Lewis Powell & Johannes Schmitt

Betting on (one's own) Ignorance

One popular method of arguing for Bayesianism relies on Dutch Book arguments. These arguments use considerations about the betting behavior of rational agents to support the view that a rational agent's credence has to be represented by a probability function. In this talk, we will examine a challenge to Dutch Book arguments that arise from Thomason-conditionals, diagnose the problem they produce for Dutch Book arguments, and show how to amend Dutch Book arguments to avoid this challenge. The challenge focuses on Thomason-conditionals, which are indicative conditionals of the form

(i)   If p, then S will not know that p

The challenge they pose, briefly, is this: there are some Thomason-conditionals for which an agent's credence should be quite high, despite the fact that it would be irrational for the agent to accept a bet on them.

This disconnect between one's confidence in the conditional and the rationality of accepting a bet on the conditional is at odds with the central assumption behind Dutch Book arguments, **Betting Prices (BP)**

> **BP:** The price at which a rational agent would be indifferent between buying and selling a bet on (the truth of the proposition that) p that pays $S if won and $0 if lost always conforms to $[S*Cr(p)] (where 'Cr(p)' stands for the agent's credence in p).

The purported counterexample to BP involves the following Thomason-conditional:

(ii)   If Mueller's spouse cheats on Mueller within the next five years, Mueller will never know it.

It seems that, in many situations Mueller would be in a position rationally place a high credence on (ii). For the sake of the illustration, let's suppose that his credence is .9. Now, if the bet on (ii) is understood as a *de Finetti* conditional bet, it is straightforward to show that **BP** requires that Mueller, if rational, place *no* credence in (ii). Again, this disconnect is a challenge for Dutch Book arguments as much as it is a challenge for the

principle **Betting Prices.**

What has gone wrong? The bet on (ii) is of course a sucker's bet for Mueller. But it seems clear that it is the *making* of the bet, not the judging in favor of (ii) which makes a sucker out of Mueller. By engaging in the bet, Mueller undermines the grounds for confidence in (ii).

So, our diagnosis is that the challenge arises because BP requires that any sucker's bet reveals a pre-existing epistemic flaw, and Thomason-conditionals take advantage of the mechanics of bets to show that one can be a sucker for making a bet without already being an epistemic sucker prior to making the bet.

In the talk we argue that BP has to be replaced with a principle like BP*, in which the betting agent explicitly includes the information *that they are about to make a bet* in the evidence that determines the right price for the bet:

> **BP*:** The price at which a rational agent would be indifferent between buying and selling a bet on (the truth of the proposition that) p that pays \$S if won and \$0 if lost always conforms to \$[S*Cr(p/I am about to bet on p]

We argue that BP* makes reasonable predictions on betting prices not just for the special case of Thomason conditionals, but for two broader classes of sentences.

If we are right, a correct formulation of Dutch Book arguments for Bayesianism has to proceed via BP* or a similar principle and not BP.