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[17] Confirmation (ctd.)

0. Outline

1. **Bayesian contrastive confirmation (ctd.)**
2. **Bayesians on the Tacking problem – take 2**
3. **Bayesians on the Ravens – take 2?**

1. Bayesian contrastive confirmation (ctd.)

- Last time:
  - My dim view of Bayesian solutions to the Tacking problem.
  - The need for an account of contrastive confirmation.
  - **LL** and the associated lack of supporting arguments / lack of discussion of competing proposals.
- Fitelson [forthcoming] provides a recipe for generating such competitors:

  (†): *E* confirms that H_1 rather than H_2 iff $c(H_1,E) > c(H_2,E)$.

  In other words: *E* is evidence that H_1 rather than H_2 if and only if *E* is better evidence that H_1 than it is evidence that H_2.
- Plugging in different popular proposals for c(*H*,*E*) yields a whole load of nonequivalent analyses.

1. Bayesian contrastive confirmation (ctd.)

- Some reasons to prefer **LL** to *any* of these competitors.
- *Reason #1*: it's the *only* account that makes the following true

  A4: 'That an ace has been drawn doesn't confirm that an ace of hearts rather than a black ace has been drawn (or vice versa).' (proof omitted)
- *Reason #2*: the following principle seems intuitive

  Robustness: If *E* supports H_1 over H_2, wrt background knowledge *K*, this remains the case even with respect to background knowledge *K** obtained by strict conditionalisation on $H_1 \vee H_2$.
- But it can be easily demonstrated that *this* is true iff we endorse **LL**. (again, proof omitted)

1. Bayesian contrastive confirmation (ctd.)

- *Reason #3*: We can also demonstrate the following theorem (proof omitted; informal version given here):

  Value: carrying out an experiment with possible outcomes E and $\neg E$ is valuable only if E would contrastively support some hypothesis H_1 over some hypothesis H_2 *according to* ***LL***.

- In other words: the only contrastive evidence we should care about is contrastive evidence *as defined by* ***LL***.
- Note: for those who are interested, the proof of this theorem builds on I.J. Good's theorem on the value of information (Good [1967]).

1. Bayesian contrastive confirmation (ctd.)

- Worry: the following seems plausible (Fitelson [forthcoming])

  Entailment condition – contrastive version (EC-C): if (i) $E \vDash H_1$ and (ii) $E \nvDash H_2$, then (iii) E confirms that H_1 rather than H_2, provided E, H_1 and H_2 are contingent.

  (Natural contrastive analogue of **EC** for non-contrastive support)
- But it turns out that (i) **LL** says this is *false* (proof omitted), whilst (ii) most other accounts say that it is true (proof omitted).
- Suggestion: surely the very *intelligibility* of 'E is evidence for H_1 rather than H_2' requires $H_1 \vDash H_2$ (does it make any sense to ask for evidence that I am tall rather than brown-eyed?)
- It turns out that **EC-C** is true according to **LL** if $\Pr(H_1|H_2) = 0$ (and a fortiori if $H_1 \vDash H_2$).

1. Bayesian contrastive confirmation (ctd.)

- I'll make a tacit mutual exclusiveness assumption throughout what follows.

2. Bayesians on the Tacking problem – take 2

- So, *assuming* we buy **LL**… what does *any* of this have to do with the Tacking problem?
- We have seen that some assertions of evidential support have explicitly contrastive surface forms ('E is evidence for H_1 rather than H_2') and hence *must* be interpreted contrastively. (e.g. **A3**)
- But utterances of the form 'E evidentially supports H' are *also* sometimes clearly interpreted contrastively (be this prompted by prosodic stress or simply conversational context):

  A5: 'Harry's testimony is evidence that Big Joe robbed the *bank.*'

  (Arguably: *all* assertions of evidential support are (at least tacilty) contrastive – I don't need this stronger claim here)

2. Bayesians on the Tacking problem – take 2

- Proposal: the reason why we judge

  A1: 'That you have at least three red cards is evidence that you have a handful of red cards and a pocketful of pennies'.

  and

  A2: 'That you have at least three red cards is evidence that you have a handful of hearts.'

  to be false, is that they are *interpreted contrastively*, as respectively

  A1*: 'That you have at least three red cards is evidence that you have a handful of red cards and a pocketful of pennies rather than just a handful of red cards.' (i.e. red cards and no pocketful of pennies)

2. Bayesians on the Tacking problem – take 2

and…

A2*: 'That you have at least three red cards is evidence that you have a handful of hearts rather than a handful of (say) diamonds.'

