Critical Thinking Lecture 1:

Introduction, Arguments and Explanations

1.1   Introduction

This is PHIL 2642: Critical Thinking. Information concerning class times, assessment, web resources, etc. can be found on your unit outline on the website.

In this unit we will be investigating the difference between good arguments and bad arguments, and good explanations and bad explanations. You will be introduced to lots of useful distinctions and new concepts, and we will practice making those distinctions and employing those concepts in a large number of examples. A common label for this field is **informal logic**. Many of the arguments we will use as examples are relatively trivial, and not of special philosophical interest. This may give rise to the illusion that what we are doing in this unit is trivial. To dispel this illusion, it is worth seeing in advance why we have good reason to study critical thinking:

1) **We need to improve our general reasoning/thinking skills.** We encounter and employ arguments in all disciplines, as well as in everyday life. If you can latch onto the distinctions detailed in this unit, you will have improved your ability to assess the strengths and weaknesses of arguments, and your ability to construct powerful arguments. You should be able to use the skills gained in this unit in your other studies and in everyday life, e.g. reading the paper, watching the news, arguing with strangers at bus stops or with your friends in the pub.

2) **It is useful to gain knowledge of terminology and techniques that are used regularly in philosophy.** Philosophers are obsessed with arguments and with the nature of argument itself, and we have particular ways of talking about arguments. This unit will introduce you to types of argument and types of criticism which will pop up again and again in your

further study of philosophy. e.g. Philosophers say these kind of things: "Descartes' argument for the existence of God is valid but begs the question", "Hume demands deductively sound arguments but we should be happy with strong inductive arguments", "Rorty is arguing against a straw-person", etc. Familiarity with the material in this unit will make your subsequent study of philosophy easier, because after doing this unit you will know what is meant by terms like "valid", "sound", "begs the question", "straw-person" etc.

The content of this unit is designed to be deeply relevant to philosophers and non-philosophers alike. At several points we will touch on some important philosophical issues concerning, e.g., knowledge, analysis, inductive scepticism, certainty. At each of these points we will spend a little time exploring the philosophical issues before returning to the main game - improving our reasoning skills.

1.2 Why do you need to improve your reasoning skills?

Here's why you need to improve your reasoning skills: Most of us are not very good at detecting flaws in arguments. Often we cannot recognise the difference between a good argument and a bad argument. Indeed, there are specific, identifiable kinds of errors that most of us are prone to make. Three examples:

a) The Monty Hall Problem:

Posed in Parade magazine by columnist Marylin vos Savant. Suppose you are on a game-show, and you are offered the choice between three boxes.

Box 1	Box 2	Box 3
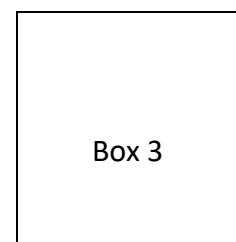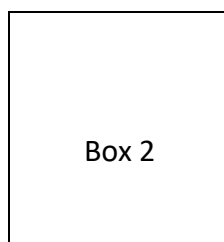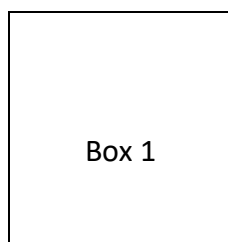
One and only one of these boxes contains the keys to a new car. Pick that box and you win the car. The game-show host knows which box the keys are in, and after you have picked a box, the host will open one of the boxes that you didn't pick, and show you that the keys are not in that box. (e.g. Suppose you pick Box 1. The host then opens Box 3 and shows you that the keys are not in Box 3.) Finally, the host offers you the chance to change your original selection. Should you…

a) change your original selection (e.g. pick Box 2)

b) keep your initial selection (e.g. stick to Box 1)

c) either; it makes no difference to the likelihood of your winning the car.

Most people choose c) or b). Why? They think that the keys start out having 1/3 probability of being in any of the boxes. When the host opens Box 3, what happens to the probabilities? Most people think the probabilities now jump to 1/2 for Box 1 and 1/2 for Box 2. Why? Because the host showed you they aren't in Box 3, and nothing else has changed. It's equivalent to the host just offering two boxes to begin with, each having 1/2 chance of containing the keys. So, it makes no difference whether or not you change, but you might prefer to stick with your original choice to avoid the regret that would come with losing what you had.

