

3.3 Fallacies of Weak Induction

In the previous section, we learned about **inductive arguments**. These were arguments where the premises STRONGLY supported the conclusion, but the support was not SO strong as the NECESSITATE or GUARANTEE the conclusion.

In this section, we will look at some inductive types of arguments where the premises only WEAKLY support the conclusion. Whenever someone concludes something from premises that only provide a very WEAK support for that conclusion, they are being irrational, and committing an informal fallacy; namely, a “**fallacy of weak induction**”. There are 6 varieties of this sort of fallacy. Let’s look at them now.

1. Appeal to Unqualified Authority (argumentum ad verecundiam): This fallacy is committed whenever someone proposes that some conclusion is true because someone who is NOT an authority on the subject SAID it was true. So, this is exactly like the NON-fallacious variety of inductive argument that we called “**appeal to authority**” in the last lesson—except that the conclusion is NOT supported when the “authority” that we are appealing to is not really an authority at all. For instance, imagine that you have a neighbor who has never been to Kansas, and then you stated the following:

“My neighbor says Kansas is absolutely beautiful, and that the people are super friendly, and the food is amazing. I think I would like to visit.”

While your neighbor MAY happen to be correct (perhaps she found this information in a reliable travel book, or on a reliable internet page; or perhaps she heard this story from a well-traveled reliable person; etc.), the MERE FACT that she told you so COMBINED with the fact that she is not really in a position to say what Kansas is like (having never been there) makes it such that we CANNOT reliably conclude that the information she is giving us Kansas is correct.

Another example of this fallacy is found in this commercial for [Sony Cameras](#). Celebrities like Peyton Manning and Justin Timberlake claim to have authoritative knowledge about which cameras are best; but their only claim to “expertise” is that lots of photos are taken of them. But, this is not grounds for being an expert about which camera is the best one to purchase. So, drawing any conclusions based on their recommendations would be irrational.

2. Appeal to Ignorance (argumentum ad ignorantiam): This fallacy is committed whenever someone concludes that either (a) because they can’t see how something could be true, it must be false, or (b) because they can’t see how something could be false, it must be true.

In short, this fallacy occurs when someone uses their own **IGNORANCE** about something as evidence for some **CONCLUSION**. While it **CAN** be rational to make these sorts of inferences—for instance, it **WOULD** be rational to look around the room I'm in and say, "I see no elephants in the room I'm in. Therefore there **AREN'T** any elephants in this room"—the mistake occurs when the speaker is not really in a qualified position to draw any conclusions from their lack of data. For instance,

"No one's ever proved for sure that there weren't two shooters at JFK's assassination. So, there must have been two shooters there."

Or:

"No has ever proven that UFO's aren't real. So, they must be real."

Or:

"No one has ever been able to prove to me that God exists. So, I know that He doesn't exist."

The mere **lack** of proof on **ONE** side of the issue in these sorts of cases should **NOT** be taken as the evidence for the **presence** of proof for the **OTHER** side of the issue.

3. Hasty Generalization (converse accident): This fallacy is committed whenever someone draws a conclusion about a **WHOLE** group after examining only **SOME** of the members of that group. So, this is exactly like the **NON-fallacious** variety of inductive argument called a "**generalization**"—except that this sort of conclusion is **NOT** supported when the group being examined is **too small** or **not random**. As an example of a sample set which is too small:

"I've met three dogs and all of them were friendly. So, all dogs are friendly."

Three dogs is simply not a large enough sample set to draw a general conclusion about **ALL** dogs. Here is an example of a sample set which is not random:

"I took a survey, and everyone at my church firmly believed in the resurrection of Jesus from the dead. So, 100% of Americans firmly believe in the resurrection."

Here, the sample set is not representative of the whole because the group being surveyed is not random. A good poll or survey will sample a **WIDE** range of people from many different regions, age groups, races, genders, religions, income brackets, and so on.

It is irrational to conclude something about an entire group after examining only a tiny, non-randomized portion of that group. But, not only is it irrational, it can also often be **dangerous**. For, hasty generalizations are largely responsible for acts of stereotyping, racism, sexism, and racial profiling. For instance, consider this inference:

“All 19 of the hijackers on 9/11 were from the middle east. Man, those middle-easterners are all a bunch of terrorists!”

In short, the smaller your sample group, and the less diverse it is, the less sure we can be about making generalizations based on the group sampled.

But, note: There ARE exceptions to this. For instance,

“I tried Diet Coke once, and it was terrible. I even tried it one more time, just to make sure. And it’s safe to say: I don’t like Diet Coke at all.”

Here, the sample set is only TWO sips of Diet Coke. But, this IS a large enough sample set for the conclusion (that the speaker does not like Diet Coke) to be rational. No fallacy is being committed here—but ONLY because we know certain other facts which make the conclusion reasonable (like the fact that the Coca-Cola company maintains a certain standard of consistency, and tries to ensure that every can of Coke will taste exactly the same as every other can).

4. False Cause: This fallacy is committed whenever someone bases a conclusion upon the imagined existence of a causal connection that probably does not exist. There are 4 varieties of this fallacy:

- (a) **Coincidence (post hoc ergo propter hoc):** This occurs whenever someone observes one event followed by another, and then concludes that the first event CAUSED the second.

