

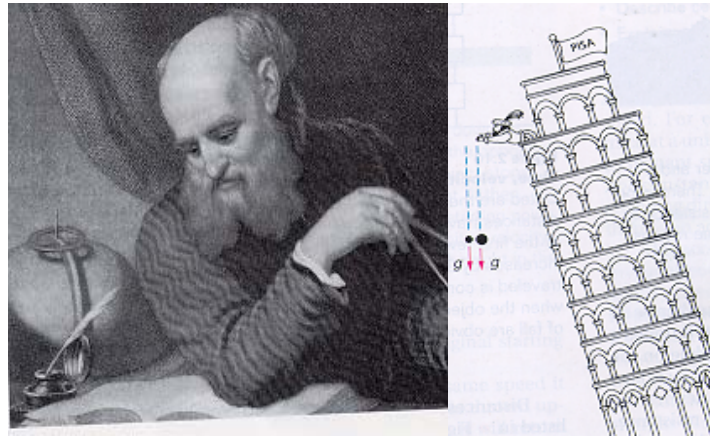
**The Onset of the Tension  
between  
Science and Christianity  
– Galileo and the Church**

***Dr. Donald Isaak***

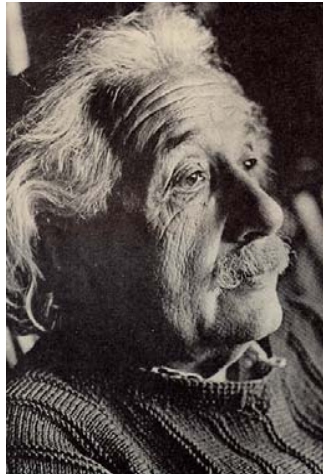
***Chair, Math and Physics Department,  
Azusa Pacific University***

# Two Lessons from History

- **Galileo**  
– early 1600's



- **Einstein**  
– 1917



$$E=mc^2$$

# (mis)Conceptions about Galileo

**Galileo**

(progressive, enlightened, scientific)

versus

**the Church**

(backwards, Bible-based, reactionary)

Galileo wins!



## ***The Scientific Outlook*, Bertrand Russell (1931)**

**“The conflict between Galileo and the Inquisition is not merely the conflict between free thought and bigotry or between science and religion; it is a conflict between the spirit of induction and the spirit of deduction.”**

# Timeline

**Aristotle**

**Jesus**

**Galileo**

**0**

**1000**

**2000**



## ***Galileo to scientist who experimented at Tower of Pisa...***

**“Aristotle says that a hundred-pound ball falling from a height of a hundred cubits hits the ground before a one-pound ball has fallen one cubit. I say they arrive at the same time. You find, on making the test, that the larger ball beats the smaller one by two inches. Now, behind those two inches you want to hide Aristotle’s ninety-nine cubits and, speaking only of my tiny error, remain silent about his enormous mistake.”**

# Aristotle's Science

Offered a comprehensive view of nature

Nature explainable from 'intuitive assumptions'

Careful development of logic

- *Make observations*
- *Proceed inductively to universal principles*
- *Use logic to infer results from these principles*

Mix scientific data with logic - dogma results

## Examples of Aristotle's 'intuitive assumptions'

- **Universe is finite with Earth at the center**
  - **All heavenly bodies surround the Earth**
  - **Every object has its natural place - up or down**
  - **Terrestrial realm: corruptible**
  - **Celestial realm: incorruptible**



## Example of Aristotle's use of logic

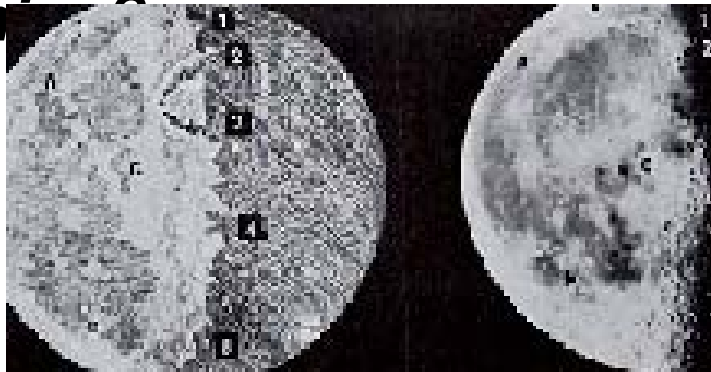
**A. Terrestrial realm changing & corruptible  
Celestial realm perfect &  
incorruptible**

**B. Spheres are perfect geometric shapes**

**C. A and B imply that all celestial bodies  
are perfect spheres!**

*Do you see any problems with this*

*reasoning?*



## Galileo in *Dialogue*

**“These doctors of philosophy never concede the moon to be less polished than a mirror; they want it to be more so, if that can be imagined, for they deem that only perfect shapes can suit perfect bodies. Hence the sphericity of the heavenly globes must be absolute. Otherwise, if they were to concede me any inequality, even the slightest, I would grasp without scruple for some other, a little greater, for since perfection consists in indivisibles, a hair spoils it as much as a mountain.”**

# **Aristotelian spokesperson responding to Galileo's observation that the moon has irregular surface...**

**“Being ingenerable, uncorruptible, inalterable, invariant, eternal, etc., implies that celestial bodies are absolutely perfect; and being absolutely perfect entails their having all kinds of perfection. Therefore their shape is also perfect; that is to say, spherical - and absolutely and perfectly spherical, not approximately and irregularly”**

# Aristotle vs. Galileo

## What Aristotle Said

- **Heavens are perfect and unchanging**

- **Celestial bodies are perfect spheres**

- **All celestial bodies circle Earth**

## What Galileo Saw

- **Sunspots Supernova explosion - proved was a distant star**

- **Moon has mountains and craters**

- **Jupiter has moons**

- **Phases of Venus  
Venus orbits Sun**

# Why was Galileo opposed by the Church?

1. (1) Threat to Aristotelian scientists
- 2.
3. (2) Combative and arrogant - made personal enemies
- 4.
5. (3) Popularized Copernicus's ideas
- 6.
7. (4) Issues with biblical interpretation (Joshua 10:12-13)

## **Letter from Niccolo Lorini (priest) to Inquisitor-General in 1615 with concerns about Galileo and followers**

**“ . . . . were taking upon themselves to expound the Holy Scriptures according their own private light, . . . that they were trampling underfoot all of Aristotle’s philosophy . . . I believe the Galileans are orderly men and all good Christians, but a little wise and cocky in their opinions.”**

# *Galileo*

**“But it is the followers of Aristotle who have crowned him with authority, not he who usurped it or appropriated it to himself. I wonder how it can be that these strict supporters of Aristotle’s every word fail to perceive how great a hindrance they are to his credit and reputation . . . For when I see them being obstinate about sustaining propositions which I know to be transparently false, and trying to persuade me that what they are doing is truly philosophical and would be done by Aristotle himself . . . ”**

## **Galileo's views about the church & scripture:**

- 1. Hostile towards Aristotelian scientists, not Church**
- 2. Wanted to prevent Church from becoming irrelevant**
- 3. Scripture tells how to go heaven not how heavens go**
- 4. God authored two books - scripture & nature  
(No conflict when both correctly understood)**

**What to do when science and scripture  
*appear* to contradict each other?**