**Common fallacies**

***This article is a resource that you may want to return to as the fallacies discussed in it come up throughout the course. Do not feel that you need to read or master the entire article now. We have provided a related file for you to download.***

We’ve discussed some of the deep-seated psychological obstacles to effective logical and critical thinking in the videos. This article sets out some more common ways in which arguments can go awry. The defects or fallacies presented here tend to be more straightforward than psychological obstacles posed by reasoning heuristics and biases.

They should, therefore, be easier to spot and combat. You will see though, that they are very common: keep an eye out for them in your local paper, online, or in arguments or discussions with friends or colleagues. One reason they’re common is that they can be quite effective! But if we offer or are convinced by a fallacious argument we will not be acting as good logical and critical thinkers.

**Species of Fallacious Arguments**

The common fallacies are usefully divided into three categories: Fallacies of Relevance, Fallacies of Unacceptable Premises, and Formal Fallacies. Many of these fallacies have Latin names, perhaps because medieval philosophers were particularly interested in informal logic. You don’t need to know the Latin names: what’s important is being able to recognize the fallacies.

**Fallacies of Relevance**

Fallacies of relevance offer reasons to believe a claim or conclusion that, on examination, turn out to not in fact be reasons to do any such thing.

**1. The ‘Who are you to talk?’, or ‘You Too’, or Tu Quoque Fallacy**

* Rejecting an argument because the person advancing it fails to practice what he or she preaches.

Doctor: You should quit smoking. It’s a serious health risk.   
Patient: Look who’s talking! I’ll quit when you quit.

Responses like that probably sound familiar. But the doctor’s failure to look after her own health is irrelevant to the argument, resting on a concern for the patient’s health, that the patient should quit smoking.

**2. The Red Herring Fallacy.**

* An arguer tries to sidetrack his or her audience by raising an irrelevant issue and then claims that the original issue has effectively been settled by the irrelevant diversion.

There is a good deal of talk these days about the need to eliminate pesticides from our fruits and vegetables. But many of these foods are essential to our health. Carrots are an excellent source of vitamin A, broccoli is rich in iron, and oranges and grapefruits have lots of Vitamin C.

Plans to eliminate or reduce pesticides probably don’t entail stopping the production of common vegetables: the suggestion that they do is an irrelevant red herring.

**3. The Strawman Fallacy.**

* Someone distorts or caricatures an opponent’s arguments or views, and then attacks the weakened version rather than the real argument.

Margaret: “We have to do something about greenhouse gases. The government should raise vehicle fuel efficiency standards to cut down the amount of CO2 we release over the next 20 years”.  
Roger: “Margaret’s solution would be a disaster. It would kill the economy. How would people get to work without cars?”

Roger claims that Margaret is proposing measures that would eliminate cars. Margaret has not said anything equivalent to that. It’s a strawman.

A positive message from the Strawman: the importance of being charitable.

Showing that a strawman version of a position we oppose may win a debate, but it is unlikely to move us toward the truth. If we can show that even the strongest version of a position we oppose is flawed, we may make progress.

So good logical and critical thinking leads to the principle of charity: When representing an argument that you do not agree with and are attempting to evaluate, it is important to represent that argument in a way that is reasonably faithful to the argument as it is made by the originators, and as strong as possible. We cover the principle of charity in greater details in week 3.

**4. The Ad Hominem or ‘At the Person’ Fallacy.**

* Rejecting someone’s argument by attacking the person rather than evaluating their argument on its merits.

“Dear Editor, the current campaign against combining drinking with driving is terrorising law-abiding people. Many law-abiding people are cutting their alcohol consumption because they are afraid of being caught by random breath testing. But research shows that the average drink-driver in a fatal accident has an average blood alcohol level of more than twice the legal limit. The current campaign against drinking and driving is failing to achieve what should be our top priority; getting the heavy and hardened drinkers off the road.” Douglas Myers. CEO, Dominion Breweries.

“Dear Editor, I read Doug Myer’s letter yesterday but he is the CEO of a major brewing company! He has a vested interest in keeping alcohol sales up, and the anti-drink-driving campaign threatens to reduce alcohol sales. We shouldn’t take any notice of his views about drinking and driving”.

