NEWTON
and
His Apple
Creativity, Sexuality,
Religion & Science

林磊
美国加州圣何塞州立大学物理与天文系
中国科学院物理研究所
中国科协中国科普研究所

yr: 1665
Three Apples in Western Culture
Isaac Newton
Newton's Position in Science History

- **simple systems** (plus medical science)
- **complex systems** (including humans)

1. **Thales** (c. 624 BC-c. 546 BC)
2. **Aristotle** (384 BC-322 BC)
3. **Arabs**
4. **Dark Age**
5. **Renaissance**
6. **Enlightenment**
   - **Adam Smith** (Economics, 1776; *The Wealth of Nations*)
   - **Condorset** (*Progress of the Human Mind*, 1795)
   - **Auguste Comte** (Sociology, 1844)
   - **Charles Darwin** (*On the Origin of Species*, 1859)

8. **Galileo** (1610)
9. **Newton** (1687)
10. **Einstein** (1905)

**1723-1790**

**1743-1794**
Isaac Newton
1642-1727 (85 yr)

1642 Isaac Newton born at Woolsthorpe Manor
1646 Hannah Newton marries the Rev. Barnabas Smith
1653 Hannah, widowed for the second time, returns to Woolsthorpe
1655 Isaac Newton enrolls at the King's School and boards in Grantham
1661 Isaac Newton enters Trinity College, Cambridge
1665 Newton awarded Bachelor of Arts degree
1665 Returns to Woolsthorpe Manor to escape the plague
1665-6 Newton’s *annus mirabilis* at Worlsthorpe
Newton's Dark Secrets

Centuries-old manuscripts reveal the hidden pursuits of a scientific genius. Aired November 15, 2005 on PBS

He was the greatest scientist of his day, perhaps of all time. But while Isaac Newton was busy discovering the universal law of gravitation, he was also searching out hidden meanings in the Bible and pursuing the covert art of alchemy. In this program, NOVA explores the strange and complex mind of Isaac Newton.

As a boy, he pored over a book called *The Mysteries of Nature and Art*.

His father died before he was born, and when he was just three years old, his mother remarried and moved away, leaving young Isaac behind with his grandparents. Newton later confessed to such rage that he wanted to burn his mother and stepfather in their house.

He worked seven days a week, 18 hours a day. He had a library of his own that had about 1,600 or 1,800 volumes,
Woolsthorpe Manor  Water Ln, Grantham NG33 5PD, UK
Welcome to Woolsthorpe Manor

Sir Isaac Newton was born here on Christmas Day in the harsh winter of 1642. He was a premature and sickly baby who was not expected to survive, but he grew into a thoughtful and solitary child. We like to picture him on the farm at Woolsthorpe, annoying the servants with his endless questioning, or as a young man in 1665, newly returned from Cambridge, wandering in the orchard, full of revolutionary ideas about mathematics, optics, gravity and motion.

Isaac spent the early years of his long life here at Woolsthorpe. He came back to look after his mother in her last illness in 1679 before heading back to Cambridge. But somehow he’s still here, a young man scratching drawings on the walls, making sundials, darkening his room and setting up his glass prisms to split the Lincolnshire sunlight into rainbow colours. We once measured the distance from the shutter to the wall for a television programme and it was 22 feet – just as in Isaac’s notebook! That was a moment when we felt we could almost touch him.

We love this place – and we’re delighted to welcome you to Woolsthorpe. We hope you have a very enjoyable visit.

The Woolsthorpe Team
They have a very peculiar relationship because Wickins is somebody who is of a higher status than Newton at Trinity and seems to have become Newton's amanuensis, i.e., his secretary, over the following 20 years. But they must have been very close.

They lived in the same rooms for 20 years.

There's no evidence that anyone liked him at all, apart from his friend John Wickins.
Cambridge Professional Years: Age 25-46

1667-1687

1667 Elected a Minor Fellow of Trinity College

1668 Elected Major Fellow of Trinity College

1669 Manufacture of reflecting telescope

1669 Becomes Lucasian Professor of Mathematics at Cambridge

1671 Shows reflecting telescope to the Royal Society

1672 Elected a Fellow of the Royal Society

1687 First edition of *Principia* published
Welcome to The Home of Genius

Like hitting a hole-in-one from 9,000 miles away!

NASA, the US space agency, achieved this stunning feat in 1989 when it guided the probe Voyager 2 to within 20 miles of its destination near Neptune.

It was only possible thanks to the genius of Isaac Newt
Why Newton delayed publication of *Principia* for 21 years

Newton was allergic to criticism, I mean really allergic. He went off the wall when people criticized him.

He cannot convince as many people as he wants that what he said is true. And that defeat, if you like to call it that, was very bitter for him. And by the mid 1670s (few years into chair professorship), he's withdrawn completely from the international world of science.

Newton's own copy of his *Principia* (1687), with hand-written corrections for the second edition

Newton vowed he would never publish a scientific paper again.

