



ADVANCED ANALYTIC RIGOUR

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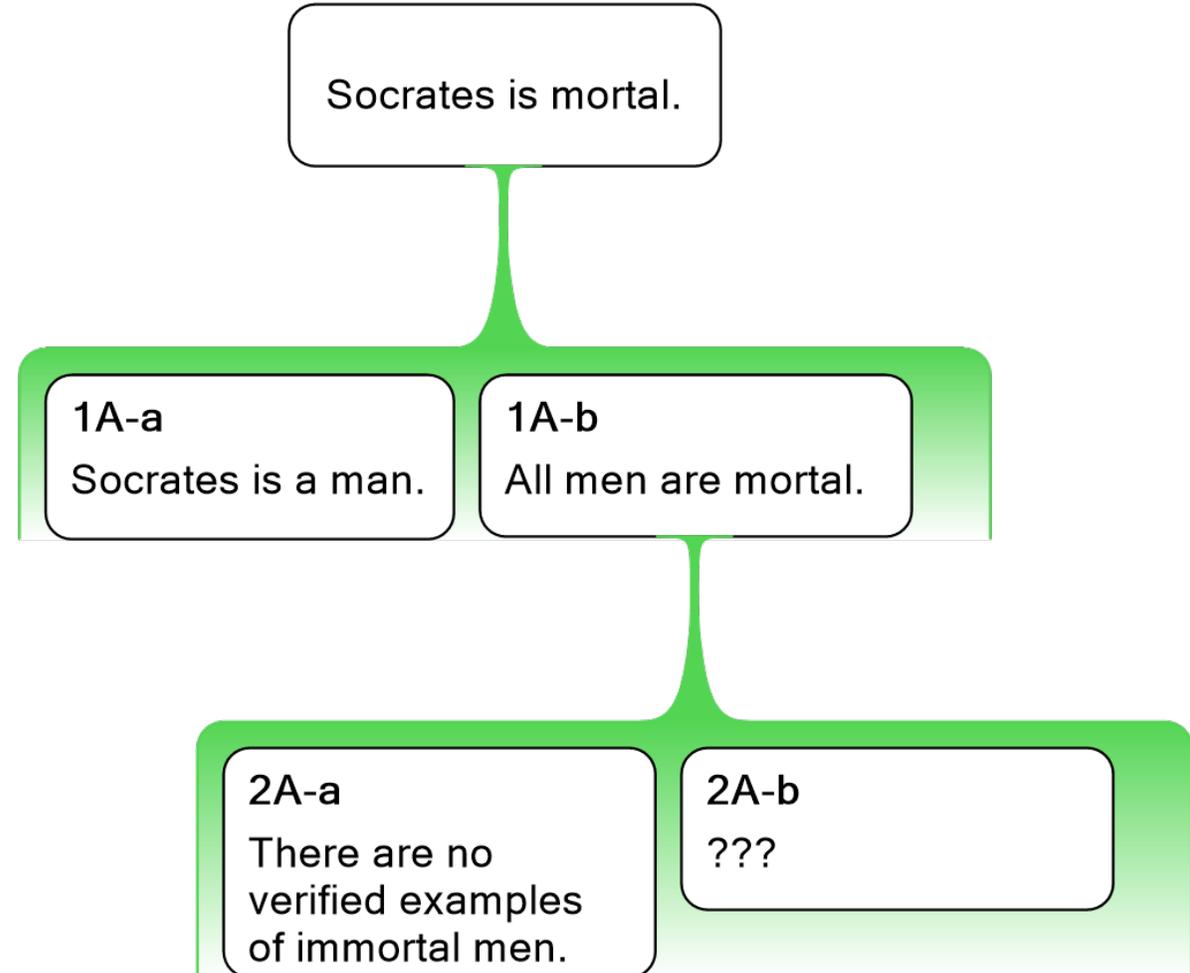


October 2020

- Review of the parts of argument
- Evaluating inferences
- Argument analysis practice
- Complexities with validity due to language
- Analysing real arguments

Argument terminology

- **Claim:** A sentence that asserts that something is the case.
- **Premise:** A claim put forward in support of a premise.
- **Conclusion** (or contention): A claim that is being argued for and supported by reasons.
- **Reason:** A set of claims that support a conclusion.
- **Objection:** A set of claims that oppose a conclusion. (Or argue for the negation of the conclusion.)
- **Argument:** A set of reasons and objections that argue for or against a claim. (i.e. a set of claims that capture some reasoning about the conclusion.)
- **Co-premises:** Premises that are part of the same reason or objection.
- **Inference:** A reason and its conclusion.
- **Intermediate conclusion:** A claim that is a conclusion in one inference, but a premise in another.
- **Unstated assumption:** A claim that is not explicitly stated, but is implied or required by the argument



Review Poll

Sir Roger Hollis, Director General of MI5 (1956-66) was a long-term Soviet agent.

1A-a
There was a GRU mole in MI5 between 1940 and 1945 under the codename ELLI.

1A-b
ELLI could either be Leo Long or Roger Hollis.

1A-c
Hollis is a more plausible candidate than Long.

2A-a
GRU defectors Ismail Akhmedov and Igor Gouzenko both independently claim this.

2B-a
In 1945 Commissar for State Security Merkulov informed Stalin that Gouzenko had exposed ELLI in MI5.

2C-a
ELLI had unrestricted access to files on Russia, counter-espionage and nuclear secrets between 1941 and 1945.

2D-a
It is unlikely to have been Long.

2D-b
It probably could have been Hollis.