For instance:

“It’s raining. And I left my umbrella at home. But, it’s only raining BECAUSE I left my umbrella at home. If I had brought the umbrella with me, it would be bright and sunny.”

Here, the speaker mistakes the event of leaving their umbrella as the CAUSE of the later event (that it rained). But, it is really just a coincidence. For other examples, watch this clip from the television show, [The Big Bang Theory](#), or this one from [Sesame Street](#).

(b) **Correlation (non causa pro causa):** This occurs whenever someone mistakes CORRELATION for CAUSATION. Correlation is the fact of two things commonly existing or occurring together, or in conjunction with one another. But, it is a mistake to think that, just because two things are often found coupled, that one is CAUSING the other.

For instance:

“All of the really fast runners wear Nike shoes. So, if I get some Nike shoes, I will be a really fast runner too!”

Though it may actually be TRUE that being fast and wearing Nike shoes are strongly correlated, this does not mean that it is the Nike shoes that is CAUSING the runners to be fast. For more examples of the sorts of terrible mistakes that can be made by erroneously taking correlation to be an indicator of causation, watch this excellent [TED Talk](#) on the topic.

(c) **Oversimplified Cause:** This occurs whenever some effect is the result of a fairly complicated system or chain of causes, but the observer selects only a small PART of that causal system and mistakes it for the ENTIRE cause.

For instance:

“Throughout the 1960’s, the youth culture experimented more and more with sex, drugs, and rock and roll. It’s all The Beatles’ fault.”

It may actually be true that the staggering popularity of the Beatles followed by their experimentation with drugs had some causal influence on the way that youth culture developed in the 1960’s. But, it is a mistake to think that this one very small part of a much larger social development was SOLELY responsible for the WHOLE movement.

(d) **The Gambler’s Fallacy:** This occurs whenever someone assumes that two independent events of random chance are connected because the events are both a part of the same game.

For instance:

“Wow, this coin has come up heads 5 times in a row. The next one is BOUND to come up tails!”

Or:

“This slot machine hasn’t paid out in over an hour. I’ve got to keep playing though, because it’s SURE to hit the jackpot really soon.”

The fact is, EVERY time you flip a coin, the odds that it will come up tails is 50%, **no matter how many times in a row it has come up heads**. Each flip of the coin is completely causally independent of the previous flip, so the fact that it has come up heads several times in a row HAS NO CAUSAL INFLUENCE on how the next flip will turn out. Similarly, if the odds of a jackpot on a slot machine are one in ten-million, then the odds are one in ten-million EVERY TIME you pull the lever on the machine, **no matter how long it has been since the machine has hit the jackpot**.

Unfortunately, gamblers fall victim to this fallacy quite often, and it is what keeps them playing. “I’ve been losing for hours,” they think. “SURELY I’ll start winning soon.” But the fact that they’ve been losing has no influence whatsoever on the next pull on the slot machine, or the next spin of the roulette wheel, etc.

Note that gamblers are not the ONLY people who engage in this sort of fallacious reasoning. You might hear people say things like this:

“I’ve been getting more and more scared to drive lately. I’ve never been in a traffic accident, so I just KNOW that one of these days an accident is bound to happen soon.”

Or:

“It’s been warm and sunny all week. So, it’ll probably rain tomorrow—and on my day off, too!”

The fact that you’ve driven accident-free for a long time does not cause it to be more likely that an accident will occur in the near future. Similarly, the fact that it’s been sunny for several days in a row does cause it to be more likely that it will rain tomorrow. Both of these assumptions are fallacious.

5. Slippery Slope: This fallacy is committed whenever someone concludes something based on an assumption about a chain-reaction that they think will occur—but the chain-reaction is actually (contrary to their assumption) very unlikely. For instance:

“The government shouldn’t regulate AR-15 assault rifles. If they do that, then pretty soon, they’ll be regulating ALL guns, and then probably knives too! And pretty soon, there will be a law for everything and you won’t be able to move an inch without breaking some law or other.”

The possibility that if we regulate one thing, that this will trigger a series of events which will result in the government regulating EVERYTHING is extremely unlikely. It is therefore irrational to base any conclusions about whether or not we should ban assault rifles on this imagined series of events.

Here’s a wonderful example of using the “slippery slope” fallacy to mislead the customer into thinking that they really need to buy [Direct TV](#).

6. Weak Analogy: This fallacy is committed whenever a conclusion is drawn about something because it is similar to something else. So, this is exactly like the NON-fallacious variety of inductive argument called the “**argument by analogy**”—except that a conclusion derived from an analogy is NOT supported if the analogy or similarity is not very strong. For instance:

“Meghan is my best friend. I can’t wait to meet her sister tomorrow. I just know we’re going to hit it off.”

The mere fact that you are great friends with one person, does not make it likely that you will ALSO be great friends with ANOTHER person, just because both people have the same parents. For all you know, Meghan’s sibling might be the polar opposite of Meghan.

This commercial by [Mercedes](#) is a great example of a conclusion derived from a weak analogy. The conclusion is that, since it is absurd to not buy ice cream if you want it and you can afford it, and have never had any, it must ALSO be absurd to not buy a Mercedes if you want it and can afford it, and have never had one. But, this conclusion does not follow at all.

Note: Do homework for section 3.3 at this time.