Almost 20 years later, after prompted by Edmond Halley to show the planets’ orbits are ellipses, he spent 18 months to write up *Principia* at age 44.
In the isolation of Cambridge, Newton threw himself into alchemy.

Alchemy is an influential philosophical tradition whose practitioners have, from antiquity, claimed it to be the precursor to profound powers. The defining objectives of alchemy are varied, but historically have typically included one or more of the following goals:

• the creation of the fabled philosopher’s stone;
• the ability to transform base metals into the noble metals (gold or silver);
• development of an elixir of life, which would confer youth and longevity.

Newton believed that in the distant past, people knew great truths about nature and the universe. This wisdom was lost over time, but Newton thought it was hidden in Greek myths, which he interpreted as encoded alchemical recipes.

(Note that it is only after nuclear physics about 100 years ago that we know alchemy is impossible.)
Newton's London Years: Age 47-85

1688-1727 (Age 47-85)

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1689</td>
<td>Elected as Member of Parliament for Cambridge</td>
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<td>1696</td>
<td>Newton becomes Warden of the Royal Mint and settles in Jermyn Street, London</td>
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<td>1701</td>
<td>Elected MP for Cambridge again and resigns Lucasian Professorship</td>
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<td>1703</td>
<td>Elected President of the Royal Society</td>
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<td>1704</td>
<td>First edition of <em>Opticks</em> published</td>
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<tr>
<td>1705</td>
<td>Knighted by Queen Anne</td>
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<tr>
<td>1710</td>
<td>Moves to house in St Martin's Street, London</td>
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<tr>
<td>1725</td>
<td>Moves to Orbell's Buildings in Kensington, London</td>
</tr>
<tr>
<td>1727</td>
<td>Newton dies and is buried in Westminster Abbey</td>
</tr>
</tbody>
</table>

As Warden, and afterwards Master, of the **Royal Mint**, Newton estimated that 20 percent of the coins were counterfeit.

He disguised as a habitué of bars and taverns, and gathered much of that evidence himself.

He conducted more than 100 cross-examinations of witnesses, informers, and suspects in 18 months (1698-1699) successfully **prosecuted 28 coiners**.
Creativity and Sexuality
Confucius says:
Eat and sex are in humans’ nature.
Da Vinci 1452-1519 (67 yr)

Renaissance polymath: painter, sculptor, architect, musician, mathematician, engineer, inventor, anatomist, geologist, cartographer, botanist, and writer.

Born out of wedlock to a wealthy notary and a peasant woman

Leonardo appears to have had no close relationships with women except for his friendship with Cecilia Gallerani and the two Este sisters, Beatrice and Isabella. (He drew a portrait of Isabella.)

His sexuality has been the subject of satire, analysis, and speculation. His most intimate relationships were perhaps with his pupils Salai and Melzi. Court records of 1476, when he was aged 24, show that Leonardo and three other young men were charged with sodomy in an incident involving a well-known male prostitute. The charges were dismissed for lack of evidence, through influence of the court as speculated.
Da Vinci’s paintings

Young Mona Lisa

Mona Lisa

Monna Vanna a nude version of the Mona Lisa

by Melzi

Da Vinci’s paintings
He joined Leonardo's household at the age of 10 as an assistant. "A graceful and beautiful youth with curly hair, in which Leonardo greatly delighted." He left at 38.

He inherited several paintings including the *Mona Lisa* and half a vineyard. Through his estate, many of those works, notably the *Mona Lisa*, passed into the possession of Francis I of France.

Salai married at the age of 43; died at 44 due to duel wound.

It has been suggested, as early as the 16th century, that there was a sexually intimate relationship between Leonardo and Salai, but this cannot be known for certain.

Melzi joined Leonardo’s household at 15.

He traveled to France with Leonardo and remained with him until Leonardo's death; inherited the artistic and scientific works, manuscripts, and collections of Leonardo, and a vineyard.

Melzi then married, and fathered a son,
Alan Turing
1912-1954 (42 yr)
OBE, FRS

British mathematician, logician, cryptanalyst and computer scientist

Turing, father of theoretical computer science and artificial intelligence, was working at the UK’s Government Communications Headquarters (GCHQ) when he cracked the Enigma code, used by Germany to encrypt its military communications.

Turing was convicted of gross indecency in 1952 after admitting to a homosexual relationship and was forced to undergo chemical castration (taking female hormones) as an alternative to jail.

He committed suicide in 1954 by ingesting cyanide. Loss of security clearance, state distrust and surveillance may have been crucial factors in the two years leading up to his death in 1954.

During Turing’s childhood years his parents traveled between UK and India, leaving their two sons to stay with a retired army couple.
The UK government had apologized for the conviction in 2009, calling Turing's treatment "appalling."

Turng was granted a royal pardon Dec. 24, 2013, more than 60 years after being convicted for homosexual behavior and undergoing chemical castration. "Dr Turing deserves to be remembered and recognised for his fantastic contribution to the war effort and his legacy to science," U.K. Justice Secretary Chris Grayling said in a statement issued today.

