CHAPTER 8 – SPECIAL INFERENCES AND FALLACIES

What You’ll Learn in this Chapter

Welcome to Chapter 8! In this chapter, we’ll focus on some special inferences – inferences that are important enough to merit attention all on their own and which can, but need not, go wrong in special ways. Inferences that are always wrong are called “fallacies.”

We’ll be treating these special inferences and fallacies as enthymemes. Enthymemes are arguments with missing premises, so when we examine these arguments we’ll use the ability to find missing premises that we developed in Chapter 7.

1) Empirical Reasoning and Corresponding Fallacies

Let’s start by taking a look at empirical, or broadly scientific, reasoning that allows us conclude things about the way the world is and how works.

To a certain extent, we get information about the world from the immediate evidence of our senses. Right now, for example, you can know certain things simply because you see them, or hear them, or taste, or touch, or smell them.

Many of the things that we think we know about the world around us cannot be known in this way, however. We often take ourselves to know what will happen in the future even though we aren’t right now in the future to see it happen. I know that the sun will rise tomorrow, for instance, although I can’t, at this very moment, observe it rising. Similarly, we think that we know about what went on in the past even though we weren’t there to witness it. Nobody (with the possible exception of God, if God exists) was around to witness the Big Bang, but we can reasonably believe that the Big Bang occurred anyway.

Let’s use the word “hypothesis” to indicate a statement about the world that it is difficult or impossible to verify by direct observation. Much empirical reasoning has to do with the formation and testing of hypotheses.

Let’s start by thinking about how people come up with hypotheses in the first place. We’ll then turn to how hypotheses are tested.

Hypothesis Formation: 1) Induction (and the Fallacy of Hasty Generalization)

Let’s consider the following argument:

“75% of the people surveyed will vote for Jones. Therefore, 75% of people generally will vote for Jones.”
This argument is an instance of induction, a case of reasoning from the past to the future, or from the specific instances to a general claim. Inductive arguments have diagrams similar to the following:

\[
\begin{align*}
N\% \text{ of all } A\text{'s sampled are (have been) } & \quad B \\
\downarrow \\
N\% \text{ of } A\text{'s are (will be) } & \quad B.
\end{align*}
\]

The argument that we’ve just seen, for example, would be diagrammed like this:

\[
\begin{align*}
75\% \text{ of the people surveyed will vote for Jones.} \\
\downarrow \\
75\% \text{ of people generally will vote for Jones.}
\end{align*}
\]

But this inference isn’t perfect. Can you see anything that might go wrong?

**Stop and Think**

How might the premise true but the conclusion false?

How could it be true that 75% of the people surveyed will vote for Jones but false that 75% of people generally will vote for Jones?

The inference in our argument could run aground in at least two ways.

First, what if Jones is a Democrat the surveyor only spoke to registered Democrats? That sample would be horribly biased and potentially unrepresentative of society as a whole. The fact that 75% of a biased sample would vote for Jones is no reason to believe that 75% of the voting population in general would vote for Jones.

Second, what if the surveyor only surveyed four people, three of whom were Jones supporters? That sample wouldn’t be large enough to warrant a prediction about general voting patterns. The fact that 75% of a very small sample would vote for Jones is no reason to believe that 75% of a much larger population would vote for Jones.

In short, to be successful an inductive inference needs to assume a missing premise to the effect that the sample was representative and sufficiently large.

\[
\begin{align*}
N\% \text{ of all } A\text{'s sampled are (have been) } & \quad B + a \\
\downarrow \\
N\% \text{ of } A\text{'s are (will be) } & \quad B.
\end{align*}
\]

\[a = 1) \text{ the } A\text{'s that were sampled are representative, and } 2) \text{ there was a large enough sample of } A\text{'s.}\]
If “a” is true, the inductive inference is probably okay. If “a” is false, the inference has committed the Fallacy of Hasty Generalization.

**Hypothesis Formation: 2) Analogy (and the Fallacy of False Analogy)**

Induction isn’t the only process used to come up with hypotheses about the way the world works. Let’s take a look at the following arguments:

“My behavior is similar to other people’s behavior. I know that my behaviors are caused by my mental states. Therefore other people probably have mental states that cause their behavior.”

“Both watches and eyes are intricate and suited to their functions. Watches are the product of intelligent design. Therefore, eyes are the product of intelligent design.”

Can you see how both of these arguments claim that one thing is like another in some respects and conclude that it is probably like it in other respects as well? This is reasoning by analogy. Analogical arguments have the following general form:

\[
\text{A and B have property P1} \quad + \quad \text{A has property P2} \quad \downarrow \\
\text{B has property P2}
\]

Stop and Think

Can you see any possible problems with this type of reasoning? What are some ways in which an analogical argument can go wrong?

All arguments by analogy depend upon the assumption that if two things are similar to each other in some specified respects then they’re likely to be similar to each other in different respects as well. In other words, arguments by analogy need a missing premise.

\[
\text{A and B have property P1} \quad + \quad \text{A has property P2} \quad + \quad \text{a} \quad \downarrow \\
\text{B has property P2}
\]

\[a = \text{A and B are sufficiently similar in that if they are alike with respect to property P1 then they are probably alike with respect to property P2 as well.}\]

When ‘a’ is true, the inference might be fine. But when ‘a’ is false, we have the Fallacy of False Analogy.
For example, my behavior probably is sufficiently similar to your behavior to justify my belief that they have similar causes. That inference might hold. But watches might not be sufficiently similar to eyes to allow us to conclude that they both require an intelligent designer. That inference might fall victim to the Fallacy of False Analogy.

