# 5. Evaluating premises

Remember the two criteria for evaluating arguments from chapter two:

1. All the premises must be **true**.
2. The premises must provide **sufficient support** for the conclusion.

In this chapter we will begin looking at how to evaluate arguments on the first condition. How do you decide whether the premises of an argument are true? It should be obvious that there is no infallible, general purpose method you can use to evaluate the premises of an argument. That is because there is no infallible method for deciding what is true. If someone discovered such a method, every scientist, mathematician, philosopher, historian, lawyer and psychologist could pack up their bags and call it a day, for any question on any subject could then be answered.

In chapter two, we gave the following list of questions you can ask about premises:

- Does the premise come from an **expert source** or a **reliable authority**?
- If the premise is a **generalisation**, can you think of any **counter-examples**?
- Could you easily check whether the premise is true by looking it up in a reference book or other reliable source?
- Is the premise beyond reasonable doubt? Is it common knowledge?
- Does the premise contradict something else you know to be true?
- If the premise offers an **explanation** of something, are there any plausible alternative explanations?

In this chapter we will look at some of these questions in more detail. We will examine two different kinds of basic premise that are often found in arguments: *generalisations* and *appeals to authority*. In each case we will offer some general principles and guidelines that can help you assess the truth of such premises. Let's look first at premises which make a claim based on the evidence of a supposed authority or expert.

### Evaluating sources

Very often, an argument will depend on a premise derived from expert testimony or an authority such as reference book, newspaper article or scientific report. As mentioned in the introduction, there are great many things which we believe because someone *told* us that they are true. Clearly, sometimes it is perfectly reasonable to believe something on that basis and sometimes it is not. Whether it is reasonable to accept something on the basis of someone's say-so depends crucially on the *reliability* of the source. We will now look at some of the factors that affect the reliability of sources.

There are several different kinds of sources that you are likely to come across. One kind of source is the *expert*: here you are asked to believe something because an expert on the subject says it is true. A different kind of source is the *witness*: here you are asked to believe something because someone tells you that they saw it happen. Whatever the source, there are three key questions to ask:

**Questions for assessing the reliability of sources**

1. Is the source in a position to know?
   - Does the source have the relevant expertise or training?
   - If the source is a witness, were they in a position to have the relevant experience?

2. Is there any reason to suspect the reliability of the source?
   - What is the source's reputation for reliability?
   - Does the source have a motive for not telling the truth?
   - Are there factors that might affect the reliability of the evidence?

3. Is there any corroborating evidence from independent sources?

Let's look at each of these in a little more detail.

**1. Is the source in a position to know?**

The first question to ask is always whether the source is actually in a position to know what they claim to be the case. If the claim is made by a supposed expert or authority, does the source actually have the relevant expertise or qualifications? It is important to recognise that just because someone is an expert or authority in one area, that does not necessarily make them an expert in other areas too. Here is an example:

> Any opinion of Einstein seems to rate special attention, no matter how far removed from physics. I have been told by several people that most of us use only 10 percent of our intellectual capacity. When I ask them why I should believe this, they tell me that Einstein said so. How he was in a position to know this they can't say, but everybody knows how smart Einstein was.
>
> Well, don't be bullied. That's what I say. Einstein was indeed a very clever man, but he didn't know any more than you or I do about how much of our intellectual capacity we all use. As far as I can see, most of us are running near our limits. And if I'm wrong, then just telling me that I disagree with Einstein isn't evidence.
>
> Jamie Whyte, *Crimes Against Logic*, pp. 29-30.

One way in which a source may not be in a position to know something is if they are not an expert or reliable authority in the relevant area. This is just common sense. You don't go to the doctor to get advice about your taxes, and you don't ask your hairdresser to fill your teeth. Someone can only be an authority about a particular domain; with the exception of mothers, there are no universal authorities. Arguments that appeal to authorities of the wrong sort engage in fallacious reasoning called *illegitimate appeal to authority*.

A different way in which a source may not be in a position to know occurs with eye-witness testimony. In this case the question to ask is: could the source really have experienced what they claim to have experienced? For example, were they actually present at the time? If so, could they see clearly? Was their view obstructed? Imagine someone giving eye-witness testimony in court about a car accident. If there is reason to think that the witness could not have been present at the time the event took place (perhaps they arrived just afterwards) or if they lost their glasses, or if it was dark or there was a building in the way, this would tend to detract from the reliability of their evidence. If on the other hand the witness was present at the time, it was broad daylight, their vision was good and there was nothing blocking their view, that would tend to strengthen their evidence.

**2. Is there any reason to suspect the reliability of the source?**

A source may be in a *position* to know, because they were there, or because they are an expert in the relevant area, but still be unreliable. This can happen for all sorts of reasons. In the case of eye-witness testimony, there may be other factors that make the evidence unreliable. The accuracy of reported experiences can be adversely affected by stress, drugs and alcohol, shock, failures of memory and by being distracted by other events. If any of these are present, or likely to have been present, the reliability of the witness's evidence is weakened.

