

FORMAL AND INFORMAL FALLACIES

The term ‘fallacy’ is ambiguous. Sometimes it refers to a mistaken belief, typically expressed as an untrue statement; sometimes it refers to a mistake in reasoning. In the latter sense, it is like the term ‘validity’ in that it can only be applied to arguments. Mistakes in reasoning are sometimes called ‘formal fallacies’ because the logical form of such arguments makes them deductively invalid, e.g., the fallacy of an undistributed middle term, or the fallacy of asserting the consequent; more generally, such arguments are inferentially weak. Mistaken beliefs (as expressed by untrue statements) are sometimes called ‘informal fallacies’ when they are used as premises in an argument because the mistake here does not have to do with the logical form of the argument, but with its premises, which are unsatisfactory in some way.

When we make an argument, we often attempt to establish the truth of a statement that is unknown or disputed. That statement becomes the conclusion of our argument. A deductively valid argument that proves the truth of its conclusion on the basis of the truth of its premises is a *sound* argument; an inductive argument that gives good evidence for the truth of its conclusion is a *strong* inductive argument. Either way, in order for an argument to give good evidence for the truth of its conclusion, it must have two features:

1. Satisfactory premises: The premises must all be true. Thus, the set of premises must also be consistent, that is, it must be possible for all of them to be true at the same time. It must also be possible to know whether the premises are true or false; thus, they cannot be unclear. Finally, knowing that the premises are true does not depend on knowing that the conclusion is true.
2. Inferential strength (support for the conclusion by the premises): In the case of deductive arguments, the conclusion necessarily follows from the premises; in the case of strong inductive arguments, the premises provide strong support for the truth of the conclusion.

The violation of these criteria leads to:

- 1) Unsatisfactory premises:
 - a) Vagueness: it is unclear just what the premises are asserting.
 - b) Ambiguity: unclear which of several possible meanings is intended.
 - i) Equivocation (semantic ambiguity): Cells are very small organisms. Prisoners live in cells. Therefore, prisoners live in very small organisms. (In syllogistic logic, this is known as the fallacy of four terms.)
 - ii) Amphiboly (syntactic ambiguity): I am too embarrassed to go into that laundromat. The instructions over the machine read: “Customers must remove all clothing when the machine stops.”
 - c) False dilemma (Black and white thinking, false dichotomy): Either you love me or you hate me. You don’t love me. Well, I guess that means you hate me.
 - d) Inconsistent premises: Joe Blow, a native of Dingbat, New South Wales, was arrested for possession of opium. Arguing for acquittal, he told the judge that his opium habit did no harm, as he was too old to work anyway. Asked how he lived, he replied that he lived on

the earnings of his grandmother.

- e) Straw man: false representation of an opponent's argument.
 - f) Begging the question: The truth of the premises cannot be established prior to knowing the truth of the conclusion. E.g.: Of course she likes me. She told me that she does, and she wouldn't lie to me about it, for she always tells the truth to people she likes.
- 2) Inferential weakness: the conclusion **does not follow** from the premises (*non sequitur*) (Traditionally referred to as *fallacies of irrelevance*, or *ignoratio elenchi*, ignorance of the conclusion that the argument is supposed to demonstrate or support)
- a) Improper appeal to authority or tradition (*Pro homine / Ad verecundiam / Ad populum*): Fido dog food must be the best; my mathematics professor told me so.
 - b) Abusive *ad hominem* (Against the man / against authority): He says we should tax the rich because he is a lazy bum.
 - c) Appeal to force (*Ad baculum*): I hope you won't park your car there in the future; if you do, something might happen to the tires.
 - d) Appeal to pity (*Ad misericordiam*): Your honour, my client must be innocent of this charge of theft; he has a wife and ten hungry children to feed.
 - e) Fallacy of Affirming the Consequent: Like all great artists, I am being ignored in my own time.
 - f) Fallacy of Denying the Antecedent: Whenever it rains, he carries an umbrella. It is not raining, so he must not be carrying an umbrella.
 - g) Guilt (or honour) by association: Don't believe him; he hangs out with some pretty unsavoury people.
 - h) Red Herring: shifts the debate away from the topic of the argument.
 - i) Division: Mice are found all over the world. This animal is a mouse. Therefore, this animal is found all over the world.
 - j) Composition: The bricks in the building are all square. Therefore, the building must be square.
 - k) Faulty analogy: primary subject and analogue are not sufficiently similar.
 - l) Hasty generalization: insufficient or unrepresentative inductive sample.
 - m) *Post hoc, ergo propter hoc* (After this, therefore because of this): If you want to avoid being hit by a charging elephant when you take a walk, just whistle. I always whistle when I walk and I have never been hit by a charging elephant.
 - n) Slippery slope: leaves out relevant distinctions, i.e., stopping points, on the 'slope'.