



Critical Thinking & Innovation

JAKE CHANDLER

Arguments, Part 1



INTRODUCTION

Quick survey # 1

- 4 cards:



- We turned the 'E' over and found a '6'. Can we be confident that, if a card has a vowel on one side, it has an even number on the other?

Quick survey #2

- Some data about breathalisers and drunk driving:

Breathalisers never fail to detect a drunk person and falsely show sober drivers to be drunk in only 5% of cases. 1 driver in 1,000 is driving drunk.

- A driver is stopped at random and fails the test. Can we be confident that he or she is drunk?

You're not alone

- Regarding example 1:

Most answer 'yes' (finding a '6' behind the 'E' is sufficient)

But we would have needed to *also* turn over the '7' to verify that there isn't a **vowel** on the other side!



- Regarding example 2:

Most answer 'yes' (failing the test is sufficient)

But there is only a **2% chance** that the driver is drunk!

(Those who get a positive result: (a) the 1 drunk, (b) the $5\% \times 999 \approx 50$ non-drunks)

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Critical thinking

- But we are constantly bombarded with complex alleged reasons to believe various things:
 - journalists,
 - politicians,
 - advertisers,
 - friends & family,
 - ourselves, ...
- **Critical thinking** aims to help us sort the good from the BS by helping us **reconstruct** and **evaluate** people's reasoning
- It also helps us bombard other people effectively and fairly, by helping us **produce** good reasons of our own!

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It quickly gets worse

- Even in *simple* cases, we're bad at assessing whether we have been given good reasons to believe a claim
- It doesn't take much for us to be completely useless:

'The sign on the red door says that the prize is behind the red door. The signs on both the blue door and the green door say that the prize isn't behind the blue door. At least one of the signs states a falsehood and at least one of the signs states a truth. Can we be confident that the prize is behind the green door?'

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Added benefits

- Critical thinking matters to your **studies & career**
- It is a cornerstone of most contemporary **philosophy** degrees
- Data on philosophy students, who have the greatest exposure to critical thinking:
 - GRE admissions verbal reasoning & analytical writing tests: **1st**
 - GRE admissions quantitative reasoning tests: **1st** (non-science)
 - Law school admission tests: **1st**
 - Management school admission tests: **1st** (non-science)
 - Earnings: **1st** (non-science)

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Added benefits (ctd)

- Finally, critical thinking makes you a **more responsible citizen**, making better informed and more objective choices for society



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REASONS AND ARGUMENTS

Reasons to believe

- Asking for a **reason** to believe X = asking “why should I believe that X ?”
- We provide reasons by making **claims**, i.e. uttering/writing declarative sentences

Examples

Claims:

“Cheerios are full of sugar.”

“Killing people for fun is wrong.”

Non-claims:

“Did someone say KFC?” (interrogative sentence)

“Don’t do that!” (imperative sentence)

Two kinds of question

- Don't confuse the following very different questions:

- (1) "Why *should I believe that X?*"
- (2) "Why *is it the case that X?*"

Examples

Q: "Why *should I think that I have covid?*"
A: "Because your rapid test came out positive"

Q: "Why *is it the case that I have covid?*"
A: "Because you partied in a packed nightclub."

- Answers to (2) are often answers to (1), but not vice versa!

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Good vs bad reasons

- Not all reasons are **good** reasons (i.e. **justify** the belief)

Example

Q: "Why believe that we should reduce our carbon footprint?"
A1: 'Because my mate Dodgy Dave down the pub reckons so.'
A2: "Because CO₂ contributes to global warming, which has various detrimental affects on the environment."

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Strong vs weak reasons

- Not all good reasons are equally good: reasons have different **strengths**

Example

"He stole something from the shop: the attendant tells me he saw him acting shifty."

"He stole something from the shop: CCTV footage shows him stuffing his bag full of bottles and walking out without paying."

- What **makes** something a good reason or a stronger reason than an other? More on that later!

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Joint vs independent reasons

- Reasons can do their job solo or merely collaboratively
- **Independent** reasons: reasons that are sufficient to support the conclusion by themselves

Example

"You shouldn't go down to the woods tomorrow because it's going to rain and because it's snake season."

- **Joint** reasons: reasons that are only sufficient to support the conclusion in conjunction with further reasons

Example

"That's a square: it has four equal sides and the inner angles are ninety degrees"

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Chains of reasons

- Reasons can be backed up by other reasons, which can be backed by further reasons...
- These form **chains** of reasons

Example

“I think Nina won’t be joining us on the trip: She’s broke. Simon told me that she lost her job last month.”

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Arguments

- Definition:
To give an **argument** = to persuade someone to hold a belief by giving reasons to think that belief would be true
- The reasons: **premises**
- The thing to be believed (also a claim): the **conclusion** (aka “main claim”, “thesis”)
- Obviously: an argument in this sense is **not an altercation!**
- An argument is also sometimes technically defined as a set of claims (premises + conclusion)

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Sample arguments

Examples

“I think it’s going to rain later because I heard the weather forecast on the radio ,which is usually reliable.”

“Climate scientists predict that the world is facing environmental catastrophe, and they are the experts on these issues.”

“The sign on the red door says that the prize is behind the red door. The signs on both the blue door and the green door say that the prize isn’t behind the blue door. At least one of the signs states a falsehood and at least one of the signs states a truth. Therefore the prize is behind the green door.”

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Reasons for *actions*

- Q: Can’t you give an argument in favour of *doing* (rather than believing) something?

Examples

“Let’s plan a picnic for Sunday: the weather will be great!”

“Smoking lowers life expectancy by up to 10 years. Don’t do it.”

A: Sure! But you’re also giving reasons to believe: to *believe one ought to act* a certain way

Example

“Smoking lowers life expectancy by up to 10 years. *You should not / it would be bad for you to smoke.*”

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Practical reasons for belief

- Q: Can't you persuade people to believe certain things just because it would be *useful* for them to do so?

Examples

"Let us wager the gain and the loss is wagering that God is. Let us consider the two possibilities. If you gain, you gain all; if you lose, you lose nothing. Hesitate not, then, to wager that He is."

"He ought to try to believe that he has been taking Sertraline because that would help him overcome his depression."

A: Perhaps. Those who think you can, call such reasons **prudential** ($\neq$ **epistemic**). We aren't interested in these here.