Informal Fallacies

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What is a good argument? To answer this question, we need to specify a couple of the terms in it. First, what is an argument? The Merriam-Webster Dictionary provides a number of different definitions of "argument". First, we are told, an argument might be defined as 'an angry quarrel or disagreement'.[1] Think of two people leaving the pub shouting at each other. Could such an argument be good? Perhaps – it might be entertaining to onlookers, for instance. It might also be cathartic for the participants – allowing them the opportunity to vent their pent-up frustrations – and consequently a source of value in this sense. But this sort of argument is not what we are ideally interested in when we study philosophy. This is true in spite of the fact that all too often arguments in this sense do happen in philosophy. If reports are to be believed, the eminent philosophers Karl Popper and Ludwig Wittgenstein descended into precisely this type of argument during a talk given by Popper at the University of Cambridge in 1946. The exchange ended, on one account, with Wittgenstein threatening Popper with a red-hot fire poker.[2]

Philosophy ideally proceeds through arguments of a different sort. Another definition of "argument" given by Merriam-Webster is 'a coherent series of reasons, statements, or facts intended to support or establish a point of view'.[3] An argument, so understood, consists of a number of *premises* – propositions which are either argued for or are assumed to be plausible enough by themselves – which, taken together, are supposed to establish a *conclusion* – a proposition that the author of the argument thinks should be accepted.

Arguments of this second sort are not just found in philosophy. We encounter them all the time. A lawyer in court might provide an argument seeking to establish a defendant's innocence, for example. A politician may put forward an argument seeking to convince us that a particular policy is the correct course of action. Even two quarrelling bar-flies leaving the pub might be making arguments in this sense – seeking to establish who bought the most rounds of drinks, maybe. But, unlike the first definition of "argument", an argument in this second sense need not have two participants. Philosophers write books and papers putting forward arguments and, although they hope that these will find readers who will engage with it, the status of their writing as an argument does not depend on any immediate response from someone else.

Now we have established the object of our enquiry – arguments in the sense of series of premises seeking to establish a conclusion – we can ask what makes an argument of this sort good. How we answer this question will depend on our purposes. A cynical politician will view their argument as a good one if it persuades enough of their electorate. Whether it does so through deceptive or otherwise underhand means will be of no concern to them. All they care about, then, is the *rhetorical power* of the argument.

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[1] 'Argument', *Merriam-Webster.com Dictionary*, available online at https://www.merriam-webster.com/dictionary/argument.

[2] For an account of this event, see David Edmonds & John Eidinow, *Wittgenstein's Poker* (Faber & Faber, 2005).

[3] Op. cit. footnote 1.

If we are good philosophers, however, we are interested in finding truth. Or, failing that, at least a well-supported belief. How we assess the value of an argument, then, will be through a consideration of the extent to which we *should* accept the conclusion, rather than how much people in fact do accept it. We are interested in *rational strength*.[4]

Of course, one possible way in which we might make an argument with great rhetorical power is to make sure that it is a strong argument. But rational strength and rhetorical power might sometimes come apart. This is often thought to be true in politics, where various well-known strategies can be deployed to make arguments seem stronger than they in fact are. The British writer George Orwell, in a magnificent short essay called 'Politics and the English Language', explains how the use of familiar metaphors and patters of speech subdue the critical capacities of the listener and consequently discourage a sceptical stance to an argument.[5] There is no reason to think that strategies like this are any less common in more recent times.[6]

If we are interested in identifying strong arguments, then, we need a more detailed account of what makes them strong. There are two essential ingredients here. The first is that, for an argument to be strong, it must have a good *logical form*. A strong argument is of a form such that, were all the premises true, the conclusion would be true (or at least likely). The second ingredient is that, for an argument to be strong, it must have *plausible premises*.

