

Introduction

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24.223: Rationality

I. Propositional attitude psychology

Propositions (claims, events) are ways the world could be.

Many psychological and rational explanations work via *propositional attitudes*—attitudes toward propositions.

Can distinguish *doxastic* (belief-like) from *bouletic* (desire-like) propositional attitudes.

We can evaluate many of these states from the standpoint of either *epistemic rationality* (is it well-supported by the evidence?) or *practical rationality* (does it serve your goals?)

Practical rationality tends to focus on the rationality of *actions* and *decisions*.

Epistemic rationality tends to focus on the rationality of *beliefs* or *degrees of belief*. In this class we'll mostly focus on *degrees of belief*, and learn how to model them using tools from probability theory.

Why?

II. Why go quantitative?

We talk about what people *believe* (more colloquially: *think*) all the time. We sometimes talk about *how likely* we think various possibilities are (*pretty likely; sorta likely; more likely than not;...*). Rarely do we give quantitative probability estimates (*it's 92% likely that...*).

"Traditional" epistemology focused on outright belief.

Consider a **Simple Binarist**: for every proposition p , they either:

- Believe p ;
- Suspend judgment on p ; or
- Disbelieve p

Supposing their beliefs are *logically closed*, we can get their **belief set** by *intersecting* all the claims they believe.

What's missing?

Argument 1: Explaining belief dynamics. Your attitudes should explain your dispositions.

"She left because she wanted to eat lunch"

"He knocked on the door because he thought she was in her office"

Anscombe's shopper & direction-of-fit

\$\$ for elephants

"Outright beliefs" or "full beliefs"

Why shouldn't we?

Believe neither p nor $\neg p$

Believe $\neg p$

I believe $B = \text{my bike's brakes work}$.

I also believe $F = \text{fusion will become a viable energy source}$.

But my attitudes toward the two are very different.

→ If I got a bit of evidence that my brakes don't work (eg your brakes froze up yesterday), I'd still believe B .

→ But a bit of evidence that fusion is not viable (eg the tokamak design can't be scaled up) would push me to suspend judgment about F .

To account for this, it's natural to introduce *comparative confidence*: I'm more confident of B than of F .

Argument 2: Explaining actions.

We want your beliefs (together with your desires) to be sufficient to *explain what you (should) do*.

I'm willing to (it's rational to) bet my life on B . (I do it every day.)

I'm *not* willing to (it'd be irrational to) bet my life on F .

So I must have different attitudes toward them—and the *degree* to which I'm more confident must suffice for betting my life.

→ We need to be able to quantify *how much you'd be willing to bet* on your beliefs. Mere comparisons aren't enough

Argument 3: What are the norms on binary belief?

If Simple Binarist picture is right, beliefs should be both *consistent* and *logically closed*:

Consistency: Your beliefs should be mutually consistent.

If you believe p_1 and you believe p_2 and... and you believe p_n , then it must be possible for $p_1 \& p_2 \& \dots \& p_n$ to be true.

Closure: You should believe anything that follows from your beliefs.

If you believe p_1 and you believe p_2 , then you should believe $p_1 \& p_2$.

Problem: the lottery paradox [coin flips].

What should we say about the lottery? Assign probabilities!

Solution to the paradox? Either (1) *belief is strong* or (2) *belief is weak* (Lockeanism).

If (1), you don't (fully!) believe your ticket will lose.

If (2), weak beliefs needn't be closed or consistent.

Although I believe F , I don't believe it very strongly.

But *comparison* doesn't imply *quantitative measurement*. Baldness. Fitness.

I'm also more confident that $C = \text{this coin won't land heads 10 times in a row}$ than I am in F . But I *wouldn't* bet my life on C .

Follow-up: the preface paradox