Arguments

We'll start with the basic idea of an *argument*. An argument is not just a verbal dispute about some matter. Rather, it is a way of articulating reasons. Or, to be more precise:

An *argument* is a series of statements where the last statement supposedly *follows from* or *is supported by* the first statements. The last statement is called the *conclusion*, and the first statements are called the *premises*.

Here's a relatively simple example:

1. Everyone who lives in Los Angeles lives in California.
2. Alvin lives in Los Angeles.
3. Therefore, Alvin lives in California.

Suppose we were trying to convince you that our friend Alvin lives in California. We might give you the following reasons for believing that Alvin lives in California. First, we know that Alvin lives in Los Angeles. And second, we know that Los Angeles is in California, so anyone who lives in Los Angeles automatically lives in California. These two reasons are represented by premises 1 and 2, and they are meant to support the conclusion, which is number 3.

In this example, if you were to accept the two premises, you would have to accept the conclusion. So our argument is, in a certain sense, a *good* argument. But there are different ways that an argument can be good.

Validity

The first way an argument can be good is if its premises actually do support its conclusion. Recall that our definition of an argument is a series of statements in which the conclusion *supposedly* follows from or is supported by the premises. Well, there are some arguments with conclusions that actually do follow from the premises, and there are some arguments with conclusions that don't actually follow from the premises, even though they *supposedly* do. The first type of arguments are *valid* arguments, and the second type are *invalid* arguments. Or, a bit more carefully:

An argument is *valid* if its conclusion follows from its premises.

Or, more carefully still:

An argument is *valid* if it satisfies the following condition: If its premises were true, then its conclusion would *have to be* true.

The argument we gave previously is an example of a valid argument because if premises 1 and 2 were true, then 3 would have to be true. But the following is an example of an *invalid* argument:

1. Everyone who lives in Los Angeles lives in California.
2. Alvin lives in California.
3. Therefore, Alvin lives in Los Angeles.

If we were to put forth this argument while trying to convince you that our friend Alvin lives in Los Angeles, you shouldn't be convinced. Why not? Simply because the reasons that we gave for believing that Alvin lives in Los Angeles don't actually support that conclusion. For in this case, premise 1 could be true (it actually is true), and premise 2 could be true, but the conclusion might still be false (Alvin could live in San Francisco, for instance). Thus this is an *invalid* argument. The conclusion doesn't actually follow from the premises. It's not the case that if its premises were true, then its conclusion would have to be true.

Adapted from: "Logical Toolkit" in Perry, Bratman, and Fischer's 'Introduction to Philosophy' AND https://writingcenter.unc.edu/tips-and-tools/fallacies/

In life, we're mostly interested in putting forth valid arguments. At the very least, our conclusions must follow from our premises. But although validity is a good first step, it's not the only way that an argument can be good.

Soundness

If we succeed in putting forth a valid argument, that's a good start. But we want more from our arguments. We also want our premises to actually be true. Recall that validity was about the *relationship* between premises and conclusion: If the premises were true, then the conclusion would have to be true. But sometimes that's a big "if." That is, sometimes we're not sure whether the premises are actually true. That's the next thing we care about. If our argument is valid and its premises are also true, then the argument is *sound*. More precisely:

An argument is *sound* if it is valid and has all true premises.

Or, more precisely still:

An argument is *sound* if it satisfies the following two conditions:

1. It is valid.
2. All of its premises are true.

Let us give another example to understand soundness better. Consider the following argument:

1. Global warming kills innocent people.
2. Killing innocent people is always morally objectionable.
3. Therefore, global warming is morally objectionable.

This is a much more interesting argument than the one we gave about our friend Alvin. Indeed, it is likely to stir emotions. But we're not going to discuss the moral rightness or wrongness of global warming— we're just using this argument as an example so that we can better understand logic. Now, there are at least two ways that an argument can be good, so whenever you are confronted with an argument such as this, you should always ask yourselves two questions: First, is it valid? Second, is it sound?

We'll save you the suspense: This argument is indeed valid. Remember what that means, though. It doesn't mean that global warming is morally objectionable.

All it means is that the premises of this argument really do support the conclusion of the argument. Or, in other words, *if* the premises were true, then the conclusion would have to be true. Whether this argument is valid is not a matter of controversy. What *is* a matter of controversy, however, is whether this argument is sound. That is, is it a valid argument with premises that are actually true? This is where opinions differ. For our purposes, it's enough to realize that if the premises of this argument actually are true, then the argument is sound (because it's also valid), and if the premises of this argument actually are false, then the argument is unsound (even though it's still valid).