3A-a
Long did not work for GRU but for the KGB.

3B-a
Hollis aroused the suspicions of senior and responsible US intelligence and counter-intelligence officials.

Review model answers

1. Sound Inferences



Validity & Soundness

🏠 > News > Politics

Boris Johnson: My vision for a bold, thriving Britain enabled by Brexit

Follow ▾

BORIS JOHNSON
FOREIGN SECRETARY

15 SEPTEMBER 2017 • 9:30PM

“And yes – once we have settled our accounts, we will take back control of roughly £350 million per week. It would be a fine thing, as many of us have pointed out, if a lot of that money went on the NHS”.



Brexit will result in a thriving Britain.

We will take back control of roughly £350 million per week.

[Britain could use that £350 million per week to thrive.]

It would be a fine thing, as many of us have pointed out, if a lot of that money went on the NHS.

Brexit will result in a thriving Britain.

We will take back control of roughly £350 million per week.

[Britain could use that £350 million per week to thrive.]

£350 million is roughly what we would send to the EU budget if it wasn't for the UK's budget rebate.

The impact on the economy from changes to trade after leaving the EU is likely to be far bigger than savings from the UK's membership fee.

It would be a fine thing, as many of us have pointed out, if a lot of that money went on the NHS.

THIS IS YOUR MACHINE LEARNING SYSTEM?

YUP! YOU POUR THE DATA INTO THIS BIG PILE OF LINEAR ALGEBRA, THEN COLLECT THE ANSWERS ON THE OTHER SIDE.

WHAT IF THE ANSWERS ARE WRONG?

JUST STIR THE PILE UNTIL THEY START LOOKING RIGHT.





Donald J. Trump ✓

@realDonaldTrump



Ice storm rolls from Texas to Tennessee - I'm in Los Angeles and it's freezing. Global warming is a total, and very expensive, hoax!

2:13 AM · Dec 7, 2013



3.1K



4.6K people are Tweeting about this

Global warming is a
hoax.

The USA had a
very cold winter in
2013.

There was an ice
storm from Texas
to Tennessee.

Los Angeles was
freezing.

Global warming is a
hoax.

The USA had a
very cold winter in
2013.

[If global warming
was real we
wouldn't have cold
winters.]

There was an ice
storm from Texas
to Tennessee.

Los Angeles was
freezing.

Global warming is an
increase in the average
global temperatures,
there will still be regional
and seasonal variation.

Example: Validity 1



Harry was born in Wollongong.

Wollongong is in Australia.

Therefore,

Harry was born in Australia.

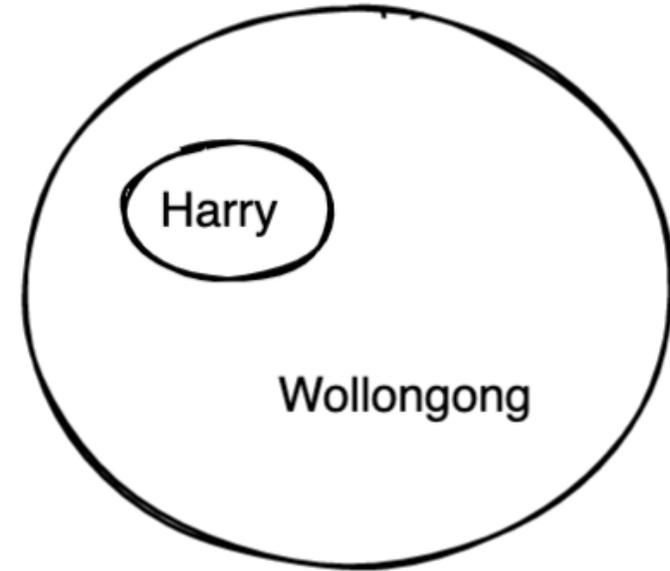
Example: Validity 1

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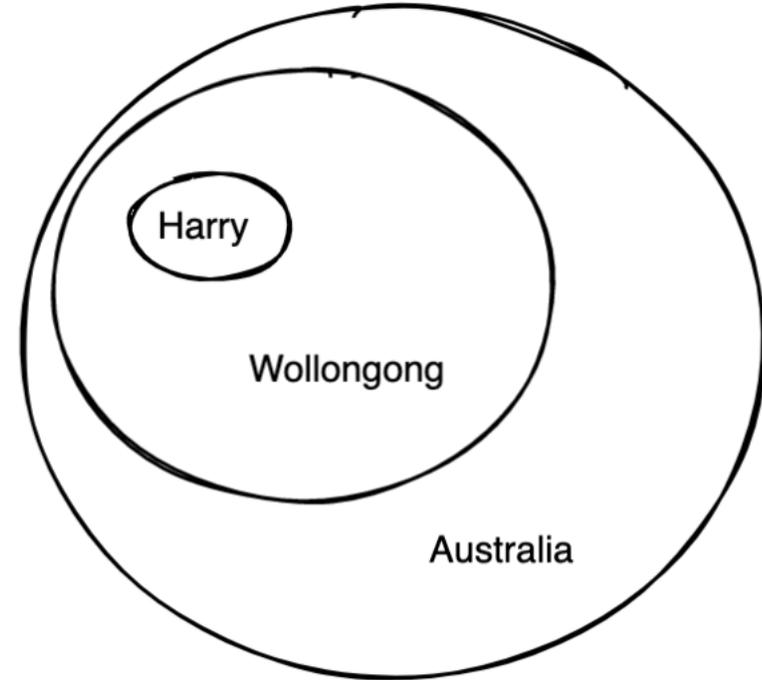
Example: Validity 1

Harry was born in Wollongong.

