

### ***Informal Fallacies: Pseudo-Deductions***

Some informal fallacies concern false or doubtful premises; we shall consider these in the next handout. But each fallacy listed below is a type of non-deductive (= invalid) argument. Regardless, in all cases, a fallacious argument never rationally *compels* you to accept the conclusion.

Like with formal fallacies, if an argument commits an informal fallacy, this does not mean that its conclusion is *false*. (Again, I can give a bad argument for a conclusion that happens to be true.) So as before, if you say that an argument contains an informally fallacy, you are saying *only* that the premises do not remove all doubt about the conclusion.

#### *1. Fallacies of Relevance*

The Appeal to the Majority: Argument *Ad Populum* (or sometimes *Ad Majoritatum*)  
**This kind of argument just cites popular opinion in order to compel your acceptance of a conclusion.**

*You should love the movie Black Panther. Everyone else does.*

This is trying to intimidate you into accepting an opinion, by identifying it as the majority opinion. But of course, the majority can be wrong.

Yet sometimes appealing to majority opinion is legitimate, as when the opinion of the majority bears directly on the truth of the conclusion. Consider:

*Most of the electoral college voted for Biden. Therefore, Biden won the presidency.*

Note also the *inverted ad populum* argument—where popular opinion is cited to motivate your *rejection* of a conclusion. Example:

*You should major in art instead of finance. Otherwise, you're just a conformist.*

The argument is trying to turn you against the finance major, merely because finance is viewed favorably by society. But the majority may well be right that finance is a better major. The argument doesn't provide any real evidence on the matter.

Certainly, blind conformity is never praiseworthy." Taking the road less travelled" may be a good idea sometimes...but not always. (It's for a *good reason* that no one has elective surgery to amputate their arms!) Usually, whether an idea is good depends on *other* things—not merely on how popular or unpopular it is.

The Appeal to Authority: Argument *Ad Verecundiam*

**When an argument appeals to something said by an authority.**

*You should vote for Biden. LeBron James endorsed him, after all.*

No matter whom you cite, the truth of a claim never follows from someone's saying so.

A special case is when someone appeals not to an authoritative person but to a *tradition* to justify a claim, as if tradition had some special authority.

Even so: If you cite a *legitimate* authority, then you often have a strong reason for believing the claim. But this is not always true; it depends on the particulars of the case. (We shall talk about this more, later in the course.)

Yet even when an appeal to a legit authority would be a strong argument, the trick is deciding who is a legit authority on the topic. The rule of thumb is that someone is a legit authority to the extent that she is in a better position than "the person on the street" to know the truth on the topic.

The Argument from Ignorance: Argument *Ad Ignorantiam*

**When a proposition is argued to be true because it has not been proven false OR when a proposition is argued to be false because it has not been proven true**

*There are no alien life forms because no one has proven that there are.*

The fact that we have not proven anything about aliens does not show either way whether there are aliens. Our ignorance just shows our ignorance about the existence of aliens.

BUT: An argument from ignorance is not always inappropriate. Consider:

*The defendant did not commit the murder, because no one has proven otherwise.*

This rests on the plausible background-assumption that one should be seen as innocent until proven guilty.

Character Assassination: Argument *Ad Hominem*

**This is the fallacy attacks a view by attacking the person's character who holds it.**

*Bill Clinton's views on conducting domestic affairs can't be right. After all, he can't even conduct himself.*

It is quite possible for someone to be a brilliant at domestic policy, yet be a lousy person. (There have in fact been U.S. presidents like this.) Thus, the details of the person's character, in this case, are irrelevant.

Of course, sometimes character traits are relevant. For example, the fact that Clinton cheats on his wife would support the claim that he is not a great *moral* leader. So not all arguments *ad hominem* are completely wrong-headed.

Some logicians distinguish between an abusive *ad hominem* argument, where the person is ridiculed for character flaws, from a “circumstantial *ad hominem*.” In the latter case, the argument cites the opponent’s circumstances to suggest that they are biased and that their view should be rejected. Consider:

*You can't believe what Catholics say since their first loyalty is not to the truth, but to upholding the doctrines of the Catholic Church.*

If this thinking were legit, it would mean that *every* argument from a Catholic should be dismissed, no matter how good the argument is!

Something related to *ad hominem* is known as *tu quoque* (Latin for “you too”). These are arguments where the opponent is accused not of immorality or bias, but rather of hypocrisy. An example:

*Elon Musk says that the carbon footprint of most Americans is unacceptable .Hmph... Too bad Musk is always travelling the world in his private jet.*

We can all agree that hypocrisy isn’t a virtue. Yet if Musk criticizes me on grounds that apply to him too, his criticism could still be right!

