

LOGICAL FALLACIES

This is a guide to using logical fallacies in debate. And when I say "using," I don't mean just pointing them out when opposing debaters commit them -- I mean deliberately committing them oneself, or finding ways to transform fallacious arguments into perfectly good ones.

Debate is, fortunately or not, an exercise in persuasion, wit, and rhetoric, not just logic. In a debate format that limits each debater's speaking time, it is simply not reasonable to expect every proposition or conclusion to follow precisely and rigorously from a clear set of premises stated at the outset. Instead, debaters have to bring together various facts, insights, and values that others share or can be persuaded to accept, and then show that those ideas lead more or less plausibly to a conclusion. Logic is a useful tool in this process, but it is not the only tool -- after all, "plausibility" is a fairly subjective matter that does not follow strict logical rules.

WHY BE FAMILIAR WITH LOGICAL FALLACIES?

I can think of a couple of good reasons. First, it makes you look smart. If you can not only show that the opposition has made an error in reasoning, but you can give that error a name as well (in Latin!), it shows that you can think on your feet and that you understand the opposition's argument possibly better than they do.

Second, and maybe more importantly, pointing out a logical fallacy is a way of *removing an argument from the debate* rather than just weakening it. Much of the time, a debater will respond to an argument by simply stating a counterargument showing why the original argument is not terribly significant in comparison to other concerns, or shouldn't be taken seriously, or whatever. That kind of response is fine, except that the original argument still remains in the debate, albeit in a less persuasive form, and the opposition is free to mount a rhetorical offensive saying why it's important after all. On the other hand, if you can show that the original argument actually commits a logical fallacy, you put the opposition in the position of justifying why their original argument should be considered *at all*. If they can't come up with a darn good reason, then the argument is actually removed from the round.

It is therefore not enough simply to point out a logical fallacy and move on; there is an art to pointing out logical fallacies in your opposition's arguments. Here are a few strategies I've found useful in pointing out logical fallacies in an effective manner:

State the name of the logical fallacy, preferably in both Latin and English, and make sure you use the phrase "logical fallacy." Why? Because it is important to impress on everyone that this is no mere counterargument you are making, nor are you just labelling the opposition's viewpoint as "fallacious" for rhetorical effect.

Tell everybody what the fallacy means and why it is wrong. But be careful -- you have to do this without sounding pedantic. You should state the fallacy's meaning as though you are reiterating what you assume your intelligent judge already knows.

EXAMPLES OF LOGICAL FALLACIES

1. **Argumentum ad antiquitatem** (the argument to antiquity or tradition). This is the familiar argument that some policy, behavior, or practice is right or acceptable because "it's always been done that way." This is an extremely popular fallacy in debate rounds; for example, "Every great civilization in history has provided state subsidies for art and culture!" But that fact does not justify continuing the policy.
2. **Argumentum ad hominem** (argument directed at the person). This is the error of attacking the character or motives of a person who has stated an idea, rather than the idea itself. The most obvious example of this fallacy is when one debater maligns the character of another debater (e.g., "The members of the opposition are a couple of fascists!"), but this is actually not that common. A more typical manifestation of argumentum ad hominem is attacking a source of information -- for example, responding to a quotation from Richard Nixon on the subject of free trade with China by saying, "We all know Nixon was a liar and a cheat, so why should we believe anything he says?"
3. **Argumentum ad ignorantiam** (argument to ignorance). This is the fallacy of assuming something is true simply because it hasn't been proven false. For example, someone might argue that global warming is certainly occurring because nobody has demonstrated conclusively that it is not. But failing to prove the global warming theory false is not the same as proving it true.
4. **Argumentum ad logicam** (argument to logic). This is the fallacy of assuming that something is false simply because a proof or argument that someone has offered for it is invalid; this reasoning is fallacious because there may be another proof or argument that successfully supports the proposition. This fallacy often appears in the context of a straw man argument.
5. **Argumentum ad misericordiam** (argument or appeal to pity). The English translation pretty much says it all. Example: "Think of all the poor, starving Ethiopian children! How could we be so cruel as not to help them?" The problem with such an argument is that no amount of special pleading can make the impossible possible, the false true, the expensive costless, etc.
6. **Argumentum ad nauseam** (argument to the point of disgust; i.e., by repitition). This is the fallacy of trying to prove something by saying it again and again. But no matter how many times you repeat something, it will not become any more or less true than it was in the first place. Of course, it is not a fallacy to state the truth again and again; what is fallacious is to expect the repitition alone to substitute for real arguments.
7. **Argumentum ad numerum** (argument or appeal to numbers). This fallacy is the attempt to prove something by showing how many people think that it's true. But no matter how many people believe something, that doesn't necessarily make it true or right. Example: "At least 70% of all Americans support restrictions on access to abortions." Well, maybe 70% of Americans are wrong!
8. **Argumentum ad populum** (argument or appeal to the public). This is the fallacy of trying to prove something by showing that the public agrees with you. For an example, see #7 above.