Wollongong is in Australia.

Therefore,

Harry was born in Australia.



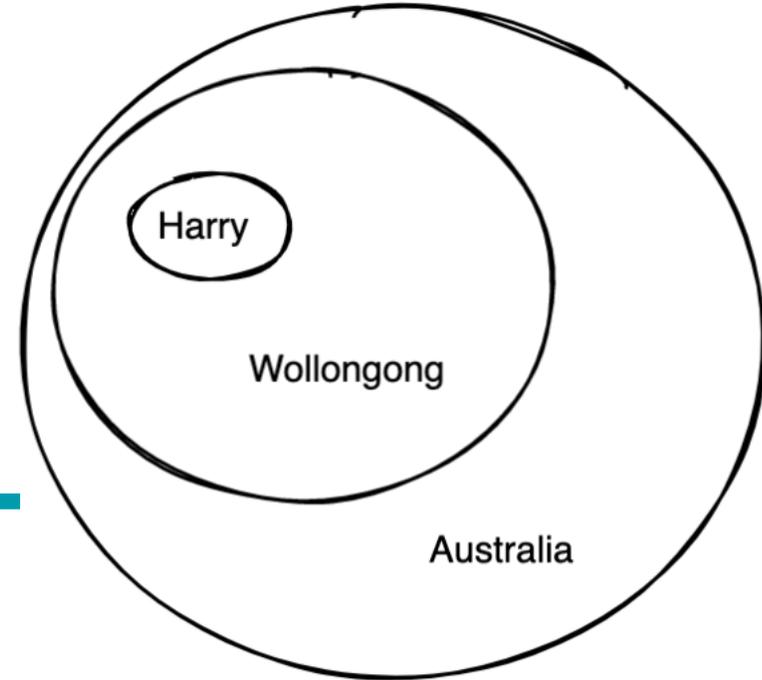
Example: Validity 1

Harry was born in Wollongong.

Wollongong is in Australia.

Therefore,

Harry was born in Australia.



Valid

Example: Validity 2



Harry was born in Australia.

Wollongong is in Australia.

Therefore

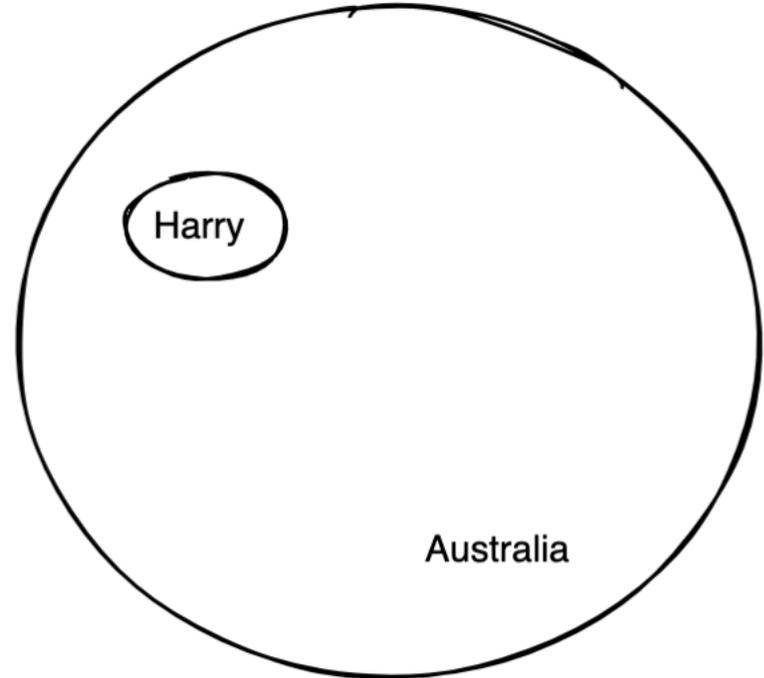
Harry was born in Wollongong.

Harry was born in Australia.

Wollongong is in Australia.

Therefore

Harry was born in Wollongong.

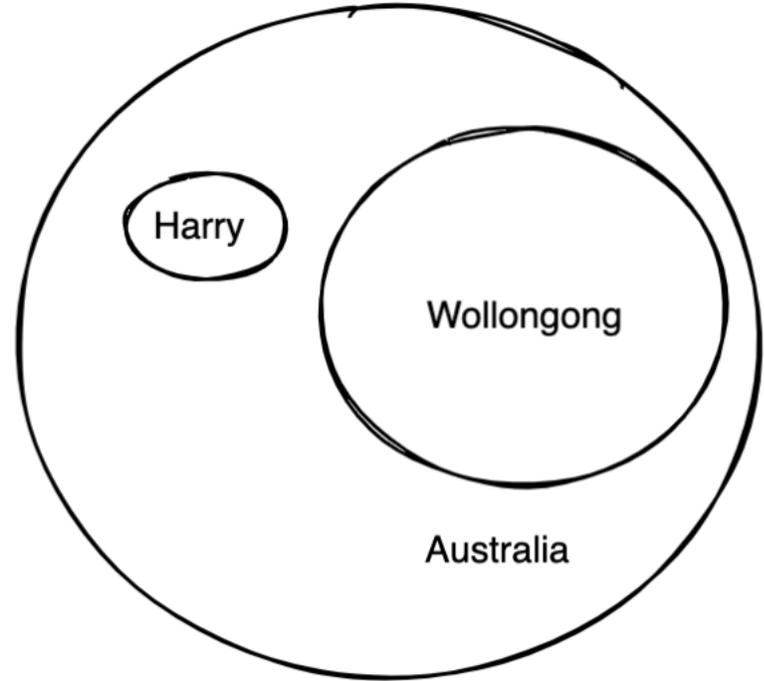


Harry was born in Australia.