**Hypothesis Formation: 3) Correlation (and Post Hoc Ergo Propter Hoc)**

There’s another way of formulating hypotheses that we should consider. Let’s think about the following arguments:

“I ate the left-over egg-salad shortly before I got sick. Therefore, that egg-salad made me ill.”

“Children who watch a lot of violence on T.V. tend to act out more in school. Therefore, violence on T.V. causes acting out.”

“I was wearing my purple socks when I gave that great interview and got the job. Therefore my purple socks are lucky.”

Can you see what all of these arguments have in common? They all move from the fact that one thing happened before another, or from the claim that one thing is correlated with another in that way, to the claim that the first thing caused the second. In other words, they all work more or less like this:

A occurred before B.  
\[ \downarrow \]  
A caused B.

**Stop and Think**

What do you think of this kind of reasoning? Which of the arguments we’ve just seen seem like they might be okay, and which seem like they’re pretty bad?

Let’s take a closer look at the first argument:

“I ate the left-over egg-salad shortly before I got sick. Therefore, that egg-salad made me ill.”

It doesn’t seem terrible to me. It might, of course, have been nothing more than a coincidence that the author got sick after eating the egg-salad, so the inference is far from perfect, but old egg-salad is the sort of thing that can make people ill so the inference isn’t entirely off-the-wall, either.

What about the second argument?
“Children who watch a lot of violence on T.V. tend to act out more in school. Therefore, violence on T.V. causes acting out.”

I think this inference is on slightly shakier ground. It could be that children who watch a lot of violence on T.V. don’t have much parental supervision, and it’s this lack of supervision which leads them to act out in school. Alternatively, children who have the desire to act out might simply watch more violence on T.V.

Finally, what about the third argument?

“I was wearing my purple socks when I gave that great interview and got the job. Therefore my purple socks are lucky.”

I think this inference is the weakest of the lot. As I understand the way the world works, the socks one wears can’t have an effect on whether or not one gets a job. Of course, if the author thinks that her purple socks are lucky then she might have more self-confidence and that might make for a good job interview, but in that case it’s the confidence, and not the pair of socks, that is responsible for her good fortune.

We’ve seen that in order conclude that one thing caused another from the fact that it happened first, we need to assume that the two things are the sort of events that can stand in this causal relationship (think about the lucky socks) and we need to eliminate the possibility of a common cause for both of them (think about kids watching violent shows on T.V.). In short, we need a missing premise.

\[
\text{A occurred before B.} \quad + \quad \text{a}
\]

\[
\downarrow
\]

A caused B.

\[
\text{a} = \quad 1) \quad \text{A is the type of thing that could have an effect on B and} \quad 2) \quad \text{the possibility of a common cause of A and B has been eliminated.}
\]

If “a” is true, the inference might hold, but if “a” is false, we have the Post Hoc Ergo Propter Hoc (or “After This, Therefore Because of This”) Fallacy.

So far, we’ve seen three ways that we can come up with an hypothesis about the way the world works: we can reason by induction, by analogy, and by correlation. Of course, it’s one thing to arrive at an hypothesis. It’s quite another to figure out whether or not that hypothesis is right. How can we test an hypothesis once we have one?

**Hypothesis Testing: 1) Confirmation (and the Fallacy of Premature Confirmation)**

Let’s start by thinking about how an hypothesis might be confirmed, or proven right.
Suppose, for example, that we’ve formulated the hypothesis that our neighbor Sam is the person responsible for minor acts of vandalism that have been occurring on our block. We might justify this belief by reasoning as follows:

“If Sam were the vandal then he would probably have grudges against his neighbors, he would have recently purchased quite a bit of toilet paper, and he would be acting nervous around the police. In fact, Sam does have grudges against his neighbors, has purchased quite a bit of toilet paper, and is acting nervous around the police. Therefore, Sam is probably the vandal.”

See what we’d be doing if we reasoned like this? We would be arguing along the following lines.

\[
\text{If } H \text{ were true then } C \text{ would be true. } + \text{ C is true.} \quad \downarrow \\
H \text{ is true.}
\]

What do you think about this sort of justification? You might have noticed that this inference is of the form “If P then Q. Q. Therefore P.” And, as you might remember from Chapter 4, this inference form is invalid. This means that the hypothesis could be false even if the consequences that would follow from the hypothesis do in fact turn out to be the case.

It’s important to remember, however, that not all invalid inferences are terrible, and in the case of hypothesis confirmation this is probably the best we can do. After all, since the truth of an hypothesis is difficult or impossible to observe directly, in order to test an hypothesis we need to think of observable consequences of the hypothesis, something we would expect to observe if the hypothesis were true. If we detect these observable consequences, then that partially confirms the hypothesis. The more observational consequences detected, the more likely the hypothesis is to be true and the stronger the confirmation.

Returning to the argument under consideration, we can see that we’ve only detected three consequences.

“If Sam were the vandal then he would probably have grudges against his neighbors, he would have recently purchased quite a bit of toilet paper, and he would be acting nervous around the police. In fact, Sam does have grudges against his neighbors, has purchased quite a bit of toilet paper, and is acting nervous around the police. Therefore, Sam is probably the vandal.”

