

# PHIL2642: Critical Thinking

## Lecture 1

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The University of Sydney

# Critical Thinking logistics

- **Lecture**

- Thursday 10am-12pm in S223 in the Quadrangle

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- **Tutorials**

- Thursday 1-2pm in S421 in the Quadrangle
- Thursday 2-3pm in S225 in the Quadrangle
- Friday 1-2pm online
- Friday 2-3pm online

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# Critical Thinking Logistics

- If you don't attend the online lecture, you won't understand the subsequent tutorial.
- Lecture notes will go online each week after we have done the lecture. Tutorial exercises and answers will go online after the tutorials.

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- Critical Thinking is harder than it looks. Attend the lectures and use the chat window to participate. (And stay off the internet! Stop messaging! Give this your undivided attention.)
- Please turn on your cameras. Facial expressions are a hugely important part of communication.
- Attend your tutorials and do the exercises.
- Tutor: Jesse Miller

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# Assessment

- Online quiz in week 5, at 10am on Thursday 1<sup>st</sup> September. 1 hour. You must do the quiz at this time along with everyone else, unless you are in a very different timezone and you arrange an alternative with me. Worth 20%.

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- Essay due Monday 24th October. 1500 words. Worth 30%.

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- Final Takehome Exam, on a date yet to be specified in the exam period. Worth 50%.
- The quiz and the final takehome exam require you to answer some MCQs and to write short answers. Note that there will be time pressure.

# Support for students

- If you have a question about assessment, due dates, unit content, etc. go to the Canvas site, click on the unit of study outline, and look for the answer.

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- If you still have a question, you can email me or your tutor Jesse.

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- If you need to help managing your stress, or your mental health, etc. please download and use the Sonder app. This app will connect you with someone who can give advice, or help you where necessary.

# Icebreaker

- In the classroom and in your breakout rooms ...

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- Introduce yourself to the other students sitting near you (or in your breakout room) (Turn your cameras on!)  
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- Tell them where in the world you are right now  
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- Tell them what degree and what other subjects you are studying

# Why study Critical Thinking?

- To improve your ability to reason and get at the truth.
- To learn how to think for yourself (develop your intellectual autonomy).
- To acquire familiarity with useful philosophical terminology. (e.g. valid, sound, begs the question, strawman, fallacy) <https://powcoder.com>
- It is fun.
- It helps you win arguments and impress people.
- Suddenly everyone at the University is in favour of it! And employers want employees who can think critically.
- But aren't your reasoning skills already pretty good?

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# The Monty Hall Problem



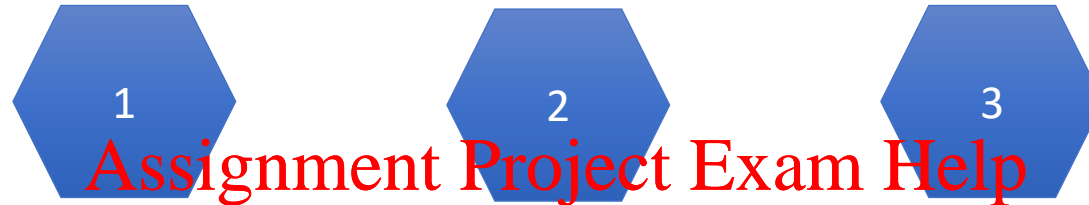
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# A choice between 3 boxes



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- 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 (say, Box 1), the host will open one of the boxes that you didn't pick (say, Box 3), and show you that the keys are not in that box. Finally, the host offers you the chance to change your original selection. Should you...
- change your original selection (e.g. pick Box 2)
- keep your initial selection (e.g. stick to Box 1)
- either; it makes no difference to the likelihood of your winning the car.

# Answer

- Most people choose to stick, or say it makes no difference. Why?
- They think probabilities start out at  $1/3$  for each box, then jump to  $1/2$  when Monty opens a box.

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- Correct answer: You are twice as likely to win if you switch.

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- What happens if you switch every time?
- Correct first pick  $1/3$  of cases, then switch and lose.
- Incorrect first pick  $2/3$  of cases, then switch and win.

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- What happens if you stay every time?
- Correct first pick  $1/3$  of cases, then stay and win.
- Incorrect first pick  $2/3$  of cases, then stay and lose.

# 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 or cards would you have to turn over to test whether this claim is false? (Only turn over the cards that could show that the claim is false.)

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# What do you need to turn over?

- Most people say D and 3.

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- Correct answer: D and 7.