These considerations suggest two ways in which an argument can be faulty. First, it can be *ill-formed*: the connection between the premises and the conclusion will not be of the right logical form. Consider the following argument:

> 'If Armand is a professional footballer, then Armand is physically fit. Armand is physically fit. Therefore, Armand is a professional footballer.'

Even if we have reason to believe both premises, this is not a good argument. This is because, even if both premises are true, the conclusion does not necessarily follow. Many people are physically fit and not professional footballers. In fact, the vast majority of physically fit people are probably not professional footballers. In this case, Armand might be Armand Duplantis, the Swedish high-jumper. The argument commits a *formal fallacy*: its logical structure is faulty. The formal fallacy this argument commits is the fallacy of *affirming the consequent*. All arguments of a similar structure will commit this fallacy, and will be faulty as a result.

This text is not concerned with formal fallacies. We are more concerned here with how arguments might be faulty in a second way: by having implausible premises. There are of course countless ways in which an argument might have implausible premises, but often they do so by committing *informal fallacies*: various demarcated faulty techniques that mean that the premises should not be accepted. An argument may well have a good logical structure, but if it involves one or more informal fallacies, it is still a bad argument. Here we look at ten of the more common or significant informal fallacies.

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[4] On this distinction, see Richard Feldman, *Reason and Argument*, second edition (Pearson, 2014), p.22.

[5] George Orwell, 'Politics and the English Language', available online at https://www.orwellfoundation.com/the-orwell-foundation/orwell/essays-and-other-works/politics-and-the-english-language/.

[6] See Isaac Taylor, 'The Language of Brexit: Having Our Cake and Eating it Too', *Philosophers' Strike*, available online at https://philosophersstrike.home.blog/2019/08/08/the-language-of-brexit-having-our-cake-and-eating-it-too/.

1. Red Herring

A *red herring* is a fallacy that involves placing an irrelevant premise in an argument to increase its plausibility. One might wonder how this could possibly work, but often the inclusion of a seemingly plausible but ultimately redundant premise can lead us to discount any worries we might have about other premises (in much the same way as the strong-smelling fish the fallacy is named after distracts our attention). Consider:

> 'Buy the Dusk2Dawn espresso maker! The only self-cleaning espresso maker and the only one used by George Clooney!'

Although this does not look like the sort of argument that we find in philosophy, it is an argument nonetheless. It provides some considerations (premises) in favor of a course of action (conclusion) – namely that you should buy the Dusk2Dawn espresso maker. To see this, we might reconstruct it in a list of numbered premises and a conclusion. This might look like the following:

1. The Dusk2Dawn espresso maker is the only espresso maker that is self-cleaning.
2. The Dusk2Dawn espresso maker is the only espresso maker that is used by George Clooney.
3. If the Dusk2Dawn espresso maker is the only espresso maker that is self-cleaning and endorsed by George Clooney, you should buy it.
4. You should buy the Dusk2Dawn espresso maker.

The red herring here is premise 2. As far as I know, George Clooney is not an authority on espresso makers. If he uses this one, it may be simply because the company gave him one in exchange for an endorsement. The premise gives no reason for me to buy the espresso maker. We could remove it and the argument would be no less strong (or weak).

It is useful to contrast the red herring fallacy with another strategy, which we might call the *dead cat strategy*. Writing in 2013, former UK Prime Minister Boris Johnson outlined what he thought was a common strategy used by politicians to prevent awkward questions from journalists with the following analogy:

> 'There is one thing that is absolutely certain about throwing a dead cat on the dining room table…everyone will shout, 'Jeez, mate, there's a dead cat on the table!' In other words, they will be talking about the dead cat…and they will not be talking about the issue that has been causing you so much grief.'[7]

What lesson can we draw from this? Well, suppose that you are a politician implementing an unpopular policy. Journalists persistently ask you about the negative effects of the policy. You do not have any good response. If you were to do something outrageous and eye-catching (insult a monarch, say), then it is likely that the journalists' attention will turn to this incident, and your policy will be yesterday's news. You can then push it through without much scrutiny.

