

Logical Fallacies

Part 1: Formal Fallacies — Structural Errors of Deductive Logic

Deductive Fallacies

Undistributed Middle

All sports are competitive, and require physical skill. Marching band is competitive and requires physical skill. Therefore, Marching Band is a sport.

People have the right to rebel against a tyrant. Colonists have the right to rebel against King George III. Therefore, King George III is a tyrant.

All students have backpacks. My cat has a backpack. Therefore, my cat is a student.

Boys like sports, guns, and the color blue. I like sports, guns, and the color blue.

Therefore I am a boy.

Middle term (e.g., competitive and requiring physical skill; having a backpack) is not “distributed”—i.e., not specified to what classes it applies, and how

Affirming the Consequent

The same as the undistributed middle, but using conditionals.

If it rains, the ground will be wet. The ground is wet. Therefore, it rained.

If someone is a girl, they probably like girly things. I like girly things. Therefore, I am probably a girl.

Denying the Antecedent

Another conditional application of the undistributed middle.

If it rains, the ground will be wet. It did not rain. Therefore, the ground is dry.

People have the right to rebel against a tyrant. King George III is not a tyrant.

Therefore, we have no right to rebel against him.

All cats have ears. My dog is not a cat. Therefore my dog does not have ears.

These fallacies (ATC and DTA) are inversions of the valid logical forms *modus ponens* and *modus tollens* respectively

Affirming a disjunct

I could be at home or at school.

I am not at home.

Therefore, I am at school.

Denying a conjunct

I cannot be both at school and at home.

I am not at school.

Therefore, I am at home.

Non sequitur

("it does not follow") designates non-specific formal/deductive errors, usually taking the appearance of purely nonsensical arguments

You love to go for walks on the beach? Then you will love our house with floors made out of sand.

Fallacy Fallacy

Assumes the conclusion of an argument to be false because it contains a fallacy. (It is possible to still arrive at a true conclusion even if the argument contains errors.)

" $2+2=4$. I know because Kim Kardashian says so." — "Kim Kardashian is not a mathematician. Your argument includes an appeal to false authority. Therefore, you are wrong; $2+2$ is not 4!"

Anageon

"Necessary." Admits fault, but then excuses it on the basis of inevitability. A specific type of non sequitur.

Yeah, I skipped school, but I wouldn't have learned anything anyway. (Attempts to dismiss or ignore the need to go to school)

Yeah, I made a mess on the floor, but the janitors are going to clean the floors anyway.

I'm not doing well in class, but I'm not that smart to begin with.

"You failed that class." – "Well, the teacher was bad."

Yes, the doctor euthanized the patient, but he was going to die anyway.

Gambler's fallacy

Predicts future random events on the basis of past events.

The probability of the coin landing heads up is 50/50. The last ten times I flipped it, it landed tails up. So, it has to land heads up this time, since it's due.

Nope, the chance is still 50/50.

Part 2: Informal Fallacies of Relevance — The evidence is irrelevant to the claim (even though it may be accurate)

Red Herring

Speaker skips to a new and irrelevant topic (usually by introducing a new, unrelated claim)

Many specific types of red herrings

“We can debate tax reform all day, but shouldn't we work to bridge the partisan gap?” (Changes the discussion from tax reform to partisan politics.)

“I thought that book was terrible.” – “Well, have you read any of her other books?”

Changes discussion from the quality of an author's book to the quality of her body of work overall

“Is it morally right or wrong to cheat on your spouse?” - “Well, what is morality exactly?”

“I'm entitled to my own opinion.” or “That may be true for you, but it's not for me.”

Changes the subject of discussion to entitlement or the nature of truth—specifically called the Relativist Fallacy.

Ad Hominem

“To the man”

Attempts to discredit an argument by attacking the character of the speaker

“Anderson says that *Twilight* isn't literature.” “Well, what does he know? He has no taste.”

“Sure, the candidate's promises all sound great—but don't forget, he's a womanizer.”

Note: sometimes a person's character is relevant to an argument, as in the reliability of a witness in a courtroom, or any time someone is cited as an authority (see also exceptions to appeal to false authority)

Tu Quoque

“You, too.”

