



ADVANCED ANALYTIC RIGOUR

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October 2020

- **Practice**
 - Is it working?
- **Less “tangential” chat**
- **Additional material on the website**

Review

The structure of reasoning

Australian Strategic Policy Institute executive director Peter Jennings told The Australian it was “very clear” that China was behind the cyber attack on Australia [...]

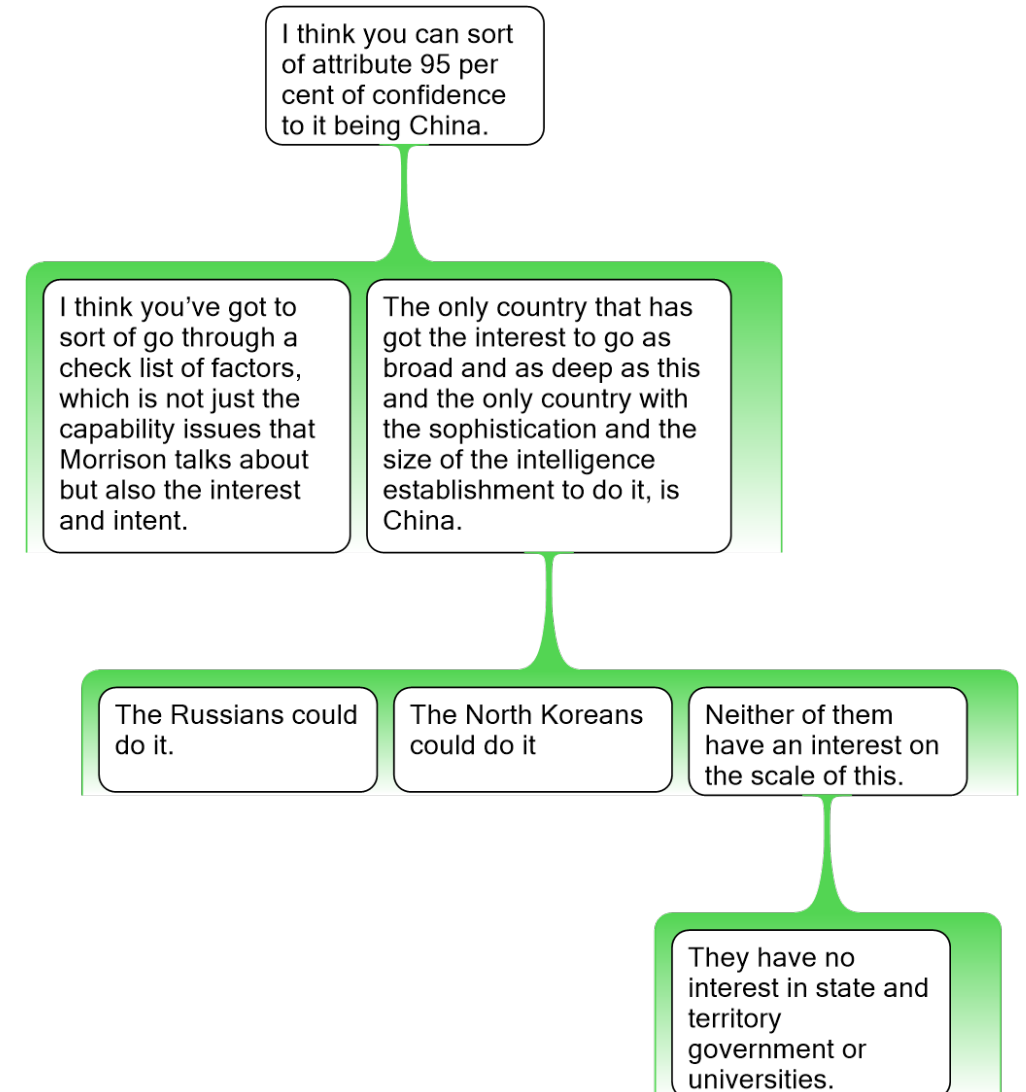
“I think you’ve got to sort of go through a check list of factors, which is not just the capability issues that Morrison talks about but also the interest and intent,” Mr Jennings said in the wake of the PM’s press conference announcing the attack.

“The Russians could do it. The North Koreans could do it, but neither of them have an interest on the scale of this. They have no interest in state and territory government or universities,”

“So that leads me to conclude that the only country that has got the interest to go as broad and as deep as this and the only country with the sophistication and the size of the intelligence establishment to do it, is China. That’s very clear.

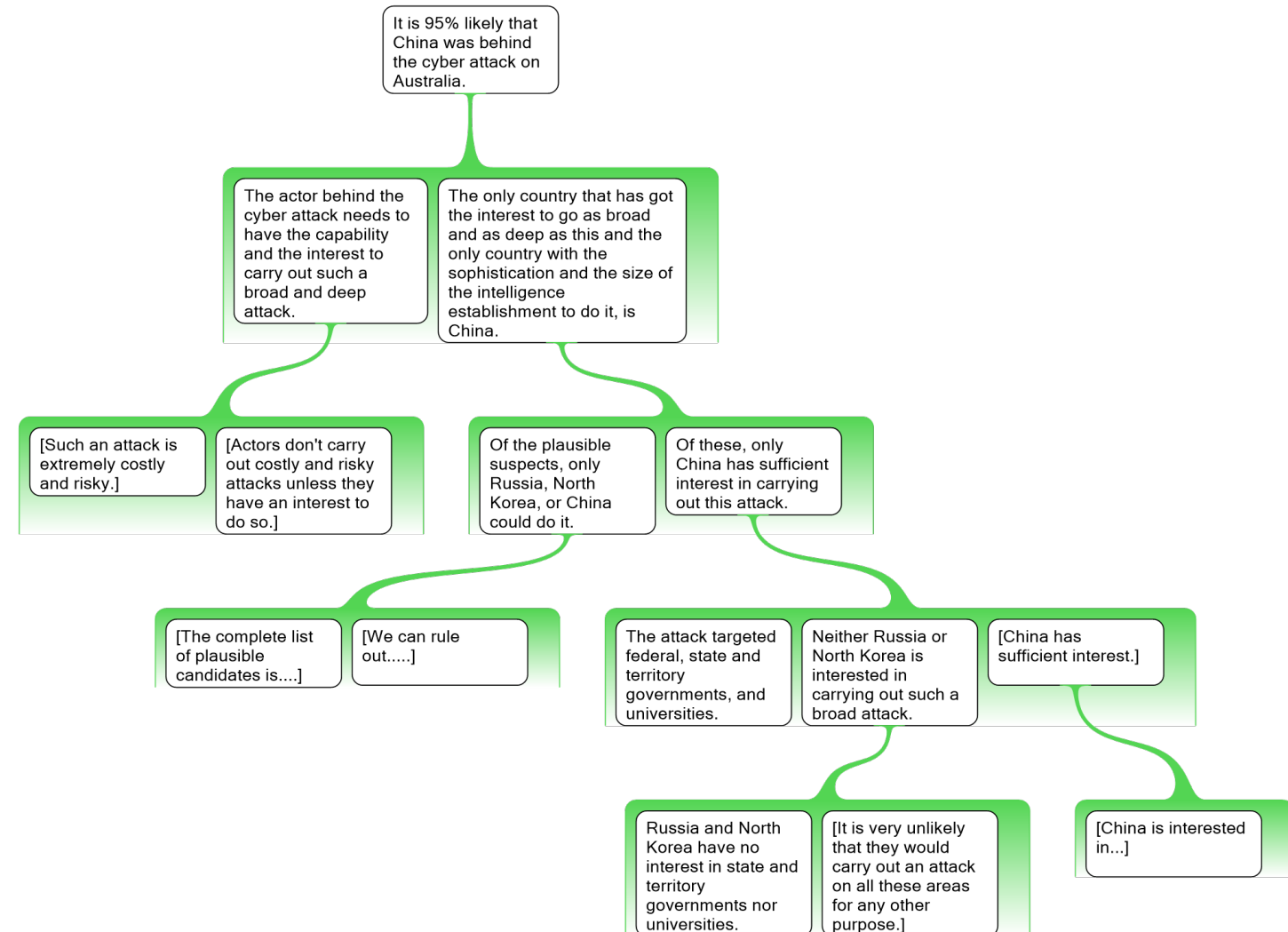
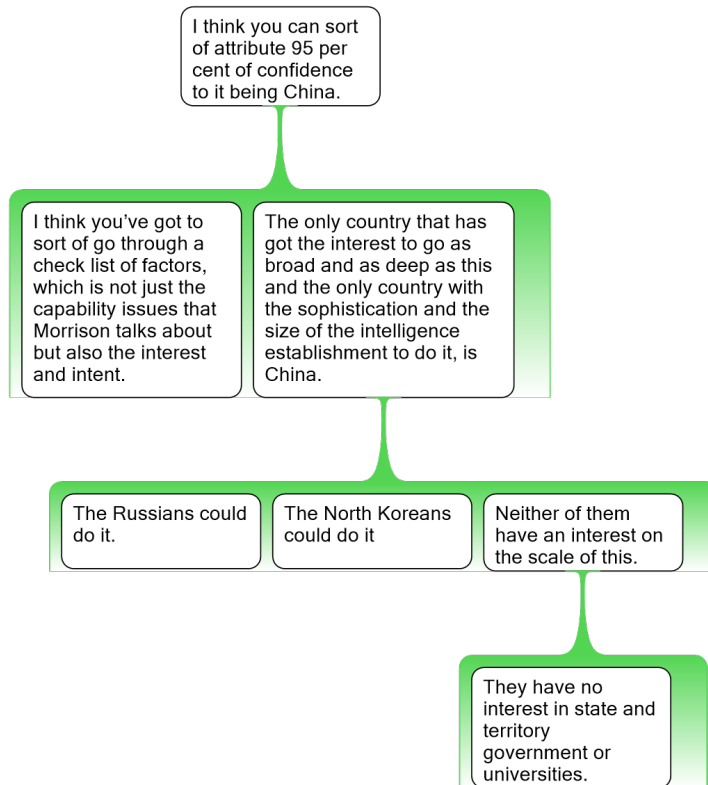
“I think you can sort of attribute 95 per cent of confidence to it being China.”