The past record of a source can also be relevant to the reliability of their claims. Again, this is common sense. The habitual liar (or exaggerator) is obviously someone you should be cautious about believing just on their say-so. If you have a friend who is always boasting about their success with members of the opposite (or the same) sex and you know for a fact that most of it is exaggerated or just plain false, then you will treat their boasts with justified scepticism. This sort of thing can happen even with people who are supposed to be experts. A particular scientist, for example, may have an appalling reputation for rushing into print with uncorroborated, speculative theories and hypotheses that typically turn out to be wrong. If so, then even though they have a PhD and tenure, it might be reasonable to take their claim to have discovered (yet again) a way of generating infinite amounts of clean energy from tap water with a pinch of salt.

Another reason for suspecting the reliability of a source is if they have a strong motive not to tell the truth. Suppose a detective asks a suspect 'Did you murder your wife?' and the suspect replies, 'No I did not.' Should the detective believe the suspect did not kill his wife *just because he says so*? Obviously not. If the suspect did kill his wife, he would have a very strong motive to lie and say that he didn't. In the same way, if you ask the salesman in the shop which is the best DVD player to buy, it would be unwise to place too much trust in the answer. The salesman has a vested interest in getting you to buy something and probably in getting you to buy the most expensive thing. Therefore, he has a motive, if not to lie, then at least not to tell you everything you might want to know. This is true even if the salesman is an expert in DVD players (which is quite likely). Similar remarks obviously apply to information concerning products found in advertisements. Sources such as these are obviously *biased* in a way that makes their evidence less reliable.

Bias is sometimes quite easy to spot. In other cases, it may not be so obvious. Here is Jamie Whyte again, talking about the spurious authority sometimes accorded to victims of tragedies:

> In 1995, Leah Betts, a British schoolgirl, died after taking the drug Ecstasy at a party. Ever since, newspaper articles about a suggested liberalization of drug laws also report her father's outraged reaction to the idea. Why? How has Mr. Betts's suffering made him an expert on the effects of drug laws on public health, crime, individual liberty, and so on? If it has not, why should we be interested in his opinion on the matter?
>
> Mr. Betts is not alone in being elevated through tragedy. Victims of London's Paddington Station rail crash of 1999 are now consulted on public transport policy and there are suggestions that crime victims should be involved in sentencing the convicted. Perhaps the journalists and politicians who approach policy formation in this way are genuinely concerned for the victims whose causes they espouse, but that is beside the point. Suffering does not bestow expertise. Believing what victims believe does not make you more likely to be right.
>
> On the contrary, the effect of suffering can be systematic error. People tend to personalize the world. Those injured in a train crash are apt to overestimate the

> probability of train crashes. Those who have lost a child to some disease are too ready to see its symptoms in their other children. This may be understandable in the individuals affected but it is no basis for government policy.
>
> Jamie Whyte, *Crimes Against Logic*, pp. 27-8.

### 3. Is there corroborating evidence from independent sources?

Corroborating evidence is evidence from an independent source that supports a piece of testimony. For example, two or more witnesses may agree on their description of certain events. That is, the witnesses may corroborate each other. In that case, the reliability of their evidence is strengthened. In the same way, the reliability of expert testimony can be strengthened if there are other independent experts in the field who agree. If *all* the relevant experts agree, that provides a very strong case for accepting what they say, unless there is very good reason to think they might be attempting to mislead us.

It is important that the corroborating evidence should be *independent*. The testimony of several experts concerning the safety of a certain drug is not independent if they all work for the same multinational pharmaceutical company, which just happens to manufacture the drug in question (even though they could be telling the truth). In the same way, supporting testimony from numerous witnesses that Joe was elsewhere when the robbery took place may not be independent if all the witnesses have some reason to lie: if they are all members of Joe's family, or if they all work for him (and stand to lose their jobs if Joe is convicted) or if Joe may have threatened them in some way.

Where there is multiple, independent corroboration of expert or witness testimony however, we should take that as greatly strengthening the reliability of the evidence presented by a source.

### A warning: motive and bias are not always relevant

We have seen that there are many ways in which the reliability of a source can be put in question. It is a mistake – an illegitimate appeal to authority – to claim that something is true when that claim is based on the say-so of someone who is not an expert, wasn't there, or is in some other way likely to be unreliable. You must take great care however, not to make the opposite mistake. The *only* time it is ever legitimate to dispute a claim on the basis of these sorts of considerations is when you are being asked to believe the claim *merely on that person's say-so*. If, on the other hand, the person has given an independent *argument* for their claim it is generally *not* legitimate to dispute it by referring to their motives or past unreliability. (Can you think of any special exceptions to this general rule?)