Why do we care about putting forth sound arguments? Well, if you present someone with a valid argument and you can successfully argue that the premises of your argument are true, then the other person *must* accept the conclusion as well, on pain of irrationality. Because valid arguments are such that their conclusions really do follow from their premises, one cannot accept their premises without also accepting their conclusions. So if you are giving us your reasons for, say, your belief in God, and you present us with a valid argument with premises with which we agree, then we must agree that God exists. Logic can be a very powerful tool.

Persuasiveness

Although typically soundness is the ultimate goal for an argument, occasionally that's not enough. For purposes of illustration, suppose that you believe in God and your belief is actually true and you present an atheist with the following argument for God's existence:

1. God exists.
2. Therefore, God exists.

Given our supposition that God actually does exist, this argument is a sound argument. First, it's valid because its conclusion actually does follow from its premise. If the premise were true, then the conclusion would have to be true (because they are identical!). Second, again, given our supposition that God exists, the premise of this argument is true. So it looks like the argument is sound. But you're never going to convince your atheist friend to believe in God on the basis of this argument. Why not? Because it's utterly unpersuasive. Although it is sound, it commits a logical fallacy, namely, it's *circular*. An argument is circular if its conclusion appears somewhere within its premises. The reason why no one should be persuaded by a circular argument is that one would have to *already* accept the conclusion of the argument *before* one accepted the premises. This gets things backward. Those who already accept the conclusion will not need the argument to be persuaded, and those who do not already accept the conclusion have been given no reason to accept the premise. A similar, although more subtle, example is the following argument:

1. The Bible says that God exists.
2. Everything the Bible says is true.
3. Therefore, God exists.

Suppose again that God does in fact exist, the Bible says this, and everything the Bible says is true. Given these suppositions, this is a sound argument. But it's utterly unpersuasive because one would need to accept its conclusion before one accepted premise 2. This is a logical fallacy related to circularity often called ***begging the question***. An argument begs the question if one or more of its premises relies for its truth on the truth of the conclusion.

Additional examples of Begging the Question:

> "Smoking causes lung cancer because it is a known carcinogen."

> "Surely the chicken came before the egg as eggs always come after chickens."

So although validity and soundness are virtues of arguments, you have to be wary that your arguments are not flawed in some other way, such as by being circular.

Other Fallacies

It's not always easy to figure out whether a particular bit of reasoning is valid. In fact, there are some bits of reasoning that *seem* to be valid even though they are not. It will be useful to give a couple of examples of this phenomenon. A common fallacy of this sort is called ***affirming the consequent***, illustrated by the following example:

1. If Annika can vote in the United States, then Annika is 18 years old.
2. Annika is 18 years old.
3. Therefore, Annika can vote in the United States.

The first premise of this argument is a *conditional*— that is, it is an "if . . . then" statement. The "if" part of a conditional is called the *antecedent*, and the "then" part of a conditional is called the *consequent*. Notice that premise 2 asserts the truth of the consequent of the conditional in premise 1, and then the argument concludes

that the antecedent is therefore true. This is why this is called affirming the consequent, and it is an invalid form of reasoning. It's probably not too difficult to see in this simple example that even if premises 1 and 2 are true, the conclusion may still be false. Just imagine a situation in which Annika is 18 years old but is not a citizen of the United States. In that case, it would still be true that if she can vote in the United States, she is 18 years old, and it would be true that she is 18 years old, but it would not be true that she can vote in the United States. Any argument that takes this form—is invalid.

A related fallacy is ***denying the antecedent***. Knowing what we know about conditionals, you can probably guess what this will look like:

1. If Amelia can vote in the United States, then she is 18 years old.
2. Amelia cannot vote in the United States.
3. Therefore, Amelia is not 18 years old.

Again, we have a conditional in the first premise, but in this case the second premise is a denial of the antecedent. The argument then concludes that the consequent must be false as well. But as in the previ- ous case, this is a fallacious form of reasoning. Again, imagine a situation in which Amelia is 18 years old but is not a citizen of the United States. In that case, it would still be true that if she can vote in the United States, she is 18 years old, and it would be true that she cannot vote in the United States, but it would not be true that she is not 18 years old. And again, any argument that takes this form—is invalid.

These two invalid bits of reasoning *seem* valid because they closely resemble two bits of reasoning that *are* valid. These are ***affirming the antecedent*** and ***denying the consequent***, and they are illustrated by the following two arguments:

1. If Amelia can vote in the United States, then she is 18 years old.
2. Amelia can vote in the United States.
3. Therefore, Amelia is 18 years old.