- Peter Jennings, head of the Australian Strategic Policy Institute.



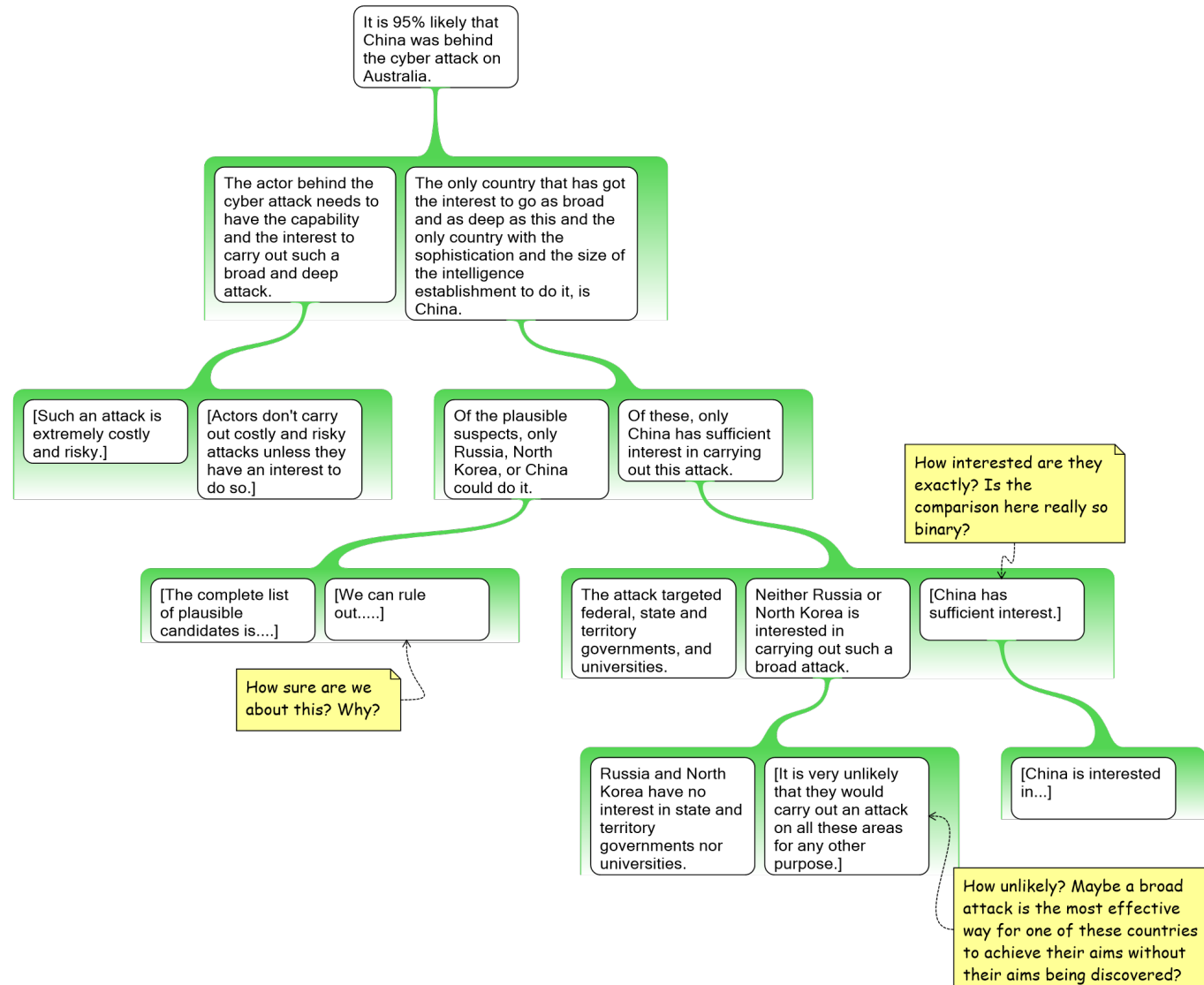
Review

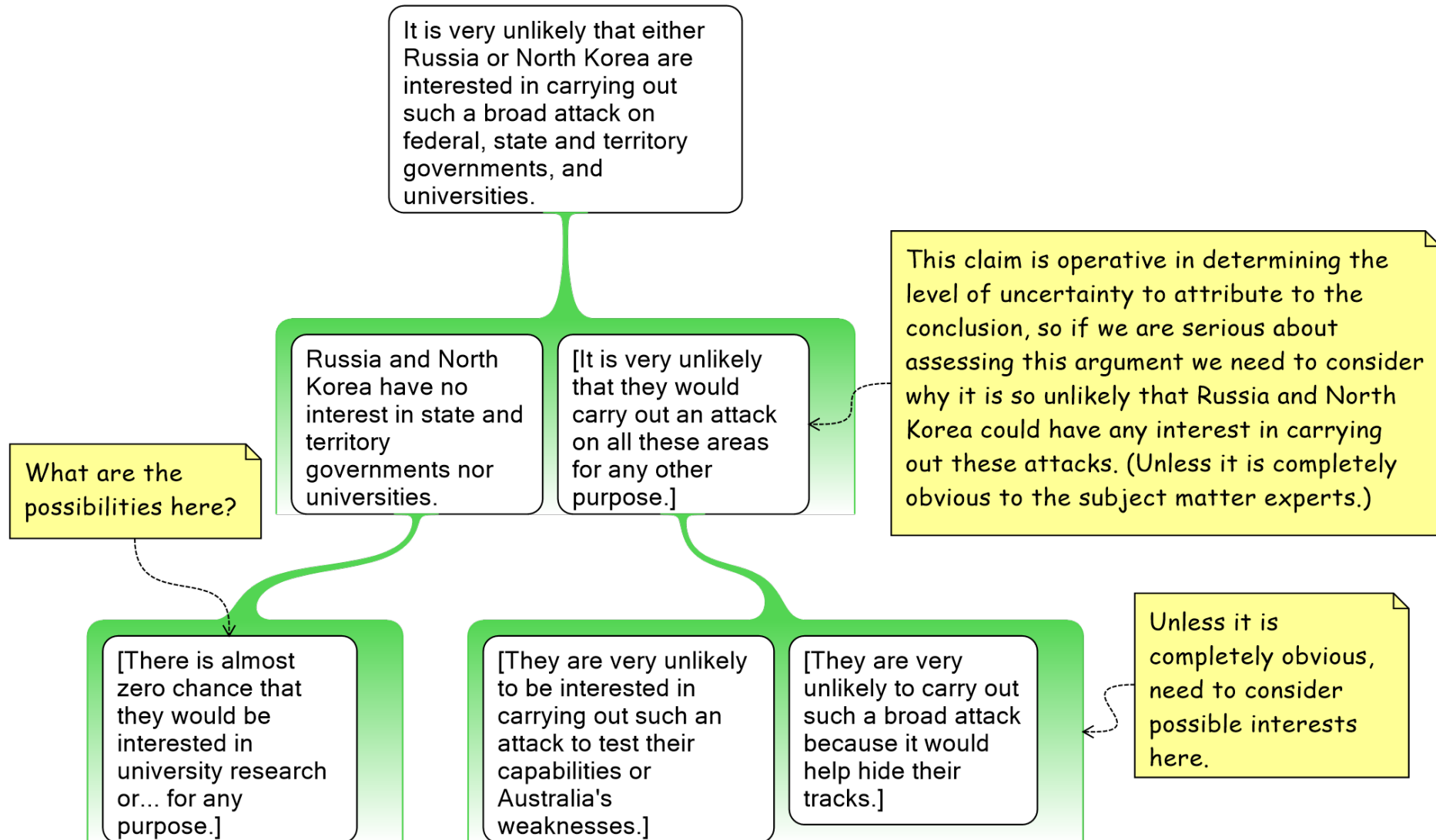
The underlying logic



Review

Valid arguments that explain the level of uncertainty





