

What is a good argument?

Last time I said that philosophy is an attempt to answer certain sorts of questions on the basis of reason; and I said that to answer a question on the basis of reason is to give an argument for your answer. But what is an argument?

An argument has two parts, First, there's what you're arguing for --- the **conclusion** of the argument. Second, there's the stuff you say in support of that conclusion. The claims you make in support of a conclusion are the **premises** of the argument.

We can all agree that some arguments are good arguments, and some are bad arguments. But what makes an argument good or bad?

One good way to write out an argument is by listing the premises of the argument by number, and then writing the conclusion. Consider the following example of an argument:

1. Notre Dame is in Indiana.
2. Indiana is the Hoosier State.

C. The number of beer bottles on Notre Dame's campus right now is odd.

Is this a good argument?

There's obviously something wrong with this argument; it is not a good argument. But the problem is not really with the premises; both of them are true, after all. Rather, the problem is with the relationship between the premises and the conclusion. You might express this by saying that the premises **have nothing to do with the conclusion**, or that they **don't really support the conclusion**, or that they **don't prove the conclusion**.

All of these things are true. But they are not as clear as one might like. After all, what does it mean to say that some premises do or do not support or prove a conclusion?

Here is one thing you might mean: you might mean that the premises could be true without the conclusion being true; or, equivalently, that the truth of the premises does not guarantee the truth of the conclusion.

When the truth of an argument's premises fail to guarantee the truth of its conclusion, we will say that the argument is **invalid**. When the truth of an argument's premises do guarantee the truth of its conclusion, we will say that the argument is **valid**.

Validity is the central concept of logic, the study of arguments.

Let's consider some examples.

1. All men are mortal.
2. George Bush is a man.

C. George Bush is mortal.

Valid or invalid?

How about:

1. If George Bush is a man, then George Bush is mortal.
2. George Bush is mortal.

C. George Bush is a man.

How about:

1. Either Notre Dame will win the National Championship this year or USC will.
2. USC will not win the National Championship this year.

C. Notre Dame will win the National Championship this year.

A slightly more tricky one is this argument:

1. If the moon is made of cheese, then it will soon become moldy.
2. The moon will not soon become moldy.

C. The moon is not made of cheese.

One way to think about the validity of certain arguments is by thinking of the arguments as being of certain *forms*. For example, here are the forms of the some arguments we have just discussed.

1. Either Notre Dame will win the National Championship this year or USC will.
2. USC will not win the National Championship this year.

C. Notre Dame will win the National Championship this year.

1. Either p or q.
2. Not-q.

C. p.

If you think about it for a second, you'll see that any argument of this form will be valid: that is, no matter what sentences you substitute in for "p" and "q", you'll get a valid argument. The first premise tells you that either p or q must be true; the second premise tells you that it is not q; so you know that p must be true, which is what the conclusion says.

This is why thinking about the form of an argument can be useful. Sometimes seeing that the argument is of a certain form can show you that the argument is valid.

What is the form of this argument:

1. If the moon is made of cheese, then it will soon become moldy.
2. The moon will not soon become moldy.

C. The moon is not made of cheese.

1. If p , then q .
2. Not- q .

C. Not- p .

Would any argument of this form be valid? Why or why not?

Now return to our example of an invalid argument:

1. If George Bush is a man, then George Bush is mortal.
 2. George Bush is mortal.
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- C. George Bush is a man.

This has the form:

1. If p, then q.
 2. q.
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- C. p.

This is an invalid form of argument. How would you show that this form of argument is invalid? Can you think of an example of an argument of this form with true premises and a false conclusion?

Let's test one more argument for validity:

1. I am the greatest basketball player in the world.

C. I am a better basketball player than Kobe Bryant.

Is this argument valid? Is it a good argument for the conclusion that I am a better basketball player than Kobe Bryant?

Despite the argument's validity, the answer is clearly "No." It is not a good argument because the premise of the argument is, unfortunately, false.

Arguments can be valid but still have one or more false premises. If an argument is **both valid and has all true premises**, we will say that the argument is **sound**. An argument is **unsound** if it **either has a false premise, or is invalid**.

Can a sound argument have a false conclusion? Why or why not?

So one way for an argument to be bad is for it to be invalid; another way for it to be bad is for it to be valid, but unsound (i.e., for it to be valid but have one or more false premises).

But there are other ways for arguments to be bad. Suppose I give you the following argument:

1. The number of beer bottles on Notre Dame's campus right now is odd.

C. The number of beer bottles on Notre Dame's campus right now is not 496.

Suppose that it turns out that the premise of this argument is true -- someone creates a perimeter around the campus, does a thorough check, and finds out that, at the time I made the argument, the number of beer bottles on Notre Dame's campus was, indeed, odd. It still seems that there would be something wrong with my argument. But if the argument is sound (and hence also valid), what could be wrong with it?

So arguments can go wrong by being invalid, or by having a false premise, or by having a premise which the author has no good reason to believe. But there's yet another way for an argument to go wrong. Consider this argument:

1. Obama will be the next president.

C. Either Obama will be the next president or Bob Barr will be the next president.

This argument certainly seems odd. But how would you explain what's wrong with it?

To sum up:

- Arguments consist of one or more premises, plus a conclusion.
- There are many ways for an argument to be less than perfectly good. One way is for the argument to be invalid; an argument is invalid when it is possible for the premises to be true without the conclusion being true. Another way to put the same idea is that an argument is valid when the truth of its premises guarantee the truth of its conclusion.
- Valid arguments can go wrong by being unsound: an argument is unsound when it is either invalid or has one or more false premises; so, a valid argument is unsound if and only if it has one or more false premises.
- Sound arguments can also go wrong by the premises being insufficiently supported. To criticize an argument's premises you don't always have to show they are false; you can also show that there is no good reason to believe that they are true. These are not the same thing; showing that there is no good reason to believe something does not show that it is not true.
- Even sound arguments with premises the author knows to be true can be faulty arguments if they are circular, or assume the conclusion they are trying to establish.

All of these points will be crucial for your work for the rest of the semester. Philosophy is the attempt to answer certain sorts of questions by argument; so, our aim for the rest of this semester will be to evaluate arguments which purport to give us answers to the questions in which we are interested. In order to evaluate arguments -- whether you are criticizing them, or defending them from criticism -- you need to clearly separate the various different ways in which an argument can go wrong.

A good test of whether you have a good grip on our discussion today is whether you're able to explain why none of the following sentences should appear in any paper you write this semester.

- “That argument is false.”
- “The first premise of the argument is unsupported, so the argument is unsound.”
- “The second premise of the argument is totally invalid.”
- “The author’s conclusion is false; so clearly the argument must be invalid.”
- “The author assumes what he is trying to prove, which is obviously invalid.”