The correct answer, in fact, is a). You are twice as likely to win the car if you change your original selection. How could this be the case? Here is the correct reasoning:

The initial probabilities are 1/3 for each box. So, if you pick Box 1, there is a 2/3 probability that the keys are in Box 2 or 3. Suppose you play this game many times over. 1/3 of those times, you will have chosen the correct box first up, and 2/3 of those times, you will have chosen the wrong box first up. Let's assess the two strategies – switch every time, or stay with you original choice every time.

Switch Every Time

If you chose the correct box first up, the host can choose to open either of the other two boxes. If you switch after this, you will not win the car. You

chose the correct box first up in 1/3 of the cases. Therefore, if you switch, at least 1/3 of the time you will lose.

If you chose the wrong box first up, the host has no choice; there is only one empty box available for him to open. (If you pick Box 1 and the keys are in Box 2, he *must* open Box 3.) If you switch after having chosen the wrong box first up, you always win the car. You chose the wrong box first up in 2/3 of the cases. Therefore, if your strategy is to switch, 1/3 of the time you will lose and 2/3 of the time you will win.

Stay Every Time

If you chose the correct box first up, the host can choose to open either of the other two boxes. If you stay after this, you will win the car. You chose the correct box first up in 1/3 of the cases. Therefore, if you stay, at least 1/3 of the time you will win.

If you chose the wrong box first up, the host has no choice – there is only one empty box available for him to open. (If you pick Box 1 and the keys are in Box 2, he *must* open Box 3.) If you stay after this, you lose. You chose the wrong box first up in 2/3 of the cases. Therefore, if your strategy is to stay, 1/3 of the time you will win and 2/3 of the time you will lose.

The key to understanding this question is that 2/3 of the time the host gives you information about the location of the keys when he opens a box. 2/3 of the time he opens that box because he must. If he didn't know which box the keys were in, the game wouldn't work – 1/3 of the time the host would open the box containing the keys.

b) Falsifying Conditionals

Cards have numbers on one side and letters on the other. Consider the conditional claim "If a card has a D on one side, it has a 3 on the other". Which card/s would you have to turn over to see whether this claim is false? (Only turn over the cards you must turn over to see if it is false.)

D	F	3	7
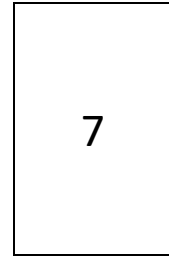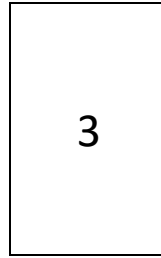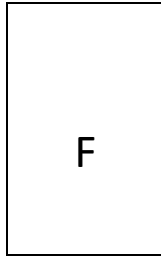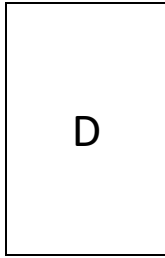
Most people choose D or D & 3, but the correct answer is D & 7. You need to check D, because if there is not a 3 on the other side the claim is false. You need to check 7, because if there is a D on the other side, the claim is false. You don't need to check 3, because you are not being asked to check whether every 3 has a D on the other side – rather, you are being asked whether every D has a 3 on the other side. Whatever is on the back of 3 cannot falsify the original claim.

c) Assessing Probabilities

Suppose there is a disease whose prevalence in the population is known to be 0.1%. Suppose there is a test for that disease that has no false negatives (i.e. every person who has the disease and undergoes the test is correctly detected as having the disease) and has a false positive rate of 5% (i.e. 5% of people who in fact don't have the disease falsely show up as having it). What is the chance that a person found to have a positive test result actually has the disease, assuming you know nothing about the person's symptoms?

People usually answer 95% chance. The average answer is 56%. The correct answer is roughly 2%. Why do we get it wrong? Because we ignore the base rate, which tells us that the disease is very rare and hence improbable even if the test comes out positive. Think it through in this way: 1 person in every 1000 has the disease, and there is a test for the disease which tests positive for all people who really do have it, but also falsely positive for 50 people per 1000. Only one in every

51 people who test positive actually has the disease – hence roughly 2% chance that a person with a positive test result actually has the disease.