This might not be enough to justify accusing Sam of vandalism. Furthermore, there might be innocent and equally plausible explanations for all of the facts cited in this argument. Maybe Sam bought the toilet paper because it was on sale. Maybe he has a grudge against his neighbors because he’s mildly paranoid, a condition that also accounts for his discomfort around the police.
In short, a good hypothesis confirmation needs the following missing premise.

\[
\text{If } H \text{ were true then } C \text{ would be true. } + \quad C \text{ is true. } + \quad a \\
\downarrow \\
H \text{ is true.}
\]

\[a = 1) \text{ Enough } C\text{’s have been observed and 2) the most reasonable explanation of } C\text{’s occurrence is the truth of } H.\]

If “a” is true then we can provisionally trust the hypothesis, but if “a” is false then we have an instance of the Fallacy of Premature Confirmation.

**Hypothesis Testing: 2) Disconfirmation (and the Fallacy of Premature Disconfirmation)**

So much for how an hypothesis might be confirmed, or proven right. How might it be disconfirmed, or proven wrong?

Suppose, for example, that someone wants to refute our hypothesis that Sam is vandal. This person might offer us the following argument.

“If Sam were the vandal then his boot prints would be in the snow. But his boot prints aren’t in the snow. Therefore, Sam isn’t the vandal.”

See what Sam’s defender is doing? She is reasoning along the following lines.

\[
\text{If } H \text{ were true then } C \text{ would be true. } + \quad C \text{ is not true.} \\
\downarrow \\
H \text{ is not true.}
\]

What do you think about this attempt at disconfirmation? You might have noticed that this inference is of the form “If P then Q. Not Q. Therefore not P.” And, as you might remember from Chapter 4, this is inference form is valid! This means that the hypothesis is refuted provided that the premises are true. If an hypothesis would have a certain observational consequence, and if we fail to detect that observational consequence, then the hypothesis can’t be true.

But there’s hitch. No hypothesis ever entails any observational consequence in isolation. For example, *is* it the case that if Sam were the vandal then his boot prints would be in the snow? Is Sam’s being the vandal *all* that we need for the boot prints? Presumably not. Maybe Sam wasn’t wearing his boots at the time of the vandalism. Maybe it didn’t snow until after the vandalism was done. Assumptions like “Sam was wearing his boots,” and “It snowed before the vandalism” are called “auxiliary assumptions.” It isn’t really the hypothesis *alone* that entails the observational consequences, but the hypothesis *together with a host of auxiliary assumptions.* “If Sam
were the vandal then his boot prints would be in the snow,” is short for “If Sam were the vandal, and if he were wearing boots at the time, and if it snowed before the vandalism, etc, etc, then there would be boot prints in the snow.” We might not take the time to state of all of these auxiliary assumptions explicitly, but they’re there nonetheless, and we can always save the hypothesis by sacrificing an auxiliary hypothesis instead. We can, in other words, maintain that Sam really is the vandal but that he was wearing slippers when he toilet-papered the house.

In short, the failure to detect an observational consequence of an hypotheses refutes the hypothesis only if we have reason to believe that the auxiliary assumptions are true. Hypothesis disconfirmation depends upon the truth of a missing premise.

\[ \text{If H (and the auxiliary assumptions)} \quad \text{then C would follow.} \quad + \text{C is false.} \quad + \quad \text{a.} \]

\[ \quad \downarrow \]

\[ \text{H is false.} \]

\[ \text{a} = \text{All of the auxiliary assumptions are true.} \]

If “a” is true, then we can reject the hypothesis as properly disconfirmed. But if “a” is false, we have the Fallacy of Premature Disconfirmation.

II) Social Reasoning and Corresponding Fallacies

Because we’re social animals, we often acquire or reject beliefs on the basis of what other people do or don’t believe. Is this always okay? Is it always wrong? If it’s sometimes okay and sometimes wrong, how can we decide when it’s permissible to adjust our beliefs on the basis of what other people believe?

Social Belief Acquisition: Appeal to Majority (and Fallacious Appeal to Majority)

Let’s start by thinking about one way in which we might adopt a belief for social reasons. Consider the following arguments:

“The trash on this street is picked up on Tuesdays. All of my neighbors think so.”

“God must answer prayers. Almost every culture has believed that he does.”

Both of these arguments conclude that something is true from the fact that many people believe it. In other words, they work like this:

\[ \text{A lot of people believe X} \]

\[ \downarrow \]

\[ X \]
Stop and Think
What do you think about this kind of reasoning? Is it always bad? Is one of the arguments that we’ve just seen better than the other?

It seems to me that the first argument is pretty good.

“The trash on this street is picked up on Tuesdays. All of my neighbors think so.”

My neighbors are in a position to know when their trash is picked up, so if they believe that it’s picked up on Tuesdays then it probably is picked up on Tuesdays.

I’m less impressed by the second argument.

“God must answer prayers. Almost every culture has believed that he does.”

The necessary connection between widespread belief and truth is less obvious here because many people might believe that prayer works out of wish-fulfillment or for some other reason.