But if Myer has given arguments in favour of his view, we should evaluate them like any other argument – are they valid? strong? sound? cogent? (we’ll explain these terms in the course) – rather than writing them off because of facts about him.

Sometimes, however, an arguer’s position may be a reason to examine their arguments more carefully than we might otherwise.

The following does not appear fallacious:

“Burton Wexler, spokesperson for the American Tobacco Growers Association, has argued that there is no credible scientific evidence that cigarette smoking causes cancer. Given Wexler’s obvious bias in the matter, his arguments should be treated with care.”

**5. Fallacious Appeal to Authority.**

* Relying upon the view of apparent (as opposed to genuine) authorities to settle the truth of a statement or argument.

Richard Long, a respected retired New Zealand newsreader featured in advertising campaigns for Hanover Finance. Long had no financial expertise.

Newsreaders look well informed, but they are essentially presenters. They are well known because they’re on the news: not because they know about investments. If we rely upon a newsreader’s endorsement to settle which investment fund we should trust, we would be accepting a claim without adequate evidence. That would be a fallacious appeal to authority.

Appeals to authority also conflict with the basic tenet of good logical and critical thinking which calls upon us to take responsibility for evaluating the grounds for our beliefs. Adopting a belief merely because someone else simply told us it was true is a way of avoiding good logical and critical thinking.

Sometimes, however, good logical and critical thinking will itself lead us to rely on genuine authorities. If I can’t assess the investment option for myself, I might reason that I should trust the advice of a genuine investment advisor. That’s not avoiding logical and critical thinking: it’s reasoning about a matter related indirectly to the question I’m trying to settle.

When I consider whether I should rely on a genuine authority, I should consider the following questions:

1. Is the authority a genuine authority: are they experts?
2. Are they giving advice in the areas within which they are a genuine authority? (We should listen to actors about acting; not so much about investing or medicine).
3. Is there a broad consensus among authorities in the area? If not, we should not decide to believe X solely because an authority says X is true, since other genuine authorities say that X isn’t true.
4. Is the authority speaking sincerely (they might be giving an endorsement because they’re paid to do so) and are they free of obvious bias?

Only if the answer to all four of these questions is “yes” should we accept a claim because an authority endorses it, and even then, we should only do so if we are not in a position to evaluate the evidence for the claim ourselves.

**6. The Fallacy of Composition.**

* Arguing that what is true of the parts must be true of the whole. (All of the parts of the object O have the property P. Therefore, O has the property P.)

Rugby players Ma’a Nonu, Jerome Kaino and Charles Piatau are all great players. In 2012, they all played for the Auckland Blues. Therefore, the 2012 Auckland Blues were a great team.

Sadly, for Tim, a long-suffering Blues Fan, the conclusion of this argument was false even though the premises were true.

And, showing that famous philosophers are not immune:

“Should we not assume that just as the eye, hand, the foot, and in general each part of the body clearly has its own proper function, so man too has some function over and above the function of his parts?” Aristotle, Nichomachean Ethics

**7. The Fallacy of Division.**

* Arguing that what is true of the whole must be true of the parts. (The opposite of the fallacy of composition: Object O has the property P. Therefore, all the parts of the object O have the property P.)

Men are, on average, taller than women. Therefore, Tim is taller than Maria Sharapova.

Tim would have to be taller than 188cm/6ft 2in to be taller than Sharapova: he’s not.

**9. Appeal to Popularity.**

* Arguing that a claim must be true because lots of people believe it.

Essential Bible Blog’s Top 10 Reason the Bible is True:

Reason 8. Leader Acceptance. A majority of the greatest leaders and thinkers in history have affirmed the truth and impact of the Bible.

Reason 9. Global Influence. The Bible has had a greater influence on the laws, art, ethics, music and literature of world civilization than any other book in history.

Perhaps the Bible is true, but the fact lots of people believe it to be so is irrelevant to whether it is or not. We should investigate and evaluate their reasons for believing it, rather than taking the mere fact that they believe it as a reason to do so.