"A pardon from the Queen is a fitting tribute to an exceptional man."
Sexuality of an artist (but not scientist) is reflected in his works, showing the basic distinction between art (human-dependent) and “science” (human-independent).
• One does not have to be a homosexual to be creative (many examples).

• But for whatever reason, historically, there are a number of homosexuals who had contributed significantly to humanity, ranging from science (Newton) to arts (Da Vince) and to computer science (Turing).

• A possible reason that we see this is that creative people are oddballs, and homosexuals are considered odd in many societies.

• With these understandings, hopefully, people will see homosexuals from a fresh angle.
Religion and Science
Science

**Scimat’s definition** (2008/2014)

Science is humans’ pursuit of knowledge about Nature (which includes the human and all nonhuman material systems) without bringing in God or supernatural.

Religion

Religion is an organized collection of **beliefs, cultural systems, and worldviews** that relate humanity to an order of existence. (Roughly 4,200 religions in the world.)

Many religions explain the **meaning of life** and/or to explain the **origin of life** or the **Universe**.

From their beliefs about the **cosmos** and **human nature**, people derive **morality**, **ethics**, religious laws or a preferred **lifestyle**.

Science, by definition, has nothing to do with religion. Whenever the religious writings are in conflict with established scientific findings, then, it is the religious people who have to resolve the conflict, not the scientists.
A Brief History of Words

**Philosophy** (600 BC, “love of wisdom”, Pythagoras; 13c, English)

- ‘Philosophy’ (humans, metaphysics)
- **Theology** (including Natural Theology) (God)
- **Natural Philosophy** (14c, non-human, non-God)
  - No God
  - Science (14c) (“pursuit of knowledge”, confirmed theories)
    - Scientist (1834)
      - Scientific Method (1854)
    - God invoked

- **Humanities** (14c)
  - “Philosophy’History Religion Economics Sociology

- **Social Science** (1772)
  - “Science” (1867)

- **Scientific Method** (1854)

- **Science** (2008)

- **Scimat** (2008)

- **“Science”** (19c, absorbed into Theology)
Philosophy

Science, defined as humans’ research in understanding Nature (human and nonhuman systems) without bringing in God or any supernatural.

Retreat of God and Expansion of Science

Early Greek time (2,600 years ago)

14th century

Scimat view (2008/2013)

Science, no God  God could be brought in
On the one hand, we can recognize Newton as a scientist, but on the other hand, he's pursuing an activity which we now label as a pseudoscience.

Newton's calculation of the date the Bible said the world as we know it would end in the Battle of Armageddon: the year 2060.

We've made Newton in a rationalist, enlightened image. That's just not Newton.
In high school, Turing formed an important friendship with fellow pupil Christopher Morcom, which provided inspiration in Turing's future endeavours. However, the friendship was cut short by Morcom's death in 1930 (Turing age 18) from complications of bovine tuberculosis contracted after drinking infected cow's milk some years previously.

This event shattered Turing's religious faith. He became an atheist and adopted the conviction that all phenomena, including the workings of the human brain, must be materialistic, but he still believed in the survival of the spirit after death.
The Apple
THE TREE COUNCIL
IN CELEBRATION OF
THE GOLDEN JUBILEE OF
HER MAJESTY
QUEEN ELIZABETH II
has designated
NEWTON’S APPLE TREE
one of fifty
GREAT BRITISH TREES
in recognition of its place
in the national heritage
JUNE 2002
Supported by National Grid
National Grid
The official story of apple falling was told like this in the book *Woolsthorpe Manor: Birthplace of Issac Newton* (National Trust, 2006, £3.5) p. 7:

**The Apple falls**

Everyone knows the story of the apply falling on Newton’s head, but this famous tale is a misconception that is regularly resurrected in everything from cartoons to computer ads.

Newton told a number of people about the occasion, but did not always mention the apple. After a conversation with Newton in 1726, his friend William Stukeley recorded:

The notion of gravitation…was occasion’d by the fall of an apple, as he [Newton] sat in contemplative mood. Why should that apple always descend perpendicularly to the ground, thought he to himself, why should it not go sideways or upwards, but constantly to the earth’s centre? Assuredly, the reason is that the earth draws it…there is a power, like that we here call gravity, which extends itself thro’ the universe.
Lam: Here no mention where the apple fell.

That it fell on Newton’s side and not on his head was told to me by an official guide (probably a volunteer, dressed in clothes of Newton’s time) during my visit there (Oct. 19, 2013).

Note that Newton died in 1727 (age 85), the next year Newton and Stukeley had this conversation.

With Newton’s status at age 84, near his end, my guess is that he had no need to invent and reiterate this apple falling story if it never happened.
Conclusion

Scientists are humans, like you and I.

Some are not like you and I, like Newton.

They are not just brighter, but tormented and darker—not entirely their fault.

Some genius, like Newton, not just contributed more, but suffered more, too.

And humanity owes them a lot.