Today's seminar
Identifying Reasoning Flaws



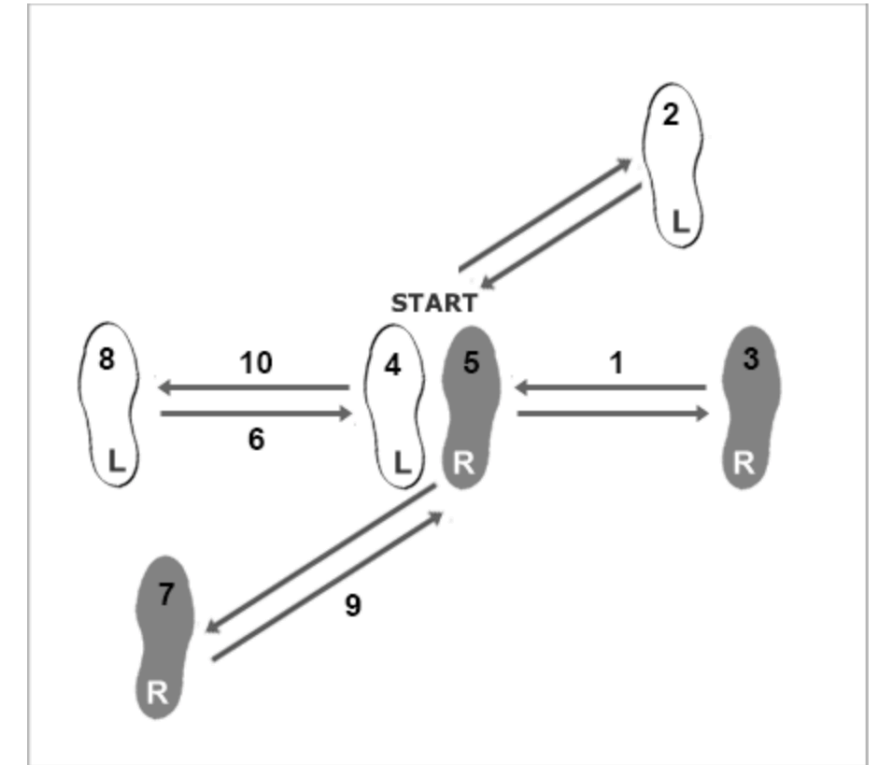
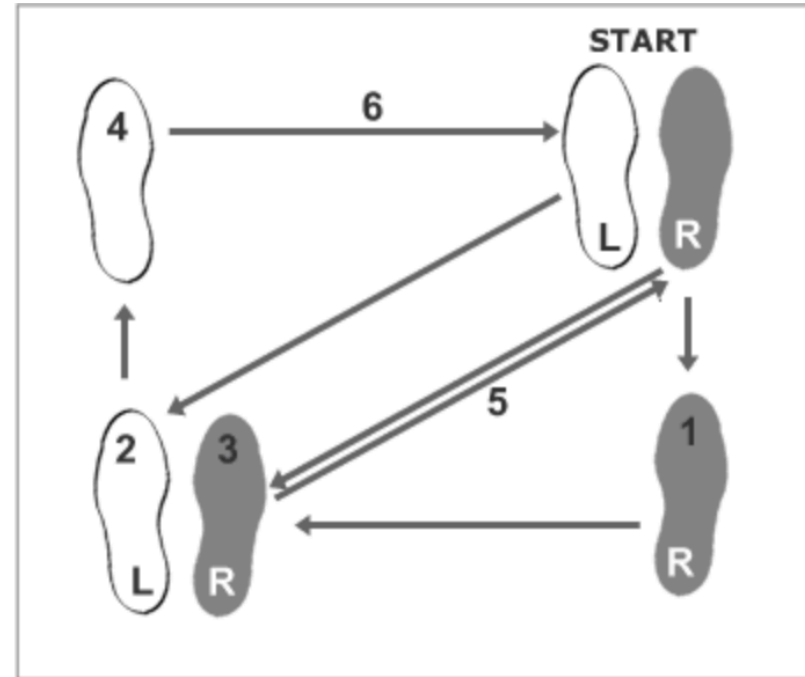
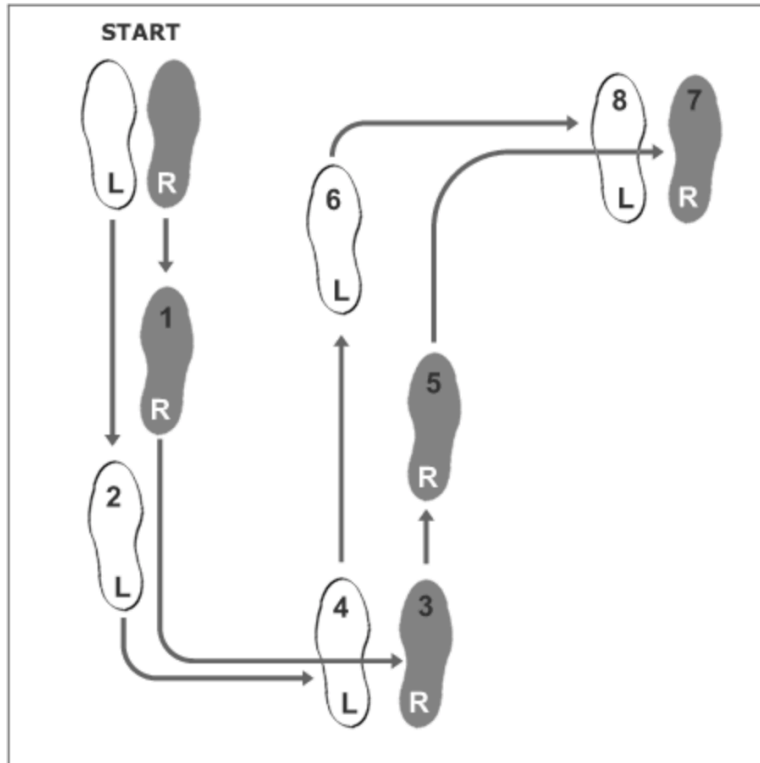
1. Reasoning Stratagems
2. Reasoning flaws and how to find them

