SPOTTING BULLSHIT

Livestream Lecture series
presented by Studium Generale

WHEN REASONING GOES WRONG

Rosa Runhardt

23 September 2020 | 12:40pm

TU Delft Library

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WHEN REASONING GOES WRONG

Peak Bullshit: When reasoning goes wrong

Dr. Rosa W. Runhardt

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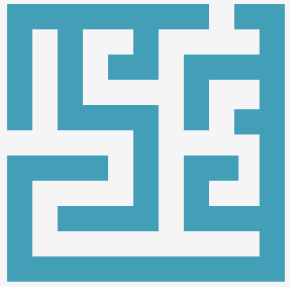

Logic, in essence, helps us evaluate arguments based on their patterns.

This helps us spot mistakes in reasoning.

Why logic?

Mistakes in patterns

Begging the question

- A. Therefore, A.

Affirming the consequent

- Our brains love this.
- "If I have Covid-19, then I have a cough. I have a cough. Therefore, I have Covid-19."
- If A then B. B. Therefore, A.

Denying the antecedent

- "If I were rich, I could be happy. I am not rich. Therefore, I cannot be happy."
- If A, then B; not A, therefore not B.

Why logic?

- These are all common propositional fallacies.
- People are bad at processing compound propositions.

- But people can learn, by comparing patterns to real-world scenarios.

Logic in the wild

- Subjects are given four cards:

- They're told that each card has a letter (consonant or vowel) on one side, and a number (odd or even) on the other.
- We want to test the hypothesis *If there's a vowel on one side of the card, there is always an odd number on the other.*
- Which cards must you turn over to see if any break this rule?

Source: Restak, R & Kim, S. (2010) *The Playful Brain*

Voting

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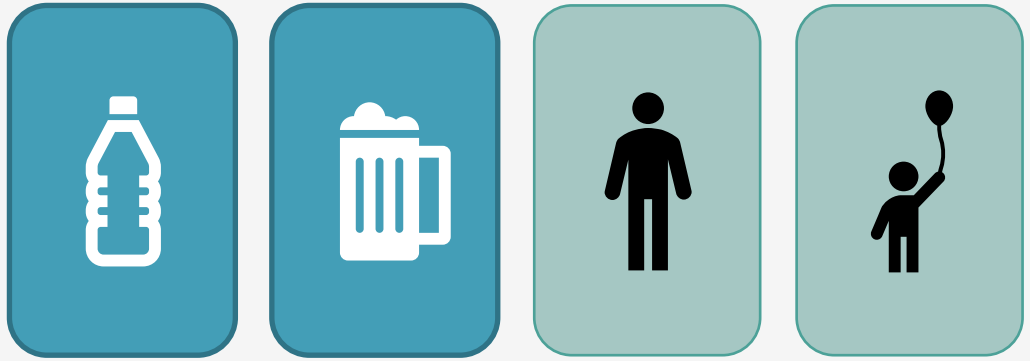
If there's a vowel on one side, there's an odd number on the other.

Which cards do we turn over? Choose 1 or more of the following options:

1. R
2. E
3. 7
4. 2

Logic in the wild

- Subjects are told about four people in a pub:



- They're told that each person drinks a beverage (water or beer), and is either under 18 or 18 or over.
- We want to enforce the law *If you're having a beer, you must be 18 or over.*
- Which person must you investigate to see if any break the law?

Source: Restak, R & Kim, S. (2010) *The Playful Brain*

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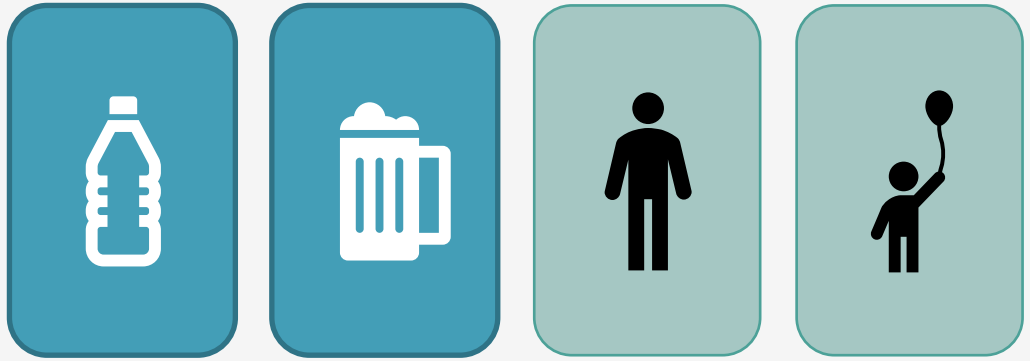
If you're having a beer, you must be 18 or over.



Which people do you check up on? Choose 1 or more of the following options:

1. The water drinker
2. The beer drinker
3. The adult
4. The child

Logic in the wild

- In both cases, the logical structure being tested is whether subjects realise that

$$A \rightarrow B \equiv \neg A \rightarrow \neg B$$

- This, it turns out, is easier if the situation is familiar.

