

## Logic Definitions

### Fallacies of Relevance

*Appeal to authority:* A testimonial or statement from a person who is an authority in the field is relevant. If it comes from a person who is famous in another field, it is irrelevant. Example: Michael Jordan gives a testimonial for a brand of men's underwear. Surely his expertise is in basketball, not in clothing.

*Appeal to pity* (argumentum ad misericordiam): An appeal for sympathy.

*Bandwagon Appeal* (argumentum ad populum): An argument based on the assertion that the argument is valid simply because everyone else believes in the argument. Example: You should buy a Pontiac Grand Am when you get a car. Everyone wants to drive a Pontiac.

*Personal Attack* (argumentum ad hominem): An irrelevant attack on an opponent rather than on the opponent's evidence or argument. This attack may be either abusive (namecalling) or circumstantial (relating to a person's ethnicity, national origin, personal appearance, religion, family, social class, profession, level of education, location of residence, etc.).

*Appeal to force* (argumentum ad baculum): Threat of force or use of force as a means to irrelevantly sway a person's opinion.

*Argument from ignorance* (argumentum ad ignorantium): Arguing that the failure to find evidence supporting a claim proves that claim is false. For example, "there is no proof that you are not prejudiced, therefore you must hold racially biased views." The use of the lack of evidence as a premise, as if a lack of proof constituted proof.

*Hypothesis contrary to fact:* Assuming that history would have been different in a specific way if the facts of history had changed. Example: "If the Industrial Revolution had occurred 100 years earlier, we would have had atomic weapons available during World War I." Yes, if the Industrial Revolution had occurred 100 years earlier, history would have been different. However, because it didn't happen, there is no evidence that it would have been different in *that particular way*.

*Hasty generalization:* Accepting an argument on the basis of relevant but insufficient information or evidence. A variation of this fallacy is *small sample*, drawing conclusions about a population on the basis of a sample that is too small to be a reliable measure of that population. We will label both as hasty generalization.

*Dicto simpliciter:* This fallacy begins with a generalization that is widely accepted as true. Then the speaker misapplies the generalization in a way that produces the fallacy by distorting the original statement. Example: "The vitamin D that comes from the sun is necessary for good health. Therefore, we should all get a deep, dark tan every summer." Notice that the second statement undermines the commonsense advice of the first statement, going off on a tangent which is irrelevant.

*False cause:* This fallacy takes two forms. *Post hoc ergo propter hoc* means "after this, therefore because of this." This form of false cause assumes that when one event happens after another event, the earlier event is the cause of the second, even though the two may be logically unconnected. Example: "I ate garlic the night before my math exam, and I got a grade

of 89 on the test. Garlic must stimulate my powers of concentration.” The second form of false cause is *pro cause non causa*. In this fallacy, one ignores the true cause and identifies a false cause. Revising the earlier example, one might say “I ate garlic last night while I was studying and I got a score of 89 on my math test. Garlic helps me concentrate.” Perhaps the true cause of the respectable grade on the math test was the studying.

*False analogy*: Drawing an analogical conclusion when the cases compared are not relevantly alike. A true analogy is an exact comparison. In an analogy, each part of the comparison must fit. The key words in a false analogy are “like” and “as,” but sometimes the comparison is implied and the words “like” and “as” are not used. In a false analogy, two things that are not alike are compared as if they were the same. Example: Mrs. Jones won’t let her 13-year-old daughter call boys on the telephone unless they are just friends from church. She says that the boy or the boy’s parents will think her daughter rude and morally loose. Her daughter disagrees. Mrs. Jones is guilty of a false analogy because the attitudes about girls calling boys were prevalent when Mrs. Jones was her daughter’s age, in 1964. Attitudes are different now. Yes, the other parents’ attitudes may have been formed in the 1960s too, so the analogy may be true for some parents, but not all parents come from the same background or decade.

*Slippery slope*: Objecting to an action on the grounds that once it is taken, it will lead to similar but less desirable actions until some horror is reached down the road.

*Guilt by association*: a variation of *ad hominem* attack, in which we judge someone guilty on the basis of the company that person keeps.

*You’re another* (Tu quoque): An abusive or circumstance personal attack that is a response to a personal attack, abusive or circumstantial. Example: any variation of “it takes one to know one.”

*Begging the question* (Petitio principii): Assuming without proof the question, or a significant part of the question, at issue. Example: Why hasn’t the prize committee considered Galbraith’s work good enough for a Nobel Prize? Because they judged it not sufficiently original to merit an award.

*Non-sequitur*: Coming to a conclusion that does not logically follow from a premise or premises. Example: Shane is from Greenwich, Connecticut. This is why he enjoys the show “Survivor”.

*Either/or*: Reasoning from the premise that there are just two plausible solutions to a problem or issue when, in fact, there are at least three. This is also called false dilemma. Example: Claiming that either economics or genetic factors must explain male domination, when there are other likely possibilities, like child-rearing practices.

**Fallacies of Ambiguity**: A word, phrase, or proposition is ambiguous when it has more than one possible interpretation.

*Equivocation*: Confusing the different meanings a single word or phrase may have and using it in different senses in the same argument. To be clear, all of the terms in an argument must have a single definition.

*Amphiboly*: The fallacy of amphiboly occurs in arguing from premises that are grammatically ambiguous and constructed in a loose or awkward way. An amphibolous statement may be true on one interpretation and false on another, or its meaning may be impossible to clearly

determine. Example: Croesus, King of the ancient Greek kingdom of Lydia, wanted to go to war against King Cyrus of Persia, so he went to ask the Oracle at Delphi for advice. When the Oracle answered Croesus, the response was amphibolous: "If Croesus went to war with Cyrus, he would destroy a mighty army." It wasn't clear which army would be destroyed.

*Composition:* The term "fallacy of composition" is applied to both of two closely related types of invalid argument. The first may be described as reasoning fallaciously from the properties of the parts of a whole to the properties of the whole itself. A particularly flagrant example would be to argue that since every part of a certain machine is light in weight, the machine "as a whole" is light in weight. The error here is manifest when we consider that a very heavy machine may consist of a very large number of lightweight parts.

*Division:* The fallacy of division is simply the reverse of the fallacy of composition. In it the same confusion is present but the inference proceeds in the opposite direction. As in the case of composition, two varieties of the fallacy of division may be distinguished. The first kind of division consists in arguing fallaciously that what is true of a whole must be true of its parts. To argue that since a certain corporation is very important, and Mr. Doe is an official of that corporation, therefore Mr. Doe is very important, is to commit the fallacy of division.

*Accent:* The fallacy of accent is committed in an argument whose deceptive but invalid nature depends upon a change or shift in meaning. The way in which the meaning shifts in the fallacy of accent depends upon what parts of it may be emphasized or accented. Some statements have quite different meaning when different words are stressed. Example: "We should not speak ill of our friends" is generally taken to mean that we shouldn't speak ill of anyone. If the word "friends" is accented, as in "'We should not speak ill of our *friends*," it may be taken to imply that we may speak ill of anyone who is not a friend. Similarly, if the word "speak" is emphasized, as in "'We should not *speak* ill of our friends," it may imply that we may act with ill intent upon our friends, so long as we do it silently. Emphasis distorts the meaning in these examples.