

Fallacies and Biases that Impede the Search for Truth

Quote of the Day:

“The ideal subject of totalitarian rule is not the convinced Nazi or the convinced Communist, but people for whom the distinction between fact and fiction (i.e., the reality of experience) and the distinction between true and false (i.e., the standards of thought) no longer exist.”

-- political theorist Hannah Arendt

**Political Science Honor Society announcement,
Rico Romo**

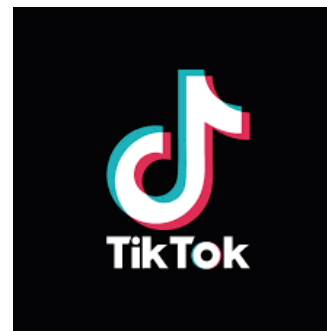
Paper assignment

The challenges in our current cultural milieu of getting people to acknowledge their errors and false beliefs:

YOU ARE
KIND.
YOU ARE
SMART.
YOU ARE
IMPORTANT.



Instagram



Readings for next time

Hypothetical coin flipping homework. How would you handle this assignment? 200 flips, written on a piece of paper, arranged in columns as follows:

H

H

T

H

T

Today's class: we'll examine some of the most prominent biases and fallacies.

cognitive dissonance: the discomfort a person feels upon learning that two of their beliefs are contradictory, or seeing a contradiction between a belief and a behavior



when people experience cognitive dissonance, they can reduce it by

- **changing one of the contradictory beliefs**
- **justifying or rationalizing a belief or behavior**

Classic study by Leon Festinger and James Carlsmith (1959). Subjects spent one hour performing a boring task, then got paid \$1 or \$20 (worth 8 times as much today) to tell the next participant that the task was enjoyable (i.e., to lie). At the end, subjects rated the task. Who gave the highest ratings?

The people paid \$1. Participants paid \$20 had an external explanation for their cognitive dissonance and thus rated the task lower. Participants paid only \$1 reduced their cognitive dissonance by rating their experience higher (“turning pegs was actually fun”).

Cognitive dissonance can help explain the prevalence of two fallacies and biases: confirmation bias and the straw man.

confirmation bias: the tendency to search for, notice, favorably evaluate, and remember information that supports beliefs you already hold

The related phenomenon of motivated reasoning happens when you start with your conclusion, then construct the reasons for it, all while ignoring or dismissing contrary evidence.

Once a person knows about confirmation bias and motivated reasoning, they could try to correct for them.

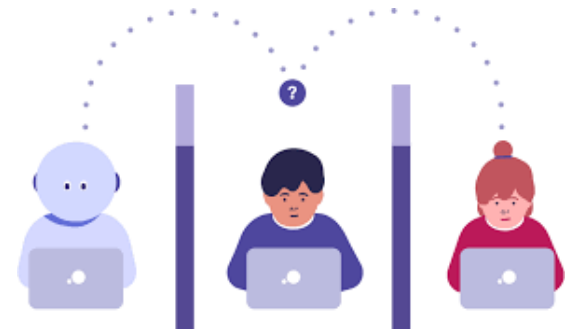
straw man: an easy-to-refute caricature of an opponent's argument



How often do you see straw man arguments in politics?

- **Internally, constructing a straw man can be comforting. The actual version of an opposing argument could cause cognitive dissonance—you might have to change your mind. You therefore create a distorted version that protects your existing belief.**
- **Externally, constructing a straw man might make you more persuasive to an audience, especially if your opponent cannot easily correct you.**

Let's examine some ways to avoid the straw man. Turing test: A person is at a computer terminal having a conversation with an AI. Can someone else tell, from the transcript alone, who is the person and who is the AI?



An example: Li Kaixiang's text chatbot.

ideological Turing test: can you state your opponent's position in a way that sounds like it came from them? If so, you have avoided the straw man fallacy.

A variant of the same approach is to construct the “steel man” where you state the opposing position in its strongest possible form.

Three possible outcomes from the ideological Turing test or the steel man:

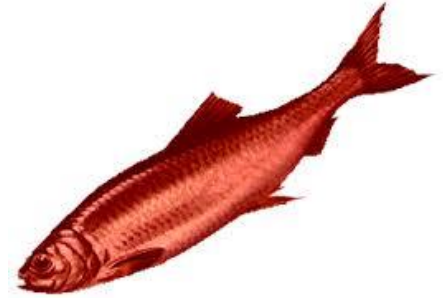
- **You see that the opposing position is flawed even when stated fairly.**
- **You become convinced by the opposing position.**
- **You see that the opposing position is a mix of good and bad points.**

The straw man is an example of an informal fallacy, a mistake in reasoning. Let's examine some others:

ad hominem (Latin for "to the man"): saying something about the person rather than the idea or argument they are advancing. Not the same thing as an insult, though it often includes an insult.

falsus ad hominem (Smith's invention). Falsely claiming that someone has engaged in an ad hominem attack. Used as a way to avoid responding to an objection to one's position.

red herring: a point someone introduces to divert attention from the original topic or argument. Similar to changing the subject.