Wollongong is in Australia.

Therefore

Harry was born in Wollongong.



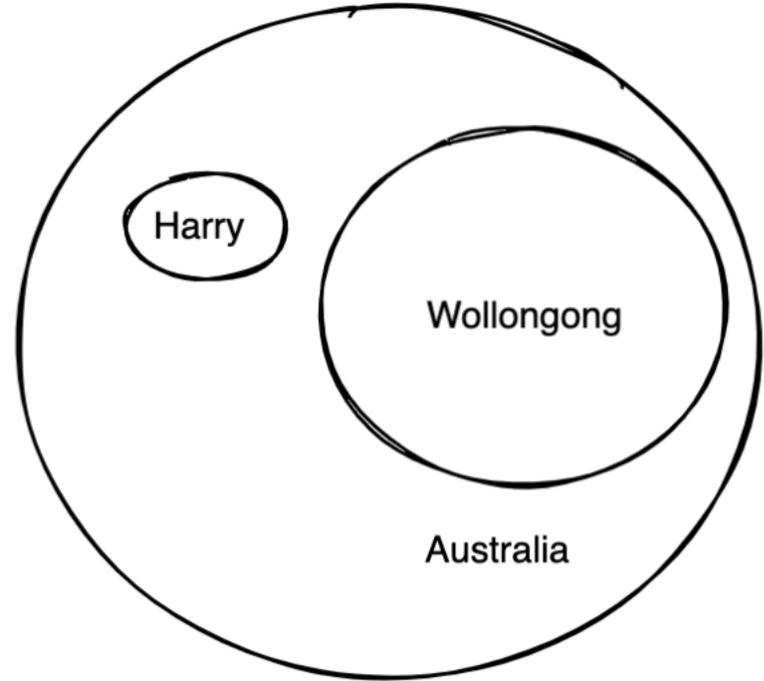
Example: Validity 2

Harry was born in Australia.

Wollongong is in Australia.

Therefore

Harry was born in Wollongong.

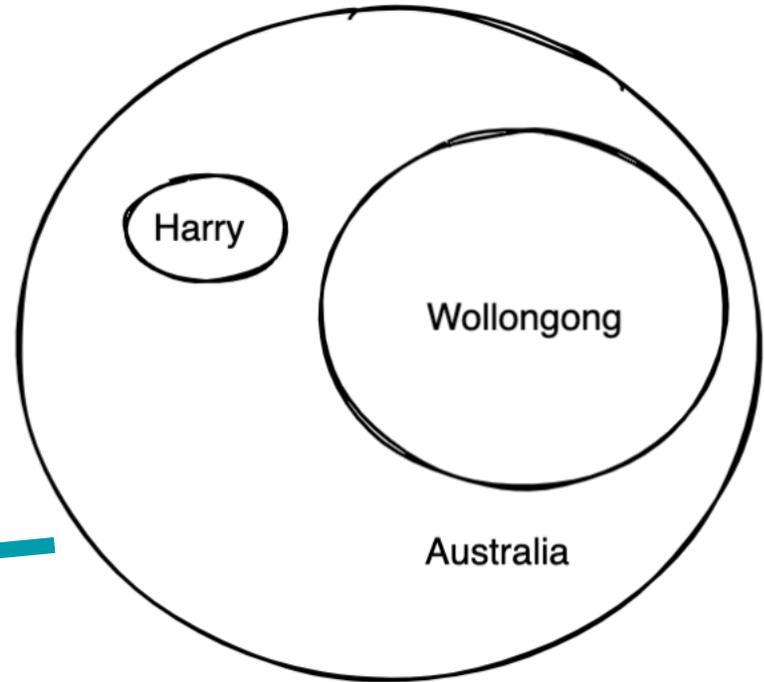


Harry was born in Australia.

Wollongong is in Australia.

Therefore

Harry was born in Wollongong.



Invalid

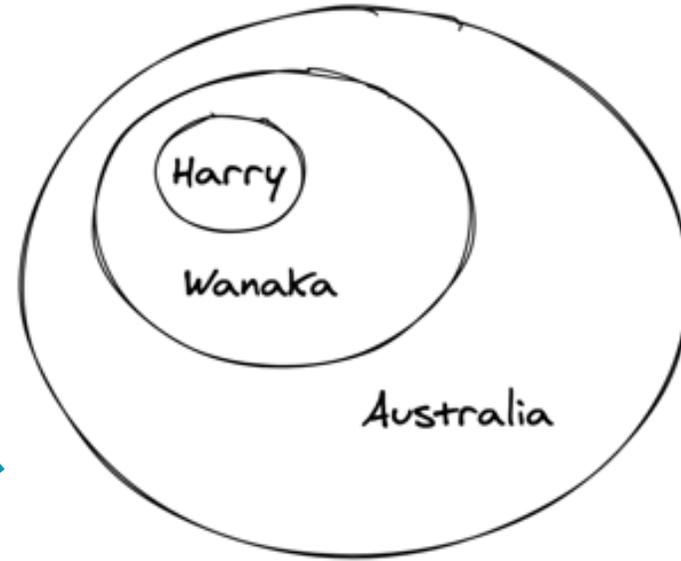
Example: Soundness

Harry was born in Wanaka

Wanaka is in Australia.