That kind of move is very common in politics. A politician presents an argument that more money should be spent on public schools, citing as evidence the fact that many of them are in disrepair and that it is the government's responsibility to do something about it. A political opponent dismisses the argument, pointing out that the politician in question is a hypocrite because she sends her children to a posh private school. This may be true, but it is completely irrelevant to the *argument* that the politician presented. It has no bearing whatsoever on the truth of the premises of that argument. It has no bearing whatsoever on whether the conclusion follows from those premises. In this case, the politician is not asking us to accept the claim that the government should spend more on public schools, *merely on their say-so*. Instead, they have given an argument which should be assessed on its merits. This opposite fallacy – the fallacy of illegitimately appealing to facts about the *arguer*, rather than the argument – is sometimes referred to as an *ad hominem* argument. Again, this kind of mistake is not always easy to spot. Here is another example from Jamie Whyte:

> The difficulty with the Motive Fallacy is not so much seeing that it is a fallacy, but

> spotting its instances in everyday life. It is so common that we have become desensitized, and it can be committed in subtle ways. Consider, for example, the way the news media report the publication of a "white paper" by a think tank. The rules for doing so must be specified in some journalism manual, for they all seem to do it the same way. First, the conclusion is baldly stated: "Joining the Euro will cost three million jobs in the U.K." Then the name of the think tank: "That's according to the Foggian Society." Then the slant: "A right-leaning think tank." … Why do journalists mention this right versus left business at all? A think tank's political allegiances would be relevant only if they invited us to accept their views simply on their say so. But they don't. Their white papers are full of evidence and argument supporting their contention. To refute their view, you need to show what is wrong with the case they make.
>
> Jamie Whyte, *Crimes Against Logic*, pp. 16-17.

### Generalisations

It is very common to find arguments that depend on premises which state *generalisations* or *general principles*. The simplest kind is the *universal generalisation*, so we will begin by looking at those.

A **universal generalisation** is a claim which says something about *all* things of a certain kind.

Here are some examples of universal generalisations:

> *All* metals conduct electricity.
> The government should ban *all* cigarette advertising.
> *Whenever* interest rates increase, the economy slows down.
> *Everyone* in my class has seen the film *Avatar*.
> Terrorism is *never* justified.
> *No one* can enter the country without a visa.
> *The only* flightless birds are penguins.

Notice the words highlighted in italics. Words such as *all*, *every*, *anyone*, *everyone*, *whenever* are what we might call *universal generalisation indicators*, since they indicate that a claim is being made about *all* things of a certain kind. What about words like *never* or *no one*? These also indicate generality: Terrorism is *never* justified means *all* instances of terrorism are *un*justified. *No one* can enter the country without a visa means that *everyone* who enters the country must have a visa.

### Counter-examples

Since a universal generalisation is supposed to hold for *all* cases of a certain kind, it cannot be true if it fails to hold for one or more of those cases. That is the key to assessing the truth of such claims. You must always ask: what does this imply about other cases? Does the principle hold in other cases or not? If it does not, you have found what is called a *counter-example* to the generalisation: an instance or case which shows the generalisation to be false.

A **counter-example** to a universal generalisation is an instance which shows the generalisation to be false. If the generalisation is that *All As are Bs*, a counter-example is an A which is *not* B.

To take a simple example, suppose you came across the following generalisation:

> All elephants have big ears.

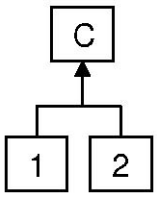
This makes a claim about all elephants, so if you can find an example of an elephant (or species of elephant) that does not have big ears, you will have found a counter-example to the generalisation. Suppose Nellie is an Indian elephant and so does *not* have big flappy ears like her African cousins. Then Nellie provides a counter-example to the generalisation that all elephants have big ears.

Here is more substantive example. Suppose you came across the following argument:

> Whatever way you look at it, war always involves the destruction of a human life. And the destruction of human life is never justified. So war is never justified.

Let's begin by putting the argument into standard form:

> **1.** War always involves the destruction of human life.
> **2.** The destruction of human life is never justified.
> **Therefore:**
> **C.** War is never justified.




Both premises and the conclusion are universal generalisations. Consider the second premise. This says that the destruction of human life is never justified. That's clearly a universal generalisation, because it is supposed to apply to *all* cases of the destruction of human life. So to assess it, we can ask, what further implications does such a principle have? What does it say about other cases? Well, what other cases are there that involve the destruction of human life? Murder is an obvious example. But that is not a counter-example because most people would agree that murder cannot be justified. But what about other, less obvious cases? What about killing in self-defence? Or by accident or mistake? What about capital punishment? Is that never justified? What about abortion? What if, by causing the death of one person, you could save many thousands of innocent lives? Would taking a life be justifiable in those circumstances?