(One could see bias or hypocrisy as character flaws. If so, then circumstantial *ad hominem* and *tu quoque* can be treated as sub-types of abusive *ad hominem* arguments.)

A final type of *ad hominem* is known as “psychologizing” your opponent. Here, you try to discredit your opponent by diagnosing them with some psychic disorder. Such diagnostics result in an abusive or a circumstantial *ad hominem*, as the following two examples illustrate (respectively):

*Andrew believes that sexual assault should be punishable by death. But he's crazy and adopts extreme views just to shock people.*

*Some people believe that sexual assault should be punishable by death. But they are usually victims of assault and their trauma prevents them from seeing things correctly.*

First, besides being rather offensive, such “diagnostics” are sheer speculation, without any real evidence to back them up. But the distinctly logical problem is this: *Even if* the diagnosis is correct, it does not follow that your opponent’s views are false! What should decide the issue is the *evidence*, and not the psychological state of your opponent. (This doesn’t mean you should ignore the biases that speakers may have...but even strongly biased people sometimes have good arguments!)

The Appeal to Force: Argument *Ad Baculum*:

**This fallacy occurs when there is a threat of some kind (e.g. brutality) if one does not accept the conclusion.**

*Communism is wrong. If you disagree, I'll prosecute you as a traitor.*

This is just trying to scare you into accepting the conclusion. The threat here does not *show* that communism is wrong.

The Naturalistic Fallacy

**This type of argument concludes something about the value of *X*—based only on non-normative or natural facts (esp. the fact that *X* is naturally occurring).**

*It is better to treat depression with St. John's Wort than with the anti-depressants from pharmaceutical companies. After all, only St. John's Wort is all-natural.*

If St. John's Wort is better, that is not shown from its being all-natural. After all, tornados and earthquakes are "all-natural," while air conditioning and indoor plumbing are not.

In ethics, the naturalistic fallacy is a central concern. There is often a temptation to justify the value of something, based only on non-evaluative or natural facts about it. E.g.:  
*Sex between consenting adults is morally permissible. That's because it brings more pleasure into the world.*

If consensual sex is permissible, that does not *follow* from facts about pleasure. After all, sometimes sex constitutes marital infidelity. Even if it is the most pleasurable sex ever (and even if the wronged party never finds out), this does not *show* that the act was morally permissible.

NOTE: It is ok if *some* of your premises cite natural facts. The fallacy occurs only when *all* of your premises concern non-evaluative or natural facts. In the last example, the naturalistic fallacy is avoided if we further assume the value-judgment that "anything which tends to bring more pleasure into the world is morally permissible." Of course, that extra premise is controversial, but at least the conclusion would follow in this case.

The Etymological Fallacy

**An argument commits the etymological fallacy when a premise about the origin of a phrase supports a conclusion about non-linguistic reality.**

*There is nothing wrong with euthanasia in principle; after all, the word originates from the Greek words 'eu-' '-thanatos', which literally means "good death."*

*Doctor: You can't have dermatomyositis; after all, the root 'myositis' means muscle disease, and your symptoms do not include muscle problems.*

The first example is clearly fallacious, since the fact that euthanasia is named by a *word* that means “good” does not settle the question of whether it really *is* good. (The word could be a serious misnomer, after all.)

The second example is more subtle, and it is based on an experience my wife had. The fallacy lies in the fact that our understanding of medical diseases advances. So although muscle deterioration initially seemed essential to dermatomyositis, we now know that the underlying pathology can occur even when the muscles are not affected.

Red Herring: Ignoratio Elenchi

**An argument is a “red herring” when it introduces an irrelevant or secondary subject, and thereby diverts attention from the main issue.** Usually, the red herring is an issue about which people have strong opinions, so that people are less likely to notice how their attention is being diverted.

*Look officer, I wasn't speeding—after all, I'm on my way to volunteer at the homeless shelter.*

In this case, *where* I am going is clearly irrelevant to *how fast* I was going there. It is plausible to see *all* of the preceding fallacies as special cases of the “red herring” fallacy. (So for example, an argument *ad hominem* introduces an irrelevant matter, viz., the character of the opponent, and thereby diverts attention from the main issue.) However, the speeding example would be an example of a “red herring” which is not classifiable as an *ad hominem*, nor an *ad ignorantium*, nor an *ad majoritatum*, [etc].

## 2. Fallacies of Causation

Genetic Fallacy

**To commit the genetic fallacy is to reject (/endorse) an idea, because of its ignoble (/venerable) history.**

*Taxation by the government is wrong. After all, in the Middle Ages, the practice was used by the ruling class to exploit working peasants.*

Taxation may have a shady history, but it is still could be the best policy, all things considered. Its dubious history *may* serve as *evidence* of its wrongness, but its wrongness does not strictly follow from its history. (Even bad circumstances can cause good things.)

