PHIL 115

Lecture #3: Inference

Example of Discourse

- Description
  - “Meletus … has a beak, and long straight hair, and a beard which is ill-grown.” (2b)
- Narrative
  - “Now the man who is dead was a poor dependent of mine who worked for us as a field labourer on our farm in Naxos, and one day in a fit of drunken passion he got into a quarrel with one of our domestic servants and slew him. My father bound him hand and foot and threw him into a ditch, and then sent to Athens to ask of a diviner what he should do with him. Meanwhile he never attended to him and took no care about him.” (4c-d)
- Explanation
  - “I [Socrates] … am desirous of becoming your [Euthyphro’s] disciple. For I observe that no one appears to notice you—not even this Meletus; but his sharp eyes have found me out at once, and he has indicted me for impiety.” (5c)
- Instructions
  - “Tell me what the pious is and what the impious.” (5d)
- Argument (see below)

Arguments from the Euthyphro:

1. Meletus’ Argument (according to Socrates) [3a-b]

- Conclusion: Socrates corrupts the youth.
  - Evidence (premise): Socrates is a maker of gods.
- Two ways to state the connection (additional premise):
  - If Socrates is a maker of gods, then Socrates corrupts the youth
  - Anyone who is a maker of gods corrupts the youth
- These alternatives point to two sets of valid logical forms
  - Stoic logic—based on the logical connections
    - if … then
    - either … or …
    - not both … and …
  - Aristotelian logic—based on the logical connections
    - All …
    - Some …
    - None …

Two Kinds of Reasoning, I

- Recall: The definition of “argument”
  - a discourse in which, certain things being asserted [the premises], something else [the conclusion] follows from their being so
- what is a discourse?
  - an organized set of statements
- kinds of discourse
  - descriptions, stories, instructions, arguments
- what is distinctive about arguments
  - that some of the propositions give us reason to believe that another proposition is true
- Note the two parts of an argument
  - premises
  - conclusion

Arguments from the Euthyphro:

2. Euthyphro’s family’s argument against Euthyphro

- How do they feel? Angry
  - Why? They think: (C) Euthyphro should not prosecute his father
- Their reasons why Euthyphro should not prosecute his father:
  - 1. Their father didn’t kill anyone
    - why not? He just threw the workman into a ditch
  - 2. The dead man did not deserve a thought
    - why not? He was himself a killer
  - 3. It’s impious for a son to prosecute his father
- What is the argument?
  - if (1 and 2 and 3) then C ?     [(1 & 2 & 3) → C]
  - if (1 or 2 or 3) then C ?          [(1 ∨ 2 ∨ 3) → C]
  - what’s the difference?
- To which does Euthyphro respond?
  - #3: It makes no difference whether the victim is a stranger or a relative [4b]
Two Kinds of Reasoning, II

- Deductive
  - reasoning from general principles to more specific principles or instances (particulars)
  - example
    - Any son who prosecutes his father is impious.
    - Euthyphro is a son who is prosecuting his father.
    - So (necessarily), Euthyphro is impious.

- Inductive
  - reasoning from particulars to general principles
  - example (10c)
    - a thing is not being seen because it is a thing-seen, but on the contrary it is a thing-seen because it is being seen;
    - nor is it because it is something-led that it is being led but because it is being led that it is something-led;
    - nor is something being carried because it is something-carried but it is something-carried because it is being carried;
    - [So,] when any thing is being changed (or affected) in any way, it is not being changed because it is something-changed, but rather it is something-changed because it is being changed.

Criteria of a Good Argument

- a proper form
- true premises
- a premises that are in some sense prior to the conclusion

The Form of an Argument

- The concept of form
  - Examples from elsewhere
    - In mathematics
      - Quadratic equation (ax^2 + bx + c = 0)
      - & Its solution x₁,₂ = \(-b ± \sqrt{b^2 - 4ac}
        \) \(2a\)
    - In literature
      - Limerick—five lines, aabba rhyme scheme, &c.
        A tutor who taught on the flute
        Tried teaching two tooters to toot.
        Said the two to the tutor
        Is it harder to toot or
        To tutor two tooters to toot?
  - Application in logic
    - What kinds of proposition are being used as evidence for what?