Reasoning Stratagems



Reasoning Stratagems

The right moves



IBE needs to:

- 1) provide a comprehensive list of the plausible explanations,
- 2) detail the information to be explained,
- 3) weigh up which explanation is best based on how well it explains the information and how plausible it is.

George is planning a terrorist attack because that is the best explanation for his recent behaviour. He has been reading extremist websites, posting extreme comments on social media, buying material for making explosives, and photographing and taking notes on the security at government buildings. He claims that he is just interested in explosives as a hobby and wants to become a security guard, but the explanation that he is planning a terrorist attack is more plausible than this alternative because...

It can hardly be supposed that a false theory would explain, in so satisfactory a manner as does the theory of natural selection, the several large classes of facts above specified [e.g., the geographical distribution of species, the sterility of hybrid species]. It has recently been objected that this is an unsafe method of arguing. But it is a method used in judging common events of life, and has often been used by the greatest natural philosophers. The undulatory theory of light has thus been arrived at; and the belief of the revolution of the earth on its own axis was until lately supported by hardly any direct evidence.

- Charles Darwin, *On the Origin of Species*, 1959, p. 452



Reasoning Stratagems

Some important reasoning stratagems



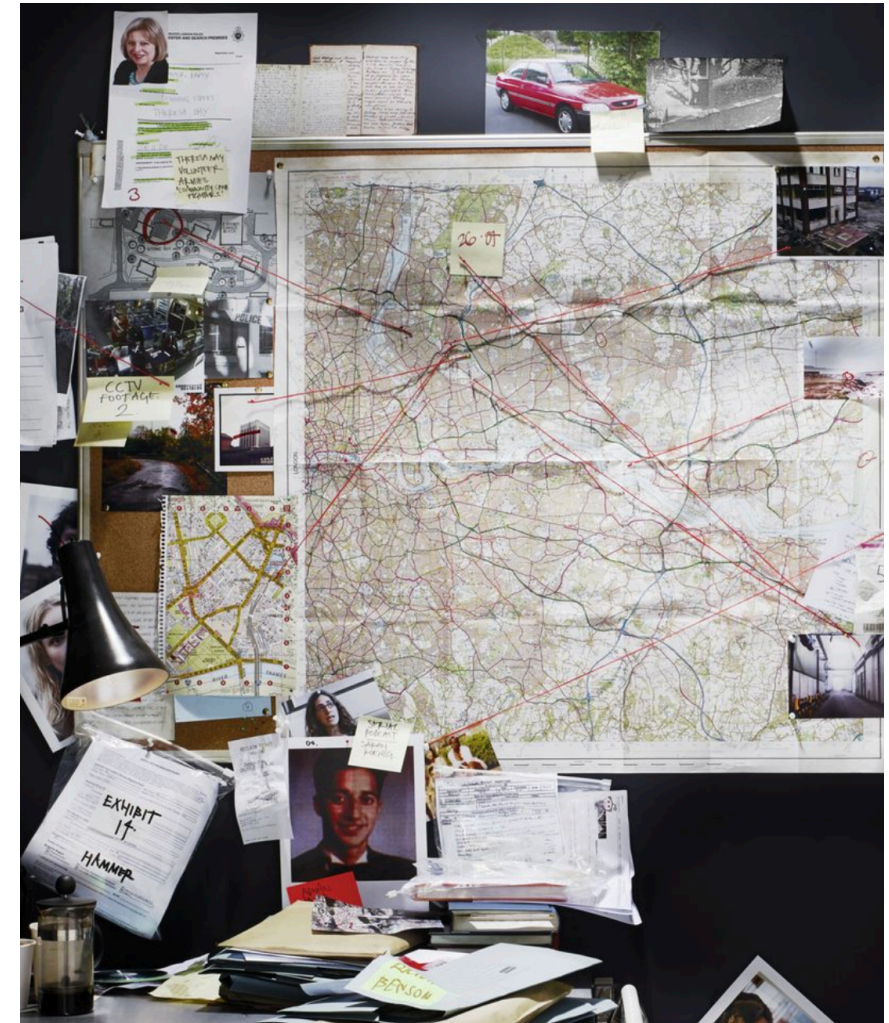
- Inference to best explanation
- Inductive generalisations
- Categorising cases
- Appeal to analogy
- Appeal to sources
 - Single sources & Corroborating sources
- Forecast
 - Changes in factors & Extrapolating past trends
- Strategic reasoning

Reasoning Stratagems

Inference to the best explanations

Inferences to best explanation need to:

- Provide a comprehensive list of the plausible explanations
 - » If a plausible explanation is overlooked, it may be the correct one.
 - » Will often be based on an uncontroversial “shortlist” selection criteria
- Detail the information to be explained
- Consider which explanation is best. Generally involves specifying the explanations with sufficient detail to explain the known evidence or information as best they can, and comparing their:
 - background plausibility
 - evidence they cannot explain, or cannot explain well
 - their internal consistency

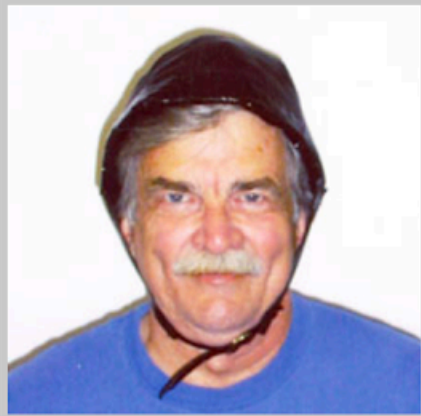


Hours watching TV correlates with depression.
Therefore, TV causes depression.

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.





Donald J. Trump  @realDonaldTrump · Nov 8

...

I WON THIS ELECTION, BY A LOT!



Official sources may not have called the race when this was



Donald J. Trump  @realDonaldTrump · Nov 5

...