In short, arguments from majority opinion require a missing premise of the following sort:

\[
\text{A lot of people believe } X + \text{a} \quad \Downarrow \quad X
\]

\[
a = \text{If a lot of people believe } X \text{ then } X \text{ is probably true.}
\]

If “a” is true (and I think that sometimes it is true) then the argument is okay, but “a” is false, this is a Fallacious Appeal to Majority

**Social Belief Acquisition: Appeal to Authority (and Fallacious Appeal to Authority)**

Now let’s think about the following arguments:

“A famous actor endorses this pain reliever. Therefore, it must really work.”

“This tobacco lobbyist says that cigarettes are safe. Therefore, they must be safe.

“This philosopher says that euthanasia is okay. Therefore, it must be okay.”

“My doctor says that I have virus. Therefore, I probably do.”
All of these arguments conclude that a certain statement is true from the fact that a particular person – usually an alleged expert of some sort – says that it’s true. They all work like this:

\[ P \text{ says that } X \quad \downarrow \quad X \]

Stop and Think
What do you think about this kind of reasoning? Is it always good? If not, under what conditions is it bad?

It seems to me that this kind of reasoning can go wrong in at least three ways. Consider the first argument.

“A famous actor endorses this pain reliever. Therefore, it must really work.”

The problem here is that a famous actor is simply not qualified to give medical advice. In order for an appeal to authority it work, the authority cited needs to really be an authority on the subject.

Now what about the second argument?

“This tobacco lobbyist says that cigarettes are safe. Therefore, they must be safe.

Here we face a different problem. Although the lobbyist may, in fact, be an expert on tobacco, her objectivity is in question and so she might not be completely honest or straightforward in her statements. In order for an appeal to authority to be strong, we need to be able to trust the authority.

What about the third argument?

“This philosopher says that euthanasia is okay. Therefore, it must be okay.”

The problem in this instance is different still. We may assume that the philosopher is an expert on ethics, the branch of philosophy that deals with questions like the moral acceptability of euthanasia. We may also assume that the philosopher is objective and is honestly reporting the truth as she sees it.

The problem here is that the ethicality of euthanasia, or anything else, might not be the sort of thing upon which any expert is in a position to pronounce. Philosophers are experts in philosophy because they have mastered certain ways of thinking and not because they have learned a list of philosophical truths. Given this, it might always be a
mistake to look to philosophers for answers to specific questions, like “Is euthanasia right or wrong?” A philosopher could certainly give you the answer that she has arrived at through a process of philosophical reflection, but the most important philosophical “product” is the reflection itself, not the answer it generated, and the philosopher is in a much better position to show you how to think philosophically than to tell you what you should think.

In short, in order to be justified in acquiring a belief from an authority, we need to ensure that the person really is an authority, that the person is objective, and that the issue under consideration is one with respect to which we can profit from expert opinion.

Given these restrictions, is the last argument okay?

“My doctor says that I have a virus. Therefore, I probably do.”

In fact, unlike the other arguments, I think this one is just fine. Doctors are experts on health-related issues. I have no reason to think that my doctor isn’t being honest. And whether or not I’m suffering from a virus is exactly the sort of thing I want an expert to tell me.

In summary, we’ve seen that appeals to authority rely upon the following missing premise.

\[
P \text{ says that } X + a \quad \downarrow \quad X
\]

\[
a = 1) \text{ P is qualified to speak on } X, 2) \text{ P is objective, and } 3) \text{ X is the sort of issue with respect to which you could benefit from expert testimony.}
\]

When “a” is true, we have a good argument. When “a” is false, this is a Fallacious Appeal to Authority.

**Social Belief Rejection: Ad Hominems**

So far, we’ve thought about how we might adopt a belief for social reasons. Now let’s consider some ways in which social reasons might lead us to reject a belief.

Take a look at the following arguments:

“Bill thinks that there’s intelligent life on other planets. But he never even graduated from high school! Humans are probably the only intelligent life in the universe.”

“I know that Amanda argues in favor of God’s existence, but it isn’t really worth our time to listen to her. After all, she believes in crystals and a lot of crazy things.”
See what’s going on here?

The reasoning may be set out as follows:

\[ P \text{ claims } X \text{ or argues for } X \quad + \quad P \text{ has some “negative” trait } T \]
\[ \quad \downarrow \]
\[ X \text{ is false or } P\text{’s argument for } X \text{ is bad.} \]

**Stop and Think**

Can you see what assumed premise is needed for this inference to hold?

Someone who argues in the way we’ve just seen is assuming that trait T corrupts to the extent that it undermines a person’s claims or arguments. In other words, the following premise is being assumed:

\[ P \text{ claims } X \text{ or argue for } X \quad + \quad P \text{ has some “negative” trait } T \quad + \quad a \]
\[ \quad \downarrow \]
\[ X \text{ is false or } P\text{’s argument for } X \text{ is bad.} \]
\[ a = T \text{ is the sort of thing that would lead } P \text{ to speak falsely or reason poorly about } X. \]

But it’s reasonable to doubt that there are any such traits because the truth or falsity of a position, or the strength of someone’s argument for a position, has nothing to do with the character or motives of the person offering the argument.

That’s important enough for me to say again: the truth or falsity of a position, or the strength of someone’s argument for a position, has nothing to do with the character or motives of the person offering the argument.

(Naturally, if we’re asked to accept the testimony of an authority, then, as we’ve seen, we may discount the authority if we have reason to think that the authority is incompetent or biased and if we are not in a position to evaluate the authority’s argument on its own merits, but even then such discounting shouldn’t lead us to believe that the position is false, but only to deny that we have been given any reason to believe that the position is true.)