1. If Amelia can vote in the United States, then she is 18 years old.
2. Amelia is not 18 years old.
3. Therefore, Amelia cannot vote in the United States.

These are both valid forms of reasoning. In both arguments, if premises 1 and 2 were true, then the conclusion would have to be true.

Additional Common Fallacies:

<u>Hasty Generalization</u>

Definition: Making assumptions about a whole group or range of cases based on a sample that is inadequate (usually because it is atypical or too small). Stereotypes about people ("librarians are shy and smart," "wealthy people are snobs," etc.) are a common example of the principle underlying hasty generalization.

Example: "My roommate said her Capstone class was hard, and the one I'm in is hard, too. All Capstone classes must be hard!" Two people's experiences are, in this case, not enough on which to base a conclusion.

Tip: Ask yourself what kind of "sample" you're using: Are you relying on the opinions or experiences of just a few people, or your own experience in just a few situations? If so, consider whether you need more evidence, or perhaps a less sweeping conclusion.

<u>Post hoc (also called False Cause)</u>

Adapted from: "Logical Toolkit" in Perry, Bratman, and Fischer's 'Introduction to Philosophy' AND https://writingcenter.unc.edu/tips-and-tools/fallacies/

Definition: Assuming that because B comes after A, A caused B. Of course, sometimes one event really does cause another one that comes later. But sometimes two events that seem related in time aren't really related as cause and effect. That is, correlation isn't the same thing as causation.

Examples: "President Jones raised taxes, and then the rate of violent crime went up. Jones is responsible for the rise in crime." The increase in taxes might or might not be one factor in the rising crime rates, but the argument hasn't shown us that one caused the other.

Tip: To avoid the post hoc fallacy, the arguer would need to give us some explanation of the process by which the tax increase is supposed to have produced higher crime rates. And that's what you should do to avoid committing this fallacy: If you say that A causes B, you should have something more to say about how A caused B than just that A came first and B came later.

Slippery Slope

Definition: The arguer claims that a sort of chain reaction, usually ending in some dire consequence, will take place, but there's really not enough evidence for that assumption. The arguer asserts that if we take even one step onto the "slippery slope," we will end up sliding all the way to the bottom; he or she assumes we can't stop partway down the hill.

Example: "If I fail PD2, I won't be able to graduate. If I don't graduate, I probably won't be able to get a good job, and I may very well end up doing temp work or flipping burgers for the next year."

Tip: Check your argument for chains of consequences, where you say "if A, then B, and if B, then C," and so forth. Make sure these chains are reasonable.

Equivocation

Definition: Equivocation is sliding between two or more different meanings of a single word or phrase that is important to the argument.

Example: "Giving money to charity is the right thing to do. So charities have a right to our money." The equivocation here is on the word "right": "right" can mean both something that is correct or good (as in "I got the right answers on the test") and something to which someone has a claim (as in "everyone has a right to life").

Tip: Identify the most important words and phrases in your argument and ask yourself whether they could have more than one meaning. If they could, be sure you aren't slipping and sliding between those meanings.

False Dichotomy

Definition: In false dichotomy, the arguer sets up the situation so it looks like there are only two choices. The arguer then eliminates one of the choices, so it seems that we are left with only one option: the one the arguer wanted us to pick in the first place. But often there are really many different options, not just two—and if we thought about them all, we might not be so quick to pick the one the arguer recommends.

Example: "Sage is in bad shape. Either we tear it down and put up a new building, or we continue to risk students' safety. Obviously we shouldn't risk anyone's safety, so we must tear the building down." The argument neglects to mention the possibility that we might repair the building or find some way to protect students from the risks in question—for example, if only a few rooms are in bad shape, perhaps we shouldn't hold classes in those rooms.

Tip: Examine your own arguments: if you're saying that we have to choose between just two options, is that really so? Or are there other alternatives you haven't mentioned? If there are other alternatives, don't just ignore them—explain why they, too, should be ruled out.

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Red Herring

Definition: Partway through an argument, the arguer goes off on a tangent, raising a side issue that distracts the audience from what's really at stake. Often, the arguer never returns to the original issue.

Example: "Grading this exam on a curve would be the fairest thing to do. After all, classes go more smoothly when the students and the professor are getting along well."

It is pretty obvious that the arguer went off on a tangent—the fact that something helps people get along doesn't necessarily make it fairer; fairness and justice sometimes require us to do things that cause conflict. But the audience may feel like the issue of teachers and students agreeing is important and be distracted from the fact that the arguer has not given any evidence as to why a curve would be fair.