[7] Boris Johnson, 'This Cap on Bankers' Bonuses is Like a Dead Cat – Pure Distraction', *The Telegraph*, 3rd March 2013.

Both the red herring fallacy and the dead cat strategy involve bringing in something to a discussion that is irrelevant – an unconnected premise in the case of the red herring fallacy and a distracting event in the case of the dead cat strategy. But it is useful to keep the two moves separate. The red herring fallacy is an informal fallacy because it is deployed in the course of making an argument. The dead cat strategy is an attempt to avoid having to make an argument at all. If successful, it relieves the speaker of the need to provide a justification. While the present text is a taxonomy of some common informal fallacies, it is important to remember that power can be exercised in more ways than merely providing faulty arguments. As good philosophers and good citizens, we should be attuned to the myriad ways in which we can be led off course in the search for truth.

2. Equivocation

Many different terms we use admit of multiple meanings. They are, we might say, *ambiguous*. We have already encountered one ambiguous term: "argument", as we have seen, might refer to an angry quarrel or a set of premises that are supposed to establish a conclusion. Quite often, we get on just fine by deploying ambiguous terms in everyday conversations. The context makes clear which sense of the term is being used. If I, as a philosophy professor, tell you, a student, to provide an argument in your assignment, it is quite clear that I am expecting you to provide an organized series of propositions in support of a point of view. If you turn up at my office to shout insults about my personal appearance, you would have got things badly wrong.

But sometimes ambiguity can trip us up. Suppose that a waiter asks you if you would like your soup hot. You might respond that of course you want your soup very hot – after all, who wants cold soup? As soon as you are then presented with a bowl of soup with pile of chili flakes floating on the surface, you will realize your mistake. The work "hot" can mean either "warm" or "spicey".

The fallacy of equivocation involves improperly moving between two senses of an ambiguous term. Think about a lawyer in court, defending an alleged bank robber - Adam. She makes the following argument:

> 'Adam cannot have robbed the bank. As we know from the weather records, there was heavy rainfall on the days leading up to the robbery, causing the water in the town's river to rise, rendering the bank muddy. If Adam was anywhere near the bank, his shoes would have been covered with mud, but they were not.'

The lawyer's argument might be reconstructed in the following way:

1. If Adam was anywhere near the bank, his shoes would have been covered with mud.
2. Adam's shoes were not covered with mud.
3. Adam was not anywhere near the bank.
4. If Adam was not anywhere near the bank, he did not rob the bank.
5. Adam did not rob the bank.

The first thing to note about this argument is that it has a good logical structure. If the premises are true, the conclusion is true. The problem with the argument lies elsewhere. The work "bank" might refer to the side of a river, or an institution when

money is kept. The lawyer's argument is faulty because it trades on the ambiguity of the term. We should reject premise 4 since, once this ambiguity is clear to us, the premise is implausible. Just because someone was nowhere near the river bank, this does not tell us anything about whether they were capable of robbing the financial bank (absent, of course, any information that to reach the financial institution, one would need to walk by the river). The implausibility of this premise would become clear if we specified the two meanings of bank here.

This is a silly argument. One would hope that any jury, even without a training in critical thinking, would spot the problem. But other instances of the fallacy of equivocation seem more prone to misleading us. Consider the following dialogue:

> BJÖRN: Yes, I posted that comment. I think it's funny – it's causing everyone to lose their minds with anger!
>
> CANSU: You shouldn't joke about that sort of thing – it's causing immense distress among people. It's not right.
>
> BJÖRN: Nonsense! Of course it's right! I have the right to say whatever I want. It's a free country, after all!