Therefore

Harry was born in Australia.



Valid

Example: Soundness

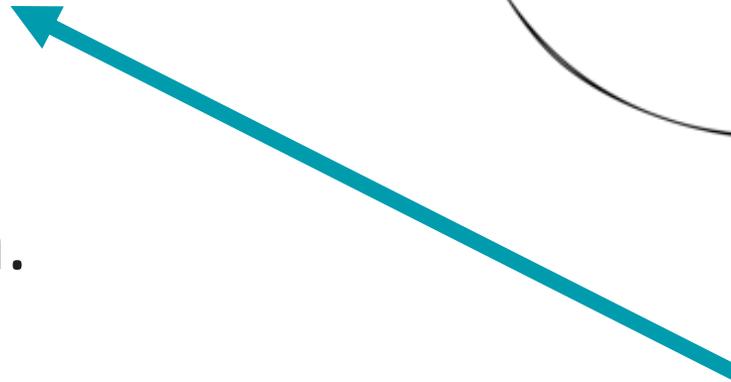
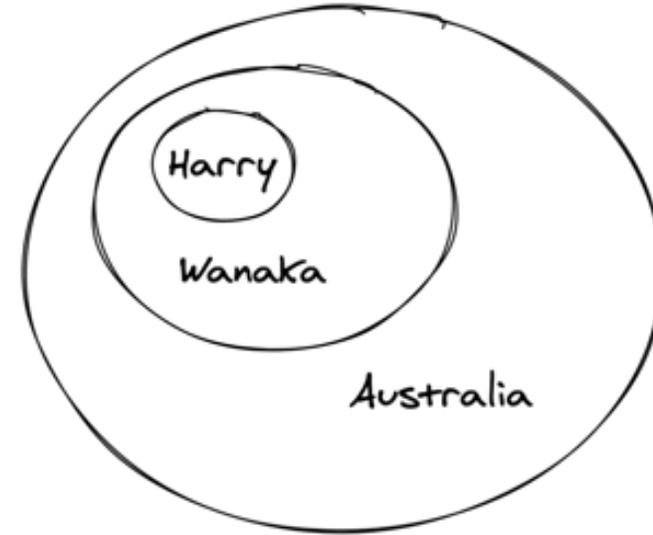
Harry was born in Wanaka

Wanaka is in Australia.

Therefore

Harry was born in Australia.

Unsound



FIRST DATE WITH A LOGICIAN

These Venn Diagrams will save us a lot of time. We'll see where you fit in, where I fit in, and if any of it overlaps.



"Now, I'll give you one example: The change to fuel excise, the people that actually pay the most are higher income people, with an increase in fuel excise and yet, the Labor Party and the Greens are opposing it. They say you've got to have wealthier people or middle-income people pay more. Well, change to the fuel excise does exactly that. The poorest people either don't have cars or actually don't drive very far in many cases. But, they are opposing what is meant to be, according to the Treasury, a progressive tax."

The following day, Mr Hockey issued a media release explaining his comments.

He said his statement relied on data from the Australian Bureau of Statistics, which showed that the 20 per cent of households with the highest incomes pay over three times more in fuel tax than the 20 per cent of households with the lowest incomes.

"The Australian Bureau of Statistics data is not something that I've concocted, it is the reality. These are dealing with the facts," Mr Hockey said.

"The fact of the matter is that I can only get the facts out there and explain the facts, how people interpret them is up to them."

The fuel excise is a progressive tax.

The people that actually pay the most are higher income people.

The poorest people either don't have cars or actually don't drive very far in many cases.

Data from the Australian Bureau of Statistics, which showed that the 20 per cent of households with the highest incomes pay over three times more in fuel tax than the 20 per cent of households with the lowest incomes.

The Australian Bureau of Statistics data is not something that I've concocted, it is the reality.

The fuel excise is a progressive tax.

1A-a

The people that actually pay the most are higher income people.

2A-a

The poorest people either don't have cars or actually don't drive very far in many cases.

2B-a

Data from the Australian Bureau of Statistics, which showed that the 20 per cent of households with the highest incomes pay over three times more in fuel tax than the 20 per cent of households with the lowest incomes.

2B-b

The Australian Bureau of Statistics data is not something that I've concocted, it is the reality.

2C-a

A progressive tax is one where the tax rate increases with a persons ability to pay.

Quiz

Validity and Soundness

Questions?

2. Argument analysis practice



Practice exercises 3: Argument Analysis

3. Evaluating Complex Arguments



1. Identify the explicit structure
2. Consider the underlying structure and important unstated claims
3. Distinguish between independent lines of reasoning (and note important dependencies)
4. Check the validity of the lines of reasoning
5. Check the reliability of the sources and basic premises
6. Consider objections and rebuttals
7. Determine if the argument is successful or not