If you were convinced that killing in self-defence could even *sometimes* be justified, then you would have to reject the universal generalisation on which the above argument depends. You would have found a counter-example: cases where the destruction of a human life *can* be justified. Reasoning about general principles requires consistency. It is inconsistent to accept a universal generalization and also deny that it applies in certain cases. If it does not apply in certain cases, then it cannot be true as a universal principle. It can be dangerous and irrational to selectively apply a general principle to some cases while denying that it applies in other cases. Someone who does that may be doing no more than adopting the principle when it suits their own selfish interests (or the interests of others they represent) and rejecting it when it is not convenient or does not suit their interests. That kind of behaviour is just the opposite of rational.

### Reformulating generalisations

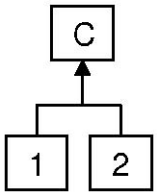
Although a counter-example shows that a universal generalisation *as stated* cannot be true, you should not necessarily rush to reject the generalisation outright. Perhaps the generalisation does hold in many other cases. If so, it may be more reasonable – and fruitful – to attempt to reformulate or restate the generalisation, so that it avoids the counter-examples, while continuing to hold for the known cases. This process of stating a generalisation, refuting and then reformulating it plays a crucial role in the development of mathematics, science and philosophy.

Let's try to apply this to the previous example. Grant, if you will, that killing a human being in self-defence can at least sometimes be justified. If that's right, then the principle on which the argument depends cannot be true. Nonetheless, most people would want to say that the principle is right some of the time. We would not want to just reject outright the idea that the destruction of human life is a terrible thing. Can the principle be reformulated in a way that avoids the counter-examples, but still gives the right answer in other cases? We might suggest something like this:

> The destruction of human life is only justified if it would prevent the destruction of a greater number of innocent lives.

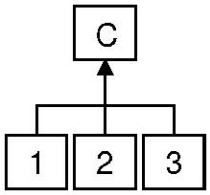
That principle seems to rule out murdering your aunt in order to inherit her fortune, which is a point in its favour. It seems to allow for killing in self-defence, in cases where innocent lives would otherwise be lost. But those are the only kind of cases in which killing is justified. Does the principle rule out war? Let's try plugging it back into the argument we were examining:

**1.** War always involves the destruction of human life.
**2.** The destruction of human life is only justified if it would prevent the destruction of a greater number of innocent lives.
**Therefore**:
**C**. War is never justified.




It's now clear that the conclusion no longer follows from the premises. For the conclusion that war is *never* justified to follow, we would need to add another premise:

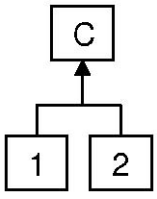
**1.** War always involves the destruction of human life.
**2.** The destruction of human life is only justified if it would prevent the destruction of a greater number of innocent lives.
**3.** The destruction of human life in war never prevents the destruction of a greater number of innocent lives.
**Therefore**:
**C**. War is never justified.




The conclusion of this new argument follows from the premises, but premise 3 is suspect. Again, it states a general principle, so we could test it by looking for counter-examples; cases of killing in wars which we have some reason to believe did prevent even more lives being lost.

Alternatively, we could reformulate the conclusion of the original argument, so that it matches the reformulated assumption:

**1.** War always involves the destruction of human life.
**2.** The destruction of human life is only justified if it would prevent the destruction of a greater number of innocent lives.
**Therefore**:
**C**. War is only justified if it saves more innocent lives than it destroys.



Now we have a valid argument for a reasonable conclusion. The conclusion follows from the premises and both premises are plausible. In particular, premise 2 is arguably more plausible than the original outright assertion that killing can never be justified. So we have made progress. We might then go on to think about the principle more carefully and see if there are any counter-examples to it. For example, what if there was a situation in which you could save a thousand lives by murdering one perfectly innocent person? If you think that would not be justified, you have a counter-example to the reformulated principle.

It is worth mentioning an alternative kind of consideration relevant to general principles. We can also ask whether the general principle follows from a yet more general principle. In this case, we might ask whether premise 2 itself depends on any more general principle. For instance, premise 2 mentions human life. But is there anything special about human life? Wouldn't the same principle apply to any other species that was sufficiently like us in relevant respects? What are the relevant respects? By digging down deeper to unearth the assumptions on which general principles like this depend, we may discover something we were not expecting and which could have radical implications. This is one of the ways in which moral and political philosophy gets done. As already indicated, it is also an important process in science, mathematics and many other fields of inquiry.

### Statistical generalisations

Universal generalisations are not the only type of general claim you will encounter. In fact, universal generalisations can be thought of as a special case of a much broader category, which we will call *statistical generalisations*.

> A **statistical generalisation** is a claim that says something about the *proportion* or *percentage* of things of a certain kind.

In some cases, the proportion might be explicitly stated:

> 90% of nurses are women
> 13% of Australians aged 15-24 are unemployed.
> 42% of all fatal car accidents occur at night
> 100% of swans are white (all swans are white)

These are all statements of the form 'X% of As are B'. A *universal* generalisation is just the special case when X=100, as in the last example. Very often however, the exact percentage is not explicity stated, as in these examples:

> The majority of Australians support the government's immigration policies.
> Most of the people killed in wars are civilians, not soldiers.
> Only a minority of voters now support the president.
> Very few religious people subscribe to *Skeptical Inquirer* magazine.
> Many of my friends have experienced racism.

