PHILOSOPHY 102
BASIC CONCEPTS: VALIDITY AND SOUNDNESS

Segue

- Logic is…
- We are going to focus on…
- Question: what, exactly, is this guarantee?
- Logicians call it validity.

1. **DEF.** To say that an argument is valid is just to say that it is necessary that if the premises are true, then the conclusion is true.

   **Alternative DEF.** To say that an argument is valid is just to say that it is impossible for the conclusion to be false while the premises are true.

Note: **QUICKLY** write these down **NOW** so you can refer to them as we continue.

2. The definition says “it is necessary that…” There is a necessary connection between the premises and the conclusion of a valid argument.

   Compare these two arguments:

   **Argument 1**
   
   1. Fritz is human. (premise)
   2. All humans are mortal. (premise)
   3. So, Fritz is mortal. (conclusion)

   **Argument 2**

   4. Fritz is mortal. (premise)
   5. All humans are mortal. (premise)
   6. So, Fritz is human. (conclusion)

   **Question:**

   How does the relationship between the premises and the conclusion differ in each of these arguments?

   **Answer:**

   In Argument 1, there is a necessary connection between the premises and the conclusion; in Argument 2, there is not. In Argument 2, notice that even if the premises are true, they leave it open whether Fritz is mortal by virtue of being human, or Martian, or angelic, or other possible ways.
Compare…

Argument 3

1. All dogs are mammals.
2. Fritz is a dog.
3. So, Fritz is a mammal.

Argument 4

4. All dogs are mammals.
5. Fritz is a mammal.
6. So, Fritz is a dog.

In Argument 3, there is a necessary connection between the premises and the conclusion; but not in Argument 4. Can you explain why?

[Hint: is it possible for Fritz to be a mammal without being a dog?]

3. The definition of validity says “…if…. then…” It does not say any of the premises are true; it does not say that the conclusion is true. The definition of validity is a conditional sentence. Validity is about what must be the case if the premises are all true. Validity is not about the actual truth or falsity of the premises and the conclusion. Validity is about the relationship between the premises and the conclusion. Five observations underscore this point.

3a. An argument can be valid even though all of its premises are false.

Example:

1. Every Canadian was born in Tonasket. (False)
2. I am a Canadian. (False)
3. So, I was born in Tonasket. (True)

Example:

1. All squares are dogs. (False)
2. All dogs are rectangles. (False)
3. So, all squares are rectangles. (True)

3b. An argument can be valid even though its conclusion is false.

Example:

1. Every Western student has four legs. (False)
2. Everything that has four legs has three legs. (True)
3. So, every Western student has three legs. (False)
Example:

1. All triangles are three-sided figures. (True)
2. All three-sided figures are circles. (False)
3. So, all triangles are circles. (False)

3c. An argument can be valid even if there is falsehood all the way through it.

Example:

1. All electrons are elephants. (False)
2. Trump is an electron. (False)
3. So, Trump is an elephant. (False)

Example:

1. Some dogs are cats. (False)
2. All cats say ‘Merry Christmas’. (False)
3. So, some dogs say ‘Merry Christmas’. (False)

3d. An argument can have all true premises and a true conclusion and yet not be valid.

Example:

1. Some Washingtonians have hiked the Hoh River Trail. (True)
2. Some Washingtonians have hiked the PCT. (True)
3. So, some Washingtonians have hiked both the Hoh River Trail and the PCT. (True)

[Side question: how can you tell that it’s not valid?]

Example:

1. You exist. (True)
2. So, I exist. (True)

3e. We can know an argument is valid even if we don’t know whether all the premises are true.

Example:

1. All epistemologists are foundationalists.
2. All foundationalists are reliabilists.
3. So, all epistemologists are reliabilists.

4. The logician’s definition of validity is not the everyday definition of validity.

a. Everyday notion: to say something is valid is to say it’s true or plausible; applies to statements.
b. Logician’s notion: to say something is valid is…; applies only to arguments, not statements.
5. Invalidity

**DEF.** To say that an argument is invalid is just to say that it is not necessary that if the premises are true, then the conclusion is true.

**Alternative DEF.** To say that an argument is invalid is just to say that it is possible for the conclusion to be false while the premises are true.

6. **DEF.** To say that an argument is sound is just to say that it is valid and all the premises are true.

7. **DEF.** To say that an argument is unsound is just to say that either (a) it is invalid or (b) it has at least one false premise.

Pigs fly. Trump is Prez. If there are students in FH, there are people in FH201.
If pigs fly, 2+2=5. Some Prezs are asses. There are no students in FH201.
So, 2+2=5. So, Trump is an ass. So, there are no people in FH201.