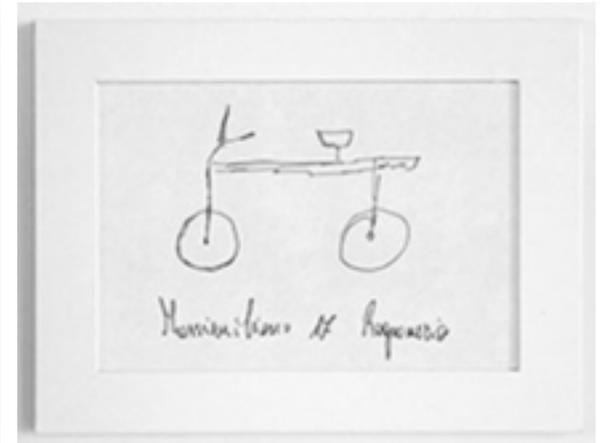
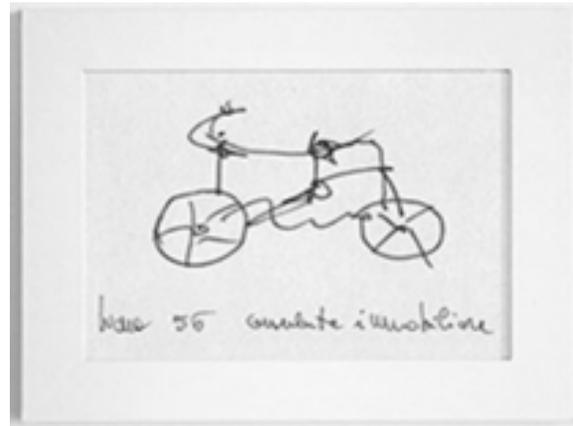
Practice Exercises 4: Evaluating Complex Arguments

Page 2

4. Surface-level reasoning and its underlying logic



Surface-level reasoning and underlying logic



Practice Exercises 5: Underlying logic

Questions?

5. Arguments in natural language



Complications with validity

1. If George belongs to the terrorist group True Patriots, then he would most likely read the National Pride Today forum. George does read the National Pride forum; therefore, he probably belongs to the True Patriots.
2. Sarah won't defect unless Frank does. Frank is going to defect. Therefore Sarah will also.
3. The suspect engaged in activities of security relevance, but it was later found not to be engaged in any activities that pose a security concern.
4. The Chinese government tried to cover up the origins of the corona virus. The most likely explanation for the cover up is that it originated from a lab. Therefore, coronavirus originated in a lab.

Glasses magnify intellect, looks

Hanna Mills

Specs sex up a potential mate, while more Aussies want glasses to boost their intellectual appeal, figures show.

More than one in 10 Aussies said glasses made a person more attractive, Roy Morgan Research for optometrists Specsavers shows.

More than one in 10 also believed spec-wearers were more intelligent than those without glasses.

But less than 10 per cent of the survey's 2182 respondents wore glasses they didn't need to increase perceptions of their intellect or because specs suited their industry.

Specsavers managing director Peter Larsen said glasses

were no longer simply functional, but an accessory that could change the way you look.

"Some people think they feel more attractive with their glasses on," Larsen said.

In an increasingly stylish world, glasses should be changed as often as shoes, Larsen said.

And he's one of a growing number of Aussies to succumb

to the lure of a strong pair of specs on the opposite sex.

"I think girls in glasses are very sexy," he said.

Melbourne image consultant Imogen Lamport, of Bespoke Image, said a pair of specs could boost a person's sex appeal by hiding their less appealing assets.

"Glasses can hide your under-eye bags," Lamport said.

Specs sex up a potential mate, while more Aussies want glasses to boost their intellectual appeal, figures show.

More than one in 10 Aussies said glasses made a person more attractive, Roy Morgan Research for optometrists Specsavers shows.

believed spec-wearers were more intelligent than those without glasses.

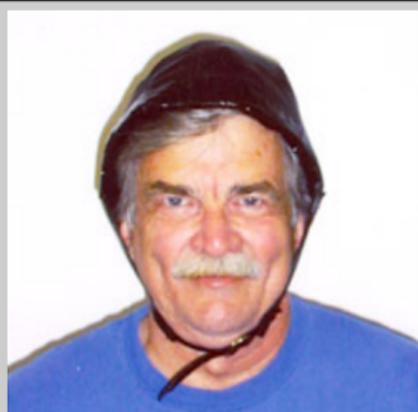
But less than 10 per cent of the survey's 2182 respondents wore glasses they didn't need to increase perceptions of their intellect or because specs suited their industry.

Specsavers managing director Peter Larsen said glasses

STOP ALIEN ABDUCTIONS



For adults and children abducted by aliens from space as reported by Prof. David Jacobs, Budd Hopkins, and other investigators.



ALIEN ABDUCTEE FROM KENTUCKY WEARING A THOUGHT SCREEN HELMET

"Since trying Michael Menkin's Helmet, I have not been bothered by alien mind control. Now my thoughts are my own. I have achieved meaningful work and am contributing to society.

My life is better than ever before. Thank you Michael for the work you are doing to save all humanity."

THE THOUGHT SCREEN HELMET STOPS SPACE ALIENS FROM ABDUCTING HUMANS.

IT'S BEEN USED SUCCESSFULLY BY FORMER ABDUCTEES FOR NINETEEN YEARS.

THIS PUBLIC SERVICE, NONPROFIT, ASSEMBLY WEBSITE TELLS YOU HOW TO MAKE A THOUGHT SCREEN HELMET.



IN SPITE OF the classical texts that Symonds was reading in the Bodleian Library or in his tutors' quarters, the drumbeats in the morning papers echoed through the common rooms. The same year, sentences handed down at the Old Bailey for "the attempt" at sodomy started to extend in length, from a year to eighteen months. And teenagers were now convicted more often: indeed, that year, fourteen-year-old Thomas Silver was actually executed for committing sodomy. The boy "was indicted for an unnatural offence [. . .] GUILTY—Death recorded."

This is the first time the phrase "unnatural offence" entered the Old Bailey records.

