Knowledge
ascription as
expression of trust

Benj Hellie

Basics
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expressivism
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Logic of knowledge
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The basic idea

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► Asserting 'Sam knows who shot JR' serves to set up a commitment to accept Sam's opinion on who shot JR, whatever it may turn out to be;

► Looked at another way (and assuming realism about belief ascriptions), it restricts the context set (the worlds being taken seriously as candidates for actuality) to worlds at which Sam's opinion on who shot JR and the answer to 'who shot JR?' coincide;

► But asserting this does so *without intrinsic constraint*. Since a knowledge ascription is a 'move in a language game' rather than an attempt to convey information, the only constraints on knowledge ascriptions are practical constraints: if establishing this commitment serves the purposes of inquiry, the ascription is open to no further charge of error.

Formal pragmatics: abstracta

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- ▶ **Modal space** is the set W of all possible worlds
- ▶ The **proposition** expressed by a sentence φ relative to a context c: $\lceil \varphi \rceil^c \subseteq W$
- ▶ A **context** c is associated with a sequence of parameters $\langle i_c, \ldots \rangle$
- ▶ The **context set** or **information state** associated with c is $i_c \subseteq W$: $w \in i_c$ just if it isn't taken for granted in c that w isn't the actual world

Formal pragmatics: dynamics

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- The **immediate update context** of c resulting from an assertion of φ being accepted against c 'without making any further alterations' is $c \dot{+} \varphi$
- The **essential effect** of assertion is *intersective*: $i_{c\dot{+}\varphi} = i_c \cap \lceil \varphi \rceil^c$
- A **nondefectiveness** stricture: if c is used to represent some real state of inquiry, $i_c \neq \varnothing$
- Often in practice we observe **accommodation**: if against c, φ is asserted, and $i_{c\dot{+}\varphi} = \varnothing$ but ψ is the weakest sentence such that $i_{c\dot{+}\psi\dot{+}\varphi} \neq \varnothing$, then for the next stage of inquiry c^*, $i_{c^*} = i_{c\dot{+}\psi\dot{+}\varphi}$

Factivism versus expressivism

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▶ For φ an arbitrary element of a 'discourse':

Factivism

$\varnothing \subsetneq \lceil \varphi \rceil^c \subsetneq W$

Expressivism

$\lceil \varphi \rceil^c$ is extremal

▶ These are rough and ready labels—various counterexamples are obvious enough; also what individuates 'discourses' etc.

Semantic values of questions

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- The semantic value of ω relative to c—$|\omega|^c$—is a partition of modal space (of the subregion of modal space where all presuppositions of ω relative to c are met)
  - A partition of S is a set of subsets of S such that no two of them contain the same member and any member of S is in one of them—they are *mutually exclusive and jointly exhaustive*
    - (This is only so for 'informational' questions—different for practical questions, questions about conditionals, and explanatory questions)
- We will write $\mathfrak{Q}(W)$ for the set of partitions of subregions of modal space
  - So $|\omega|^c \in \mathfrak{Q}(W)$

Examples

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- $|\text{Who shot JR}|^c$ is the set of sets of worlds (at which JR was shot by a person) such that:
  - If at w, Suellen shot JR, while at w', Kristin shot JR, w and w' are in different cells;
  - If at both w and w', Suellen shot JR, w and w' are in the same cell
- $|\text{Are you the farmer}|^c$ is the two-membered set of sets of worlds (at which the addressee of c exists and there is exactly one farmer of the sort salient in c) such that:
  - All worlds at which the addressee of c exists and is a farmer of the sort salient in c are in one cell
  - All worlds at which the addressee of c exists but is not a farmer of the sort salient in c are in the other cell

Questions and inquiry

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- ► Slogan: *questions structure inquiry*
- ► Theory to go with the slogan:
  - ► At a stage of inquiry a number of questions are *live*
  - ► Any learning that goes on as that stage updates to the next stage is the making of progress at answering a live question
- ► More formally:
  - ► $c = \langle i_c, \ell_c \ldots \rangle$
  - ► $\ell_c \subseteq \mathfrak{Q}(W)$—it represents the set of questions (partitions of subregions of modal space) live at c
  - ► For some $q \in \ell_c$, for some a in the set of union sets of members of the power set of q, $i_{c'} = i_c \cap a$
    - ► This is compatible with my not learning anything

Livening things up

- ▶ How does the constituency of ℓ_c get updated?
- ▶ The most straightforward way is by *accepting an explicit interrogative*
  - ▶ Against c, someone asks 'are you the farmer?'
  - ▶ Everyone agrees that this is a question worth taking seriously
  - ▶ The result is to 'direct-inject' the semantic value of that question to the list of live issues
    - ▶ More formally: $\ell_{c+\text{are you the farmer?}} = \ell_c \cup \{|\text{are you the farmer}|^c\}$

Accommodation of an assertion

▸ Against c, someone says 'goats eat cans'. Two options:
  1. Although this is out of the blue, we decide to accept the assertion. We do so by accommodation: first raise the question then answer it:
     ▸ $c' = c + \text{do goats eat cans?} + \text{goats eat cans}$
     ▸ $\ell_{c'} = \ell_c \cup \{|\text{do goats eat cans}|^c\}$
     ▸ $i_{c'} = i_c \cap \lceil \text{goats eat cans} \rceil^c$

     ▸ Public speakers sometimes do this explicitly: 'Will Bob Dole bring prosperity to the American family? Yes he will. Does Bob Dole have the experience needed to make this country grow? Yes he does', says Bob Dole.