Phrases like 'the majority' and 'most' can be interpreted as meaning '50% or more', while a 'minority' can be interpreted as 'less than 50%'. Phrases like 'Many', 'lots' and 'few' on the other hand have no precise interpretation, but do not make the mistake of thinking that makes generalisations involving them are entirely *meaningless*. In context, such claims make sense and can be evaluated, at least provisionally.

The following statements are also statistical generalisations, but of a different kind.

> Male tennis players can serve the ball faster than female tennis players.
> People who smoke are 25 times more likely to develop lung cancer than people who do not.
> Children who have a lot of sugary food in their diet are more likely to be hyperactive.

This type of statistical generalisation tells us about a *correlation* or *association*. They compare two different groups and tells us there is a difference between them with respect to a particular characteristic. For example, the first statement compares male and female tennis players and tells us that they differ in terms of how fast they can serve a tennis ball. You should think of it as saying that the *average* speed of a tennis serve is greater in one group than another. It would *not* be a good interpretation to think of it as saying that every male tennis player can serve a tennis ball faster than any given female tennis player. That claim is very unlikely to be true whereas the correlational claim about average speed is much more likely to be true.

The second example compares smokers and non-smokers and tells us that the rate of lung cancer is higher in one group than the other. The third example compares children who have a lot of sugary food in their diet with children who do not and tells us that there is a higher rate of hyperactivity in the first group than in the second. We will discuss correlations, what they mean and how to evaluate them in chapter 7, when we discuss arguments for causal claims.

### Evaluating statistical generalisations

Statistical generalisations which are not universal cannot be refuted with a single counter-example. A claim like 'Most people support the government's immigration policies' cannot be refuted by saying something like 'Well, I know lots of people who do *not* support those policies'. That would work if the claim was that everyone supports the government's policies (a universal generalisation) but that is not what the claim says. To refute it, you would have to present evidence to show that less than 50% of people support the government's policies.

One way to evaluate a statistical generalisation is to ask what the *evidence* or *argument* for it is. Many statistical generalisations are based on evidence from *samples*. For example:

> A recently conducted opinion poll, asked 500 adult Australians what they thought of the government's immigration policies. 76% of the sample said they approved of those policies. We can conclude that the majority of Australians support the government's immigration policies.

Some samples can give very good evidence for a statistical generalisation. On the other hand, inferring generalisations from samples can go wrong if the sample is too small, or biased in some way. We will discuss this in detail in chapter 6, on inference from a sample.

If you encounter a statisitical generalisation as a premise in an argument, but are not told how it was derived or what the source is, the argument is in trouble. The generalisation *might* be true and then again it might not be – you have no way of knowing without doing further research into the question for yourself. Statistical generalisations are not straightforward to either prove or disprove, so in the absence of good evidence either way, you ought to remain undecided. When evaluating the argument it is perfectly acceptable to say that you do not know whether the premise is true and that further research would be needed to decide.

Of course, you *could* do some research of your own to try to discover if the claim is true. Most likely this would involve trying to find relevant sources to answer the question. In that case, you will need

to make use of the criteria for evaluating sources discussed in the first part of this chapter. Or perhaps, if you have the interest, time and resources, you will be inspired to do some primary research of your own to discover the answer for yourself.

If you do not know whether a premise in an argument is true, you can still evaluate the *support* the premises of the argument would give to the conclusion. That is, assuming that the premises were all true, would they be sufficient to establish the conclusion? You can do that without knowing whether the premises are actually true or false. So you can give a provisional evaluation of the argument, either positive (*if* the premises were true, they would be sufficient to establish the conclusion) or negative (*even if* the premises were true, they would *not* be sufficient to establish the conclusion).

### An example argument

Let's look at an example. Consider the following argument:

> According to the police profiler, the guilty person in this case is a sociopath. 80% of sociopaths are male. Therefore, the guilty person is probably male.

As with any argument, to evaluate it, we need to ask a) whether the premises are true and b) whether they support the conclusion. The first premise is based on an appeal to authority. We are asked to accept it on the basis of the police profiler's say-so. We could evaluate this premise using the criteria for evaluating sources: **position to know** (does the profiler have the relevant training and expertise?), **reliability** (how reliable is this kind of psychological profile in general? How reliable is this particular profiler? Is there any reason to think they might be biased?) and **corroboration** (do other, independent relevant experts agree?)

The second premise is a statistical generalisation. Proper evidence would be needed in order to accept it as either true or false and none has been supplied here. So we should not accept that premise without further research. This is of course, not the same as saying that the premise is *false*. We simply do not know whether it is true or false.