Tip: Try laying your premises and conclusion out in an outline-like form. How many issues do you see being raised in your argument? Can you explain how each premise supports the conclusion?

Straw Man

Definition: One way of making our own arguments stronger is to anticipate and respond in advance to the arguments that an opponent might make. In the straw man fallacy, the arguer sets up a weak version of the opponent's position and tries to score points by knocking it down.

Example: "The American Declaration of Independence declares that all people are created equal. But all people are born with different emotional and physical abilities. Therefore, the Declaration of Independence is wrong." The arguer is using a particular definition of 'equal' to attack the Declaration that is likely not the definition the original writers had in mind when writing the original argument.

Tip: Be charitable to your opponents. State their arguments as strongly, accurately, and sympathetically as possible. If you can knock down even the best version of an opponent's argument, then you've really accomplished something.

Appeal to Emotion

Definition: The appeal to emotion takes place when an arguer tries to get people to accept a conclusion by appealing to their emotional responses of fear, pity, joy, etc., rather than providing any verifiable factual evidence.

Examples: "I know the exam is graded based on performance, but you should give me an A. My cat has been sick, my car broke down, and I've had a cold, so it was really hard for me to study!" The information the arguer has given might feel relevant and might even get the audience to consider the conclusion—but the information isn't logically relevant, and so the argument is fallacious.

Tip: Make sure that you aren't simply trying to get your audience to agree with you by making them feel sorry for someone or angry at someone else.

Appeal to Authority

Definition: Often we add strength to our arguments by referring to respected sources or authorities and explaining their positions on the issues we're discussing. If, however, we try to get readers to agree with us simply by impressing them with a famous name or by appealing to a supposed authority who really isn't much of an expert, we commit the fallacy of appeal to authority.

Example: "We should abolish the death penalty. Many respected people, such as actor Guy Handsome, have publicly stated their opposition to it."

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Tip: There are two easy ways to avoid committing appeal to authority: First, make sure that the authorities you cite are experts on the subject you're discussing. Second, rather than just saying "Dr. Authority believes X, so we should believe it, too," try to explain the reasoning or evidence that the authority used to arrive at their opinion. That way, your readers have more to go on than a person's reputation.

Ad Populum

Definition: The Latin name of this fallacy means "to the people." There are several versions of the ad populum fallacy, but in all of them, the arguer takes advantage of the desire most people have to be liked and to fit in with others and uses that desire to try to get the audience to accept his or her argument.

Example: "A majority of Americans are middle class. 70% of Americans think so!" The arguer is trying to get us to agree with the conclusion by appealing to our desire to fit in with other Americans.

Tip: Make sure that you aren't recommending that your readers believe your conclusion because everyone else believes it, all the cool people believe it, people will like you better if you believe it, and so forth. Keep in mind that the popular opinion is not always the right one.

Ad Hominem and Tu Quoque

Definitions: The ad hominem ("against the person") and tu quoque ("you, too!") fallacies focus our attention on people rather than on arguments or evidence. In both of these arguments, the conclusion is usually "You shouldn't believe So-and-So's argument." The reason for not believing So-and-So is that So-and-So is either a bad person (ad hominem) or a hypocrite (tu quoque). In an ad hominem argument, the arguer attacks his or her opponent instead of the opponent's argument. In a tu quoque argument, the arguer points out that the opponent has actually done the thing he or she is arguing against, and so the opponent's argument shouldn't be listened to.

Examples: "You shouldn't smoke tobacco because it can lead to a higher risk of cancer and cardiovascular disease." "Says the person who smokes 10 cigarettes a day, and didn't pass Calculus until their 3rd attempt!"

Tip: Be sure to stay focused on your opponents' reasoning, rather than on their personal character. (The exception to this is, of course, if you are making an argument about someone's character—if your conclusion is "President Jones is an untrustworthy person," premises about her untrustworthy acts are relevant, not fallacious.)

Other Helpful Distinctions:

A Priori and A Posteriori

These are Latin terms that are especially useful in describing the way in which we are able to come to know certain propositions. Propositions that can be known a priori are those that can be known completely independent of experience. They are those propositions that we can know, so to speak, "from the armchair." For example, our knowledge that all triangles have three sides is a piece of a priori knowledge. There's no need to go around the world looking for triangles and counting up their sides to conclude that all triangles have three sides. On the other hand, propositions that can be known a posteriori are those that require experience of the world to come to know. For example, your knowledge that it is raining outside right now is a posteriori knowledge. To determine whether it is raining, you need to open your eyes and look at the world. No amount of armchair speculation will help.

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