How come every time they count Mail-In ballot dumps they are so devastating in their percentage and power of destruction?



107.9K



135.6K



556K



Donald J. Trump  @realDonaldTrump · Nov 7

...

I had such a big lead in all of these states late into election night, only to see the leads miraculously disappear as the days went by. Perhaps these leads will return as our legal proceedings move forward!



184.6K



148.7K



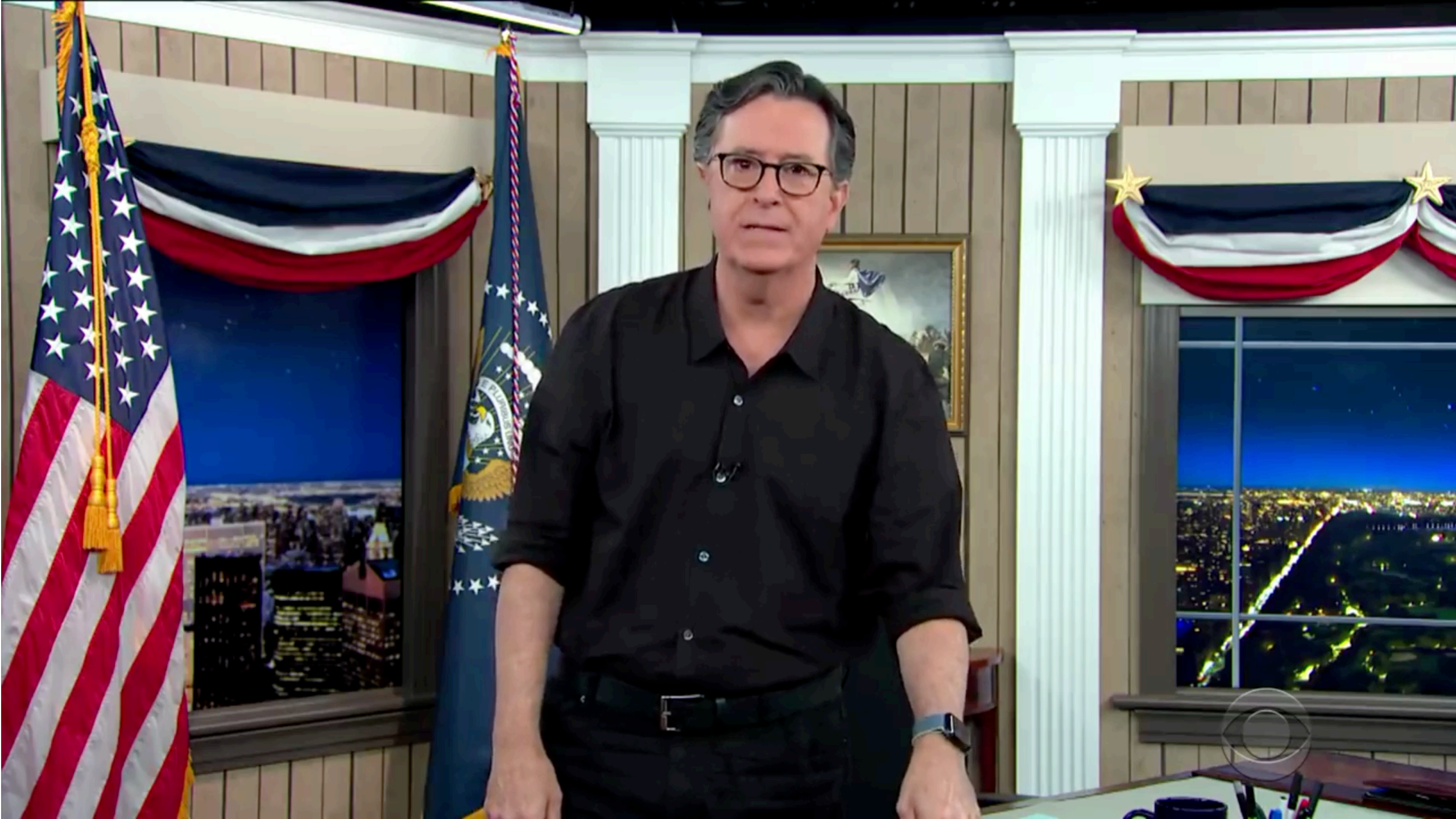
583.5K



Donald J. Trump  @realDonaldTrump · Nov 8

...

THE OBSERVERS WERE NOT ALLOWED INTO THE COUNTING ROOMS. I WON THE ELECTION, GOT 71,000,000 LEGAL VOTES. BAD THINGS HAPPENED WHICH OUR OBSERVERS WERE NOT ALLOWED TO SEE. NEVER HAPPENED BEFORE. MILLIONS OF MAIL-IN BALLOTS WERE SENT TO PEOPLE WHO NEVER ASKED FOR THEM!



Inference to best explanation.

E correctly explains situation X.

It is easy to miss alternatives.

The only plausible candidate explanations of X are E and F.

E is a more likely explanation of X than F.

Often many complicated factors are in play.

It is easy to miss relevant data.

Data D, is the complete set of information that needs explaining with regards to situation X.

E is a more likely explanation of D than F is.

E explains all of D.

F doesn't explain some key parts of D.

E would require abc to happen.

F would require xyz to happen.

abc is more likely than xyz.

John Doe was murdered by Professor Plum.

The plausible candidate explanations are Doe was murdered by Professor Plum or Miss Scarlet.

The more likely explanation is that Plum is the murderer.

Only Plum and Scarlet had motives.

If Plum was the murderer, this would require that he walked to the crime scene and then later hid the weapon in his rubbish bin at home.

If Scarlet was the murderer, she would have needed to have flown via helicopter to the scene of the crime.

It likely that someone didn't fly a helicopter to crime scene.

The murder weapon was found in Plum's rubbish bin at home.

Plum was seen in walking distance of the crime scene at the time of the murder.

There is no other relevant information.

Miss Scarlet was in a different city shortly before the murder.

There is no other relevant information.

No witnesses heard or saw a helicopter.

Generalisations need to:

- Explain how reliably the information has been collected.
- Explain why the amount of information is sufficient for the conclusion.
- Establish that the information has been collected from a sample or group representative of the group you are making a conclusion about.
- Consider exceptional circumstances.

According to repeated nationwide surveys,

More Doctors Smoke **CAMELS** than any other cigarette!

Doctors in every branch of medicine were asked, "What cigarette do you smoke?" The brand named most was Camel!

You'll enjoy Camels for the same reasons so many doctors enjoy them. Camels have cool, cool *mildness*, pack after pack, and a *flavor* unmatched by any other cigarette. Make this sensible test: Smoke only Camels for 30 days and see how well Camels please your taste, how well they suit your throat as your steady smoke. You'll see how enjoyable a cigarette can be!

THE DOCTORS' CHOICE IS AMERICA'S CHOICE!



MAUREN O'HARA says: "I pick Camels. They agree with my throat and taste wonderful!"

DICK HAYMES agrees: "I get more pleasure from Camels than from any other brand!"

RALPH BELLAMY reports: "Camels suit my taste and throat. I've smoked 'em for years!"



• LOOKING A VISION

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.

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Specsavers managing director Peter Larsen said glasses

Generalising from
a sample

X is true for the
population of
interest.

X is true for this
sample.

This sample is
representative of
the population.

Measuring some
variables is
difficult.

This sample have
been collected in
an unbiased way
from the population
of interest.