In view of the fact that missing premise ‘a’ is always false, this kind of reasoning is always fallacious. We call arguments that work this way “*ad hominem* arguments,” because “*ad hominem*” is Latin for “against the person” and because all of these
arguments incorrectly attack a position or argument by attacking the person who advances it.

Ad hominem fallacies are so common that we can distinguish between different types of ad hominems. For example, let’s take a look at the following arguments:

“Brother Harrington claims that Marjory’s vision was authentic. But of course he’d want to believe that, wouldn’t he, because her vision claimed that his own church is the true faith. Therefore, Marjory’s vision is probably not authentic.”

“You pray before you take an exam! How can you tell me that it’s superstitious?”

“Marjory believes that God answers prayers just because her parents taught her that. Therefore, her belief is probably false.”

Each of these arguments exhibits a special kind of ad hominem inference. Let’s take a closer look at them.

**Special Ad Hominem: 1) The Vested Interest Fallacy**

Can you see what’s going on in the first argument?

“Brother Harrington claims that Marjory’s vision was authentic. But of course he’d want to believe that, wouldn’t he, because her vision claimed that his own church is the true faith. Therefore, Marjory’s vision is probably not authentic.”

The person who gave this argument is inferring that Brother Harrington’s position is false from the fact that Brother Harrington wants it to be true!

We can represent this form of reasoning as follows:

\[
P \text{ claims } X \text{ or argues for } X \quad + \quad P \text{ wants } X \text{ to be true} \quad \downarrow \quad X \text{ is false or } P\text{’s argument for } X \text{ is bad.}
\]

But this argument depends upon a missing premise. Specifically,

\[
P \text{ claims } X \text{ or argues for } X \quad + \quad P \text{ wants } X \text{ to be true} \quad + \quad a \quad \downarrow \quad X \text{ is false or } P\text{’s argument for } X \text{ is bad.}
\]

\[a = \text{ If } P \text{ wants to believe something then that thing is false or } P\text{’s argument for it is weak.}\]
And, of course, this is a fallacy because the fact that someone wants a position to be true does not mean that the position is false, and it certainly does not mean that we can dismiss all of that person’s arguments for that position.

This kind of argument is called a “vested interest” fallacy because it improperly rejects a position or argument on the grounds that the person advancing the position or argument has a vested interest in supporting it.

In general, we shouldn’t try to impugn someone’s objectivity by claiming that the person has a vested interest in the position advanced, unless the person is being cited as an authority and we are not in a position to assess the argument on its own merits.

Special Ad Hominem: 2) Tu Quoque (You’re Another)

Now, what about the second argument?

“You pray before you take an exam! How can you tell me that it’s superstitious?”

The person who advances this argument is thinking that since an individual prays before taking an exam, she must be mistaken when she says it’s superstitious to do so. In other words, the person who advances this argument is maintaining that an individual’s position is false on the grounds that she fails to act in accordance with it herself.

We can represent the reasoning like this:

\[
\begin{align*}
\text{P claims X or argues for X} \quad + \quad \text{P fails to act in accordance with X} \\
\downarrow \\
\text{X is false or P’s argument for X is bad.}
\end{align*}
\]

This argument needs the following assumed premise:

\[
\begin{align*}
\text{P claims X or argues for X} \quad + \quad \text{P fails to act in accordance with X} \quad + \quad \text{a} \\
\downarrow \\
\text{X is false or P’s argument for X is bad.}
\end{align*}
\]

\[
\text{a} = \text{If someone fails to practice what they preach then what they preach is false.}
\]

And can you see that this assumed premise is false? I can correctly argue against smoking even if I smoke myself. Someone could maintain that praying is superstitious
even though she feels an uncontrollable need to pray before exams. (Whether or not praying is a superstition, superstitions can be like that!)

An argument of the sort we’ve just see is called a “*Tu quoque*” fallacy, where “*Tu quoque*”is Latin for “You’re another.” *Tu quoque* is a fallacy because the fact that someone is advancing a position at odds with that person’s own practice doesn’t mean that it isn’t a good position or argument.

**Special Ad Hominem: 3) Genetic Argument**

And finally, what about the last argument?

“Marjory believes that God answers prayers just because her parents taught her that. Therefore, her belief is probably false.”

The general idea here is that the way in which someone acquires a belief can show that the belief is false. We can represent this reasoning like so:

\[
P \text{ came to believe } X \text{ through process } Y \quad \downarrow \quad X \text{ is false.}
\]

Naturally, this argument requires an assumed premise of the following sort:

\[
P \text{ came to believe } X \text{ through process } Y \quad + \quad a \quad \downarrow \quad X \text{ is false.}
\]

\[a = \text{Beliefs arrived at through process } Y \text{ stand a good chance of being false.}\]

And this assumed premise is frequently wrong. It’s *one* thing to suspect that beliefs formed in a certain way are unreliable, but it’s quite *another* thing to think that the beliefs formed in a certain way are probably false.

Parents are fallible, for example, so most parents are less-than-perfect sources of belief. On some subjects, they might be quite unreliable and the beliefs that one would get from them might not have much more than a 50% chance of being true. To think that beliefs acquired from your parents are *probably* false, however, would involve thinking that your parents are either systematically mistaken about a certain subject or else are out to systematically mislead you. Although this *might* be true, it hopefully isn’t true very often!
If “a” in the above argument is false, we call the argument “the Genetic Fallacy” because it incorrectly infers that a belief is false on the basis of how the belief was generated, or acquired.