This mistake in reasoning obviously can have terrible consequences, e.g. someone from a low risk group who tests positive for a terminal disease could kill herself because she believes that a 95% accurate test means they have a 95% chance of having that disease.

The moral of the story: Many of us are not good at lots of apparently simple reasoning tasks. Thus it is important to try to improve our skills by learning something about reasoning and argumentation.

1.3 More reasons to improve your reasoning skills

We are often presented with arguments that have implications for our lives, but many of us are unable to ask even basic questions that might test the plausibility of those arguments.

e.g. Drinking more than a litre of water a day makes you healthy, scientists concluded in a recent study. The scientists surveyed 50 randomly selected men, asking how much water each typically consumed per day. 20 of the group drank more than a litre a day, and 30 drank less than a litre a day. Next, the scientists medically tested the general level of health of each group, and found that members of the group who drank more water were less likely to be obese, had lower cholesterol levels, and had more active immune systems.

Is this a good argument? Do we have to take the scientists' word for it? What if there are other scientists who draw a different conclusion? In this unit, we will learn how to ask basic questions that will help us to evaluate arguments like these.

There are other cases in which we might be quite good at noticing that there is something fishy about an argument, but are unable to say in any detail what is wrong with it.

e.g. The world is run by a secret society of freemasons who occupy most positions of power in Western countries, and who manipulate the world economy in order to make money and maintain control. Because they have such a strong vested interest in staying in power, and because they would be kicked out if the general population knew about them, the freemasons have become expert at concealing their influence. Hence, it is very hard to find evidence that they control things.

Should we believe conspiracy theories like this one? If not, why not? In this unit we will think about how we ought to respond to difficult arguments like this.

One final reason why we need to study critical thinking. When people already have an opinion on a topic, they tend to evaluate arguments about that topic in the following way:

Is the conclusion of the argument true? If so, then it is a good argument. If not, then it is a bad argument.

This is a lazy and potentially disastrous way to evaluate arguments, but for some people it is habitual. If you are one of those people, I want to break you of the habit of thinking in this way.

e.g. This war in Iraq is morally indefensible, and here's why: To start with, George W. Bush is the stupidest President in living memory. Webster's Dictionary declares that murder is wrongful killing. There is lots of murder going on right now in Iraq, so even the dictionary shows clearly that the war in Iraq is morally wrong. Either Bush understands the meaning of the word 'murder', or he doesn't. Bush should go back to school and learn something! The only reason G.W. went to war is because he is a dutiful son, trying to finish the job that his father started when he invaded Iraq the first time around.

Is this argument convincing? Suppose that you are think that G. W. Bush made a terrible mistake in going to war, and that the US should not have invaded Iraq. In this case, the fact that you endorse the conclusion might lead you to applaud such an

argument. Yet the argument is fallacious in several respects, and is not rationally convincing. Of course, this is not to say that the conclusion of the argument is false.

There can be weak arguments (as well as strong arguments) for conclusions that are true! If we are able to identify weak and strong arguments, then we can use that skill to help us discern which conclusions are likely to be true. As intelligent rational beings, we have the capacity to assess and revise our beliefs in the light of evidence and argumentation. We ought not just dig our heels in and accept whatever beliefs we started out with. If we cannot find any strong arguments in support of our beliefs, but we find strong arguments in favour of an alternative view, then we should change our minds. Changing your mind in the face of new evidence or a persuasive new argument is not a sign of weakness, or flip-flopping, but a sign of strength.

On your handout you will see the order in which we will run through the various topics that make up the unit.

1.4 Claims, Explanations and Arguments

In this unit we will be focusing on arguments and to a lesser extent on explanations. Thus, it will be important for you to be able to distinguish arguments from explanations and from other uses of language. The word "argument" itself is ambiguous. It can refer to a mere disagreement; e.g.

Trev and Dave are having a terrible argument about whose turn it is to do the washing up.

"It's your turn! You should do it."

"No, you idiot, I I'm not going to wash the dishes."

"Do the dishes, Dave!"

"No, you do them!"

That kind of disagreement is not an argument in the philosophical sense of the term. "Argument" in the philosophical sense refers to claims made in support of believing

a conclusion. These are the claims that might be put forward by someone who is having a disagreement. Imagine a different disagreement between Trev and Dave e.g.

