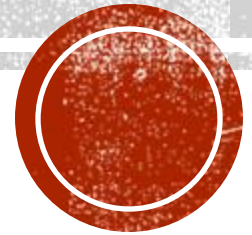


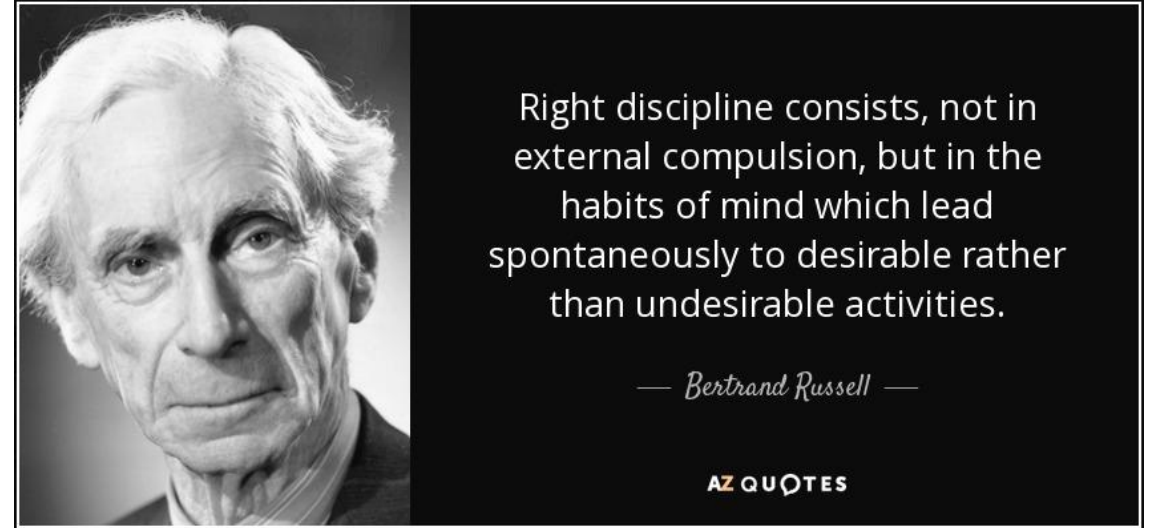
# INTRODUCTION TO CRITICAL THINKING

Lecture 1



# STARTING RIGHT

- Online learning can be challenging
- Suggestions:
  - Making Time
  - Right Space: Physically and Mentally
  - Active Learning



# PRELIMINARIES

- What is critical thinking?
- Why critical thinking?



# WHAT?

- “KI students should be able to **analyse and critique information and arguments**, and **determine their validity in a reasoned and substantiated manner**. KI students should be capable of reflecting on their own thinking processes and demonstrate an awareness of how these processes could be improved” (Syllabus)



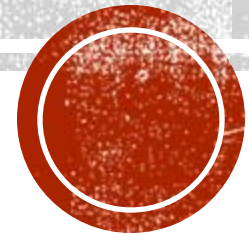
# WHY?

- Allows for the careful evaluation and critique of one's claim to knowledge
- To call something knowledge is to bestow some status and power upon it
- E.g.: “I believe that the Earth is round” vs “I know that the Earth is round”
- Qn: Which has greater implications for further knowledge and action?



# UNIT A

The Make-Up Of An Argument



# UNIT A: THE MAKE-UP OF AN ARGUMENT

- Go to YouTube and search for “Monty Python Argument Clinic”
- Click on the one that is 3:07 long by “unmusedtails”



# WHAT IS AN ARGUMENT?

- “An argument is a connected series of statements to establish a definite proposition.”
- “An argument is an intellectual process...”
- “... contradiction is just the automatic gainsaying of anything the other person says”
- i.e. an argument is used to **persuade** the other of the **conclusion(s)**
- Reasons, aka **premises**, are offered for this purpose





# EXAMPLES

- 1: *“He must be older than he says he is. He told us he was thirty, but he has a daughter who is at least twenty-five years old.”*
  - Conclusion?
  - Premises/ Reasons?
- 2. *“The bus is late. It must have broken down.”*
  - Conclusion?
  - Premises/ Reasons?



# IDENTIFYING PROPOSITIONS

- Proposition: a sentence that has a truth-value, i.e. can be either true or false.
- Examples of Propositions:
  - Wei Lin is in RI this year
  - Today is Tuesday
  - Software piracy is unethical and illegal
- Examples of sentences that are **not** propositions:
  - Do not walk on the grass
  - Is today Friday?

Why are these not considered to be propositions?