III) Changing the Subject

Sometimes, people change the subject in the process of a conversation, either intentionally or unintentionally, and muddle the topic in a way that can give the incorrect impression of making a good point, or scoring a definitive “victory” over an opponent. For example…

**Straw Man**

What do you think about the following arguments?

“Would you believe a drunk who claims to see pink elephants? Of course not! Obviously, then, you shouldn’t believe reports of religious visions!”

“I understand that my opposition is favor of reducing funding to some of our social programs. Well, unlike her, I’m against forcing our underprivileged to die on the streets, without access of affordable housing or basic medical care.”

Can you see what’s going on here? Both arguments attempt to refute one position by attacking a caricature of it. Are all religious visions really like seeing pink elephants? Are people who want to reduce some social programs really out to have underprivileged people die on the streets?

We can represent arguments like this as follows:

\[
\text{Y is an unacceptable position [where Y is a caricature of X]} \quad \downarrow \\
\text{X is wrong.}
\]

Like most fallacies, such arguments depend upon a highly dubious assumed premise.

\[
\text{Y is an unacceptable position [where Y is a caricature of X]} + \text{a} \\
\downarrow \\
\text{X is wrong.}
\]

\text{a = If Y is wrong then X is wrong.}
And because this missing premise is almost always wrong (Why should the unacceptability of a caricature reflect poorly upon the original position?) arguments of this type are almost never good. They are, however, not uncommon and they can, unfortunately, be persuasive.

Such arguments are often called “straw men” because it’s exactly as if instead of battling a real person, the individual advancing the argument constructs a scarecrow that resembles her opponent and fights that instead.

Obviously, this maneuver relies upon changing the subject, and it does so in an attempt to refute a position. A related fallacy changes the subject in order to defend a position. Let’s take a look at it.

**Diversion**

Consider the following argument.

“Stable families are important to the well-being of children because individuals raised in disrupted or dysfunctional families have a higher chance of falling victim to substance abuse later on. That’s why only married couples should be allowed to adopt.”

Can you see what’s wrong with it? This argument tries to support one idea (the idea that only married couples should be allowed to adopt) by giving us reasons to believe a different idea (the idea that stable families are important to the well-being of children).

Obviously, the idea allegedly supported must bear some resemblance to the idea we are given reasons to believe or else the argument will seem completely silly, but the fact that these ideas are sufficiently different from each other makes this a changing-the-subject fallacy. (Granted that stable families are important to the well-being of children, for instance, mightn’t single people or unmarried couples be able to provide such families?)

Arguments that work like this have the following structure:

```
Here are some good reasons to believe Y [where Y is a position that has some passing resemblance to or bearing on X].
↓
X is true.
```

Consequently, they depend upon the following missing premise:
Here are some good reasons to believe Y [where Y is a position that has some passing resemblance to or bearing on X]. \[ + a \]

\[ \downarrow \]

X is true.

\( a = \) If Y is true then X is true.

When “a” is false, the argument attempts to support one idea by diverting the audience’s attention to another idea for which it provides evidence. Not surprisingly, this tactic is called “Diversion.”

There’s one more way to change the subject that we should discuss, so let’s take a look at it.

**Appeal to Ignorance (and Burden of Proof)**

Consider the following arguments.

“Of course extraterrestrials have taken over the government. After all, you can’t prove that they haven’t. All of them are wearing very convincing human-suits.”

“You didn’t have a childhood. After all, you can’t prove that you did; maybe you were created less than a minute ago, along with all of your apparent memories.”

Can you see what’s going on here? Both of these arguments either conclude that an idea is true (“Extraterrestrials have taken over the government”) because it hasn’t been proven false or else conclude that an idea is false (“You had a childhood”) because it hasn’t been proven true.

Arguments of this type can represented as follows:

\[ X \text{ hasn’t been proven false (or true)} \]

\[ \downarrow \]

We should believe that X is true (or false)

And they depend upon a missing premise of the following sort:

\[ X \text{ hasn’t been proven false (or true)} \quad + \ a \]

\[ \downarrow \]

We should believe that X is true (or false)

\( a = \) If X hasn’t been proven false then we should assume that it’s true (or if X hasn’t been proven true then we should assume that it’s false).
The interesting thing about this missing premise is that sometimes it’s *true*, and its truth or falsity has to do with something called the “burden of proof.”

We say that a certain position has the burden of proof if it seems as though we shouldn’t believe the position unless we’re given good reasons to do so. Someone who wants us to believe the idea has the burden to prove it to us.

For example, consider the claim that you’re actually a brain in a vat, fed all of your experiences through electrodes running from a supercomputer in the basement of M.I.T. This *could* be the case, couldn’t it? Your experiences would be *exactly* as are now, so there’s no way for you prove that you *aren’t* a brain in a vat. Does this mean that you should conclude that you *are* a brain in a vat? Presumably not. The claim that you’re a brain in a vat has the burden of proof. Even though you can’t prove to yourself that you’re not a brain in a vat, you shouldn’t think that you *are* a brain in the vat unless you’re given pretty compelling reasons to do so.