Trev said that he did the washing up last time, and that he had to go to footy training, and that Dave is really good at washing up, so Dave ought to do the washing up.

This is the sense of "argument" that we are focused on in this unit. Here Trev offers reasons for believing a particular conclusion.

An argument consists of a premise or premises and a conclusion. The premises, if true, and taken together, are supposed to provide rational support for the conclusion, i.e. the premises are supposed to provide a reason to believe the conclusion. If a series of statements is an argument, it makes sense to say "Therefore" between the premises and the conclusion.

Premise. A premise is a statement given in an argument which is supposed, if true, and in conjunction with the other premises, to support the conclusion.

Conclusion. The conclusion of an argument is the statement for which the argument is supposed to provide rational support. It is the final point of an argument, to which we work from the premises.

The **primary function of an argument** is to convince an audience to believe a conclusion. Often the arguer assumes that the premises will be believed by the audience, and hence that the audience will be led by the argument to believe the conclusion. Often the arguer assumes that the audience do not believe the conclusion, or are unsure of the conclusion, but hopes the audience will be led to believe it, or to believe it with more confidence, as a result of the argument.

In addition to their primary function, **arguments have many other uses**. For instance:

- to show what conclusions would follow if we accepted particular beliefs even though we don't accept those beliefs
- to show which beliefs are compatible or incompatible with other beliefs

- to provide logical proofs for conclusions that we already know to be true

- to help us understand why particular people hold particular beliefs

- to convince people to *do* something (rather than to believe something).

In philosophy, we often set out arguments like so:

Premise 1

Premise 2

Conclusion

In a good argument, the premises are true, and the truth of the premises gives us a good reason to believe that the conclusion is also true. A good argument has true premises and these premises give us a good reason to believe the conclusion.

Two different kinds of flaws in arguments:

1) A premise is false (or, perhaps, unjustified)

2) The conclusion does not follow from the premises (or, more broadly, the premises do not support the conclusion).

What is wrong with these arguments?

1. If my dog can speak English, then my dog can speak a language.

2. My dog can speak English.

Therefore, my dog can speak a language.

- **A good relationship between premises and conclusion, but premise 2 is false.**

1. Australia is a democracy.

2. In a democracy, most citizens can vote.

Therefore, Australia has great beaches.

- **True premises (and a true conclusion), but a bad relationship between premises and conclusion. The conclusion does not follow from the premises.**

Obviously, not all uses of language are arguments. Some uses of language that are not arguments can easily be mistaken for arguments. E.g. Some uses of language might look like arguments because they are designed to get us to believe something, but they are not really arguments because they lack the requisite internal structure. They do not point to *reasons* to believe something.

e.g. **"The Vikings landed in North America long before the Spanish did."**
This is not an argument because it does not contain any reasons for believing a conclusion. Rather, it is simply a claim.

e.g. **"The University of Sydney is located in the city of Sydney, in Australia. It is the oldest university in Australia. The University is close to Central Station"**
Since there are no premises and no conclusion in this series of claims about the University of Sydney, there is no argument here.

e.g. "**Bears are scary!**" is just a claim about bears. It is not an argument.

Some uses of language might look like arguments because they point to rational connections between claims, but in fact are not arguments because they point to a different kind of rational connection.

e.g. **Explanations** consist of the thing or things that need explaining (the explanandum, or (plural) explananda) and the thing does the explaining (the explanans).

e.g. A: Why is Trev wearing red underpants over the top of his jeans?
B: Trev is wearing red underpants over the top of his jeans because he is on his way to a fancy dress party dressed as Superman.

Here, the explanandum is the fact that Trev is wearing undies over his jeans, and the explanans is the fact that Trev is on his way to a fancy dress party dressed as

Superman. There is a rational connection between the explanandum and the explanans - the explanans *makes sense of* the explanandum. The reason this use of language is not an argument is that it consists of a series of claims that are not rationally connected *in the way that characterises arguments*. Neither claim is supposed to give us a reason to believe that the other claim is true. Since there are no premises and no conclusion, there is no argument.

