Preliminary reading quiz

Graded iClicker QUIZ: Select the best single answer
1. Which of the following observations is discussed in the greatest detail in your reading from Galileo’s Dialogue concerning the Two Chief World Systems?
   (A) The changing stages of Venus
   (B) The mountains on the Earth’s moon
   (C) Sunspots on the Sun
   (D) The moons of Jupiter

Material today:
1. Galileo’s view of reliance on authority
2. Galileo’s view of the senses

Galileo’s view of reliance on authority

• Q: Why did people refuse to believe Galileo even after he produced astronomical observations to support his theory, he devised a new physical theory to explain it, ?? 
  two main reasons:
  a. Church authorities said it was inconsistent with the Bible
  b. Scientific authorities said it was inconsistent with the science of Aristotle
• We’ll discuss (A) on Friday
• Today we’ll focus on (B)

Galileo’s view of reliance on authority

• Aristotle (384–322 BC)
  • Greek philosopher, founder of sciences of logic and biology
  • held an influential geocentric theory
• In his model:
  • natural motion below the moon is “rectilinear” (up and down)
  • natural motion above the moon is circular
  • the Earth is the realm of change
  • above the moon the heavens are changeless

Galileo’s view of reliance on authority

• Q: How could Galileo (or anyone) refute the idea that the heavens are changeless?
  • Galileo gives three pieces of evidence:
    a. comets generated and dissolved above the moon
    b. two “new stars” (1572, 1604)
      [actually these were supernovae]
    c. the motion of sunspots across the sun
3: Galileo’s Basic Theory of Knowledge (continued)

Material today:
1. Galileo’s view of reliance on authority
2. Galileo’s view of the senses

Galileo’s view of reliance on authority

- Some scientists of the day responded that sunspots could be other heavenly bodies moving past the sun
- Q: What is Galileo’s response?
  1. some spots appear and disappear in the middle of the sun
  2. they contract, slow down close to its circumference
- Both of these suggest they are on the sun
- Q: Which authority is Galileo appealing to here?
  1. his own senses

Galileo’s view of reliance on authority

- Others responded: but Aristotle thought the heavens were unchanging! Who can guide us if not him?!
- Q: How should Galileo respond?
  1. hint: how did Aristotle devise his own astronomy (or his biology)?
  2. Aristotle himself thought the senses were the ultimate authority, before any theory
  3. if he were presented with data from the telescope, he’d change his mind
  4. The only reason to believe him anyway is because of his arguments and evidence

Galileo’s view of the senses

- Galileo thinks our senses are an important data source

Q: How would Galileo judge the senses?
  1. the senses are always right
  2. the senses are sometimes right
  3. the senses are never right
  4. None of the above

Q: How are the senses sometimes wrong in his view?
  1. the sun appears to move; it does not
  2. objects appear to fall straight down; they do not

Material today:
1. Galileo’s view of reliance on authority
2. Galileo’s view of the senses

Galileo’s view of reliance on authority

- Q: How could Galileo (or anyone) refute Aristotle’s idea that the heavens are changeless?
  1. comets generated and dissolved above the moon
  2. two “new stars” (1572, 1604) (actually these were supernovae)
  3. the motion of sunspots across the sun

Galileo’s view of reliance on authority

- Q: What authority does Galileo think we should trust?
  1. no one
  2. only whatever you yourself happen to believe
  3. only your own senses, never another’s
  4. None of the above

Galileo: we can trust others, but only if we have good reason to think they have a good reason:

- One need a guide in an unknown and unexplored country; but in a flat and open region only the blind need a guide; wherever is blind would do well to stay home, whereas anyone who has eyes in his head and in his mind should use them as a guide. Not that I am thereby saying that one should not listen to Aristotle; on the contrary, I applaud his being examined and diligently studied and only blame submitting to him in such a way that one blindly subscribes to all his assertions and accepts them as unquestionable dictates, without searching for other reasons for them... As Socrates, come freely with reasons and demonstrations (yours or Aristotle’s) and not with textual passages or more authorities because our discussions are about the sensible world and not about a world on paper.

Galileo’s view of the senses

- Galileo’s view of the senses

Galileo’s view of the senses
Galileo’s view of the senses

- Q: How did Galileo explain these illusions?
  - the sun appears to move because the earth is moving
  - objects appear to fall straight down because we are moving with them
- But explaining an illusion doesn’t stop it from being one
- Galileo concludes that the senses deceive us:
  1. The senses cannot distinguish what is real from what is merely apparent.
  2. Therefore, the senses deceive us.

But Simplicio raises a very sensible question:

- Q: What can Galileo say in response?
  - we shouldn’t trust the senses completely if they can deceive us
  - we should use our reason to set aside the deceptive appearance
- Q: What question hasn’t Galileo answered here?
  - what truth can we derive from such a deceptive faculty?
  - when can reason trust senses, when not?

Review quiz

Graded iClicker QUIZ: Select the best single answer
2. Galileo thinks the following is true about the sunspots:
   (A) The same sunspots can be seen regularly appearing as they move around the sun.
   (B) Sunspots are really heavenly bodies orbiting between us and the sun.
   (C) Sunspots regularly appear and disappear as they move around the surface of the sun.
   (D) None of the above
3. What does Galileo think Aristotle would say about Galileo’s views?
   (A) Aristotle would agree with Galileo because he is in agreement with Galileo’s philosophy of knowledge.
   (B) Aristotle would completely disagree with Galileo because his philosophy is mistaken.
   (C) Aristotle would completely disagree with Galileo because his astronomy is mistaken.
   (D) None of the above

Review quiz

Graded iClicker QUIZ: Select the best single answer
4. What view does Galileo have about both great scientists like Aristotle and about the senses.
   (A) We should never believe anything they say.
   (B) We should listen to them both but do so using our reason.
   (C) We should believe everything they have to say.
   (D) None of the above