Björn commits a fallacy here by equivocating between two senses of the word "right". The term can sometimes mean "morally permissible": this is the sense that Cansu uses it, and the sense of Björn's first use of it. But "right" can sometimes also refer to a noun – a strong (legal or moral) claim that someone has. This is the sense intended by Björn's second usage. Despite the awkwardness in the English language, there may be no contradiction in thinking that one has "a right to do wrong": that is, a right to do something that is morally impermissible.[8] Cansu is not denying that Björn has a right to post what he did – she may not think that he should be coercively prevented from posting it, for instance. All she is claiming is that he should not exercise this right. Björn is attempting to object to this through inappropriately moving between the two senses of the ambiguous term "right". This may seem like an obvious point, but it is one that has arguably not been appreciated in many discussions of ethics.[9]

3. Straw Man

Arguments often respond to other arguments. According to a principle of *charity*, we should always present arguments that we are responding to in the best possible light. If there are ambiguities in how the argument is presented, we should (other things equal) adopt the interpretation that has the greatest degree of plausibility when criticizing an argument.

People do not always follow the principle of charity. Their failure is either intentional or unintentional. The *straw man* fallacy involves misrepresenting the argument of one's opponent in a way that makes it look less plausible than it seems. This makes it easier to dismiss their argument without giving it proper consideration, just as it is easier for soldiers in training to attack a mock figure made out of straw than a real member of the enemy forces.

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[8] Jeremy Waldron, 'A Right to do Wrong', *Ethics* 92(1), pp.21-39.
[9] As is pointed out by Judith Jarvis Thomson, 'A Defense of Abortion', *Philosophy & Public Affairs* 1(1), 1970, pp.47-66.

Suppose, for example, that two people are debating the merits of the UK's Assisted Dying Bill, which passed in parliament in late 2024. John supports the bill, which grants individuals with a terminal illness the right to a physician-assisted suicide so long as they have expressed 'clear, settled and informed' wish, on the basis that it will reduce unnecessary suffering. Sarah, on the other hand, opposes the bill, and challenges John in the following way:

> 'How can you support this bill? You can't tell me that it is moral to encourage relatives to get vulnerable people to end their lives as soon as they become an inconvenience or, worse still, when they want to get hold on an inheritance. This is obscene!'

Sarah's argument might be reconstructed in the following way:

1. The Assisted Dying Bill will encourage relatives to get vulnerable people to end their lives when it is convenient or profitable for them to do so.
2. If a policy encourages relatives to get vulnerable people to end their lives when it is convenient or profitable for them to do so, it is immoral.
3. The Assisted Dying Bill is immoral.

Again, the argument is valid. But the problem with it lies in premise 1. The assisted dying bill does no such thing as is claimed here, and so to represent John's view as accepting these effects is fallacious. The bill certainly does not "encourage" relatives to do anything. Moreover, there are safeguards in place in the bill that rule out pressure or coercion on the individuals in question. One might worry, of course, whether those safeguards are sufficient – that is a legitimate topic of debate. But to misrepresent the bill, and attribute views to John that are not his own, leads Sarah to unduly reject his argument without the opportunity to consider the real issues at stake.

At this point, it is worth considering a worry about classifying fallacies that you may have. We said that Sarah's premise 1 is a straw man, since it misrepresents the views of her opponent. But could we not equally say that it is a red herring, since it contains information that is irrelevant to a consideration of the merits of the Assisted Dying Bill? This is true. Sometimes a faulty argument strategy might be properly classified as two fallacies simultaneously. But it is always a good idea, when explaining what is wrong with an argument, to use the narrower fallacy, as this will give us more information. In this case, we get provide more detail by classifying Sarah's mistake as a straw man fallacy – by doing so, we give an indication of precisely *why* premise 1 is irrelevant.

4. Slippery Slope

The fallacy of *slippery slope* involves unjustifiably rejecting or disparaging something because of the supposed knock-on effects. Consider:

> 'We shouldn't show Quentin Tarantino films. If young, impressionable people go and see them, they will think that they are a true reflection of reality. And, in that case, they will feel free to use violence without a second thought. Society will break down.'