Other examples of explanations:

> **A: Why is Trev going to the bottleshop? Hasn't he already got beer in the fridge at home?**
>
> **B: Trev's brother Dave is coming to stay, and that's why Trev is going to the bottle shop even though he's already got beer in the fridge at home.**

Explanandum: Trev is going to the bottle shop even though he's already got beer in the fridge at home.

Explanans: Trev's brother Dave is coming to stay.

(NB According to this claim, the fact that Trev is going to the bottle shop does not explain why Trev's brother Dave is coming to stay.)

> **A: I see that Trev fell down the stairs. Why did he fall?**
>
> **B: The reason Trev fell down the stairs is that he was very drunk.**

Explanandum: Trev fell down the stairs.

Explanans: Trev was way too drunk.

Here the speaker assumes that you already believe that Trev fell down the stairs, or that you will believe this just on the basis of the speaker's testimony, and then explains why Trev fell down the stairs.

> **A: Why is the Earth warming up?**
>
> **B: The Earth's climate is warming because humans have produced a great deal of greenhouse gases in the past century.**

Explanandum: The warming of the Earth.

Explanans: Humans have produced a great deal of greenhouse gases in the past century.

The whale has useless bones where its legs would be. This is because whales are descended from animals that did have legs.

Explanandum: The useless bones where whales' legs would be.

Explanans: The whales' being descended from animals that did have legs.

Note that none of these utterances should be divided into one part that is giving evidence for believing another part, or one part that gives a reason for believing the other part. Rather, the fact pointed to in one part (the fact that Trev's brother Dave is coming to stay, that Trev fell down the stairs, that the Earth's climate is warming, the whale has useless bones where its legs would be), is supposed to be explained by the fact or facts pointed to in the other part.

Perhaps the easiest way to get a grip on the difference between arguments and explanations is to come up with arguments and explanations for the same claim. E.g. Let us consider the claim "**Sydney, the first city that British colonists built in Australia, is not located inland but is located around a harbour.**".

If we are asked to *explain* why it is true that Sydney, the first city in Australia, is built around a harbour, we would point to the facts that led early colonial settlers / invaders to build the main city in the colony of New South Wales around a harbour rather than elsewhere. For instance, we would say that harbours were very important for shipping and trade in the 18th century, and that a harbour would be the point of supply from the colonists home country (Britain), and that a harbour provided a valuable naval base.

In contrast, if we are asked to provide an *argument* for the claim that Sydney is built around a harbour, we would point to evidence which shows that Sydney is built around a harbour. For instance, we would say

1. Wikipedia says that Sydney was the first city that the British built in Australia.
2. Wikipedia says that Sydney is built around a harbour.
3. This map shows that Sydney is built around a harbour.

Therefore, Sydney is built around a harbour.

This does not explain why Sydney was built around a harbour, but it is how we would convince people that Sydney is built around a harbour. The primary function of arguments is to provide evidence that the conclusion is true.

1.5 Arguments

Here are some examples of arguments, which we can carve up into premises and conclusions, where the premises are supposed to provide a reason for believing the conclusion:

1. Temperature records from weather stations around the world show gradually increasing temperatures since the 1920s.

2. Weather stations are a reliable source of information about temperatures.

Therefore, the Earth has warmed since the 1920s.

Suppose that we wonder whether Trev's brother Dave is coming to visit him. Someone might try to convince us that he is by offering an argument containing evidence that he is coming to stay.

Debbie: Is Trev's brother Dave coming to stay?

Diane: Trev is going to the bottle shop even though he's already got beer in the fridge at home. Trev's brother Dave drinks a lot of beer. Trev's brother Dave must be coming to stay.

Premise 1: Trev is going to the bottle shop.

Premise 2: Trev has already got beer in the fridge at home

Conclusion: Trev's brother Dave must be coming to stay.

Note that in this case the fact that Trev is going to the bottle shop even though he's already got beer in the fridge at home is given as *evidence* for believing that Trev's brother Dave is coming to stay. Why should I believe that Trev's brother Dave is coming to stay? Because Trev is going to the bottle shop even though he's already got beer in the fridge at home. As we will see later in the course, this is not a very strong argument, but for now our aim is just to identify arguments, not to evaluate their strength.

Debbie: Did Trev fall down the stairs? I don't believe he did.