But … sometimes a consensus among properly informed people may be a fairly good guide to the truth of a claim: see the circumstances in which an appeal to authority might not be fallacious.

**8. Equivocation.**

* A key word is used in two or more senses in the same argument and the apparent success of the argument depends on the shift in meaning.

Any law can be repealed by the proper legal authority. The law of gravity is a law. Therefore, the law of gravity can be repealed by the proper legal authority.

When the two senses of ‘law’ (laws regulating human conduct vs. uniformities of nature) are made explicit, it is apparent that the first premise is irrelevant, hence a fallacious argument.

And, showing that famous philosophers are not immune again, we see John Stuart Mill arguing that happiness is desirable:

“The only proof capable of being given that an object is visible, is that people actually see it. The only proof that a sound is audible, is that people hear it… In like manner, I apprehend, the sole evidence it is possible to produce that anything is desirable, is that people do actually desire it… [T]his being a fact, we have not only all the proof which the case admits of, but all which it is possible to require, that happiness is a good. ” John Stuart Mill, Utilitarianism.

But ‘desirable’ is used in two different ways in this passage, to mean ‘can be desired’ (just like ‘visible’ means ‘can be seen’) and ‘worthy of being desired’.

**10. Appeal to Tradition.**

* Like appeals to popularity except the appeal is to how long something has been believed, rather than to the number of people who have believed it

People have believed in astrology for a very long time, therefore, it must be true.

But all of the objections to arguments from majority belief apply here, too.

**11. Appeal to Ignorance: Argumentum Ad Ignorantiam.**

* The arguer asserts that a claim must be true because no one has proven it false, or that a claim must be false because no one has proven it to be true.

*Note*: When we describe someone as ignorant, we often mean it as an insult. Here we use it to describe the situation in which we do not know (are ignorant of) something. In this sense, the smartest of us are ignorant of quite a lot. (We don’t want any equivocation in our use of the term ‘ignorant’).

There must be intelligent life on other planets: No one has proven there isn’t.

There isn’t any intelligent life on other planets: No one has proven there is.

Both claims assume that the lack of evidence for (or against) a claim is good reason to believe that the claim is false (or true). Ignorance – in the sense of a lack of knowledge – features as part of the proof of the conclusion. But in general, the mere fact that a claim has not yet been proven is not enough reason to think that claim is false.

However, are there some non-fallacious appeals to ignorance?

a) If qualified researchers have used well-designed methods to search for something for a long time, without success, and it’s the kind of thing people ought to be able to find, then the fact that they haven’t found it might constitute some evidence that it doesn’t exist.

b) Some practices (e.g. law – see week 6) require us to reject a claim until a certain standard of proof is met: the presumption that defendants are innocent until proven guilty beyond a reasonable doubt for example.

**12. Appeals to Emotion – e.g., pity, affection.**

* An arguer attempts to evoke feelings of pity or compassion, when such feelings are not logically relevant to the arguer’s conclusion.

Student to Lecturer: I know I missed most of the lectures and all of my tutorials. But my family will be really upset if I fail this course. Can’t you find a few more marks?

Daughter: Can we get a puppy?   
Father: No.   
Daughter: If you loved me, we’d get a puppy.

That would be an appeal to emotion, in this case love. Note that the persistent child might continue:

Daughter: A puppy would grow up and protect us. Can’t we get a puppy?  
Father: No.  
Daughter: If you wanted to keep us safe you’d get a puppy! You don’t care about us!

That would be a strawman, not contemplated by the father or entailed by his actual view, and attacking that. Being able to spot the common fallacies can be very useful in the home.

Remember, there are three species of fallacies. The Fallacies of Relevance sketched so far attempt to introduce premises that are irrelevant to the conclusion.

**Fallacies of Unacceptable Premises**

Fallacies of Unacceptable Premises attempt to introduce premises that, while they may be relevant, don’t support the conclusion of the argument.