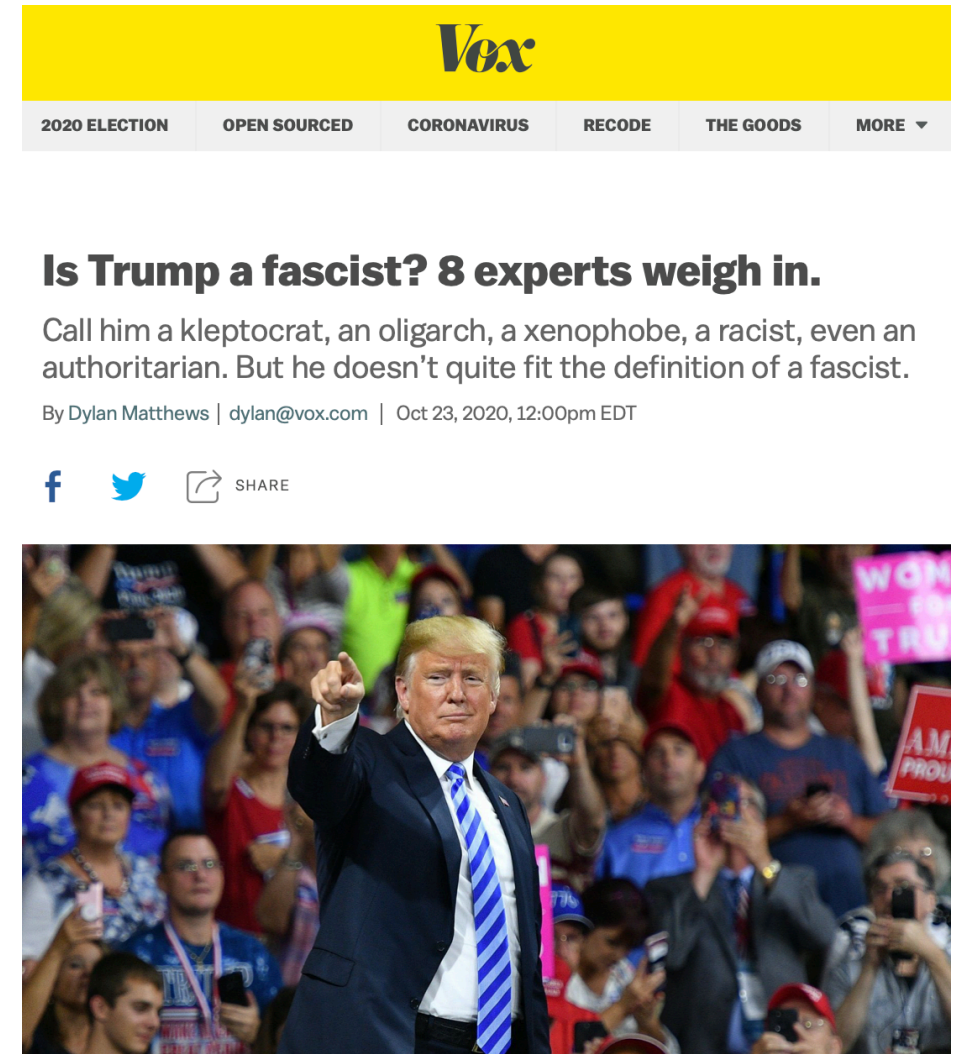
The sample size is
sufficiently large for
a representative
sample.

Check for the
wide range of
selection biases.

This is the type of argument where a generalisation is applied to an instance and used to make conclusions about it.

These arguments need to:

- Establish that the generalisation is acceptable
- Clearly explain how the instance in question is a case of the thing the generalisation is about.



Reasoning Stratagems

Categorising cases



Lones Smith @LonesSmith · Jul 20

Solid argument



Isaac Haxton

@ikepoker



Woman in front of me at airport security has a bottle of frozen water. They want to take it. She says it's not a liquid.

Categorising cases

X is B.

X is an A.

All A's are B.

[Need to check X
meets the criteria.]

[Often a detailed
explanation of the
category is required
here.]

Reasoning Stratagems

Appeal to Analogy

An argument from analogy needs to:

- Explain how the two situations are sufficiently similar
 - Explaining the relevant similarities
 - And that the differences are unrelated to the matter at hand
- Generally, explain how the same causal mechanism could be present in both cases
 - Otherwise an argument from analogy is a generalisation from insufficient data.



Appeal to analogy.

X is true.

Y is true because of
Z.

Z plays the same
role in X.

There are no other
relevant differences
between X and Y.

The best analogies
are clear and
uncontroversial.

[Requires a
detailed
explanation of how
this is the case.]

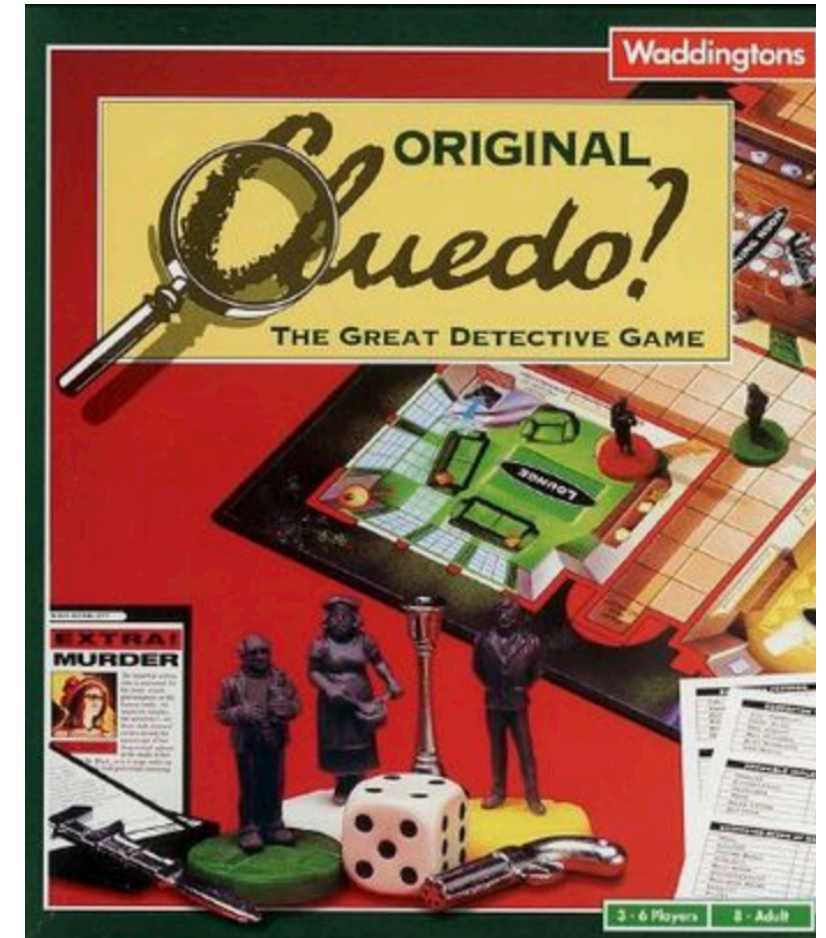
Can be very easy
to miss key
differences.

Reasoning Stratagems

Argument by Elimination

An argument by elimination needs to:

- Provide a complete list of the options
 - Missing one option invalidates the method
- Establish that all but one of them is unacceptable
 - Each option needs to be dealt with separately; this mode of reasoning does not work by comparing options
 - Needs to be able to eliminate options with a high degree of certainty.



Elimination.

