

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.

So to give an argument is to enumerate some premises in support of a conclusion. But suppose that you are given an argument for some conclusion - say, that God exists. How do you tell whether that argument is a good or bad argument? What does it even mean to say that an argument is good or bad?

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We can begin by considering some examples of arguments. One good way to write out an argument is by listing the premises of the argument by number, and then writing the conclusion, as follows:

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.

Here the horizontal line represents the transition from premises to conclusion. Is this argument a good argument?

There's obviously something wrong with this argument; it is not a good argument. But why? The problem is not really with the premises; both of them are true, after all. Rather, the problem is with the relationship, or lack thereof, 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**.

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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, which is the study of arguments. It is the single most important concept for you to grasp in this course. Let's try to get a handle on it by considering some arguments, and trying to figure out whether they are valid or invalid.

An argument is **valid** if and only if it is impossible for its premises to be true, while its conclusion is false.

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1. All men are mortal.
 2. Brian Kelly is a man.
-
- C. Brian Kelly is mortal.

Valid or invalid?

How about:

1. If Brian Kelly is a man, then Brian Kelly is mortal.
 2. Brian Kelly is mortal.
-
- C. Brian Kelly is a man.

Or:

1. Either Notre Dame will win the National Championship in 2010 or USC will.
 2. USC will not win the National Championship in 2010.
-
- C. Notre Dame will win the National Championship in 2010.

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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.

It is sometimes useful to think about the validity of certain arguments is by thinking of the arguments as being of certain **forms**. To get an idea of what I mean, let's look at the forms of some of arguments we have just discussed.

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1. Either Notre Dame will win the National Championship in 2010 or USC will.
2. USC will not win the National Championship in 2010.

C. Notre Dame will win the National Championship in 2010.

We said that this argument was valid. And the reason why it is valid clearly has something to do with the way the sentences “ND will win the National Championship in 2010” and “USC will win the National Championship in 2010” are combined with “or” and “not” in the premises:

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.

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2. USC will **not** win the National Championship this year.

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

Given this, you might think of the form of this argument as follows:

1. **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.** After all, 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.

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Let's return to our example about the moon:

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**.

What is the form of this argument?

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

C. **Not-p**.

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

An argument is **valid** if and only if it is impossible for its premises to be true, while its conclusion is false.

Now return to our example of an invalid argument:

1. If **Brian Kelly is a man**, then **Brian Kelly is mortal**.
 2. **Brian Kelly is mortal**.
-
- C. **Brian Kelly is a man**.

This has the form:

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

What does it mean to say that a form of argument is **invalid**? Is this an invalid form of argument?

Can you think of an argument of this form with true premises and a false conclusion?

An argument is **valid** if and only if it is impossible for its premises to be true, while its conclusion is false.

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 LeBron James.

Is this argument valid?

Is it a **good argument** for the conclusion that I am a better basketball player than LeBron James?

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?

Can a valid argument have a false conclusion?

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 also other ways for an argument to be bad.

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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?

What seems to be wrong with it is that, even if the premise turns out to be true, I had no reason to believe that it was true when I gave you the argument. It seems as though a good argument should be valid, should have true premises, and should be such that we have some good reason for thinking that the premises are true -- they shouldn't just be "lucky guesses."

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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. God exists.

C. God exists.

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

Here's a different argument which exhibits a related flaw:

1. Obama will be elected president in 2012.

C. Either Obama will be elected president in 2012 or Charlie Weis will be elected president in 2012.

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An argument is **sound** if and only if it is valid and all of its premises are true.

To sum up our preliminary discussion of the goodness and badness of arguments:

- 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 guarantees 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.

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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.

Before doing this, though, you have to be able to state arguments clearly: and this involves **identifying the premises of an argument**. This is not always easy to do, since writers do not always make their premises obvious.

Your first paper assignment - which we'll discuss in more detail next week - will be to take a paragraph of text, and give an analysis of the author's argument in premise/conclusion form. Let's discuss a short example of how one might go about doing this.

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A first step is to try to identify the **conclusion** of the argument. Here that seems to be:

ND's football team will win more games this year than they did last year.

Now, what are the premises from which this conclusion is supposed to follow? There seem to be two:

ND's football team won six games last year.

ND's football team will beat at least seven teams this year.

Notre Dame's football team will win more games this year than they did last year. After all, they won only six games last year, and there's at least seven teams on the schedule for next year that they will definitely beat.

We can then present the argument in premise/conclusion form as follows:

1. ND's football team won six games last year.
 2. ND's football team will beat at least seven teams this year.
-
- C. ND's football team will win more games this year than they did last year.

Of course, this is a very simple argument. But the means for reconstructing more complex arguments are, in principle, the same. Consider the following more complex argument for the same conclusion:

Notre Dame's football team will win more games this year than they did last year. After all, they won only six games last year, and next year they play Purdue, Michigan State, BC, Western Michigan, Tulsa, Navy, and Army; and they will definitely beat all of those teams.

This argument seems to differ from the previous one only in that in this argument, the second premise is not simply assumed, but rather is given a defense. That is, the argument contains a sub-argument whose conclusion is the second premise of our previous argument.

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Most of the arguments we'll be interested in will be like this; they will contain sub-arguments for premises, which are then used to derive the intended conclusion.

When you represent arguments of this sort, it is important to display their structure, by noting which premises are supposed to follow from which other premises. For example, our argument above might be represented in premise/conclusion form as follows:

1. ND's football team won six games last year.
 2. Next year, ND plays Purdue, Michigan State, BC, Western Michigan, Tulsa, Navy, and Army.
 3. ND will definitely beat Purdue, Michigan State, BC, Western Michigan, Tulsa, Navy, and Army.
 4. Next year, ND's football team will win at least seven games. (2,3)
-
- C. ND's football team will win more games next year than they did last year. (1,4)

Here, premise 4 is derived from premises 2 and 3; and then the intended conclusion is derived from 1 along with 4. This fact about the argument is indicated by noting which premises a given claim is supposed to follow from.

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.”