Let's reconstruct this argument:

1. If we show Quentin Tarantino films, young people will think that they are a true reflection of reality.
2. If young people think that Quentin Tarantino films are a true reflection of reality, they will feel free to use violence without a second thought.
3. If young people will feel free to use violence without a second thought, society will break down.
4. We should not do something that causes society to break down.
5. We should not show Quentin Tarantino films.

The problem with this argument is that all of the steps are highly questionable. Do people who see violent films really take them to be a true reflection of society? Maybe some do but most won't. (The fact that premise 1 does not specify how many people will have this effect is problematic. In order for it to be plausible by itself, the number would have to be small. But for the overall argument to go through, it is likely that the number must be large.) Similar things can be said about premise 2. Premise 3 seems highly unlikely to be true – violent films are shown and society has arguably not broken down. The argument is fallacious since it relies on the existence of a causal chain from one event (the showing of Tarantino films) and another (society breaking down) which is very unlikely to obtain.

Many arguments – from across the political spectrum – call for certain things to be stopped on the basis of a purported causal chain leading from them to undesirable consequences. During the recent COVID-19 pandemic, some civic libertarians objected to the legal requirement to wear masks in public spaces, on the basis that this was a first step towards government overreach. And some feminists argue for restrictions on pornography on the basis of the link between it and violence against women. Should we reject these arguments as involving slippery slope fallacies? Not necessary. Remember that there is only a fallacy if the causal chain is *unjustifiably* claimed. To know whether these arguments involve a slippery slope, we need to examine the evidence for the supposed effects in greater detail.

5. Begging the Question

Return to Adam in court. The lawyer for the prosecution is now summing up the case against Adam, the alleged bank robber. Among his arguments is the following:

> 'Ladies and gentlemen of the jury, the only piece of evidence showing that Adam was out of town on the day of the murder is the testimony of his friends. But we shouldn't believe a word these people say – after all, they consort with a criminal. Adam is therefore guilty.'

Assuming that Adam has no prior convictions, this is a fallacious argument. To better understand the fallacy, let's reconstruct it in the way we have been doing so far:

If there is no good evidence that Adam was out of town, he is a criminal.

1. The only evidence that Adam was out of town is the testimony of his friends.
2. The testimony of someone who is friends with a criminal is not good evidence.
3. Adams friend are all friends with a criminal (i.e. Adam).

4. There is no good evidence that Adam was out of town.
5. If there is no good evidence that Adam was out of town, he is a criminal.
6. Adam is a criminal.

The problem here is that the proposition 'Adam is a criminal', which is the conclusion of this argument, also serves as an assumption allowing the lawyer to dismiss the testimony of Adam's friends. But this is the very thing that the argument seeks to establish. The argument involves a vicious circularity. When this happens – when the strength of an argument depends on its being true – we say that the argument commits the fallacy of *begging the question*.

6. False Dilemma

Arguments can be fallacious in virtue of posing a *false dilemma*. This is where two or more options are presented, and all but one of them, it is argued, are untenable, implausible, or undesirable. The remaining option is then taken to be the one that should be accepted. Yet the fallacy occurs because there is at least one further option that is not properly considered. Consider, for example, the following argument:

> 'We should be opening new coal power plants. After all, we don't want our countryside ruined by hundreds of wind turbines.'

The argument presents the listener with a stark choice between two options: more coal power plants or wind turbines. But there may be many other options available: investing in solar power, building nuclear power plants, reducing energy consumption, and so on.

One notable case of what some people take to be a false dilemma was when then-US President George W. Bush, following the terrorist attacks on September 11th, told the international community:

> 'Either you are with us, or you are with the terrorists.'[10]

There are a number of ways of interpreting this claim. If it is understood as a statement of empirical fact, it might well be viewed as a false dilemma. This is because there is a third option that Bush ignores: one might remain neutral and be neither with the US or terrorist organizations.