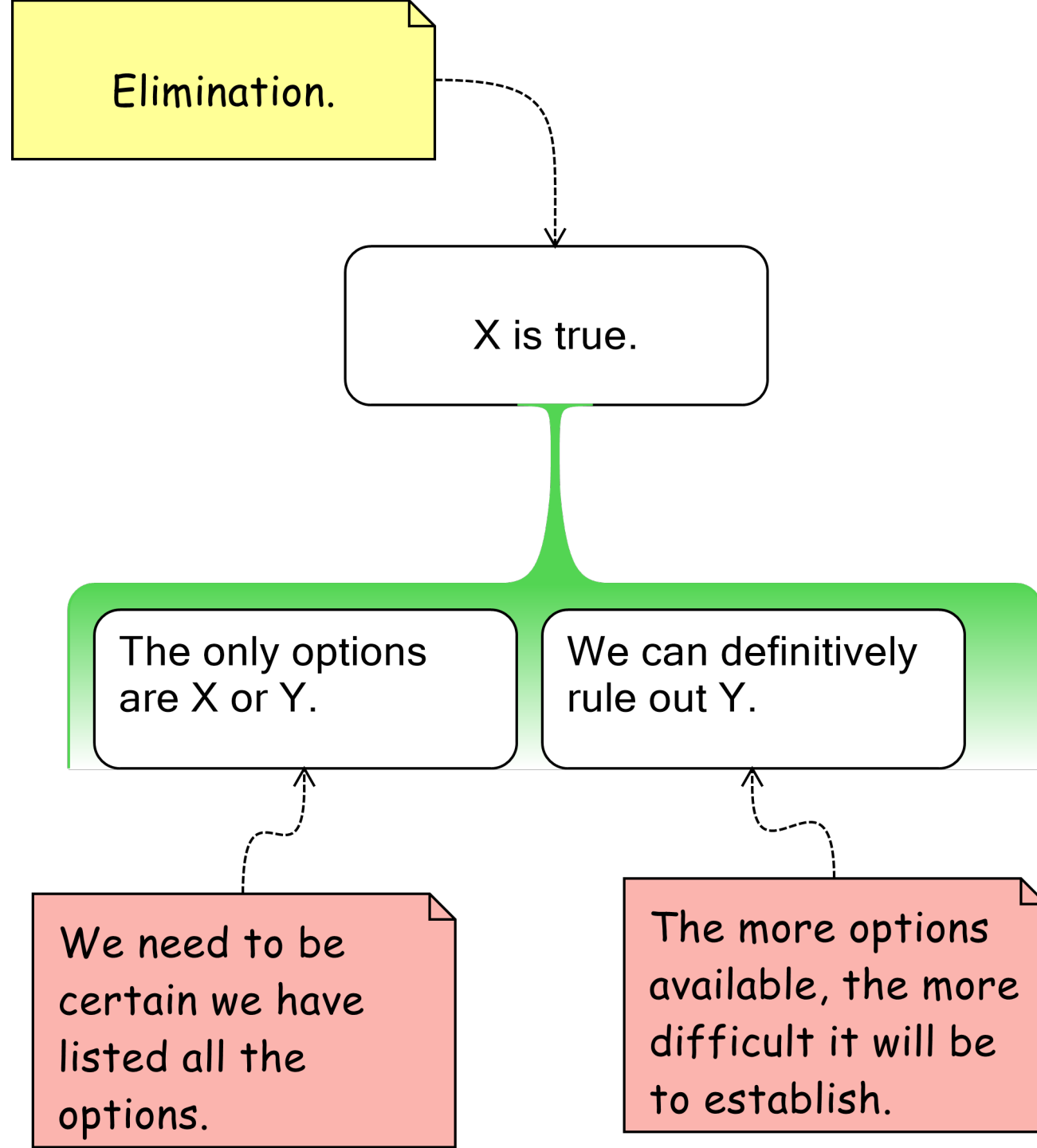
X is true.

The only options
are X or Y.

We can definitively
rule out Y.

We need to be
certain we have
listed all the
options.

The more options
available, the more
difficult it will be
to establish.



An appeal to sources needs to:

- Accurately state what the source claims
- Establish that the source knows the claim is true
- Establish that the source is reporting honestly in this case.



This guy just doesn't get it. Pete Evans is trying to sell a \$15,000 fancy light machine to vulnerable and frightened people to protect them against [#COVID_19](#).
He is not a doctor.
He is not a scientist.
He is a chef.



12:45 PM · Apr 10, 2020

♥ 1.9K ⚡ See the latest COVID-19 information on Twitter

Appeal to a single source

X is true.

Source S claims X is true.

Source S is telling the truth about X.

Check source has been correctly understood.

Source S knows the truth about X.

Source S is honest/trustworthy when it comes to this type of claim.

[Normally based on the source's position or expertise.]

[Normally based on the fact the source has no reason to lie or their track record.]

A source may not appreciate how limited their knowledge is, or may exaggerate how much they know.

A source may try to hide their bias, or accepted indicators of reputation may be misleading.

Appeal to corroborating sources.

X is true.

Sources S & T claim X.

It would be very unlikely for sources S & T to claim X unless it was true.

Consider explanatory errors.

Check that they do say the same statement.

Sources S & T are independent.

Sources S & T probably know the truth about X.

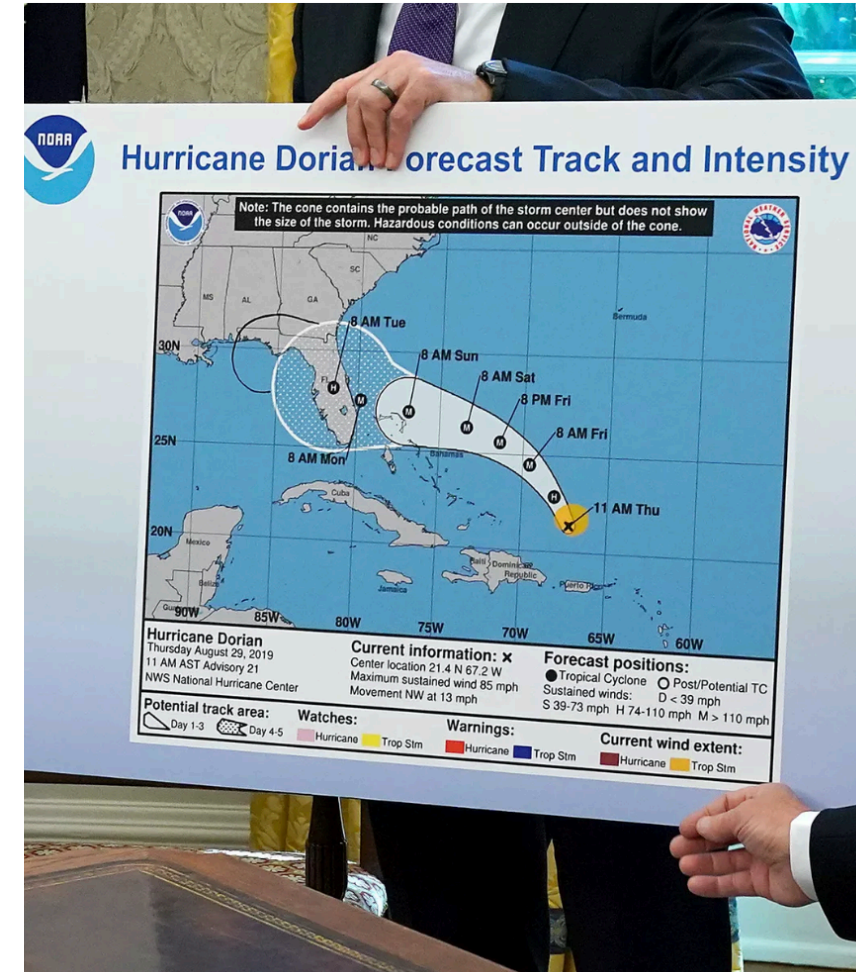
Sources S acquired the information via Y.