Another example:

*The founding fathers of the United States owned slaves—that's why slave ownership should be allowed in the U.S.*

Americans often justify public policy by citing the founding fathers. But just because the U.S. was founded by slave-owners does not mean it should permit slave-ownership.

HOWEVER: Some instances of the genetic fallacy are not actually fallacious. Consider an example within constitutional law:

*“Freedom of religion” originated in the founding fathers’ desire to avoid an official state religion. Therefore, it is unconstitutional to make Christianity the official state religion.*

If the premise captures the intention behind the first amendment, then it indeed follows that such a thing is unconstitutional (assuming no amendment to the contrary has been added). Though notably, the argument bears only on the *legality* of a state religion; nothing yet follows about *morality*.

Logic textbooks sometimes classify the etymological fallacy as a subtype of genetic fallacy. However, in a genetic fallacy, the conclusion is a value-judgment, based on a value-judgment about the past. Whereas, under the etymological fallacy, the second example featured a premise and conclusion that were both purely descriptive. (The word origin was used to justify whether a certain disease was present.)

*Cum hoc; ergo, propter hoc*

**This is the fallacy of inferring that *X* causes *Y*, from the premise that *X* and *Y* are correlated.** Thus, the fallacy assumes falsely that “Correlation implies causation”

*Our study finds that people with clinical depression are more likely to be vegetarian. Therefore, depression influences someone’s decision to be a vegetarian.*

The conclusion does not follow from the premise, since it may be that being a vegetarian causes you to be depressed (rather than the other way around). Alternatively, perhaps there is some THIRD thing which is simultaneously causing both the depression and the vegetarianism. Or, the correlation is sheer coincidence.

So there are *three* possibilities where *X* correlates with *Y* even though *X* does not cause *Y*:

- i) *Y* causes *X* instead;
- ii) neither *X* causes *Y* nor vice-versa, but rather both are caused by some third thing *Z*;
- iii) neither *X* causes *Y* nor vice-versa, nor are they caused by some third thing— instead, the correlation between *X* and *Y* is *purely coincidental*.

A special case of the fallacy is when one concludes that *X* causes *Y*, given that *X* occurs *before* *Y*. (“*Post hoc; ergo, propter hoc*.”) Sometimes, merely one observation of *X* before *Y* is regarded as sufficient “correlation” to infer causation! Now it is true that if *X* occurs before *Y*, this at least indicates that *Y* does not cause *X* (assuming that causes must precede their effects). Yet it still does not follow that *X* causes *Y*, given that ii) and iii) would remain live possibilities.

A related error is when we conclude that *X* is the *entire* cause of *Y*, given a correlation between *X* and *Y*. Yet even if *X* is a necessary ingredient to causing *Y*, it may not be the SOLE ingredient. Causation is often multi-factorial.

Regardless, some cases of *cum hoc; ergo, propter hoc* are legitimate as *abductive* arguments. Depression and suicide are correlated, for example, and it is plausible to infer abductively that this is because depression causes suicide. But what makes for a good abduction is not a simple matter and we shall discuss it more later.

### 3. Part-Whole Fallacies

#### The Fallacy of Division

**This is the fallacy of inferring that the parts of *X* must have a certain feature, from the premise that *X* as a whole has that feature.**

*Big Corporation lost a lot of money this year. And that means each financial advisor in the company is responsible for losing money.*

Just because Big Corporation lost money doesn't mean that each financial advisor screwed up. Possibly some financial advisors might have even made quite a bit for the company, if the losses incurred by others were greater.

Nevertheless. In some cases, one *can* infer a property of the parts from a property of the whole. This is especially so when the argument concerns *quantities*. For instance:

*Big Corporation earned no more than \$100M in profits last year. And that means each financial advisor earned no more than \$100M for the company last year.*

This second argument is perfectly deductive, thanks to what 'no more than' means when applied to quantities. Still, it is not as if *every* division inference with quantities is deductive. (That's what the first example shows.)

#### The Fallacy of Composition

**This is the fallacy of inferring that *X* as a whole must have a certain feature, from the premise that its parts individually have that feature.**

*Each individual in Big Corporation has a right to free speech. Therefore, Big Corporation itself has a right to free speech.*

The argument here is invalid. Although the premise may be true, corporations generally do *not* have a civil or human right to say whatever they want in selling their products!

But as with the division fallacy, in some cases the composition fallacy is non-fallacious. Again, that can occur when quantities are involved, though it can occur elsewhere too:

*Each Canadian Province is located in North America. Therefore, Canada is located in North America.*

This too is technically a composition fallacy, but the inference is deductive: The meaning of ‘located in’ effectively “secures” the connection between the whole and its parts.