Then the language changed again, and the highly charged Biblical word "abominable" appeared in the formerly matter-of-fact court re-



Matthew Sweet @DrMatthewSweet · May 24, 2019

Thomas Silver, as [@naomirwolf](#) now agrees, was not executed. The understandable confusion is produced by this "death recorded" category, which is a way of acknowledging that sodomy has been a capital crime since the 1500s, but no longer enforced. Death on paper only.



Validity and uncertainty

When we reason, every statement we use or consider has a degree of certainty. This can either be stated explicitly or left undefined and understood by the context.

- » “I am 80% confident that Trump will lose the election”
- » “I know that World War Two ended in 1945.”

We can rank beliefs, and we can determine fair bets to place on them

The range of uncertainty can be quite large

- » but it can't get too large without the claim becoming uninformative and unable to play a role in reasoning.

In reasoning, uncertainty means the probability that the claim is true *given* the reasons or evidence presented.

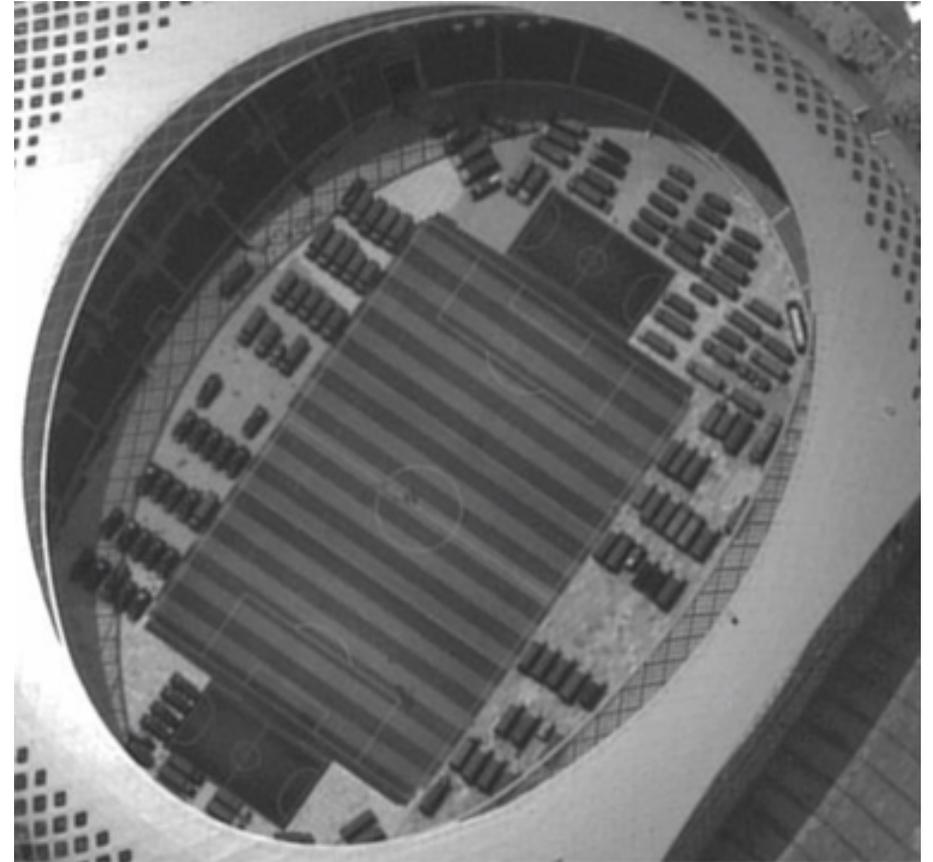
Reason:

China has moved troops close to Hong Kong.