What we *can* assess is the support the premises would give to the conclusion *if* they were both true. In this case, we have an *inductively valid* argument. The premises, if true, make the conclusion more likely to be true (notice how this is indicated with the word 'probably' in the text). The argument is not deductively valid – it is possible that the guilty person in this case is one of the rarer female sociopaths. Nonetheless, if we have to make a guess at the gender of the guilty person, the statistic (if true) tells us that until further information comes in, our best guess should be that they are male. Given only the information have, it is *unlikely* (though not impossible) that the guilty person is female.

Suppose however that a *different* argument had been given:

> 80% of sociopaths are male. The guilty person in this case is male. Therefore, the guilty person is probably a sociopath.

This time, it should be clear that even if the premise were true, they would *not* support the conclusion. The first premise tells us that most sociopaths are men, but that does not mean that most men are sociopaths! The premises do not even make the conclusion more likely to be true. In order to infer that the guilty person is a sociopath from the fact that the guilty person is male, we would need to know is the percentage of men who commit this kind of crime who are sociopaths and that is not the same thing as the percentage of all sociopaths who are male. Perhaps only 1% of men who commit this kind of crime are sociopaths. If so, then the fact that the guilty person is a

man actually makes it very *unlikely* that they are a sociopath. So this argument is not even inductively valid. The premises, even if they were true, would not support the conclusion.

## Further Reading

For more on judging the reliability of sources, see:

> Anne Thomson, *Critical Reasoning: a practical introduction*, pp. 41-44.
>
> Alec Fisher: *Critical Thinking: an introduction* (2nd edition), Chapter 7.
>
> Jill LeBlanc, *Thinking Clearly*, chapter 6, pp. 153-7.

For more on illegitimate appeals to authority and illegitimate appeals to motives, see:

> Jamie Whyte, *Crimes Against Logic*. McGraw-Hill, 2004. Chapter 2, pp. 11-18 and Chapter 3, pp.19-30.

I can heartily recommend this book as a thought provoking and amusing survey of some of the many ways in which real arguments can go badly wrong.

For more on evaluating generalisations, see:

> Anne Thomson, *Critical Reasoning*: a practical introduction, pp. 65-7.
>
> Tracy Bowell and Gary Kemp, *Critical Thinking. A concise guide*. pp. 36-40; 144-147.

## Exercise 6.1 Evaluating sources

Assess the reliability of the sources involved the following examples. Consider the questions; (1) is the source in a position to know? (2) are there any reasons to suspect the reliability of the source? and (3) Is there any corroborating evidence from other sources? If not, what possible sources of corroborating evidence could you look for?

If possible, try to come to a reasoned conclusion about the truth of the matter under discussion. If not enough information is provided to come to any definite conclusion, say what factors would be relevant in assessing the reliability of the sources involved.

**1** According to the Holden car company, the brakes fitted in their new range of cars are the safest in the world.

**2** Professor Jones of Harvard University mentions in his latest book that in 17th century England there were severe penalties for begging.

**3** The report released yesterday by the Queensland Department of the Environment states that in the last 5 years the state's land-reclamation program has resulted in a 20% increase in the amount of land available for farming. If these figures are correct, the program has been a great success. Professor Craig, a distinguished mathematician and winner of the Nobel prize for economics maintains however, that the reclamation program could not possibly have been successful. Clearly then, the figures cited in the report cannot be accurate.

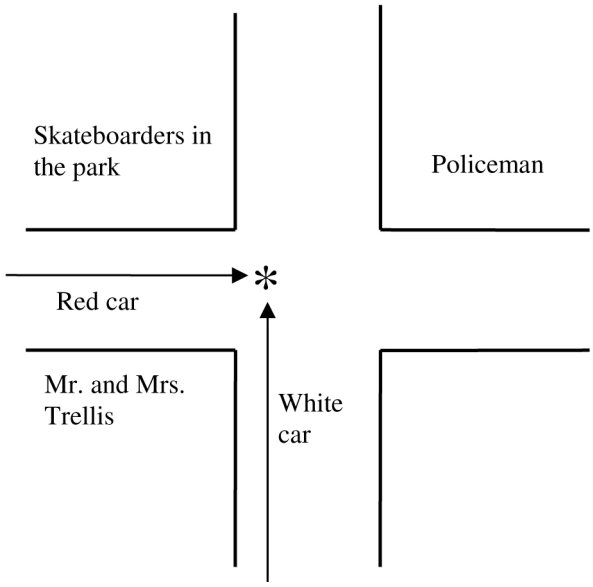
**4** Gloria's drama teacher claims that her policy is to give each student the opportunity to act in at

least one play during the year but, since Gloria, who attended every class, reports that she was not given such an opportunity, the teacher's claim cannot be true.

**5** Amos claims that he can hold his breath under water for a full hour. Dr. Treviso, a cardiopulmonary specialist, has stated that humans are physiologically incapable of holding their breath for even half that long; so Amos' claim cannot be true.