Compare this with the claim that your experiences are generated by your interactions with a real external world in pretty much the way you’ve always assumed they were generated: you see an apple because there’s an apple there; you hear the phone ring because the phone is ringing, and so on. Can you *prove* that your experiences come from a real external world in this commonsense way, and not from a supercomputer as your brain floats in a vat in the basement of M.I.T.? No. Does that mean you shouldn’t think that you’re experiences result from normal interactions between your normal sensory organs and a normal external world? No. The position that experiences result from normal interactions between your normal sensory organs and a normal external world doesn’t *need* proving – at least not usually. It’s the sort of thing you can take for granted. It *doesn’t* have the burden of proof; that burden is shouldered by the contrary position.

In many of the most interesting cases, it’s unclear exactly where the burden or proof lies. Is it acceptable to believe in God unless that belief is undermined by evidence, as though atheism had the burden of proof? Or should we think that God doesn’t exist unless given reason to think that he does, as though theism had the burden of proof? Or should we remain agnostic in the absence of evidence either way, as though the burden of proof is shared by both theism and atheism?

Sometimes, however, the burden of proof is pretty clear. We’d need good evidence to support the claim that extraterrestrials have taken over the government, and that’s why the first argument probably sounded so strange to you.

“Of course extraterrestrials have taken over the government. After all, you can’t prove that they haven’t. All of them are wearing very convincing human-suits.”

And we’d need good evidence to think that we didn’t have a childhood, which accounts for the oddity of the second argument.
“You didn’t have a childhood. After all, you can’t prove that you did; maybe you were created less than a minute ago, along with all of your apparent memories.”

Both of these arguments misplace the burden of proof in a way that makes the missing premise false.

$$\text{X hasn’t been proven false (or true)} + a$$

$$\downarrow$$

We should believe that X is true (or false)

$$a = \text{If X hasn’t been proven false then we should assume that it’s true (or if X hasn’t been proven true then we should assume that it’s false).}$$

When this happens, we have an Argument from Ignorance. Arguments from ignorance mistakenly assume that we need to give evidence for something for which no evidence is needed and for which (often frustratingly) no evidence can be given, a fact which accounts for the maddeningly “check-mate” impression that these arguments can (falsely) appear to have.

**IV) Psuedo-Arguments**

So far, we’ve seen ways in which arguments can go wrong, but sometimes people opt out of the argument game entirely, either intentionally or unintentionally, refusing to justify their positions with reasons. Presumably, that’s okay now and then. Nobody can defend their positions all the time, after all! Sometimes there are more important things to do, like making friends, or having dinner, or sleeping. And some positions might not really need defending.

Problems arise, though, when someone pretends to be defending a position without really defending it or when she tries to get others to share her position by employing underhanded tactics. Both of these activities can involve advancing things that look like arguments but are so bad that they really aren’t arguments at all. I’ll call these things “pseudo (or false) arguments.” Let’s take a look at some common pseudo-arguments.

**The Fallacy of Misplaced Relativism**

Let’s take a look at the following three passages.

“I know you don’t like pecan pie, but it certainly is delicious to me.”

“I know you think that abortion is okay in order to save the life of the mother, but I disagree. That just isn’t true for me.”

“I know you believe in evolution, but I don’t. I believe in creationism. That’s what’s true for me.”
What do you think of them? Do some of them sound stronger, in some sense, than others?

Personally, I don’t see anything wrong with the first passage.

“I know you don’t like pecan pie, but it certainly is delicious to me.”

I happen to love pecan pie, but not everybody does. We can say that taste in pie is a relative thing, varying from person to person with no real “right” or “wrong” about it. If I like pecan pie and you don’t, it doesn’t really make much sense for me to say that you’re mistaken.

The second passage is trickier.

“I know you think that abortion is okay in order to save the life of the mother, but I disagree. That just isn’t true for me.”

What, we might wonder, does the author mean when she says that the morality of abortion to save the life of the mother isn’t “true for her”?

“True for me” is an interesting turn of phrase, and people often use it in an attempt to terminate or avoid a dispute in a way that allows all parties to be right. Just as one person can like pecan pie and another person prefer lemon meringue because taste in pie is relative, maybe people can disagree about things like abortion because that’s relative too. Maybe everyone, even people who disagree with each other, can be right because their respective positions are “true for them.” So, the crux of the matter here is whether or not ethical positions are relative to the speaker, much like pie preferences are relative. If so, it makes sense for someone to say that a particular ethical position is true for her and to leave it at that.

There are good reasons, however, to think that ethical statements aren’t completely relative to the speaker. (Among other things, it seems to make sense to fight about ethical opinions in a way that it doesn’t make sense to fight about things like taste in pie.) And if ethical positions aren’t relative, then refusing to defend one’s own positions by saying something like “that’s true for me,” is what we might call the “Fallacy of Misplaced Relativism.”

The Fallacy of Misplaced Relativism is particularly obvious in the last example.

“I know you believe in evolution, but I don’t. I believe in creationism. That’s what’s true for me.”

Whatever we might think about ethics, scientific fact is presumably not relative. The Earth was round even when people thought it was flat. The brain was used for thinking even when people thought that its purpose was to cool the blood. Similarly, either
creationism is true or false, regardless of what anybody thinks about it, so people can’t get away with refusing to defend it by declaring it “true for them.”