A Proper Form

- proper relation between premises and conclusion
  - example of an improper relation
    - "All the students in the German class know what die Friedhofswärterinwissembagenrentennumpfungenbscheineigung means.
    - Karl knows what the word means.
    - So, he is in the German class."
  - example of a proper relation
    - "All the students in the German class know what the word means.
    - Mary does not know.
    - So, she's not in the class."
  - what kinds of proposition are being used as evidence for what?

The Passage at 10b-c

- This passage is hard to translate into English because English uses the same participle ("seen") both as an adjective ("a thing seen") and part of a passive construction ("it is being seen"). Other language (including Greek) use different words, which makes the difference clearer. For an imperfect comparison with a more familiar language, compare the Spanish translation below.

- Greek
  - οὐχίδιπον ὑπὸ ὁρίσματος καὶ ήτοι, διὰ τοῦτο ὁρίσματος
    - ἀλλὰ τὸ ἔννοιαν διότι ὁρίσματος, διᾷ τοῦτο ὁρίσματος
  - οὐδὲ διὸν ὁρίσματος ἐστος, διᾷ τοῦτο ὁρίσματος
    - οὐδὲ διὸν ὁρίσματος φέρεται, ἀλλὰ διὸν φέρεται ὁρίσματος.

- Spanish
  - Luego no es cierto que se ve una cosa porque es vista, sino por lo contrario; ella es vista porque se la ve.
  - No es cierto que se empuja una cosa porque ella es empujada, sino que ella es empujada porque se la empuja.
  - No es cierto que se lleva una cosa porque es llevada, sino que ella es llevada porque se la lleva.
Validity

- the ideal relation between premises & conclusion
  - valid argument—an argument in which the conclusion follows with necessity from the premises
    • or (equivalently), ... in which the truth of the premises guarantees the truth of the conclusion
    • or ... for which the assertion of the premises and the denial of the conclusion would be a contradiction

Examples of Validity

- Valid argument
  1. All mammals are vertebrates.
  2. Dogs are mammals.
  3. So, Dogs are vertebrates.
- Here
  - the conclusion follows with necessity from the premises
  - the truth of the premises guarantees the truth of the conclusion
  - the assertion of the premises and the denial of the conclusion would be a contradiction.
- Another good argument
  1. This dog has always been friendly in the past.
  2. So, it will be friendly today.
- Here
  - the conclusion does not follow with necessity from the premises
  - the truth of the premises does not guarantee the truth of the conclusion
  - the assertion of the premises and the denial of the conclusion would not be a contradiction.

Validity & Soundness

- A valid argument is
  - an argument in which the conclusion follows with necessity from the premises (i.e., one that is formally correct)
- A sound argument is
  - a valid argument (formally correct)
  - with true premises

Examples of Validity

- Valid argument
  1. All mammals are vertebrates.
  2. Dogs are mammals.
  3. So, Dogs are vertebrates.
- Here
  - the conclusion follows with necessity from the premises
  - the truth of the premises guarantees the truth of the conclusion
  - the assertion of the premises and the denial of the conclusion would be a contradiction.

Premises Prior to the Conclusion

- this avoids triviality
- two forms of priority
  - premises better known than the conclusion,
    • e.g.,
      - Mars moves in an elliptical orbit; so do Mercury, Venus, Jupiter, Saturn, &c.
      - So, Planets move in elliptical orbits.
    • here, the observed fact is better known than the scientific law
  - premises state cause of conclusion
    • e.g.,
      - Any object (in a closed orbit) moving under the influence of an inverse-square law has an elliptical orbit.
      - Planets move (in a closed orbit) under the influence of an inverse-square law.
      - So they must move in an elliptical orbit.
    • here the scientific law gives the cause of the observed fact