Arguments

1. Arguments: In this class, we will be concerned with arguments. By "arguing," I do not mean the sort where two people yell and throw things at each other. I mean this:

> **Argument:** An argument is a collection of sentences that attempt to establish that some conclusion is true.

Arguments have the following two features:

> **Two Central Features of Arguments**
> (1) It is trying to CONVINCE us of something, or PROVE something to us.
> (2) It supplies some EVIDENCE in order to SUPPORT the thing being proved.

The claim that is being proved is called that "**conclusion**," and claims which provide the evidence to support that conclusion are called the "**premises**." They are the *reasons* given for why we should accept the conclusion.

For example:

1. Witnesses said that the thief had blonde hair and brown eyes.
2. Perry does not have blonde hair and brown eyes.
3. Therefore, Perry is not the thief.

In this example, the first two sentences are the premises. The third sentence is the conclusion. The speaker is presenting points (1) and (2) as bits of EVIDENCE, or as REASONS for why you should believe the conclusion (3) that Perry is not the killer.

Any successful argument must have two features: It must be both **valid** and **sound**. What do these words mean?

> **Validity:** An argument is valid when, IF all of it's premises were true, then the conclusion would also HAVE to be true.

In other words, a "valid" argument is one where the conclusion *necessarily* follows from the premises. It is IMPOSSIBLE for the conclusion to be false if the premises are true. The argument above about Perry is valid.

So, an argument is valid if it has the proper **form**. An argument can have the right form, but be completely and obviously false. For example:

1. Chad is a duck.
2. All ducks are rabbits.
3. Therefore, Chad is a rabbit.

The argument just given is valid. But, premise 2 as well as the conclusion are both false. Notice however that, IF the premises WERE true, then the conclusion would also have to be true. The conclusion necessarily **follows from** the premises. This is all that is required for validity.

So, a valid argument need not have true premises or a true conclusion. On the other hand, a **sound** argument DOES need to have true premises and a true conclusion:

Soundness: An argument is sound if it meets these two criteria: (1) It is valid. (2) Its premises are true.

In other words, a sound argument has the right *form* AND it is *true*.

Note: A sound argument will always have a true conclusion. This follows every time these 2 criteria for soundness are met. Do you see why?

Do you see why this is the case? First, recall that a sound argument is both valid AND has true premises. Now, refer back to the definition of "valid". For all valid arguments, if their premises are true, then the conclusion MUST also be true. So, all sound arguments have true conclusions.

Looking back to our argument about ducks and rabbits, we can see that it is **valid**, but not **sound**. It is not sound because it does not have all true premises. In fact, NEITHER of its premises are true.

So, the argument about Chad, ducks, and rabbits is valid, but NOT sound. What about the argument about Perry not being the thief? Well, we don't know! The argument is valid, but we will not know if it is sound unless we verify the truth of the premises. DOES the thief have blonde hair and brown eyes? Is it TRUE that Perry does NOT have blonde hair and brown eyes? We will not be able to determine whether or not the argument is sound until we answer these questions.

Here's an example of an argument that is obviously valid AND sound:

1. Williamsburg is in Virginia.
2. Virginia is in the United States.
3. Therefore, Williamsburg is in the United States.

In this argument, if the premises are true, then the conclusion is necessarily true (so it is valid). AND, as it turns out, the premises ARE true (Williamsburg IS in Virginia, and Virginia IS in the U.S.)—so the conclusion must also be true (so the argument is sound).

Thought Experiments

Metaphysics literally translates as 'beyond physics', or 'before physics'. Just like physicists, metaphysicists take themselves to be investigating the fundamental nature of reality. But, in metaphysics, we explore truths even MORE fundamental than physics. Physicists actually make LOTS of philosophical assumptions in their work. It is the philosophers' job to scrutinize those underlying assumptions.

Scientists often conduct experiments. We will too. Though philosophers don't have access to tangible data like weights, chemicals, or organs of, physics, chemistry, and biology, we DO have access to the data of intuition and sound reasoning. So, our experiments will be 'thought experiments'.

But, how can we prove anything merely using the data inside our minds!?

Actually, scientists sometimes engage in thought experiments too. You may have heard of Galileo. He's the guy who dropped stuff off of the leaning tower of Pisa, discovered the moons of Jupiter with a telescope, and so on. Well, Galileo, who was both a scientist AND a philosopher, came up with a really neat thought experiment about gravity.

In Galileo's time, it was often thought that, the heavier an object is, the faster it falls toward the ground. But, now consider:

Galileo's Balls: Imagine two iron spheres. One is 10 lbs., and the other is 20 lbs. The theory of gravity during Galileo's day predicts that the 20 lb. ball will fall faster than the 10 lb. ball. But, now imagine that the two balls are tied together by a length of rope, or string. How fast will the two balls fall now?

Slower than the 20 lb. ball by itself: Since the 10 lb. ball falls more slowly than the 20 lb. ball when they are NOT tied together, when they ARE tied together, the 10 lb. ball will act as a sort of DRAG or PARACHUTE to the heavier ball. Since it falls more slowly, it will constantly tug at the string between them and slow the heavier ball down.

Faster than the 20 lb. ball by itself: When the two balls are tied together, they now form a 30 lb. object! So, the balls tied together will fall FASTER than the 20 lb. ball would fall by itself.

But, a-ha! The balls tied together cannot both fall faster AND slower than either ball individually. For, that is a contradiction! Galileo concluded that objects do NOT fall at different rates. And he conducted this experiment entirely inside of his mind...