But perhaps the idea was more of a moral claim. Perhaps what Bush was communicating was something more like:

> 'You are either giving us support or you are acting immorally and enabling terrorism.'

This is a controversial claim. Deciding whether or not we should accept it would require moral reflection (can one refuse to offer support to the US and still act permissibly?) and geo-political analysis (what is at stake?). But it does not involve a clear case of a false dilemma. We should remember that there are more ways of

[10] George W. Bush, 'Address to a Joint Session of Congress and the American People', 20th September 2001. Available online at https://georgewbush-whitehouse.archives.gov/news/releases/2001/09/20010920-8.html.

rejecting an argument than simply identifying one of the common informal fallacies. Much of the time, we will need subject-specific knowledge relevant to the case at hand. Looking for obvious informal fallacies cannot get us all the way there alone, but it is an important first step in evaluating arguments.

7. Ad Hominem

Lisa and Michael are two politicians debating the merits of cutting taxes on businesses. Lisa argues in favor of this proposal, arguing that it will ensure growth. Michael responds in the following way:

> 'Whatever we think of Lisa's claims about growth, we should not take her argument in favor of these tax cuts seriously. Need I remind everyone that she herself is a business owner, and thus stands to gain financially from this policy going through?'

What are we to make of this revelation (assuming that it is accurate)? We might begin to wonder about Lisa's true motives for supporting the tax cuts. Maybe she is not as civic-minded as we might have otherwise thought. But does this fact give us reason to reject her argument?

It does not. This is because Michael's response involves the fallacy of *ad hominem* (Latin for "to the person"). Just as it is a properly considered a foul in football to kick an opposing player's leg rather than kick the ball, it is a faulty argument technique to cast dispersions on the motives or character of a person making the argument in order to bring their argument into question. Even the most morally reprehensible people sometimes make good arguments, and if we are interested in truth we need to evaluate them on their own terms. A stopped clock is right twice a day.

The ad hominem fallacy occurs not just when someone's argument is dismissed because of their supposed motives for making the argument. It describes any attempt at dismissing someone's argument because of the identity of the person making it. Michael would have also committed the fallacy of ad hominem if he claimed that we should not listen to Lisa because of her party affiliation, her appearance, or the degree to which she lives a virtuous life.

8. Tu Quoque

A notable sub-variant of the *ad hominem* fallacy is the fallacy of *tu quoque* (literally translated as "you as well"). This involves rejecting the argument of someone because they themselves are engaging in the sort of behavior that their argument seeks to establish is undesirable or impermissible. Consider the following exchange between Nigel and Ophelia:

> NIGEL: You shouldn't throw litter on the floor. It makes the environment worse for everyone.
>
> OPHELIA: Why should I accept that? I saw you throwing litter on the floor just the other day.

If Ophelia is right about what she saw, Nigel is a hypocrite. But this doesn't make his argument any less good. He's right, after all: we all should avoid littering. Ophelia commits a fallacy by rejecting this argument.

One might wonder whether *tu quoque* is always a fallacy. Consider Petra and Qasim, two burglars who are breaking into a house.[11]

PETRA: You know, you shouldn't steal. It's immoral!

QASIM: …

What can Qasim say here? We may be tempted to say that he should simply reject Petra's argument. But I think that would be too quick. She is right, after all. If we feel uneasiness about this case, it may be because Petra is not simply providing an argument, she is also (in doing so) *condemning* the actions of Qasim. And we may think that she *lacks the standing* to condemn this sort of action.[12] Qasim might well object to *her* condemnation, even if the argument she provides is strong.