**6** Moira, after observing the finish of the 60-kilometer bicycle race, reports that Lee won with Adams a distant third. Lomas, a bicycle engineering expert, insists, however, that Lee could not have won a race in which Adams competed; so Moira's report cannot be true.

**7** There is a cross-roads with traffic lights on both roads and there has just been a collision between a red car and a white one (as shown on the diagram below). The driver of the white car accuses the driver of the red car of having jumped the red light; the red car driver denies this. Mr. and Mrs. Trellis were waiting to cross the road on which the white car approached the junction. Mrs. Trellis claims that the red car driver did jump the red light, her husband Mr. Trellis says he didn't. Just before the accident, Mr. Trellis was watching some teenagers skateboarding in a park on the other side of the road on which the red car approached the junction. A policeman was also watching the junction and he says the red car driver did jump the red light.




The following three questions are taken from an exercise in Alec Fisher, *Critical Thinking: An Introduction*. CUP, 2001.

**8** One of the employees at Dovetail Joinery has had an accident with a circular saw. Whilst pushing a large piece of wood through the saw, his hand was seriously injured by the blade. A dispute has now arisen over who was to blame for the accident.

The injured employee, Ashworth (A), claims that he followed all the company's safety procedures but that the owner of the company, Bell (B), had not ensured that the machine was as safe as possible. (B) is adamant that the machine was in a perfectly safe condition. If it had not been, he argues, he would have been told by the foreman (F).

(F) also insists that the machine was always maintained satisfactorily and, to emphasise his point, he has given the written maintenance record to the tribunal. In addition, (F) claims that just before the accident, he saw (A) 'laughing and joking and messing about with his

workmates'.

One of these workmates, Chandra (C), agrees with (A) that, despite its regular maintenance, the saw was not as safe as it should have been because its safety guard was poorly designed and did not function well. Furthermore, they had told (F) about it.

A health and safety inspector (I), who has inspected the machine, reports that the safety guard is poorly designed to protect operators in a number of circumstances which are familiar to operators of circular saws.

**9** As the warden of Larkfield Park, you have been called to investigate an incident involving a fight between two dogs. The fight look place in the park fifteen minutes ago.

The owner of the first dog (A) claims that the second dog attacked hers, 'viciously and without warning'. The owner of the second dog (B) denies this, pointing to the injuries on her dog as evidence that it was (A)'s dog which attacked viciously. (You can see that (B)'s dog is indeed more injured than (A)'s.)

The owner of a third dog (C) says that, about half an hour ago, her dog had been involved in a fight with (B)'s dog, a fight that was started, without any provocation, by (B)'s dog. In addition, she insists on making the point that (A)'s dog 'always gets on well with hers'.

A jogger (J) tells you that, from a distance, he had seen both incidents in which (B)'s dog is alleged to have been involved. In both cases, he says, (B)'s dog did seem to be the one that was chasing the other and making the most noise.

Another dog owner (D), who has just come into the park, says that he has often walked with (A) and her dog; he finds it impossible to believe that (A)'s dog could be vicious.

**10** The appointment of a new ambassador from a South American country provoked considerable controversy because the ambassador had been accused by many human rights groups of having been personally involved in the torture of political opponents some years before. A demonstration against his appointment had been organised by the anti-Fascist Alliance (AFA). However, this had provoked the group Rebirth-1933 (known otherwise as R33) to organise a counter-demonstration, welcoming the ambassador as 'a fighter against moral decline'.

The police had decided to let both demonstrations go ahead, but provided a very heavy presence in order to keep the two sides apart. Unfortunately, the number of demonstrators on both sides was greater than had been expected, and it became difficult to prevent violence breaking out. One of those hurt was the leader of the AFA, Fran Lee (F), who suffered serious head injuries, and had to be taken to the nearest hospital, where she remains in a coma.

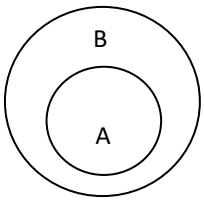
The situation surrounding (F)'s injuries remains unclear. At the time that she was injured, she was being restrained by a policeman, (P) who claims she was hit by a 'rock' which also struck his helmet and which was thrown from a group of R33 demonstrators. Furthermore, (P) insists that he was one of a group of police who were trying to ensure that she did not get attacked by some R33 members who had got very close to her.

On the other hand, a well-known lawyer and human-rights activist (A), who was with her at the time, claims that (F) was injured by the police, especially (P), using their batons with unreasonable force against her and other AFA members. A TV news crew (N), whose camera was damaged in the melee, said that they had filmed several police using their batons heavily on (F) and other AFA members just before she was grabbed by (P). Though R33 leaders deny that she was hit by something thrown by one of their supporters, an R33 member (M), who

refused to be identified, boasted in an interview to the BBC of having 'split Lee's head with a brick'. Another witness, a Dutch tourist (D), who had taken shelter from the violence in a doorway, says she certainly saw police using their batons strongly to try to separate people, but she did not see any missiles being thrown. A hospital spokesperson (H) said, 'Frances Lee sustained a fractured skull which appears to have been caused by at least one very severe blow to the head.'