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- Why not 3?
- Why 7?
- “If a card has D on one side then it has 3 on the other” is not equivalent to “If a card has 3 on one side then it has D on the other”.

# Assessing Probabilities

- Suppose there is a disease whose prevalence in Australia 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 the people who in fact don't have the disease are mistakenly diagnosed by the test as having it).

What is the chance that an Australian found to have a positive test result actually has the disease, assuming you know nothing about the person's symptoms?

# Answer

- Median answer: 95%
  - Average answer: 56%
  - Correct answer?
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- Roughly 2% chance.
  - Heuristic: 1 in every 1000 has the disease, and this person gets a positive test result. 50 in every 1000 get a false positive test result. Out of the 51 positive test results, only 1 has the disease.
  - Medical doctors usually get this wrong!

# Assessing Arguments

- 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.

# Conspiracy Theories

- 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.



# Lazy thinking

- When people already have an opinion on a topic, they tend to evaluate arguments about that topic in the following way:

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

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- Don't do this! We need to break this habit.
- **There can be weak arguments (as well as strong arguments) for conclusions that are true.**

# Overcoming Bias

- Don't assess arguments by asking if they argue for the right conclusion.
- Assess arguments by asking if they provide a reason to believe the conclusion.
- 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.

# Arguments

- The word “argument” is ambiguous. It could simply mean “a disagreement or clash”.

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

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- “It’s your turn! You should do it.”
- “No, you idiot, I don’t want to wash the dishes.”
- “Do the dishes, Dave!”
- “No, you do them!”

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- This is not an argument in the philosophical sense of “argument”.

# Arguments

- Let's watch a Monty Python comedy sketch: Argument Clinic.
- <https://www.youtube.com/watch?v=ohDB5gbtaEQ>

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- Michael Palin: "An argument is a collected series of statements designed to establish a definite proposition."
- The kind of argument that interests philosophers consists of **premises** that are supposed to give us a reason to believe the **conclusion**.
- An argument points to **reasons to believe** that a particular claim is true.
- Philosophical arguments between two parties need not be angry, hostile, or unpleasant.
- Arguments contain justification or evidence for believing the conclusion.

# Instead of rational arguments, people regularly offer ...

- Mere contradiction of the claim being made. e.g. No, you're wrong. You're confused. This is a mistake. I disagree. The reality is ....

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- Repetition of the conclusion. e.g. Politicians staying “on message”, repeating the same slogan.

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- Abuse of the opponent. e.g. This is ridiculous. You would have to be an idiot to believe that. You are being foolish. Your views are old-fashioned.
- In this unit we are going to learn how to argue properly, to do more than merely repeat conclusions and abuse our opponents.

# Arguments

- **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.

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- **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.

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**Premise 1**

**Premise 2**

**Conclusion**

# The ambiguity of the word “rational”

- “Rational” has two different meanings:
- **1)** A rational process = a process in which you weigh up reasons, deliberate, and make a decision.

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- Sometimes people do this well, but sometimes they do it badly and make mistakes. When they do it badly, we say that they were being irrational! This is a bit confusing.

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- **2)** A rational process = a process in which you *correctly* weigh up reasons, deliberate, and make a decision.
- When we study philosophy we want to learn how to reason well. We learn how to construct and assess arguments.

# Assessing Arguments

- The typical function of an argument is to convince the audience that the conclusion is true. (Sometimes we do other things with arguments too.)
- 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).

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# 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.**

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- 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.**

# Mere claims are not arguments

- The Vikings landed in North America long before the Spanish did.

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- 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.

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- Bears are scary!
- An argument has premises and a conclusion. The premises are supposed to provide evidence for the conclusion.

# Explanations are not arguments

- **Explanations** consist of the thing or things that need explaining (the explanandum, or (plural) explananda) and the thing does the explaining (the explanans).
- The explanans **makes sense of** the explanandum (often by pointing to the cause of the explanandum).
- e.g. **Why is Trev wearing red underpants over the top of his jeans?**

# Why?

- 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.
- Explanandum: Trev is wearing red underpants over his jeans
- Explanans: Trev is going to a fancy dress party dressed as Superman.



# 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.

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- 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.

# Explanations

- **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.**  
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- **The whale has useless bones where its legs would be. This is because whales are descended from animals that did have legs.**  
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# Arguments v. Explanations

- Sydney, the first city that British colonists built in Australia, is not located inland but is located around a harbour.