9. *Argumentum ad verecundiam* (argument or appeal to authority). This fallacy occurs when someone tries to demonstrate the truth of a proposition by citing some person who agrees, even though that person may have no expertise in the given area. For instance, some people like to quote Einstein's opinions about politics (he tended to have fairly left-wing views), as though Einstein were a political philosopher rather than a physicist.
10. *Circulus in demonstrando* (circular argument). Circular argumentation occurs when someone uses what they are trying to prove as part of the proof of that thing. Here is one of my favorite examples (in pared down form): "Marijuana is illegal in every state in the nation. And we all know that you shouldn't violate the law. Since smoking pot is illegal, you shouldn't smoke pot. And since you shouldn't smoke pot, it is the duty of the government to stop people from smoking it, which is why marijuana is illegal!"
11. *Complex question*. A complex question is a question that implicitly assumes something to be true by its construction, such as "Have you stopped beating your wife?" A question like this is fallacious only if the thing presumed true (in this case, that you beat your wife) has not been established.
12. *Cum hoc ergo propter hoc* (with this, therefore because of this). This is the familiar fallacy of mistaking correlation for causation -- i.e., thinking that because two things occur simultaneously, one must be a cause of the other. A popular example of this fallacy is the argument that "President Clinton has great economic policies; just look at how well the economy is doing while he's in office!" *Cum hoc ergo propter hoc* is very similar to #13 below.
13. *Post hoc ergo propter hoc* (after this, therefore because of this). This is the fallacy of assuming that A caused B simply because A happened prior to B. A favorite example: "Most rapists read pornography when they were teenagers; obviously, pornography causes violence toward women." The conclusion is invalid, because there can be a correlation between two phenomena without one causing the other.
14. *Red herring*. This means exactly what you think it means: introducing irrelevant facts or arguments to distract from the question at hand. For example, "The opposition claims that welfare dependency leads to higher crime rates -- but how are poor people supposed to keep a roof over their heads without our help?" It is perfectly valid to ask this question as part of the broader debate, but to pose it as a response to the argument about welfare leading to crime is fallacious. (There is also an element of *ad misericordiam* (#5) in this example.)