**13. Begging the Question.**

* In philosophy, unlike in many other areas, ‘begging the question’ does not mean ‘raises a question which must be answered’. In philosophy, when someone begs the question, they state or assume as a premise the very thing they are trying to prove as a conclusion.

Arthur: God exists.  
Barbara: How do you know?  
Arthur: Because it says so in the Bible.  
Barbara: How to you know what the Bible says is true?  
Arthur: Because the Bible is divinely inspired. Everything it says is true.

The Bible could only be divinely inspired if God existed. So Arthur’s appeal to the Bible to prove the existence of God assumes the very thing he’s trying to prove.

**14. False Dilemma or False Dichotomy.**

* Occurs when an argument presents two options and gives the impression that only one of them may be true, never both, and that there are no other possible options.

Either Shakespeare wrote all the plays attributed to him, or Bacon did. There’s good reason to think Shakespeare didn’t write all the plays attributed to him. Therefore, Bacon wrote all the plays attributed to Shakespeare.

It’s possible that Shakespeare didn’t write all of the plays attributed to him, but that doesn’t mean Bacon did: there are other possibilities.

In the Shakespeare/Bacon case the false dilemma was explicit (either Shakespeare wrote all the plays … or Bacon did), but often the dilemma is implicit.

If I spend all of the week partying, I won’t have time to study and I’ll fail.

If I spend all week studying, I’ll be over-prepared and stressed and I’ll fail.

So I’m going to fail either way. I might as well spend the week partying.

Here the dilemma is unstated – “The only options are to spend all week studying or to spend all week partying” – and once stated it surely isn’t plausible: the student could spend some of the week studying and some of the week partying?

**15. Decision Point Fallacy or the Sorites Paradox.**

* Sometimes the conditions that make the use of a term appropriate vary along a continuum and there is no sharp cut off between circumstances in which the term is correctly applied and those in which it is not.

If an arguer claims that because we cannot identify a precise cut-off or decision point, we cannot distinguish between correct and incorrect uses of the term, they are arguing fallaciously.

One grain of wheat doesn’t make a heap. Suppose 1 million does. Take one away. Surely, we still have a heap: if a million makes a heap, surely 999,999 does too. One grain can’t turn a heap into a non-heap. Take another away. Surely, we still have a heap: if 999,999 does, surely 999,998 does too. One grain … etc. Take another away. Surely, we still have a heap …. Etc. etc. etc.    
But if one grain doesn’t make a difference, then it seems that we will be forced to conclude that 1 grain does make a heap. But that means we can’t talk about heaps of wheat at all: we don’t know when we can describe a collection of grains of wheat as a heap and when we can’t.

At conception an embryo is not a person. At birth, a baby is a person. There is no non-arbitrary way of determining exactly when the embryo became a person. Therefore, there is no moral difference between the embryo and the baby at birth.

But we can tell the difference between people who are bald and not bald, between heaps and non-heaps, and embryos and babies, even if we can’t tell exactly when something stopped being one thing and became the other.

**16. The Slippery Slope Fallacy.**

* Arguers say that an innocent-looking first step should not be taken because once taken, it will be impossible not to take the next, and the next, and so on, until you end up in a position you don’t want to be in.

Don’t get a credit card. If you do, you’ll be tempted to spend money you don’t have. Then you’ll max out your card. Then you’ll be in real debt. You’ll have to start gambling in the hope of getting a big win. But you’ll normally lose. Then you’ll have to steal money to cover your losses. Then your partner will leave you. And you won’t be able to feed the dog, and it’ll die. And it would be bad if the dog died. So, you mustn’t get a credit card.

Slippery Slope arguments are fallacious if it is possible to stop at one of the steps: couldn’t I get a credit card with a maximum, or exercise a bit of control, or get the local animal protection society to help me feed the dog?

**17. Hasty Generalisations.**

* Arguer draws a general conclusion from a sample that is biased or too small.

The oldest woman in the world, Jeanne Calment (122 years, 164 days) smoked until her early 110s. Therefore, smoking isn’t really bad for you.

Andrew Wakefield claimed to have shown a correlation between the MMR vaccine, bowel disorders and autism, but – among other flaws – his research focused on children already thought to have the conditions he claimed were caused by the vaccine.