#### 4. Other Informal Fallacies

##### Equivocation

**To equivocate is to switch between at least two meanings of a single word or phrase—accidentally or deliberately—so that the argument appears sound.**

*I see that there is no greatest prime number. Since seeing is done with the eyes, it is with my eyes that I see there is no greatest prime number.*

Here the argument is invalid due to the equivocation on “seeing.” One can see with the eyes, but also we sometimes use ‘see’ to mean (roughly) “understand” or “recognize.”

##### Straw Man Argument [or “Straw” Fallacy]

**To give a straw man argument is to argue against a mere caricature of the opposing view. In such an argument, you build your opposition out of “straw” so that they are easily knocked down.**

*It is silly to oppose cloning technology. Anyone who does so is telling us to “go back to the caves” and live in ignorance.*

Straw man arguments are fallacious, since if you only discredit a simplified version of a view, it doesn’t follow that the more sophisticated version is absurd.

Paradoxically, an easy way to commit the straw fallacy is to falsely accuse someone of a fallacy. Sometimes, the person is guilty only of an enthymeme rather than fallacy, and a bit more discussion and thought would clear up the matter. So be careful when you accuse someone of a fallacy!

##### Bait-and-Switch Fallacy

**To commit a bait and switch is to portray your own view as less controversial than it is. Once you have lured your audience with this “bait,” you then *switch* to your real, more controversial view (and hope your audience doesn’t notice).**

*Christian: “Hell” is really just the state of being separated from God.*

*Audience: Seems fair.*

*Christian: Good, so you agree that if you don’t believe in God, you’ll burn in hell.*

Naturally, if you've established the less controversial version of your view, the more controversial version does not follow.

### The Fallacy of Accident

**This is the fallacy of applying a rough guideline or “rule of thumb” to a case that it was not meant to apply to.**

*Christianity teaches: Thou Shalt Not Kill. Therefore, a good Christian should not kill even in self-defense.*

Notably, this example could also be seen as a case of Bait-and-Switch. Or, if an opponent said this in order to *criticize* Christianity, it would be a Straw Man fallacy. This just goes to show that an argument can be objectionable for more than one reason. (Still, these different types of fallacies do not always co-occur like this. Consider that the Hell example under the Bait-and-Switch fallacy is not also a fallacy of Accident.)

Some people also recognize a related phenomenon, the so-called Fallacy of Converse Accident (a.k.a. Hasty Generalization). This is where examples that seem atypical are generalized into a broader rule. Example:

*My father smoked a pack from age 12 until he was 90. So it seems my family is resistant to the negative effects of smoking.*

However, the speaker here probably is not acting as if the conclusion *deductively follows* from the premise. So it does not seem like fallacious in the usual sense of ‘fallacious’. I myself find it cleaner just to label this a weak inductive argument, rather than a “fallacy”.

### Nirvana Fallacy

**This is the fallacy of inferring that X is bad (/good), from the premise that X has a flaw (/benefit).**

*Affirmative Action should be abolished, since it causes animosity between the races and the sexes.*

Just because affirmative action has a downside does not prove that it is better to forego it. After all, the downside of abolishing affirmative action may be much worse. Though again, a downside to affirmative action can possibly serve as *evidence* that it should be discontinued. (But you would need to weigh the evidence on the other side of the issue as well, before making up your mind.) Similarly, it is fallacious to argue:

*Affirmative Action is best, since it counteracts the negative effects of racism and sexism.*

This too commits the Nirvana fallacy. Even though the conclusion is true IMO, the conclusion does not deductively follow *merely* from a single benefit of the practice.

All too often, political debate (when it has any argument at all) consists in both sides committing the Nirvana Fallacy. One side emphasizes the pros of their position; the others emphasize the cons. However, one-sided emphasis is not sufficient to justify either side. One must ultimately *weigh the pros against the cons*, and do so in a convincingly fair manner. That of course is no easy task. (This is one reason why political disputes persist, though not necessarily the main reason.)

There are exceptions however. Sometimes, one of the pros or cons is so huge that it trumps all other possible considerations. We might call such a thing a “clincher” (pro) or a “deal breaker” (con). With such a premise, it is reasonable to think that the evaluative conclusion indeed follows. Examples:

*Once our competitor offered to double my salary for the same job, nothing could beat that. It was the obvious choice.*

*I don't care how great he is otherwise—that guy is a racist. I will NOT date him.*

But notice that it is a premise of each argument that the relevant consideration overrides all else. So *if* such a premise is true, then the conclusion would have to be true as well.