## Exercise 6.2 Generalisations and counter-examples

A universal generalisation of the form 'All A are B' can be represented on a simple circle diagram, like this:

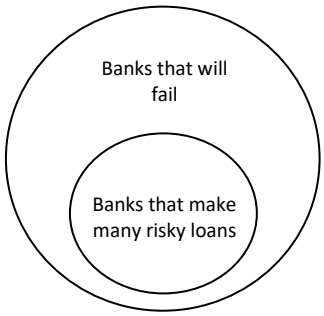



The smaller circle labelled 'A' is completely inside the larger circle 'B' which represents the claim that every A is a B, but allows for the possibility that not all Bs are A.

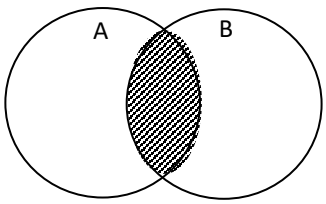
For example, the universal generalistion:

Any bank that makes many risky loans will fail.

Can be represented on such a diagram like this:




We can also represent universal generalisations of the form 'No A are B' using a circle diagram:

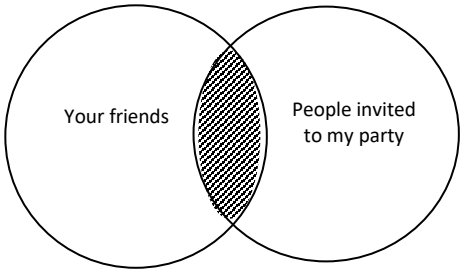



where the overlap region between the circle representing 'A' and the circle representing 'B' has been shaded out to show that it is empty, indicating that there are no As which are also B (and equally, no Bs which are A).

For example, the universal generalistion:

None of your friends are invited to my party

Can be represented on such a diagram like this:




Diagrams like these were referred to as *Euler diagrams* in the chapter on deductive support: you might also know them as *Venn diagrams*.

For each of the following statements, say whether they are universal generalisations or not. For those that are, draw a diagram to represent the claim and say what a counter-example would be.

**1** All trees and shrubs that bear edible fruit have five-sided flowers.

**2** No employee of this company has life insurance

**3** Any television show that depicts violence incites violence.

**4** Terrorist attacks succeed whenever security measures are lax.

**5** Not all guilt feelings are psychological aberrations.

**6** Every jazz fan admires Duke Ellington.

**7** Only diabetics require insulin treatments.

**8** The electroscope is a device for detecting static electricity.

**9** Bats are the only true flying mammals.

**10** Monkeys are found in the jungles of Guatemala.

**11** No shellfish except oysters make pearls

**12** The gap between rich and poor in Australia is now wider than ever.

## Exercise 6.3 Evaluating generalisations

**1** A just government never restricts the right of its citizens to act upon their desires except when their acting upon their desires is a direct threat to the health or property of other of its citizens.

Which one of the following judgments conforms to the generalisation stated above? Which judgements represent counter-examples to that principle?

(A) A just government would not ban the sale of sports cars, but it could prohibit unrestricted racing of them on public highways.

(B) A just government would provide emergency funds to survivors of unavoidable accidents but not to survivors of avoidable ones.

(C) A just government would not censor writings of Shakespeare, but it could censor magazines and movies that criticize the government.

**2** To classify a work of art as truly great, it is necessary that the work have both originality and far-reaching influence upon the artistic community.

The principle above, if valid, most strongly supports which one of the following arguments?

(A) By breaking down traditional schemes of representation, Picasso redefined painting. It is this extreme originality that warrants his work being considered truly great.

(B) Some of the most original art being produced today is found in isolated communities, but because of this isolation these works have only minor influence, and hence cannot be considered truly great.

(C) Certain examples of the drumming practiced in parts of Africa's west coast employ a musical vocabulary that resists representation in Western notational schemes. This tremendous originality coupled with the profound impact these pieces are having on musicians everywhere, is enough to consider these works to be truly great.

**3** Many environmentalists have urged environmental awareness on consumers, saying that if we accept moral responsibility for our effects on the environment, then products that directly or indirectly harm the environment ought to be avoided. Unfortunately it is usually impossible for consumers to assess the environmental impact of a product, and thus impossible for them to consciously restrict their purchases to environmentally benign products. Because of this impossibility there can be no moral duty to choose products in the way these environmentalists urge, since ….

Which one of the following generalisations provides the most appropriate completion for the argument?

(A) a moral duty to perform an action is never based solely on the effects the action will have on other people

(B) a person cannot have a moral duty to do what he or she is unable to do

(C) the morally right action is always the one whose effects produce the least total harm