Sodali.

IMPRIMATUR.
S. P E P Y S, *Reg. Soc. PRÆSES.*
Julii 5. 1686.

L O N D I N I,

Jussu Societatis Regiæ ac Typis Josephi Streater. Prostat apud
plures Bibliopolas. Anno MDCLXXXVII.



Thomas Jefferson
1743-1826

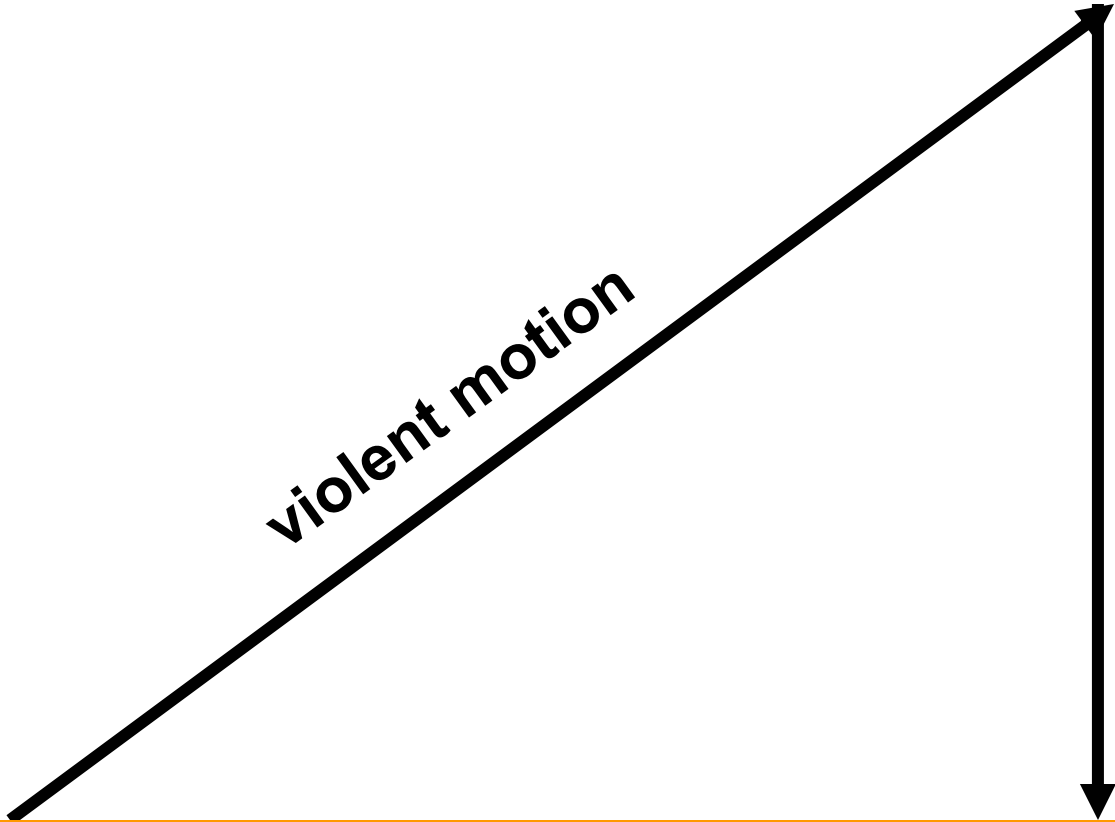
Why did the revolution occur; was it inevitable?

Why did it occur in Western Europe?

Why did it occur when it did?

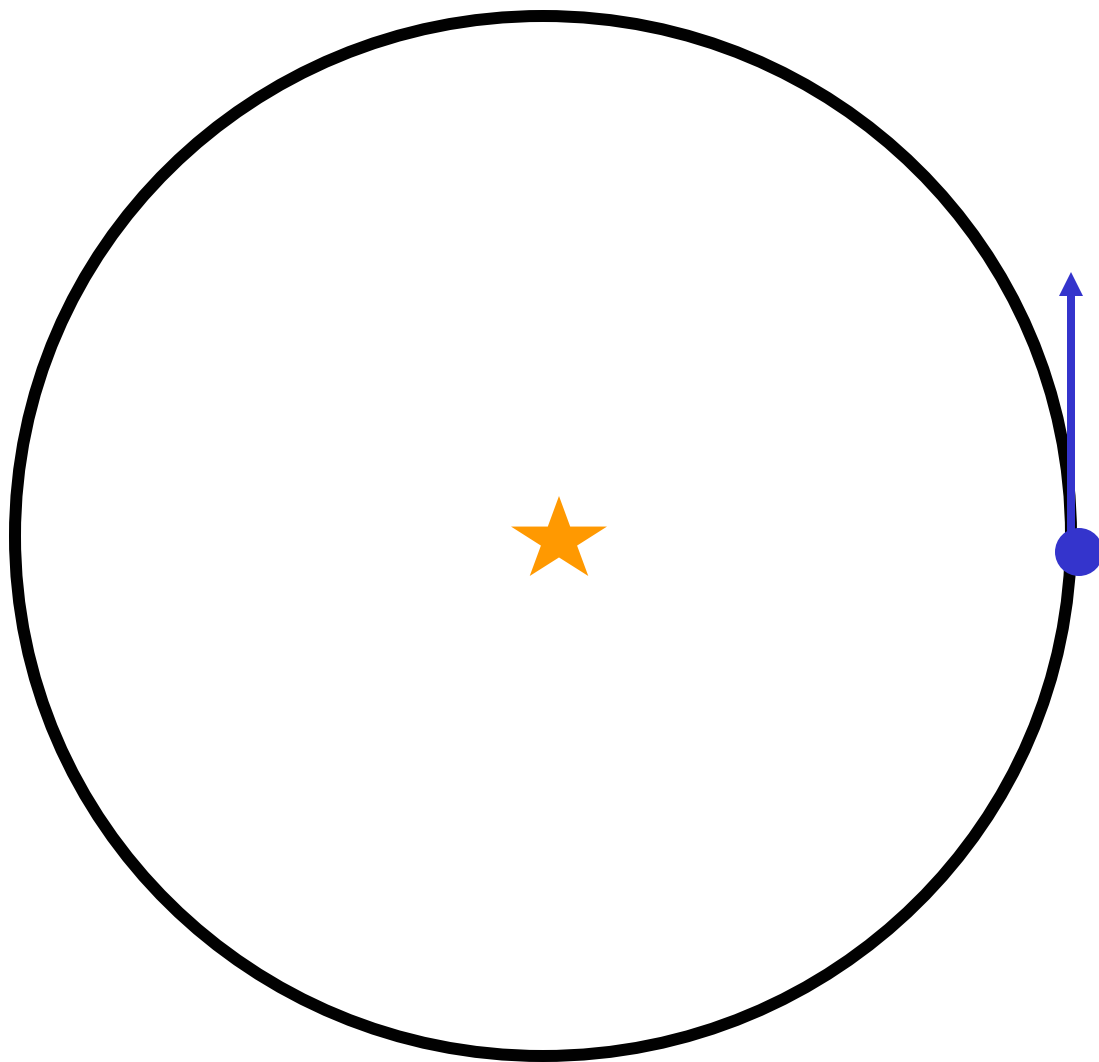
How would it have played out without Copernicus, Tycho, Kepler, Galileo, or Newton?

Will we ever develop a better way to do science?



violent motion

natural motion



in absence of a force, planet would

- 1. slow to a stop?**
- 2. continue to orbit?**
- 3. fly off in a straight line?**