A specific type of *ad hominem*

Attempts to discredit the speaker by pointing out the inconsistency to act according to the conclusions of his/her argument.

“How come I can’t stay out late? You stayed out late all the time when you were my age!”

“Why do I get a ticket for speeding? I see you cops speeding all the time.”

“Mr. Anderson, I shouldn’t have to do this assignment. I don’t see *you* writing any essays!”

Faulty Analogy

Makes an invalid comparison, or stretches a comparison beyond what is reasonable (so is sometimes a fallacy of sufficiency rather than relevance)

“Euthanasia is acceptable in some circumstances: we put animals down who are in irreversible pain, so we should do the same for people.” (Animals and people are not necessarily comparable.)

“The students of this school are like the nails in a building; they are what hold everything together. And just like nails, in order for them to work, you must hit them on the head with a hammer.”

Burden of Proof

Shifts the burden of proof from one arguer to the other. (See also, argument from ignorance.)

“I don’t have to prove that I’m right. It’s your job to prove that I’m wrong.”

“I can’t say for sure that electing Donald Trump will destroy our nation. But can you prove that it won’t?”

“I believe that reality is an illusion.” – “Why do you believe that?” – “Well, we don’t have any proof that reality exists.”

Genetic Fallacy

Assesses a claim on its origin rather than its merit.

“I don’t agree with conservatives; their beliefs are rooted in outdated traditions.” (See also Chronological Snobbery.)

“I don’t see how you can say the VW bug is a good car. It originated in Nazi Germany.”

“Don’t believe him; he’s just repeating what he has heard other people say.” (See also *Ad Hominem*.)

Bulverism

Assumes the opponent wrong, and then explains why by describing the circumstances of the error rather than demonstrating that there was an error. (A combination of **circular reasoning** and **genetic fallacy**.)

“You’re only saying that because you’re a teacher.”

“We invented religion because without science, people had no other way of explaining things.”

“You’ve embraced atheism because you’re angry at God.”

Chronological Snobbery

Chronological snobbery assesses a claim by virtue of its placement in time.

Appeal to precedent or tradition supports an argument by virtue of what has happened in the past.

Appeal to novelty supports an argument by virtue of what is new or unusual.

For example, when the word “medieval” is used disparagingly

“Our students need technology that is on the cutting edge.” (**novelty**)

“Get the newest...” (Just because it is new does not mean it is good.)

“You can’t give me a C; I’ve never gotten below a B before!” (**precedent**)

“Traditional recipe” (Just because the recipe is old does not mean it is good.)

BIG exception: legal precedent

In court, a given law is interpreted by judges according to reason *and* according to any previous interpretations and rulings given on it. This is in order to make the legal system more predictable, and protect against arbitrary decisions, which in turn would lead to unfair and potentially discriminatory practices.

If there is a dispute, the law itself must be clarified or revised

Appeal to False Authority

Supports an argument by relying on the testimony of a person in an area unrelated to their expertise

Most commonly seen in celebrity endorsements

Of course, in many cases, an appeal to authority is perfectly legitimate: doctors giving medical testimony, teacher speaking about education, etc.

Bandwagon / *Ad Populum*

Supports an argument by appealing to its popularity

See the new movie that everyone has been raving about!
9 out of 10 Americans agree...

Fallacious Appeal to Emotion

AKA Pathetic Fallacy. Use of emotion to support an argument in an inappropriate/ irrelevant way. (Often guilt, but also pity, fear, vanity, etc.)

“Make a decision you can be proud of: vote yes on this bill!”
“Vote ‘no’ on this initiative. You don’t want this poor grandma to suffer because of your ‘yes’ vote, do you?” (An appeal to guilt; the grandma’s suffering does not necessarily mean that a ‘yes’ vote is wrong.)
“Don’t give me a speeding ticket. How would you feel if you were the one getting a ticket?”
“I deserve a better grade than that. I worked really hard...”

Argument from Consequences

Evaluates a claim based on its consequences rather than its merit
Includes any appeal to force
Usually valid when speaking about ethics

“Humans must have free will; if we didn’t, we would all just be automatons.”
“Don’t give me a ticket; I’ll go broke!”