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- Explain why Sydney, the first city that British colonists built in Australia, is not located inland but is located around a harbour.
- Give an argument for the conclusion that Sydney, the first city that British colonists built in Australia, is not located inland but is located around a harbour.
- Arguments are designed to convince people that a claim is true.



Explanation: Colonisation, naval asset, easy supply from Britain, etc.





Arguments provide evidence that Sydney is built around a harbour



1. Wikipedia says that Sydney was the first city that the British built in Australia.

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2. Wikipedia says that Sydney is build  
around a harbour.

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3. This map shows that Sydney is built around a harbour.



Therefore, Sydney is built around a harbour.

# Arguments v. Explanations

- Explain why driving when drunk is dangerous.
- Explain why the Titanic sank.

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- Give an argument for the conclusion that driving when drunk is dangerous.
- Give an argument for the conclusion that the Titanic sank.

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# Arguments can look like explanations

- **Trev is going to the bottle shop even though he's already got beer in the fridge at home. Trev's brother Dave must be coming to stay.**

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- 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 is coming to stay.

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# More arguments

- **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.**

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- Premise 1: Trev told me he fell down the stairs.
- Premise 2: Trev is covered in bruises.
- Conclusion: Trev fell down the stairs.

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# The difference

## Explanation

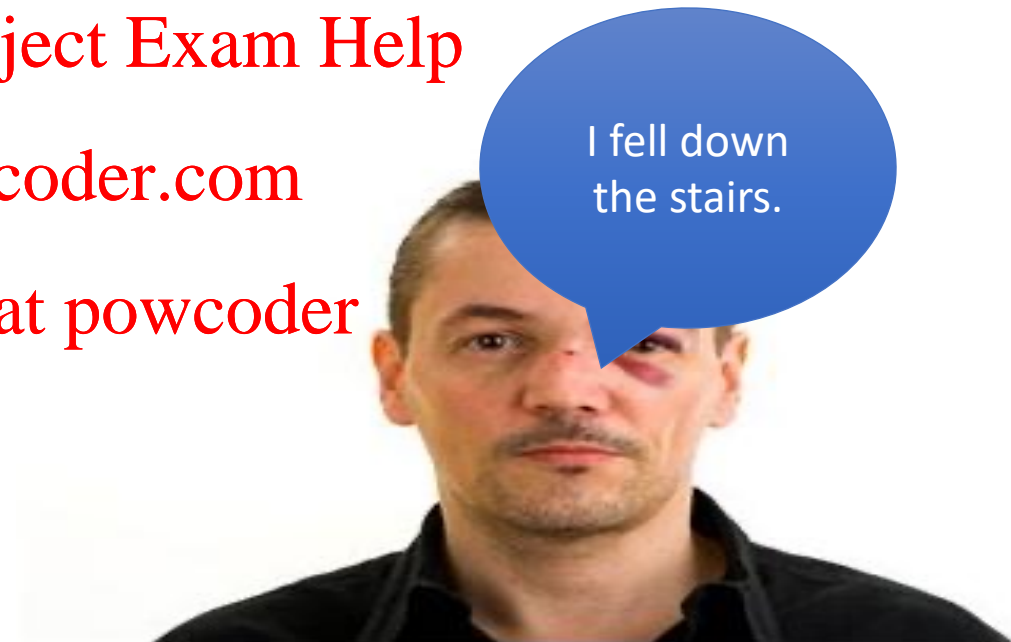


## Evidence in the argument

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# More arguments

- **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.**  
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- **Premise 1: The whale has useless bones where its legs would be.**
- **Conclusion: The whale is descended from animals that did have legs.**

# Indicator words?

- Does the presence of the word “therefore” or “since” show that we have an argument?

- These words do occur in some arguments.

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- 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.

# But indicator words appear elsewhere!

- ***Since*** Sydney's population has grown and we are going through a drought, Sydney's dam levels are very low.  
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- Sydney's population has grown and we are going through a drought.  
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***Thus,*** Sydney's dam levels are very low.  
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- The Australian Test Cricket team cheated. ***Hence*** they are unpopular with opposing teams.



# Not all arguments have indicator words

- **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.**

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- To spot an argument, you need to ask what is going on. Is this speaker/writer offering you evidence that she thinks might provide reasons for believing a conclusion?

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# Overview

- **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.
- **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.**

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# Questions: Argument or explanation?

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

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- 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.

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- Everybody likes monkeys. I did a survey of which animals people like and monkeys were universally liked.
- Everybody likes monkeys. This is because monkeys are cute and cheeky, and not scary like some other animals.