15. Slippery slope. A slippery slope argument is not always a fallacy. A slippery slope fallacy is an argument that says adopting one policy or taking one action will lead to a series of other policies or actions also being taken, without showing a causal connection between the advocated policy and the consequent policies. A popular example of the slippery slope fallacy is, "If we legalize marijuana, the next thing you know we'll legalize heroin, LSD, and crack cocaine." This slippery slope is a form of non sequitur (#20) because no reason has been provided for why legalization of one thing leads to legalization of another. Tobacco and alcohol are currently legal, and yet other drugs have somehow remained illegal.
16. Straw man. This is the fallacy of refuting a caricatured or extreme version of somebody's argument, rather than the actual argument they've made. Often this fallacy involves putting words into somebody's mouth by saying they've made arguments they haven't actually made. One example of a straw man argument would be to say, "Mr. Jones thinks that capitalism is good because everybody earns whatever wealth they have, but this is clearly false because many people just inherit their fortunes," when in fact Mr. Jones had not made the "earnings" argument and had instead argued, say, that capitalism gives most people an incentive to work and save. The fact that some arguments made for a policy are wrong does not imply that the policy itself is wrong.
17. Tu quoque ("you too"). This is the fallacy of defending an error in one's reasoning by pointing out that one's opponent has made the same error. An error is still an error, regardless of how many people make it. For example, "They accuse us of making unjustified assertions. But they asserted a lot of things, too!"
18. Dicto simpliciter (spoken simply, i.e., sweeping generalization). This is the fallacy of making a sweeping statement and expecting it to be true of every specific case -- in other words, stereotyping. Example: "Women are on average not as strong as men and less able to carry a gun. Therefore women can't pull their weight in a military unit." The problem is that the sweeping statement may be true (on average, women are indeed weaker than men), but it is not necessarily true for every member of the group in question (there are some women who are much stronger than the average).
19. Nature, appeal to. This is the fallacy of assuming that whatever is "natural" or consistent with "nature" (somehow defined) is good, or that whatever conflicts with nature is bad. For example, "Sodomy is unnatural; anal sex is not the evolutionary function of a penis or an anus. Therefore sodomy is wrong." But aside from the difficulty of defining what "natural" even means, there is no particular reason to suppose that unnatural and wrong are the same thing. After all, wearing clothes, tilling the soil, and using fire might be considered unnatural since no other animals do so, but humans do these things all the time and to great benefit.
20. Non Sequitur ("It does not follow"). This is the simple fallacy of stating, as a conclusion, something that does not strictly follow from the premises. For example, "Racism is wrong. Therefore, we need affirmative action." Obviously, there is at least one missing step in this argument, because the wrongness of racism does not imply a need for affirmative action without some additional support (such as, "Racism is common," "Affirmative action would reduce racism," "There are no superior alternatives to affirmative action," etc.).

DEDUCTIVE, INDUCTIVE, AND ABDUCTIVE REASONING

Reasoning is the process of using existing knowledge to draw conclusions, make predictions, or construct explanations. Three methods of reasoning are the deductive, inductive, and abductive approaches.

Deductive reasoning: conclusion guaranteed

Deductive reasoning starts with the assertion of a general rule and proceeds from there to a guaranteed specific conclusion. Deductive reasoning moves from the general rule to the specific application: In deductive reasoning, if the original assertions are true, then the conclusion must also be true. For example, math is deductive:

*If $x = 4$
And if $y = 1$
Then $2x + y = 9$*

In this example, it is a *logical necessity* that $2x + y$ equals 9; $2x + y$ *must* equal 9. As a matter of fact, formal, symbolic logic uses a language that looks rather like the math equality above, complete with its own operators and syntax. But a deductive *sylllogism* (think of it as a plain-English version of a math equality) can be expressed in ordinary language:

*If entropy (disorder) in a system will increase unless energy is expended,
And if my living room is a system,
Then disorder will increase in my living room unless I clean it.*

In the syllogism above, the first two statements, the *propositions* or *premises*, lead logically to the third statement, the *conclusion*. Here is another example:

*A medical technology ought to be funded if it has been used successfully to treat patients.
Adult stem cells are being used to treat patients successfully in more than sixty-five new therapies.
Adult stem cell research and technology should be funded.*

A conclusion is *sound* (true) or *unsound* (false), depending on the truth of the original premises (for any premise may be true or false). At the same time, independent of the truth or falsity of the premises, the *deductive inference* itself (the process of "connecting the dots" from premise to conclusion) is either *valid* or *invalid*. The inferential *process* can be valid even if the premise is false:

*There is no such thing as drought in the West.
California is in the West.
California need never make plans to deal with a drought.*

In the example above, though the inferential process itself is valid, the conclusion is false because the premise, *There is no such thing as drought in the West*, is false. A syllogism yields a false conclusion if either of its propositions is false. A syllogism like this is particularly insidious

because it looks so very logical—it is, in fact, logical. But whether in error or malice, if either of the propositions above is wrong, then a policy decision based upon it (*California need never make plans to deal with a drought*) probably would fail to serve the public interest.