The claim that smoking carries significant health risks isn’t falsified by a single case and trials drawing population wide conclusions must recruit representative study-populations.

**18. Faulty Analogies.**

* The conclusion of an argument depends upon a comparison between two (or more) things that are not actually similar in relevant respects, or without pointing out how the two differ and why it does or does not matter. (See reasoning by analogy in Week 6).

I need a new car. My last three cars have all been reliable, and they were blue. So, I’m going to buy a blue car.

A letter to the editor following a report someone had been turned away from an after-hours medical clinic because she couldn’t pay for treatment for her feverish, vomiting child:   
“Why do people attend private clinics for medical treatment with insufficient funds to cover fees? Do these same people go to the petrol station, fill up, toss $5 out the window and say “I’ll be back with the rest later,” or perhaps after dining out one evening, pay for the meal and promise to return next week, month or year to pay for the wine? I think not. The answer is simple - don’t go to private clinics.”

Are visits to after-hours medical clinics with a sick child analogous to visits to a gas station or a restaurant?

**19. And … the Fallacy Fallacy!**

* The fallacy of inferring that merely because an argument contains a fallacy, its conclusion must be false.

Bob told me that I shouldn’t steal because everyone knows that stealing is wrong, but I recognised immediately that argument contained the popularity fallacy, so I concluded that it was ok to steal the apple.

The conclusion of an argument may be true, even if the argument contains a fallacy. Finding a fallacy just means that the arguer needs to look for other, better reasons in support of their conclusion.

**Formal Fallacies**

The third species of fallacy are Formal Fallacies. Some arguments are fallacious not because of their content – because of what they say – but because of their form or structure. Any argument with these forms or structures will be invalid, no matter what content we put into them.

Patrick will talk a little more about the standard forms or structures of arguments in weeks 2 to 4. The most familiar versions have some number of premises, followed by a conclusion, and if they’re valid (Patrick will talk about that in week 3) the truth of the premises guarantees the truth of the conclusion.

There are some common argument forms, however, which look quite like the valid versions, but which are not valid. Here we’re just going to identify two formal fallacies that will come up later in the course.

**20. Affirming the consequent.**

Suppose I have a guard dog, Brutus, and I’m confident he will bark if an intruder comes into my house.

I might reason like this:

P1P2CIf there’s an intruder, then Brutus will bark. Brutus hasn’t barked. Therefore,There's no intruder.

That’s valid: If it’s true that Brutus will bark if there’s an intruder, and if Brutus hasn’t barked, then there can’t be an intruder.

If the premises are true, then the conclusion must be true too.

But what if I reason like this:

P1P2CIf there’s an intruder, then Brutus will bark. Brutus has barked.Therefore,There's an intruder.

That’s not valid. Why? Well the premises might be true, but the first premise doesn’t say that Brutus will bark if and only if there’s an intruder.

The first premise can be true – that is it can be the case that Brutus will bark if there’s an intruder – even if Brutus occasionally barks for other reasons as well.

Notice that you can’t respond here “Oh, the burglar might have fed Brutus tranquilized steak. That’s why he hasn’t barked. There is a burglar!” That rejects the first premise (If there’s an intruder, Brutus will bark), and we’re seeing what happens if the premises are true. So here, if the premises are true, the conclusion must follow.

**21. Denying the Antecedent.**

Suppose I hear barking and reason like this:

P1P2CIf it barks, then it’s a dog.It's barking.Therefore,It's a dog.

That’s valid. If the premises are true – if it’s true that if it barks it’s a dog and it barks – then the conclusion must be true too.

But what if I reason like this:

P1P2CIf it barks, then it’s a dog.It's not barking.Therefore,It isn't a dog.

That’s not valid. The first premise says that if something barks then it’s a dog (i.e., that only dogs bark), but it doesn’t say that every dog barks. So we can’t be sure that the conclusion of this second argument is true evn if the premises are true.

It might be true that something doesn’t bark (i.e., the antecedent is false, or denied, as the second premise says), but is a dog.