In general, we’ve seen three passages, each of which appears to work like this:

\[
\begin{align*}
X \text{ may not be true for you but it is true for me.} & \\
\downarrow & \\
I \text{ don’t need to argue for } X.
\end{align*}
\]

And we’ve seen that reasoning of this sort depends upon the following missing premise.

\[
\begin{align*}
X \text{ may not be true for you but it is true for me. } + \ a & \\
\downarrow & \\
I \text{ don’t need to argue for } X.
\end{align*}
\]

\[a = \text{The truth or falsity of } X \text{ is relative.} \]

Sometimes (as with pie preferences), “a” is true. Sometimes, though (as with science), “a” is false. When “a” is false, we have the Fallacy of Misplaced Relativism, an attempt to claim that there is no objective truth or falsity in matters where there is an objective fact to the matter in order to avoid having to defend or refute a position.

**Appeal to Emotion**

Consider the following pieces of reasoning.

“Isn’t it clear that the government should reduce its social programs? Just think about all those lazy people, relying on welfare instead of getting a job and being useful to the community. Just think about all those hard-working families who are barely able to scrape by because the federal government is taxing them in order to support drug-using, law-breaking, layabouts.”

“Go ahead and buy the expensive truck. Won’t you look powerful behind the wheel?”

Do you see what these passages are trying to do? Both of these passages are trying to persuade you of a position by provoking some emotion in you, and so we call them “Appeals to Emotion.” Appeals to emotion work more or less like this:

Something to make you feel good (or bad) about P. \[
\downarrow
\]

P is true (or false).
Although there’s nothing necessarily wrong with appealing to someone’s emotions while giving an argument, appealing to someone’s emotions instead of giving an argument is almost always bad. The fact that something makes us feel good doesn’t mean it’s true (or false), and the fact that something makes us feel bad doesn’t mean it’s false (or true). To see if an appeal to emotion is being committed, we can translate the passage into emotively neutral language and see if an argument remains.

One kind of appeal to emotion is special enough to deserve a category all its own, so let’s take a look at it.

**Appeal to Force**

Let’s take a look at the following arguments (loosely so-called).

“Only naïve and simple-minded people believe that God answers prayers, you know, so before you believe that God answers prayers, think about whether or not your friends would want to associate with a naïve and simple-minded person.”

“Everyone around here is a good American who embraces the current administration’s foreign policy. You’re not un-American, are you?”

What should we make of these passages? Did you, like me, detect a subtle threat in each of them?

“Only naïve and simple-minded people believe that God answers prayers, you know, so before you believe that God answers prayers, think about whether or not your friends would want to associate with a naïve and simple-minded person.”

This passage implies that you’ll lose your friends if you believe that God answers prayers, presumably in an effort to get you to believe that God doesn’t answer prayers.

“Everyone around here is a good American who embraces the current administration’s foreign policy. You’re not un-American, are you?”

This passage implies that disagreeing with the current administration’s foreign policy will make you un-American and expose you to ostracization, presumably in an attempt to get you to accept that policy.

In short, both passages do something like this:

If you don’t believe P, something bad will happen.

Believe P.
Passages that attempt to influence belief through threats or intimidation are Appeals to Force. They are a way of appealing to the emotion of fear.

Appeals to force are bad because although they might give us strong prudential reasons to adopt a particular position, they can’t really give us reasons to think that the position we adopt is true.

To see if an appeal to force is being committed, we can translate the passage into emotively neutral language and see if an argument remains.

**Summary**

This chapter has given us some new inference evaluation skills.

We’ve learned a bit about empirical reasoning, or the process of formulating and testing hypothesis about the way the world works.

Induction, reasoning by analogy, and observing correlations can help us to formulate hypotheses, and are open to the fallacies of hasty generalization, false analogy and *post hoc ergo propter hoc*, respectively.

An hypothesis can be confirmed by noting that the consequences of the hypothesis do obtain and disconfirmed by noting that the consequences of the hypothesis don’t obtain. When too few consequences are observed to justify accepting the hypothesis, or when another explanation for the hypothesis is available, we have premature confirmation. When the hypothesis is abandoned without an examination of the auxiliary assumptions, we have premature disconfirmation.

Because we often accept or reject beliefs on the basis of the people who espouse them, we explored social reasoning.

Sometimes people accept a belief because it’s held by the majority of people or advocated by an authority figure. When the belief isn’t one that we would expect most people to be right about, we have a fallacious appeal to majority, and when the authority isn’t an impartial expert on the subject, we have a fallacious appeal to authority.

*Ad hominem* inferences reject a belief on grounds that the belief is advocated by someone who has some negative trait. This is almost always a fallacious move because it’s reasonable to doubt that character or motives of the person offering the argument bears any strong connection to the truth or falsity of the position advanced or to the strength of the argument for that position. There are a number of special *ad hominem* arguments, including the vested interest fallacy, *tu quoque*, and the genetic fallacy.

Occasionally, people attempt to defend or reject a position by changing the subject entirely.

A straw man argument caricatures and rejects a position. Diversion attempts to support a position by arguing for another position that resembles it. And an appeal to Ignorance attempts to support or reject a position by inappropriately shifting the burden of proof.
Finally, sometimes people opt out of the process of supporting positions with reasons, advancing pseudo-arguments instead.

The fallacy of misplaced relativism incorrectly characterizes a position as a relative truth. An appeal to emotion attempts to influence opinion by generating strong feelings. And an appeal to force uses threats and intimidation to manipulate belief.