Assuming the propositions are sound, the rather stern logic of deductive reasoning can give you absolutely certain conclusions. However, deductive reasoning cannot really increase human knowledge (it is *nonampliative*) because the conclusions yielded by deductive reasoning are *tautologies*—statements that are contained within the premises and virtually self-evident. Therefore, while with deductive reasoning we can make observations and expand implications, we cannot make predictions about future or otherwise non-observed phenomena.

Inductive reasoning: conclusion merely likely

Inductive reasoning begins with observations that are specific and limited in scope, and proceeds to a generalized conclusion that is likely, but not certain, in light of accumulated evidence. You could say that inductive reasoning moves from the specific to the general. Much scientific research is carried out by the inductive method: gathering evidence, seeking patterns, and forming a hypothesis or theory to explain what is seen.

Conclusions reached by the inductive method are not logical necessities; no amount of inductive evidence guarantees the conclusion. This is because there is no way to know that all the possible evidence has been gathered, and that there exists no further bit of unobserved evidence that might invalidate my hypothesis. Thus, while the newspapers might report the conclusions of scientific research as absolutes, scientific literature itself uses more cautious language, the language of inductively reached, probable conclusions:

*What we have seen is the ability of these cells to feed the blood vessels of tumors and to heal the blood vessels surrounding wounds. The findings suggest that these adult stem cells may be an ideal source of cells for clinical therapy. For example, we can envision the use of these stem cells for therapies against cancer tumors [...].*¹

Because inductive conclusions are not logical necessities, inductive arguments are not simply true. Rather, they are *cogent*: that is, the evidence seems complete, relevant, and generally convincing, and the conclusion is therefore probably true. Nor are inductive arguments simply false; rather, they are *not cogent*.

It is an important difference from deductive reasoning that, while inductive reasoning cannot yield an absolutely certain conclusion, it can actually increase human knowledge (it is *ampliative*). It can make predictions about future events or as-yet unobserved phenomena.

For example, Albert Einstein observed the movement of a pocket compass when he was five years old and became fascinated with the idea that something invisible in the space around the compass needle was causing it to move. This observation, combined with additional observations (of moving trains, for example) and the results of logical and mathematical tools (deduction), resulted in a rule that fit his observations and could predict events that were as yet unobserved.

Abductive reasoning: taking your best shot

Abductive reasoning typically begins with an incomplete set of observations and proceeds to the likeliest possible explanation for the set. Abductive reasoning yields the kind of daily decision-making that does its best with the information at hand, which often is incomplete.

A medical diagnosis is an application of abductive reasoning: given this set of symptoms, what is the diagnosis that would best explain most of them? Likewise, when jurors hear evidence in a criminal case, they must consider whether the prosecution or the defense has the best explanation to cover all the points of evidence. While there may be no certainty about their verdict, since there may exist additional evidence that was not admitted in the case, they make their best guess based on what they know.

While cogent inductive reasoning requires that the evidence that might shed light on the subject be fairly complete, whether positive or negative, abductive reasoning is characterized by lack of completeness, either in the evidence, or in the explanation, or both. A patient may be unconscious or fail to report every symptom, for example, resulting in incomplete evidence, or a doctor may arrive at a diagnosis that fails to explain several of the symptoms. Still, he must reach the best diagnosis he can.

The abductive process can be creative, intuitive, even revolutionary. Einstein's work, for example, was not just inductive and deductive, but involved a creative leap of imagination and visualization that scarcely seemed warranted by the mere observation of moving trains and falling elevators. In fact, so much of Einstein's work was done as a "thought experiment" (for he never experimentally dropped elevators), that some of his peers discredited it as too fanciful. Nevertheless, he appears to have been right-until now his remarkable conclusions about space-time continue to be verified experientially.