# IDENTIFYING ARGUMENTS

- Arguments must have both premises and conclusions
- Is an argument present? Look for **indicator words** for premises and/or conclusion
- Premise:       the building block(s) of an argument  
                  **not proven by logic (i.e. not the result of an argument)**  
                  has a truth value (i.e. a proposition)
- Conclusion:   the end point of an argument  
                  proven by logic  
                  has a truth value (i.e. a proposition)



# PREMISE AND CONCLUSION INDICATORS

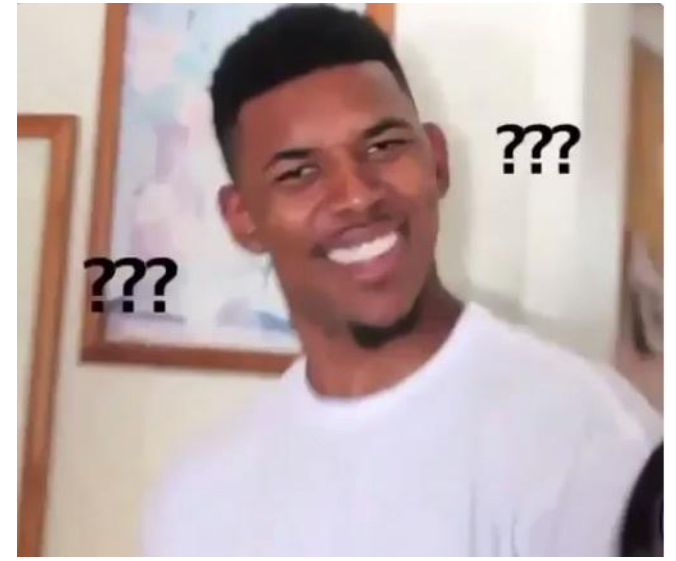
| Premise Indicators  | Conclusion Indicators  | Neither                 |
|---|--|-------------------------|
| As<br>As indicated by<br>Because<br>For<br>For the reason that<br>Given that<br>In light of<br>In that<br>Inasmuch as<br>Owing to<br>Seeing that<br>Since | Accordingly<br>As a result<br>Consequently<br>Entails that<br>For this reason<br>Hence<br>Implies that<br>It follows that<br>It must be that<br>So<br>Therefore<br>Thus<br>Wherefore | Nevertheless<br>However |



# ARGUMENTS VS EXPLANATIONS

- The two are often confused
- Arguments: attempt to **demonstrate** that something is true, i.e. conclusion is **not** assumed to be true
- Explanations: conclusion is **assumed** to be true already
- Test if an argument is present:
  - Author/speaker intends to **prove** that the conclusion is true
  - Presence of Premise/Conclusion indicator words

The converse holds for explanations.



# QUIZ TIME!

- Explanation or Argument?



# PREMISES VS EXAMPLES

- Also often confused
- Premise: part of an argument to **demonstrate** that the conclusion is true
- Example: **evidence** to show that a premise is true



# PREMISES VS EXAMPLES

- Eg A: Our street lights are too dim. **That is why** we have more accidents than we should.

When converted into Standard Argument Form (SAF):

P1: We have more accidents than we should

P2: If P1, then our street lights are too dim (implicit)

C: Our street lights are too dim (P1, P2; modus ponens)

- Eg B: (same as Eg A but add the following) The global average of accidents in a single year is 15,000. In our city however, we have had 17,000 accidents this year.
- These additional statements are evidence for P1, i.e. they are examples.





# PREMISES VS EXAMPLES

- Often, we can **infer** a premise from an example, especially if the premise has not been explicitly stated.
- Eg C: Our street lights are too dim. That is why even though the global average of accidents in a single year is 15,000, we have had 17,000 accidents instead.
- Conclusion is explicitly stated (our street lights are too dim)
- But the premise isn't – we have to **infer** from the examples/evidence given
- P1: We have had more accidents than we should



# IMPLICIT PREMISES & CONCLUSIONS

- Not all premises are explicitly stated (cf. Eg C)
- Arguments with such implicit or suppressed premises are called *enthymemes*.
- This can happen too with conclusions.
- Usually happens when the premises/conclusions are so obvious that it does not require mentioning



# IMPLICIT PREMISES

- What is left unsaid/implied in the following examples?
- 1) All men are mortal. So Socrates is mortal.
- 2) The match will be cancelled if it rains or snows, but one of these will happen.
- 3) It will either rain or snow. So the match will be cancelled.
- Note: it is **very important** to pick out implicit premises as sometimes, they are *smuggled* into the argument such that the argument appears sound when it actually isn't.



# HOMEWORK

- Exercise A in lecture notes
- For each of the following passages: Decide whether each of the following cases contains an argument. If it does not, write 'N/A'.
- If it does, identify its premises and conclusion by underlining the appropriate propositions and writing 'C' under the conclusion and 'P' under the premises. Pull out the implicit premises
- **Eg.** Bob is a dog and all dogs are black. So Bob is black.  
P1 P2 C



# LET'S DO A FEW TOGETHER

- 1) Pets are good for you. Research has shown that pet owners are less likely than other people to be depressed or to suffer from high blood pressure.
- 2) A disease found in the faeces of cats can cause miscarriages if it infects pregnant women. Most cat owners are probably immune to this disease. Rabbits can spread listeriosis and salmonella.

