Fallacies

- A fallacy is just a mistake in reasoning.
- Humans are not nearly as rational as we'd like to suppose.
- In fact, we are so prone to certain sorts of mistakes in reasoning that philosophers and logicians refer those mistakes by name.
- There are two types of logical fallacies: formal and informal.
- Formal fallacies have to do with the structure of the argument, and informal fallacies have to do with the content.

Informal fallacies

Ad Hominem fallacy

- Personal attacks
- Ad hominem is Latin for "against the man".
- More specifically, the ad hominem is a fallacy of relevance where someone rejects or criticizes another person's view on the basis of personal characteristics, background, physical appearance, or other features irrelevant to the argument at issue.
- Verbally attacking people proves nothing about the truth or falsity of their claims.
- **Tu quoque fallacy:** "You also do so" is a form of ad hominem fallacy. **Being an hypocrite does not invalidate an argument by them**.
    - E.g."But, Dad, I know you smoked when you were my age, so how can you tell me not to do it?"
    - Guilt by association: Creating guilt in the opponent by associating them with something bad. (Like Nazis also believed what you believed.)

Strawman

- In the strawman argument, someone attacks a position the opponent doesn't really hold.
- Instead of contending with the actual argument, he or she attacks the equivalent of a lifeless bundle of straw, an easily defeated effigy, which the opponent never intended upon defending anyway.
- This move oversimplifies an opponent's viewpoint and then attacks that hollow argument.

- E.g. People who don't support the proposed state minimum wage increase hate the poor.

Moral equivalence

- This fallacy compares minor misdeeds with major atrocities, suggesting that both are equally immoral.
- E.g. That parking attendant who gave me a ticket is as bad as Hitler.

Ignorance

- E.g. "No one has ever been able to prove definitively that extra-terrestrials exist, so they must not be real."
- E.g. "No one has ever been able to prove definitively that extra-terrestrials do not exist, so they must be real."
- An appeal to ignorance isn’t proof of anything except that you don’t know something.

False dichotomy

- This line of reasoning fails by limiting the options to two when there are in fact more options to choose from.
- E.g. “Either we go to war, or we appear weak.”
- The false dichotomy fallacy errs by oversimplifying the range of options.
- It’s not a fallacy however if there really are only two options. For example, “either Led Zeppelin is the greatest band of all time, or they are not.” That’s a true dilemma, since there really are only two options there.

Slippery slope fallacy:

- This is a conclusion based on the premise that if A happens, then eventually through a series of small steps, through B, C,..., X, Y, Z will happen, too, basically equating A and Z.
- The slippery slope fallacy works by moving from a seemingly benign premise or starting point and working through a number of small steps to an improbable extreme.
- Just beacuse something can happen doesn't mean it has very high probability of happening.
- "You are confusing possibilities with probabilties" - Young Sheldon

Circular argument (petitio principii)

- When a person’s argument is just repeating what they already assumed beforehand, it’s not arriving at any new conclusion.
- E.g. George Bush is a good communicator because he speaks effectively.

Hasty generalization

- A hasty generalization is a general statement without sufficient evidence to support it.
- A hasty generalization is made out of a rush to have a conclusion, leading the arguer to commit some sort of illicit assumption, stereotyping, unwarranted conclusion, overstatement, or exaggeration.
- Hasty generalization may be the most common logical fallacy because there’s no single agreed-upon measure for “sufficient” evidence.
- E.g. Even though it's only the first day, I can tell this is going to be a boring course.
- E.g. "People nowadays only vote with their emotions instead of their brains."

Red herring fallacy (ignoratio elenchi)

- A “red herring fallacy” is a distraction from the argument typically with some sentiment that seems to be relevant but isn’t really on-topic.
- A red herring fallacy can be difficult to identify because it’s not always clear how different topics relate.
- This is a diversionary tactic that avoids the key issues, often by avoiding opposing arguments rather than addressing them.
- E.g. The level of mercury in seafood may be unsafe, but what will fishers do to support their families?

Ad populum / Bandwagon appeal

- This is an appeal that presents what most people, or a group of people think, in order to persuade one to think the same way. Getting on the bandwagon is one such instance of an ad populum appeal.
- E.g. If you were a true American you would support the rights of people to choose whatever vehicle they want.

Post hoc ergo propter hoc

- This is a conclusion that assumes that if 'A' occurred after 'B' then 'B' must have caused 'A.'
- E.g. I drank bottled water and now I am sick, so the water must have made me sick.

Sunk costs

- Sometimes we invest ourselves so thoroughly in a project that we're reluctant to ever abandon it, even when it turns out to be fruitless and futile.
- However, this kind of thinking becomes a fallacy when we start to think that we should continue with a task or project because of all that we've put into it, without considering the future costs we're likely to incur by doing so.

Appeal to authority (argumentum ad verecundiam)

- This fallacy happens when we misuse an authority.
- It's tough to see, sometimes, because it is normally a good, responsible move to cite relevant authorities supporting your claim. It can't hurt.
- But if all you have are authorities, and everyone just has to "take their word for it" without any other evidence to show that those authorities are correct, then you have a problem.
- There's another problem with relying too heavily on authorities: even the authorities can be wrong sometimes.
    - The science experts in the 16th century thought the Earth was the center of the solar system (geocentrism). Turns out they were wrong.
    - The leading scientists in the 19th century thought that the universe as we know it always existed (steady state theory). They too were wrong.
    - So, instead of just quoting the authority, it is important to provide arguments, even the same one that the authority istelf gave to assert a statement.
    - E.g. NASA says Sanskrit is the best language for AI. (It is a fallacy)
    - However, Sankrit is the best language for AI because it has the strictest grammatical rules and hence less probability of confusions. (This is correct)

Appeal to pity (argumentum ad misericordiam)

- In this case, the fallacy appeals to the compassion and emotional sensitivity of others when these factors are not strictly relevant to the argument.
- Appeals to pity often appear as emotional manipulation.
- Truth and falsity aren't emotional categories, they are factual categories.
- They deal in what is and is not, regardless of how one feels about the matter.
- So, as a general rule, it's problematic to treat emotions as if they were (by themselves) infallible proof that something is true or false.

Resources

- https://ad.hominem.info/en/index
- http://www.fallacyfiles.org/taxonomy.html

- https://www.logicalfallacies.org/