Diane: Yes. We should believe that Trev fell down the stairs because he told me that he did, and he is covered in bruises.

Premise 1: Trev told me he fell down the stairs.

Premise 2: Trev is covered in bruises.

Conclusion: Trev fell down the stairs.

Note that in this case Trev's testimony and his bruises do not *explain* why he fell down the stairs. In fact, they are explained by his falling down the stairs. In this argument, Trev's testimony and his bruises give us reason to believe that he fell down the stairs.

Debbie: What kind of animals are whales descended from?

Diane: The whale has useless bones where its legs would be. Thus, the whale must be descended from animals that did have legs.

Premise 1: The whale has useless bones where its legs would be.

Conclusion: The whale is descended from animals that did have legs.

The premise of this argument offers us a reason to believe that the conclusion is true.

1.6 Distinguishing Arguments and Explanations

How can we recognise an argument, and how can we recognise an explanation? Often it is easier to do this when we have access to the context in which the argument or explanation occurs. e.g. Is someone wondering why Trev fell down the stairs (in which case an explanation would be the appropriate response), or wondering whether Trev fell down the stairs (in which case an argument would be the appropriate response)?

Often when we consider brief examples that are isolated from their usual context, it is hard to distinguish arguments from explanations. Some people suggest we can make this distinction by looking for indicator words that mark out arguments. Often the transition from premises to conclusion is marked by the words "**therefore**", "**thus**", "**so**" or "**hence**". Often premises are indicated by the words "**since**" or "**because**".

e.g. **There is not much water left in Sydney's dam, and we have no reason to expect much rain to fall soon. *Therefore* we should continue to enforce restrictions on water use.**

***Since* there is not much water left in Sydney's dam, and we have no reason to expect much rain to fall soon, we should enforce restrictions on water use.**

One problem with trying to identify arguments by spotting indicator words is that these same indicator words can be used in explanations as well as in arguments. The following examples are explanations, not arguments, but they do contain the indicator words.

e.g. ***Since* Sydney's population has grown and we are going through a drought, Sydney's dam levels are very low.**

Sydney's population has grown and we are going through a drought. *Thus*, Sydney's dam levels are very low.

The Australian Test Cricket team cheated. *Hence* they are unpopular with opposing teams.

Another problem with trying to identify arguments by spotting indicator words is that many arguments are presented without these indicator words.

e.g. There is not much water left in Sydney's dam, and we have no reason to expect much rain to fall soon. We should continue to enforce restrictions on water use.

We have been thinking about two tasks:
- identifying arguments and breaking them into premises and conclusions.
- identifying explanations and breaking them into explananda and explanans.
We cannot perform these tasks simply by spotting indicator words in the claims. These tasks require us to think about the relationship between the claims, and, if possible, about the context in which the claims were made (e.g. the audience to whom the claims are made, the knowledge possessed by the audience, the situation that prompted the claims, the intentions of the claimant, etc.). **Arguments consist of a series of claims, some of which are intended by the arguer to give us reason to believe that another of the claims is true. Explanations consist of a series of claims, some of which are intended by the explainer to account for the fact that another of the claims is true, or to make sense of that other claim.**

Is the following an argument or an explanation?

Athens hosted the first Modern Olympics in 1896 because it was the capital of the nation that hosted the Ancient Olympics; namely, Greece.

Explanation.

Athens hosted the first Modern Olympics in 1896. I saw a doco about the Olympics which said that Athens was the host city, and Wikipedia also says that the games were held in Athens.

Argument.

Everybody likes monkeys. I did a survey of which animals people like and monkeys were universally liked.

Argument.

Everybody likes monkeys. This is because monkeys are cute and cheeky, and not scary like some other animals.

Explanation.

1.7 Linked v. Convergent Premises

As we have seen, arguments have one or more premises that support a conclusion. There is an important distinction between two ways in which premises can support a conclusion.

Linked premises are interdependent, and support the conclusion only if taken together.

Convergent premises are independent, and each on its own provides some support for the conclusion. e.g.

1. **Trev knows how to catch fish.**
2. **Trev knows how to start a fire.**
3. **Trev is a friendly person.**

Conclusion: Trev would be a good companion if you were marooned on a desert island.