9. Post Hoc ergo Propter Hoc

During the mid-1960s, the Brazilian footballer Pelé noticed that his performance had been declining. After much consideration, he realized that this had started to happen right after he had given one of his shirts away to a fan. He concluded that the shirt had been "lucky", and that his dip in form had been caused by his losing it.[13]

Is this a good argument? Absent other information, it is not. Pelé here committed the fallacy of *post hoc ergo propter hoc* (latin for 'after this, therefore because of this'). This fallacy involves making the unwarranted assumption that, if one event (such as giving away one's shirt) comes before another one (a dip in form), the first even caused the second. To see that this is unwarranted, we can note that many events proceeded Pelé's dip in form. Shortly before this occurred, Humberto Castelo Branco became a military dictator of Brazil following a coup d'état. But we should not assume that the military dictatorship led to a dip in form of one footballer (whatever other negative effects it had). The fallacy of post hoc ergo propter hoc is particularly liable to mislead us since we humans are biologically programmed to look for patterns in our experiences. But, absent any good reason for thinking that there are causal links behind these patterns, we should reject any connection here.

Pelé was eventually given what he was told was his lucky shirt back, and his form improved immediately. Does this show that we were too quick to dismiss his argument that the loss of his shirt caused his dip in form? We are not. Even if Pelé was correct that his shirt was lucky, the argument he gave for it was not strong, owing to the fallacy involved. We should remember that weak arguments can sometimes have conclusions that are true, and strong arguments can sometimes have conclusions that are false. Only believing the conclusions of strong arguments is not a strategy that will

[11] The example is adapted from Gerald Dworkin, 'Morally Speaking', in Edna Ullman-Margalit (Ed.) *Practical Reasoning* (Oxford University Press, 2000), pp.182-199.
Edna Ullmann-Margalit (ed.)
[12] Ibid.
[13] Sandy Macaskill, 'Top 10: Football Superstitions to Rival Arsenal's Kolo Toure', *The Telegraph*, 25th February 2009.

guarantee us knowledge, but it is the most rational strategy to adopt most of the time if we are seeking knowledge. For all we know, Pelé's shirt might have been lucky. But we have been given no good argument for believing this.

10. Mistaking Correlation for Cause

Pelé only had two data points: his giving away his shirt and the beginning of his dip in form. On the basis of this, he unjustifiably posited a causal relation between the two events. But what if we have more data points? Would this give us greater credence in a causal connection? It has often been observed that there is a robust positive correlation between ice cream sales and homicide rates: when ice cream sales go up in a city, the number of murders committed also goes up.[14] Should we conclude from this that eating ice cream causes people to commit murder? Consider an argument for that conclusion:

1. High ice cream sales are correlated with high homicide rates.
2. If high ice cream sales are correlated with high homicide rates, high ice cream sales cause high homicide rates.
3. High ice cream sales cause high homicide rates.

Hopefully we can see the problem here lies in premise 2. Just because two events are correlated, we cannot infer that one caused the other. Assuming this amounts to committing the fallacy of *mistaking correlation for cause*.

But why do we find this correlation between ice cream sales and homicides? One plausible explanation is that there is a common cause of both. The common cause here might be hot weather. As the temperature increases, it is likely that the demand for ice cream increases, as people enjoy eating ice cream when it is warm. At the same time, high temperatures may make people quicker to anger, and consequently the tipping point that causes some people to commit murder when provoked may be crossed more easily. The observed correlation here may not be accidental.

In some cases, however, there may be no common cause between two events that are highly correlated, yet we should not nonetheless infer a causal relation between the two. It is known, for example, that water levels in Venice are positively correlated with British bread prices: as the former went up, the latter also went up.[15] It is difficult to identify a common cause of the two trends. Should we therefore conclude that there is a causal relation between the two? We should not. These two variables may have risen over time independently. To assume any connection between them is also to confuse correlation for cause.

[14] Justin Peters, 'When Ice Cream Sales Rise, so do Homicides. Coincidence, or Will Your Next Cone Murder You?', *Slate*, 9th July 2013.
[15] Elliot Sober, 'Venetian Sea Levels, British Bread Prices, and the Principle of the Common Cause', *British Journal for the Philosophy of Science* 52(2), 2001, pp.331-346.