For the ad hominem, red herring, and other fallacies, knowing about them is the first step in combating them. We need to learn to recognize them in others and—perhaps more importantly—in ourselves.

begging the question: a form of argument where the conclusion is assumed within one of the premises. In common usage, begging the question is the same thing as circular reasoning.

Example: “How do we know that smoking causes cancer? Because tobacco smoke is a known carcinogen.”

false dichotomy: artificially limiting the discussion to only two possibilities. One of the possibilities is absurd, immoral, or otherwise flawed, which the speaker uses to gain support for the other possibility.

George W. Bush: You’re either with us, or you’re with the terrorists.

equivocation: using a term differently from the standard meaning without explaining why you are doing so, or shifting from one to another meaning of a term

An example. “Sure, critical thinking helps you argue better, but do we really need to encourage people to argue? There's enough hostility in this world.”

nutpicking: using an extreme person on the other side to define the other side as a whole

**origin fallacy (also known as the genetic fallacy):
rejecting an idea based on its origin rather than its actual
merit. Unreliable sources sometimes contain accurate
information, and you can't assume something is false
because of the source.**

**Like many informal fallacies, the problem in the origin
fallacy is pushing a reasonable heuristic too far.**

moving the goalposts: continually changing the standards of evidence so that they will never be met. As soon as one point gets refuted, the person introduces another.



special pleading: an attempt to invoke an exception to a generally accepted rule or principle, without justifying the exception

no true Scotsman: claiming that a person from your group who behaves improperly isn't actually in your group

**argument from ignorance: claiming something must be true because there is no evidence contradicting it.
Related to the burden of proof.**

argument from authority: accepting a claim merely because it comes from an authority figure

argument from popularity (also known as the bandwagon fallacy): asserting that a claim is true because many people believe it

argument from tradition: asserting that a claim is true because it has deep roots in the past

wishful thinking: allowing what you want to be true to influence what you believe is actually true

is-ought fallacy: claiming that because things are a certain way, they should be that way; or inferring a moral claim from an empirical observation

naturalistic fallacy: equating “natural” with good or desirable and “unnatural” with bad or undesirable

natural and good:

babies

sunsets

flowers

natural and bad:

cyanide

bird poop

earthquakes

unnatural and bad:

pollution

eating a pound of sugar

excessive inbreeding in dogs

unnatural and good:

glasses

indoor plumbing

chemotherapy

Besides committing fallacies in reasoning, people fall prey to cognitive biases, which are systematically inaccurate judgments we make about ourselves, other people, and social situations.

We'll focus on just some of the most prominent cognitive biases.

**availability bias (also called accessibility bias):
overestimating the actual frequency of something based
on currently accessible examples from experience or the
media**

**self-justification bias: the tendency for people to
rationalize their decisions after making them, for example
by increasing the spread between their decision and the
next-best alternative**

Intelligence does not immunize a person from the problems we are covering today (David Robson). Various studies show intelligence to be at most weakly correlated with the ability to avoid these biases and fallacies. Intelligence can make things worse for confirmation bias and motivated reasoning.

endowment effect: people often demand much more to give up an object than they would pay to acquire it

overconfidence bias: a form of self-delusion whereby people overestimate their own knowledge, attributes, competence, etc.

***The Onion* on males overestimating their fighting ability:**

<https://www.youtube.com/watch?v=fe3na9umxDA>

Most high school students rate themselves as above average in leadership skills (70%) and ability to get along with others (85%)

93% of drivers say their driving skills are above average

94% of college professors say they are above average teachers

Dunning-Kruger effect: a variant of overconfidence bias. The tendency for people with the lowest ability in a task to think they are more capable than they really are.

cherry picking: identifying and emphasizing evidence that supports your position while ignoring contrary evidence

assuming that correlation means causation

several different possibilities could lead to a correlation between X and Y (the arrows indicate causation)

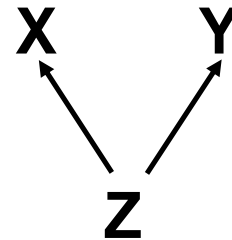
1. $X \rightarrow Y$

4. chance

5. spurious correlation

2. $X \leftarrow Y$

3. $X \rightleftharpoons Y$



By designing research projects appropriately, we can gain evidence on whether a correlation does or does not indicate causation.

post hoc ergo propter hoc (“after this, therefore because of this”): assuming a second event following a first event was caused by that first event. A variant of correlation does not equal causation.

halo effect: a person or object that scores highly on one attribute (e.g., attractiveness) tends to get evaluated favorably overall and on unrelated attributes

false consensus effect: people overestimate the extent to which other people share their opinions, beliefs, and behaviors

One study found a correlation between people’s (a) own positions and (b) their perceptions of other people’s positions of .32 on the death penalty and .44 on gun control. (Positive correlations can range from 0 to 1)

hindsight bias: the tendency to claim, after you know an outcome, that you expected it all along

2015 Super Bowl. 2nd and goal from the 1, with 26 seconds remaining, 1 timeout

<https://www.youtube.com/watch?v=U7rPIg7ZNQ8>

4 ways to lose the game:

fumble, interception, downs, clock

**On the season, Marshawn Lynch scoring a TD
from inside the 1: 1 for 5**

**All teams on the season, passing from inside the 1
before that game: 108 passes, 0 interceptions**