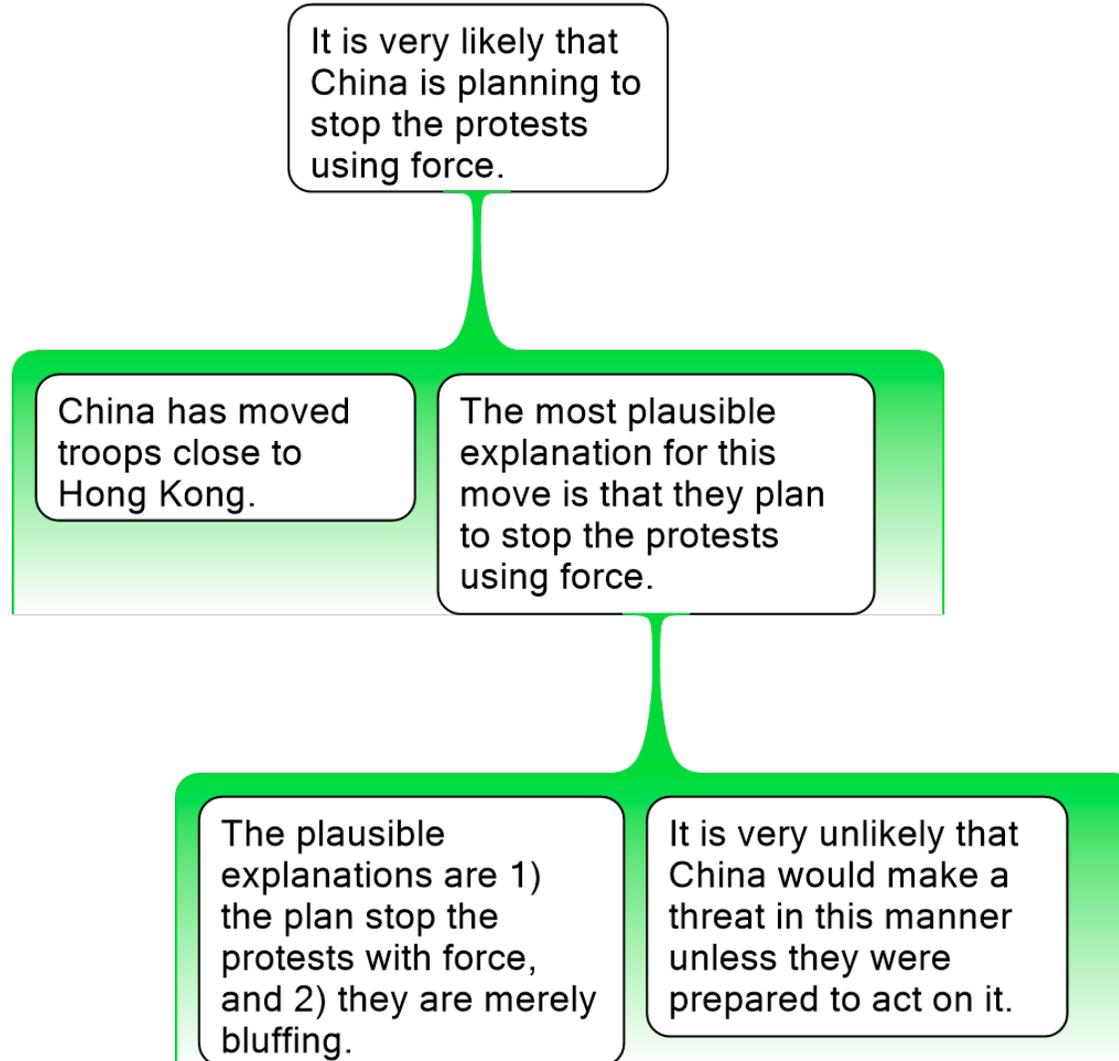
therefore

Conclusion:

China is planning to stop the protests using force.



Example: degree of support



Socrates was a philosopher and philosophers are boring, therefore Socrates was boring.

Socrates was a philosopher and most, maybe 80%, of philosophers are boring, therefore, it is very likely that he was boring.

Samantha is a politician who accepts donations from a foreign adversarial country, publicly defends the actions of that country, regularly holidays in that country, communicates regularly and covertly with top officials from that country, and tries to minimize knowledge of her financial connections to that country.

What should we conclude?

1. It is certain that Samantha is spying for that country.
2. Maybe Samantha is spying for that country.
3. There is a 50% chance that Samantha is spying for that country.
4. There is a 20 - 70% chance that Samantha is spying for that country.

Questions?

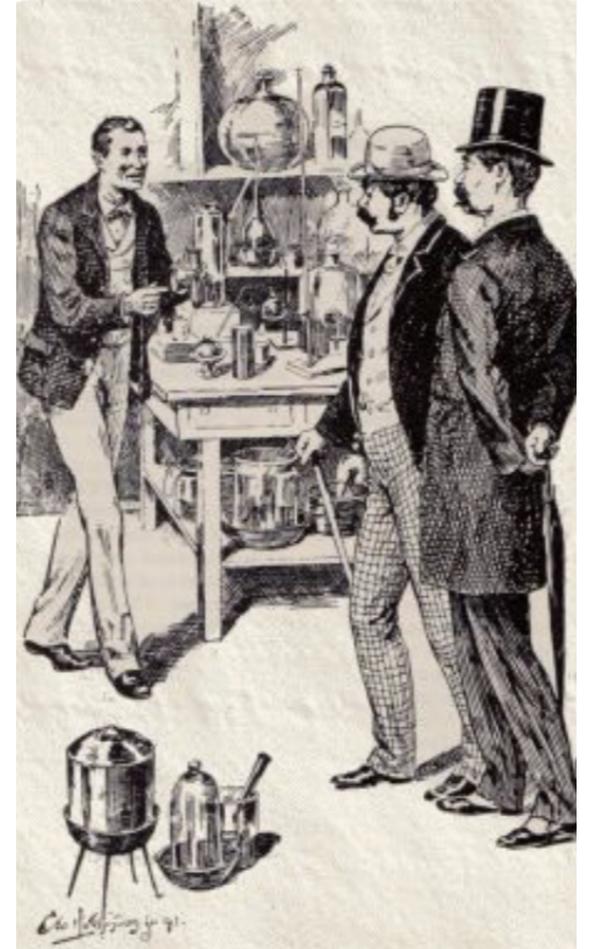
Example: Sherlock Holmes

"You appeared to be surprised when I told you, on our first meeting, that you had come from Afghanistan."

"You were told, no doubt."

"Nothing of the sort. I knew you came from Afghanistan. From long habit the train of thoughts ran so swiftly through my mind, that I arrived at the conclusion without being conscious of intermediate steps. There were such steps, however. The train of reasoning ran, "Here is a gentleman of a medical type, but with the air of a military man. Clearly an army doctor then. He has just come from the tropics, for his face is dark, and that is not the natural tint of his skin, for his wrists are fair. He has undergone hardship and sickness, as his haggard face says clearly. His left arm has been injured. He holds it in a stiff and unnatural manner. Where in the tropics could an English army doctor have seen much hardship and got his arm wounded? Clearly in Afghanistan." The whole train of thought did not occupy a second. I then remarked that you came from Afghanistan, and you were astonished."

- *A Study In Scarlet*, Arthur Conan Doyle, 1887.



Practice exercises 6: Arguments in natural language

Questions?



**ADVANCED
ANALYTIC RIGOUR**

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