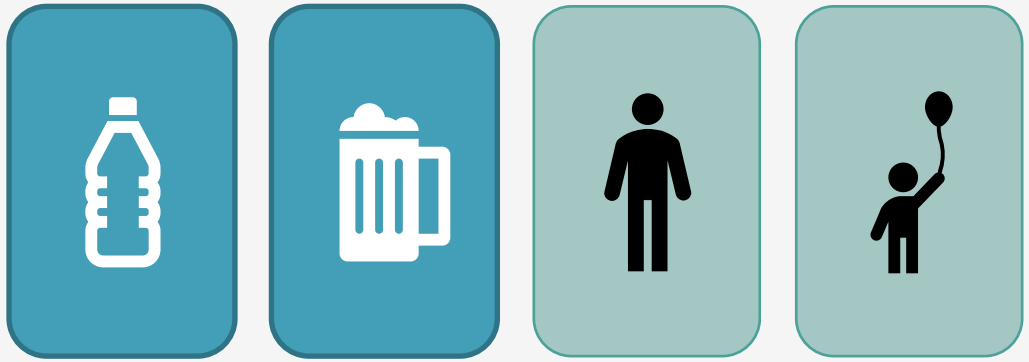
Source: Restak, R & Kim, S. (2010) *The Playful Brain*

Results of voting

Logic in the wild

- Only 25% of subjects get this right

- Over 90% of subjects get this right



Source: Restak, R & Kim, S. (2010) *The Playful Brain*

Good patterns, bad facts

Other types of fallacies

"So the media likes to say we have the most cases [of Covid-19], but we do, by far, the most testing. If we did very little testing, we wouldn't have the most cases." – Donald Trump

- What is the fallacy here?

Source: Sheth, S. (15 June 2020) "Trump says that 'if we stop testing right now, we'd have very few cases' of coronavirus" *Business Insider*.

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- What is the fallacy?

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Other types of fallacies

"So the media likes to say we have the most cases [of Covid-19], but we do, by far, the most testing. If we did very little testing, we wouldn't have the most cases." – Donald Trump

- A lot of people think 'correlation does not equal causation', but…

Source: Sheth, S. (15 June 2020) "Trump says that 'if we stop testing right now, we'd have very few cases' of coronavirus" *Business Insider*.

Other types of fallacies

- Interestingly, an **ad hominem fallacy**!
- "For instance, they would say we have more [cases] than China. I don't think so. We have more than other countries. I don't think so. But by doing all of the testing … we're going to have more cases because we do more testing. Otherwise, you don't know if you have a case. I think that's a correct statement," Trump added.

Source: Sheth, S. (15 June 2020) "Trump says that 'if we stop testing right now, we'd have very few cases' of coronavirus" *Business Insider*.

Two types of bad arguments

A mistake in the pattern

A mistake in the premises

Two types of bad arguments

If the truth of the premises guarantees the truth of the conclusion, we call the argument **valid.**

If, on top of that, the premises are true, we call the argument **sound**.

The opposite problem…

- Think of UK businessmen's claim "As an enterpreneur, I know that Britain would thrive out of the EU" *(e.g. Luke Johnson, head of Patisserie Valerie)*
- A person thinks their assertion should be deemed equivalent to proof: 'The premise is true because I say it is'
- The aptly called 'self-trumpeter's fallacy'

Argument from ignorance

- Since we cannot prove with absolute certainty that a claim is true, it must be false.
- E.g., “Scientists are never going to be able to positively prove their crazy theory that humans evolved from other creatures, because we weren't there to see it! So, that proves the Genesis six-day creation account is literally true as written!”

Where do we get our facts?

Evaluating premises means evaluating facts.

In debates about elections, Brexit, …, these are facts about the social world.

Social facts?

Checking social facts

- In debates like Brexit and the US elections, you must ask: **how can I tell good social facts from bad social facts?**
- You are training to do this for facts about the natural world, and may be sceptical.
- Some advice!

Checking social facts

- Good social science **is falsifiable**
- It is possible to refute it through making observations (cf. Popper)
- Recall the argument from ignorance: we cannot prove our statements absolutely, but that doesn't make them false

Checking social facts

- A good social fact **is based on two pieces of evidence**:
  - It works somewhere;
  - It works for you.
- E.g. “Smaller classrooms will bring up grades in the primary schools of the Netherlands”.
- No matter how much evidence you have that it worked in Germany, you have to show the situations are sufficiently similar!
- We call this **external validity**

Checking social facts

- A good social fact attempts to open the ‘black box’ of causation: it **answers why questions**
- It is not enough to show there is a correlation between e.g. economic inequality and civil war.
- Tracing the steps in a particular conflict will corroborate a causal claim.

Questions?

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Joris Luyendijk

29 September 2020 | 8-9:30pm

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