Source T acquired the information via Z.

Dependencies can be hard to spot and may not even be known by the sources.

Reasoning to establish a forecast needs to:

- Accurately establish the changes in the relevant indicators.
- Explain why the indicators used can be relied upon.
- Establish that there are no mitigating circumstances.



Reasoning Stratagems

Strategic reasoning

Reasoning about what move an actor will take requires:

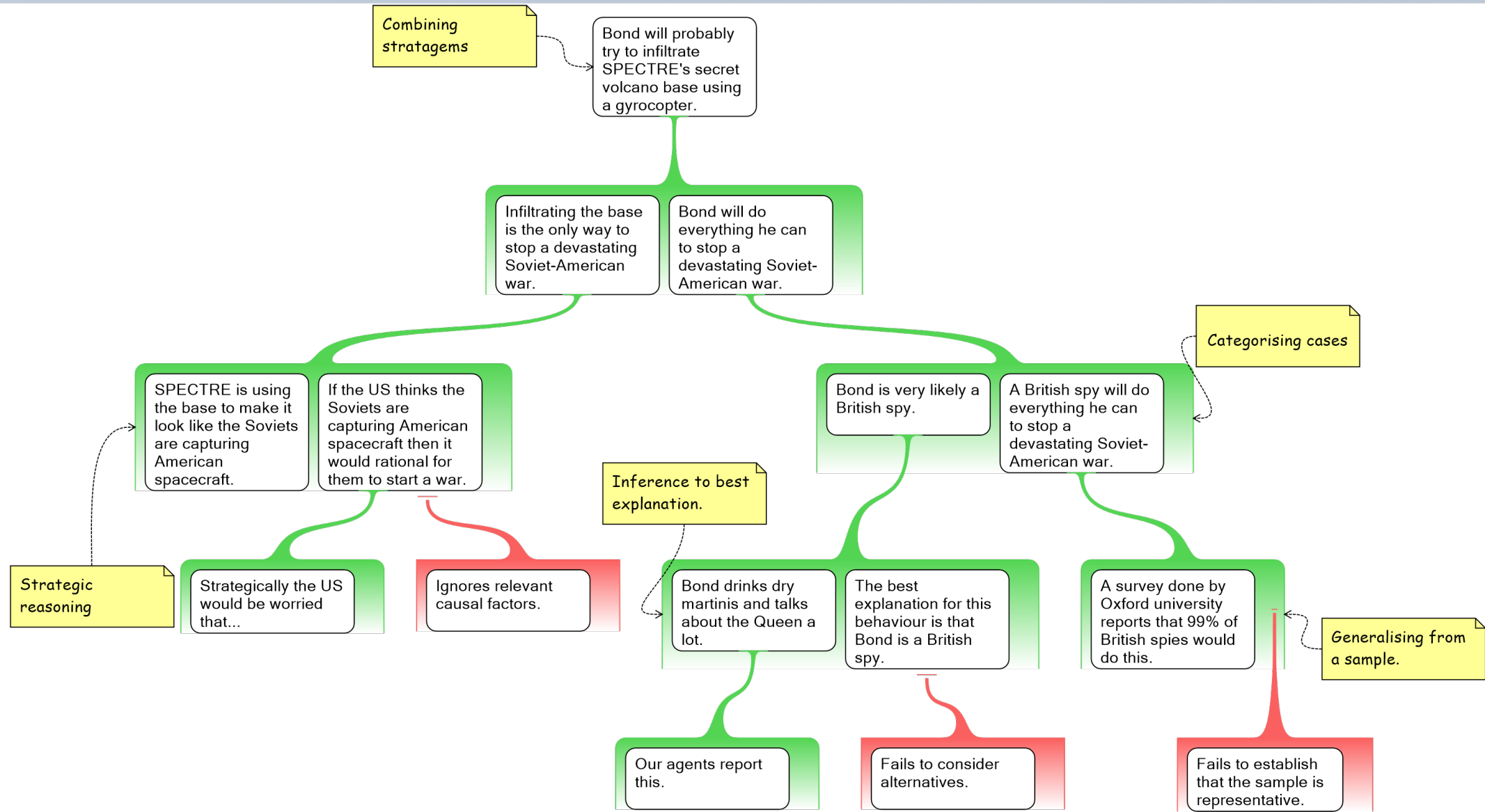
- Listing the set of moves the actor believes are available to them.
- Determining what the actor believes will be the outcome or response to each move.
- Determining what outcome the actor will deem best given their objectives.



JFK Library

Reasoning Stratagems

Combining stratagems





Review questions

Physical books are technologically obsolete, and the book industry is heading down the path that the music industry took, where digital downloads decimated CD sales and put record stores out of business. Between 2009 and 2011, e-book sales rose at triple-digit annual rates.

- Adapted from James Surowiecki, “E-Book Vs. P-Book”, *New Yorker* July 2013

The QuackCon conspiracy theory group in Australia has the same ideology convictions to the QuackCon group in the UK, and has similar goals and resources. Both here and in the UK, QuackCon members believe the world is run by a cabal of evil aliens that needs to be overthrown. The group in the UK has carried out terrorist attacks. Therefore, it is probable that the Australian wing is planning or will plan a terrorist attack here.

Farmers in Queensland will not be too seriously affected by the floods. A recent phone-in poll conducted by ABC News Radio asked the question: “Will you still buy fruit and veggies, if the prices go up as a result of the flood?” 1,254 people called, sent an SMS or went online to respond. 74% of respondents voted ‘yes’ and only 26% voted ‘no’. So, the great majority of Australians are willing to pay more for fruit and veggies because of the floods.

In my view, ...taking into account all relevant (and available) information about Monis, what would have emerged was an individual whose concerning behaviour was escalating, including in the “security” arena, such as to justify the commencement of a formal investigation by ASIO. What that information comprises is detailed in the closed version of this chapter. In essence, there had been a malignant shift in Monis’ presentation—reflected in his apparent increased violence (exhibited by his involvement in his ex-wife’s murder, and his posting of graphic images from conflict zones), coupled with a burgeoning interest in IS pointing toward radicalisation.

Lindt Inquest, page 402.

What does the Chinese Communist Party want from Australia?

Duncan Lewis, who was not only the previous head of the Australian Security Intelligence Organisation (ASIO) but also commander of Australia's Special Forces, secretary of the Defence Department and Australia's inaugural national security adviser, is especially well qualified to answer. "They are trying to place themselves in a position of advantage," he told me in an interview shortly after retiring in September.

In a post-retirement interview, former ASIO boss Duncan Lewis said while it was not only China that preoccupied the Australian authorities, it was "overwhelmingly" China.

"Espionage and foreign interference is insidious. Its effects might not present for decades and by that time, it's too late. You wake up one day and find decisions made in our country that are not in the interests of our country. Not only in politics but also in the community or in business. It takes over, basically, pulling the strings from offshore." Note that, although Lewis was a longtime soldier, traditional military invasion does not feature in his answer. This is the modern way of intelligent statecraft, conquest and control without war.



ADVANCED ANALYTIC RIGOUR

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