

Dallmann 2017, Rational Obstinacy

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24.223 Rationality

Effects:

- Primacy effect.
- Belief perseverance (debriefing paradigm).
- Selective scrutiny.

Care about accuracy. Value of evidence \Rightarrow always want *free* evidence.

But for limited agents, evidence is never free: has *cognitive* opportunity costs: can't process other bits of evidence.

Focus on cases where inquiry is *fruitful* but has *diminishing returns*.

Focus on cases where (i) quantity of information, (ii) expected credal accuracy, and (iii) resilience of credences to new info are all correlated.

Naive policy: Process all evidence you can remember on first-come, first-served basis.

Obstinate policy: Once you have processed enough info about P , disregard new info about it; otherwise, proceed naively.

Model: p_1, \dots, p_n true propositions of interest.

Evidence X_i about p_i comes in with a Poisson distribution.

Working memory store of size (say) 4.

Process information (clear slot in WM) with a Poisson distribution as well.

If WM full, discard new info.

Assume (strong) diminishing returns on expected accuracy for each p_i .

Score credences with Brier score.

Results:

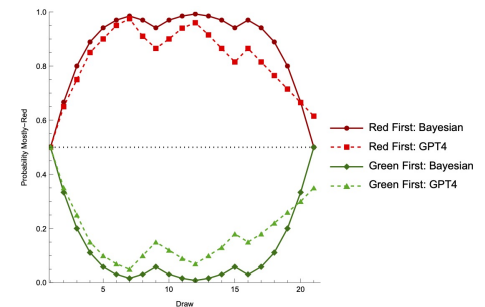
Intuition: want to manage information bottlenecks, prioritizing high-impact info.

For small (30-ish) number of epistemic events (info coming in or going out of WM), obstinate policy better for all parameter values.

For cases where WM small and info comes in faster than can be processed [seems realistic!], obstinate policy better for much longer.

Why? Chance of an information bottleneck!

Applications:



Suggests these are common.

Idea: focuses on high-impact information.

Bus riders arriving at stop; NOT buses, which are scheduled

He updates as soon as enter memory, rather than when leave. That's weird.

$(cr(q) - \mathbb{1}_q)^2$
Why not absolute distance?

Primacy effect. Belief perseverance. Selective Scrutiny.

Beliefs as plans, simplifying reasoning.

Q: Does this model make it plausible that obstinacy is rational for *us*?

References