- Now it turns out that the following can be demonstrated (see Chandler [2007]):

  [T19]: According to **LL**, if there are two propositions, H^{+}_{1} (e.g. you have a handful of hearts) and H^{+}_{2} (e.g. you have a handful of diamonds) such that both entail a third proposition H (e.g. you have a handful of reds) and H screens both of them off from E (e.g. you have at least three reds), then E *isn't* evidence that H^{+}_{1} rather than H^{+}_{2}.

2. Bayesians on the Tacking problem – take 2

- Interesting question: would alternative accounts of contrastive confirmation yield a similar resolution?

3. Bayesians on the Ravens – take 2?

- Another interesting question: could a similar move be pulled off wrt the Ravens?
- I can't see why not.
- Tentative suggestion: give the Schefflerian line a Bayesian spin, arguing that we judge:

  A6: 'A non-black nonraven confirms that all non-black things are non-ravens.'

  true and judge:

  A7: 'A non-black nonraven confirms that all ravens are black.'

  false because…

3. Bayesians on the Ravens – take 2?

they are interpreted contrastively, as (say – other alternatives might work too):

A6*:'A non-black nonraven confirms that all non-black things are non-ravens rather than ravens.'

and

A7*: 'A non-black nonraven confirms that all ravens are black rather than non-black.'

- And **A6*** comes out *true*, whilst and **A7*** comes out *false*, according to the appropriate account of contrastive confirmation.
- Minor worry: I have argued that to ask whether H_1 rather than H_2 presupposes that H_1 and H_2 are mutually exclusive.

3. Bayesians on the Ravens – take 2?

- But according to the standard view of the relevant pairs of universal generalisations here, these *aren't* mutually exclusive.
- 'All non-black things are non-ravens' and 'all non-black things are ravens' both turn out to be *true* if everything is black.
- So don't we have a counterexample to the mutual exclusiveness requirement?
- Incidentally, if we did, this would create some worries for **LL** (not terminal ones, however).
- Response (see L15):
  - The standard view is simply false.
  - 'All non-black things are non-ravens' and 'all non-black things are ravens' are *unintelligible* if everything is black.

3. Bayesians on the Ravens – take 2?

- Assuming this is correct, how does all this look like from **LL**'s point of view?
- I'll leave you to think about that…

Appendix: precise versions of some theorems cited

[T19]: For any E, H, H^+_1 and H^+_2, if [1] $\mathrm{Bel}_{S,K}(E \mid H\&H^+_1) = \mathrm{Bel}_{S,K}(E \mid H)$ and $\mathrm{Bel}_{S,K}(E \mid H\&H^+_2) = \mathrm{Bel}_{S,K}(E \mid H)$ and [2] $\mathrm{Bel}_{S,K}(H \mid H^+_1) = 1$ and $\mathrm{Bel}_{S,K}(H \mid H^+_2) = 1$, then [3] $\mathrm{Bel}_{S,K}(E,H_1) = \mathrm{Bel}_{S,K}(E,H_2)$.

Reference

- Chandler, J. [2007]: ‘Solving the Tacking Problem with Contrast Classes’, *British Journal for the Philosophy of Science* 58(3): 489-502.
- Fitelson, B. [forthcoming]: ‘Likelihoodism, Bayesianism, and Relational Confirmation’, forthcoming in *Synthese*.
- Good, I.J. [1967]: ‘On the Principle of Total Evidence’, *BJPS* 17(4), pp 319-321.

Next lecture: ‘The Lottery (ctd.)’

- Reading TBA.