Appeal to Force

Uses force, coercion, or threats as reasons to accept the conclusion of an argument. (A specific type of argument from consequences?)

“If you don’t clean your room right now, you’ll be sorry!”
“You should come to class on time because if you are tardy again, you will receive a detention.”

Sometimes consequences are relevant to the discussion, as in utilitarian/consequentialist ethics.

“It is wrong to run a red light on a busy street because it will likely cause injury.”

Special Pleading

Uses special circumstance to support an argument, usually that rules should be ignored in a particular case for irrelevant reasons.

“I shouldn’t get a ticket for speeding; my wife is in labor!”

“I don’t usually speed; don’t give me a ticket!”

“I didn’t see the sign!”

“Don’t confiscate my cell phone; I was texting my mom because she was afraid I was dead.” (Assumes rules should be ignored because of special circumstances.)

Ad Ignorantium

“Argument from Ignorance.”

Assumes that if a claim cannot be disproved, it is true; or that if it cannot be proved, it is false.

“There is no proof that God exists; therefore he must not exist.”

“The existence of God cannot be disproved; therefore he exists.”

“Not believe in Santa Claus! You might as well not believe in fairies! You might get your papa to hire men to watch in all the chimneys on Christmas Eve to catch Santa Claus, but even if they did not see Santa Claus coming down, what would that prove? Nobody sees Santa Claus, but that is no sign that there is no Santa Claus. The most real things in the world are those that neither children nor men can see. Did you ever see fairies dancing on the lawn? Of course not, but that’s no proof that they are not there. Nobody can conceive or imagine all the wonders there are unseen and unseeable in the world. ...No Santa Claus! Thank God! he lives, and he lives forever.” (Francis Pharcellus Church, “Is There a Santa Claus?”)

Nirvana Fallacy

Rejects a solution to a problem, or a conclusion to an argument, because it is not perfect.

These anti-drunk driving ad campaigns are not going to work. People are still going to drink and drive no matter what.

(Complete eradication of drunk driving is not the expected outcome. The goal is reduction.)

See also: straw man

Part 3: Informal Fallacies of Accuracy — Evidence is misrepresented or inaccurate (even though it may be relevant, and would seem sufficient)

Straw Man

Misrepresents an opponent's position in order to refute it

“Spending money on the space program is a mistake. We shouldn't be wasting our time looking for little green men.”

Obama: “Governor Romney doesn't have a five-point plan; he has a one-point plan.”

False Dilemma / Either/Or

Falsely presents two options (usually extremes) as the only options available

“If you're not angry, you're not paying attention.”

“Marching Band: If it were easy, it would be called a sport.”

Post Hoc Ergo Propter Hoc, aka False Cause

“After which therefore because of which.”

Inaccurately or inappropriately assumes causation because of correlation.

“In order to be successful, I'm following the example of successful people like Albert Einstein, William Faulkner, Arnold Schwarzenegger— I'm dropping out of high school.”

“Historically, every person who has died breathed air. I don't want to die. So I'll stop breathing.”

“Every time I go to sleep, the sun goes down. Tonight, I want the sun to stay in the sky, so I'm not going to go to sleep.”

Division

Assumes the parts of the whole to have the qualities of the whole.

“The team is good, so all the players must be good.”

“The country is powerful, so all of its citizens must be powerful.”

Composition

Assumes the whole to have the qualities of the parts.

“All of the players on the team are good; therefore the team is good.”

“All parts on an airplane are light; therefore the airplane must be light.”

“All of the rules you came up with are good. Therefore, this list of rules is a good list.” (Maybe some of the rules contradict each other?)

“Each of the paragraphs of this essay are good. Therefore, the essay is good.” (Maybe the paragraphs have nothing to do with each other?)

Conflicting Conditions

AKA inconsistent premises

The argument is self-contradictory.

“This statement is false.”

“The only thing certain is uncertainty.”

“Morality is relative to the individual; therefore...

...we should be tolerant of everyone.

(declares tolerance a universal imperative, making morality not relative)

...no one has the right to tell anyone else what they should or shouldn't do.

(assumes universal rights, or lack thereof, making morality not relative)

...people can do whatever they want as long as it doesn't harm anyone else.