The premises in this argument are convergent. Each one, considered on its own, offers some support for the conclusion. You might be convinced by this argument even if you reject some of the premises, e.g. even if Trev cannot catch fish. One way to show that this argument gives no support at all to the conclusion would be to show that every premise is false. (As we shall see later, another way to undermine an argument is to show that it has the wrong form, and hence, even if its premises were true, the conclusion would not be supported by those premises.)

1. **You have to get to Soho.**

2. **You can get to Soho only on the F train or on the R train.**

3. The F train is not running.

Conclusion: You have to catch the R train.

1. **Everybody in the room speaks English.**

2. **Sarah is in the room.**

Conclusion: Sarah speaks English.

The premises in these arguments are linked. The premises provide some support for the conclusion only if they are taken together. You would be convinced by the argument only if you accepted all of the premises. One way to show that these arguments give no support at all to the conclusion would be to show that any one of the premises are false.

e.g. You can totally undermine the first argument simply by showing that the F train is running, or by showing that that there are other ways to get to Soho, or by showing that you do not have to get to Soho. Similarly, you can totally undermine the second argument by showing that Sarah is not in the room, or that not everyone in the room speaks English.

Do the following arguments contain linked or convergent premises?

1. Dogs are smarter than cats.

2. Cats are smarter than rabbits.

3. Rabbits are smarter than wombats.

Conclusion: Dogs are smarter than wombats.

Linked.

1. Dogs are smarter than cats.

2. Dogs are friendlier than cats.

3. Dogs keep away burglars but cats don't.

Conclusion: Dogs are better pets than cats.

Convergent.

1.8 Implicit Premises

Often when people put forward an argument they do not explicitly include every premise (i.e. they don't write or say every premise).

e.g. He is much bigger than you, so you should not make him angry.

Premise 1: He is much bigger than you.

Premise 2 (implicit): People who are much bigger than you could harm you when they are angry.

Conclusion: You should not make him angry.

When we are trying to assess such arguments we have to decide which, if any, implicit premises need to be made explicit. This is a tricky business because sometimes it is hard to tell whether an arguer is implicitly endorsing a premise, or whether she has not realised the premise is required, or whether she would actually reject what we think of as the implicit premise. In ascribing implicit premises we

should be guided by both **the arguer's intentions** (which we can often discern by asking her what she means, or by her related behaviour), and by a **principle of charity.** According to the principle of charity we should interpret claims and arguments that are unclear or incomplete so as they make sense, i.e. so as they are closer to being true or rational. The idea is that if we need to add in an implicit premise, we should add one which makes the argument stronger.

e.g. He is much bigger than you, so you should not make him angry.

There could be many implicit premises that the arguer intended.

Premise 1: He is much bigger than you.

Premise 2 (implicit): People who are much bigger than you have heart attacks when they get angry.

Conclusion: You should not make him angry.

Premise 1: He is much bigger than you.

Premise 2 (implicit): People who are much bigger than you explode when they are angry.

Conclusion: You should not make him angry.

It is also possible that the arguer did not intend for there to be any extra premises. e.g. the arguer (inexplicably) believes that bigger people simply should not be made angry.

In choosing the implicit premise "People who are much bigger than you could harm you when they are angry", we relied on the principle of charity. It is the premise that makes the argument strongest. Moreover, it is likely to fit with the arguer's intentions. If we have contrary evidence about the arguer's intentions (e.g. if the arguer says that big people explode when angry), then we should be guided those intentions rather than the principle of charity.

Some implicit premises are so obvious that they do not need to be made explicit, except in unusual circumstances.

e.g. Premise 1: He is much bigger than you.
Premise 2 (implicit): People who are much bigger than you could harm you when they are angry.
Premise 3 (implicit): You should not do something if it is likely to result in your being harmed.
Conclusion: You should not make him angry.

In most cases, this third premise is obvious enough that we can take it for granted without making it explicit. But note that in some cases we should make it explicit. e.g. If this is a case in which there is some other benefit which might come from making the big guy angry (in which case some people will think that premise 3 is false). As we shall see, if we are trying to construct deductively valid arguments, we also have to make very obvious implicit premises explicit.

1.9 More Complex Arguments

It will be useful for us to be able not only to recognise arguments, but also to identify their structures. As we have seen, arguments consist of premises and conclusions, and the premises might be linked or convergent. Arguments can have more complex structures, though, which contain sub-premises that give us reason to believe the main premises, that, in turn, give us reason to believe the conclusion.

I can't get into the nightclub. To get into the nightclub you have to pay $20. I have to get home, and the only way I can get home is by taxi. A taxi ride home costs $20. I have only $30 left. I would need at least $40 if I was to get into the nightclub.

How can we identify the structure of this argument? First, find the ultimate conclusion.

Conclusion: I can't get into the nightclub.

Then identify the main premises that support this conclusion.

Premise 1: I would need at least $40 if I was to get into the nightclub.
Premise 2: I have only $30 left.

Then look for any sub-premises which support the main premises. No support is offered for premise 2, but a sub-argument is offered to support premise 1.

Sub-premise 1.1: To get into the nightclub you have to pay $20.
Sub-premise 1.2: The only way I can get home is by taxi, and a taxi ride home costs $20.
Sub premise 1.3: I must be able to get home.
Therefore
Premise 1: I would need at least $40 if I was to get into the nightclub.

We can set out the whole argument in a tree structure.

Sub-premise 1.1: To get into the nightclub you have to pay $20.
Sub-premise 1.2: The only way I can get home is by taxi, and a taxi ride home costs $20.
Sub premise 1.3: I must be able to get home.

    Premise 1: I would need at least $40 if I was to get into the nightclub.
    Premise 2: I have only $30 left.
    Conclusion: I can't get into the nightclub.

Here is another example of a more complex argument which we need to set out in a way that makes its structure clear.

We should only give money to charities that make the world a better place. We should not give money to Greenpeace, because they are against genetic modification. Genetic modification offers the prospect of cheap, high-yield crops that do not need any pesticides and that pose minimal risks to the environment and to people's health. The world's population is growing, so we need cheap, high yield crops to feed everyone. Thus, genetic modification promises to make the world a better place. In opposing genetic modification, Greenpeace is not making the world a better place.

How can we identify the structure of this argument? First, find the ultimate conclusion.

Conclusion: We should not give money to Greenpeace.

Then, identify the main premises that support this conclusion.

Premise 1: We should only give money to charities that make the world a better place.
Premise 2: Greenpeace is not making the world a better place.
Therefore
Conclusion: We should not give money to Greenpeace.

Then, identify the sub-premises that support each of the main premises. In this argument, no sub-premises are offered in support of premise 1, but some are offered in support of premise 2. (Premise 2 is the conclusion of this sub-argument.)

Sub-premise 2.1: Genetic modification promises to make the world a better place.
Sub-premise 2.2: Greenpeace opposes genetic modification.
Therefore

Premise 2: Greenpeace is not making the world a better place.

Then, identify the sub-sub-premises that support sub-premise 2.1.

Sub-sub-premise 2.1.1: We need cheap, high yield crops to feed everyone.

Sub-sub-premise 2.1.2: Genetic modification offers the prospect of cheap, high-yield crops that do not need any pesticides and that pose minimal risks to the environment and to people's health.

Therefore

Sub-premise 2.1: Genetic modification promises to make the world a better place.

There is one more step in the argument, which supports Sub-sub-premise 2.1.2.

Sub-sub-sub-premise 2.1.1.1: The world's population is growing.

Therefore

Sub-sub-premise 2.1.1: We need cheap, high yield crops to feed everyone.

We can set out the whole argument in a tree structure.

2.1.1.1: The world's population is growing.

    2.1.1: We need cheap, high yield crops to feed everyone.

    2.1.2: Genetic modification offers the prospect of cheap, high-yield crops that do not need any pesticides and that pose minimal risks to the environment and to people's health.

        2.1: Genetic modification promises to make the world a better place.

        2.2: Greenpeace opposes genetic modification.

            2: Greenpeace is not making the world a better place.

            1: We should only give money to charities that make the world a better place.

                Conclusion: We should not give money to Greenpeace.

It is very important that we are able to identify the structure of complex arguments, because doing so better enables us to understand and evaluate the argument. e.g. If you wanted to attack the previous argument, there are many points at which you could do so.