(assumes universal [unstated] definition of harm and universal law against it, making morality not relative)

Equivocation

Uses different meanings of a word or phrase simultaneously in order to make the argument work.

Distinct from ambiguity, in which the meaning of a word isn't clear, which is not necessarily a fallacy (but still something to avoid).

“People say that in order for there to be good, there must also be evil; but you can have good without evil. If I win a race, it is good, but if I lose, it is not evil.”

(Good: moral goodness/righteousness vs. personal benefit/advantage) — *The God Hypothesis*

“We've had enough of history. What about HERstory?” (mistakes homophone for root word)

Part 4: Informal Fallacies of Sufficiency (Inductive fallacies) — There is not enough evidence (even though it may be relevant and accurate)

Hasty Generalization

Draws a conclusion from too little evidence, or a sample that does not represent the population

“Cigarettes won't kill you early. My grandma smoked a pack a day for her entire life and lived to be 93!”

The opposite is **slothful induction** which dismisses an inductive conclusion as coincidence. (sometimes accompanied by *anageon*)

“Yeah, I'm failing all my classes; my teachers have it out for me.”

Cherry-Picking

Omits or distorts information in order to draw a conclusion

“I do have a healthy diet. I eat vegetables every day!” ...neglecting to mention that the vegetables in question are potato chips

Distinction Without Difference

Supports a claim by rephrasing it to make it sound more appealing

“I didn’t lie. I just stretched the truth a little bit.”

“Euthanasia isn’t killing people; it’s helping to end their suffering.”

“Does this mean the popularity of the group is waning?” — “Oh, no...I just think that their appeal is becoming more selective.” —*This is Spinal Tap*

Circular Reasoning / Begging the Question

Supports a claim by restating it, or with evidence that assumes the conclusion as a premise

“You can’t give me a C; I’m an A student!”

“Whatever is less dense than water will float because such objects won't sink in water.”

“The author’s attitude is bleak, as demonstrated through the use of a pessimistic tone throughout the book.”

“We know that God exists because the Bible says so.”

One must believe in God to hold the Bible as authoritative in this matter

No True Scotsman

AKA appeal to purity

Defends an argument against counterexamples by modifying the argument to exclude them, without giving any objective criteria for doing so

In science: *ad hoc* hypothesis (qualifications given to preserve a theory from being falsified) – which is not necessarily a fallacy, but means a theory lacks predictive power

“North Mason Bulldogs are full of school spirit!” - “I go to North Mason, and I don’t have any school spirit.” - “Well, you are not a true Bulldog!”

“You will be successful if only you follow your heart!” – “I followed my heart and now I’m broke.” – “Well, you were not truly following your heart!”

[modifying ‘following’] or “But you are rich in other ways...” [modifying ‘success’]

Complex or Loaded Question

A question in which an assumption is made, and if answered straight, will validate the assumption.

“Do you still beat your wife?”

“Are you aware that everyone thinks you are insane?”

“Can God make a rock too heavy for him to lift?”

Assumes certain definitions of God and omnipotence

God performs physical lifting

Omnipotence can/must be demonstrated by non-omnipotence (see conflicting conditions)

Slippery Slope

Assumes a conclusion as the result of an inevitable chain of events, when there is no clear reason to do so

“If we relax gun restrictions, anybody will be able to buy a gun, and the number of shootings will skyrocket.”

“If they start tightening restrictions on gun owners, next thing you know, they’ll be taking our guns and only criminals will have them.”

Exercises

Identify the fallacy/fallacies, if any.

How come I can't stay out late? None my friends' parents give them a curfew.

Fallacy: _____

How come I can't stay out late? You got to stay out late when you were my age.

Fallacy: _____

How come I can't stay out late? Giving a curfew is bad parenting.

Fallacy: _____

How come I can't stay out late? You don't have a problem if I stay up late working on homework.

Fallacy: _____

How come I can't stay out late? You guys are control freaks.

Fallacy: _____

How come I can't stay out late? Stop treating me like a baby!

Fallacy: _____

How come I can't stay out late? If I can't hang out with my friends, I will become depressed and antisocial, my grades will suffer, and I may not even graduate—and it will be all your fault!

Fallacy: _____