  2. Because it is out of the blue, we decide to reject the assertion:
     ▸ Because $|\text{do goats eat cans}|^c \notin \ell_c$ we cannot accept the assertion without accommodating by raising a question to which it is an answer;
     ▸ We do not feel like doing this, so we reject the assertion:
     ▸ 'That's irrelevant', we say, and move on.

Some notation

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- ω is a schematic letter ranging over *embedded questions*. Substitution instances: 'who shot JR'; 'what the meaning of life is' 'whether that is really your hair'
- $?\varphi$ abbreviates 'whether φ'
- $K_s\omega$ abbreviates 's knows ω'
  - In particular, $K_s?\varphi$ abbreviates 's knows whether φ'
- $K_s!?\varphi$ abbreviates 's knows that φ'
  - This last is not really a proper 'logical form' in that it is not compositional: more shortly

Live issues and information sources

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- An **information source** s is something associated with a set $i_s \subseteq W$
- A **source-marked question** is a pair $\langle q, S \rangle$ where $q \in \mathfrak{Q}(W)$ and S is a (perhaps empty) set of information sources
- Adapt our characterization of ℓ_c to make it a set of source-marked partitions rather than a set of partitions

Test semantics for knowledge-ascriptions

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- $\lceil K_s \omega \rceil^c = \ldots$
  - W iff $[\exists S : |s|^c \in S]$, $\langle |\omega|^c, S \rangle \in \ell_c$;
  - $\emptyset$ otherwise
- So asserting $K_s \omega$ against c carries certain presuppositions:
  - That ω expresses a live issue (if not, should accommodate to make it so);
  - That that issue is source-marked with (the semantic value of) s (if not, should accommodate to make it so)
- $K_s \omega$ presupposes that for some cell α of ω, $i_s \subseteq \alpha$
  - Nice to extract this from something else, probably the coherence rule on the next slide, but I don't quite see how to do that
- $K_s !? \varphi$ additionally presupposes the truth of φ

A coherence rule

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- ► If $[\exists S : |s|^c \in S]$, $\langle |\omega|^c, S \rangle \in \ell_c$:
  - ► If for some $\alpha \in |\omega|^c$, c represents that $i_s \subseteq \alpha$,
  - ► c is incoherent unless $i_c \subseteq \alpha$

  - ► Slot in your favorite theory of what it is to represent an information source as bearing certain information: this is in my view best done in expressivist terms as well, but let the details not detain us

- ► That is to say, if we think of s as knowledgeable on the question at issue, and we think of s's opinion on that question as falling a certain specific way, then that had better be our opinion as well.

Comparison

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- Throughout the possibilities we are taking seriously, Sam's opinion on ω matches the answer to ω
- That is not too different from a safety/sensitivity account:
  - Think of the difference between the views on analogy to that between the expressivist approach to the indicative conditional and a Lewis-type approach to the 'counterfactual'.
  - Principally, while there is a lot of 'contribution of the world' stuff involved in the latter, there is none in the former: they are worried about nontrivial truth-conditions, so they want to make it a challenge to say something true; we, by contrast, are concerned solely to model the use of these things in the regulation of inquiry, so it can be super-easy (by one's own lights) to say something true (though it might be a challenge to get one's assertion accepted).

Why expressivism?

1. Mere true belief
2. Logic of knowledge
3. Explains modern epistemology
4. Divergences from ideal epistemic operators

When K = TB

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- ▶ A story:

> Boris and Natasha are spies. Natasha has hidden microfilms in Bullwinkle's pumpkin patch.
> Bullwinkle, a hopeless fantasist, has all sorts of opinions he just conjured up. Natasha and Boris both know about Bullwinkle that he is a hopeless fantasist.
> One of Bullwinkle's wacky views is that the stolen microfilms in the news have been hidden in his pumpkin patch. Natasha somehow knows that Bullwinkle has this opinion.
> Natasha wants to convey to Boris where the microforms are over the phone, but both know the FBI is listening in. The conversation proceeds: 'Natasha, Natasha, Mr. Big wants me to bring him those microfilms now. You must tell me where they are!'
>
> 'Boris, darling, you know I cannot tell you where they are. But go ask
>
> Bullwinkle: he knows where the microfilms are.'

- ▶ Natasha's speech seems to be entirely in order. If necessary, we could say that it is true.
- ▶ Now, the only thing to be said on behalf of Bullwinkle's belief is that it is true. If your account of knowledge predicts that K = XTB, then (if this can be done without interfering with what I have stipulated), assume that Bullwinkle's belief is not X.

Expressivism on Bullwinkle

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- Expressivism says that when Boris accommodates Natasha's assertion, he marks Bullwinkle as a trusted source on *where are the microfilms*. So since he wants the answer to this question, he will go and ask Bullwinkle. That seems right.
- Note that Boris and Natasha's only purpose with Bullwinkle is to exploit him as an 'information dump': Natasha's assertion signals that Bullwinkle is in possession of the information it is their common desire for Boris to share, so it serves this purpose.
- The question of whether Natasha's speech is true is of subsidiary interest. Relative to her context, and to the one to which she hopes Boris to accommodate, it expresses the trivial proposition. Relative to mine, maybe it expresses the trivially false proposition, but who cares? I'm not in on the conspiracy. What is predictively important is that the assertion serves the intended regulative role.

The logic of knowledge

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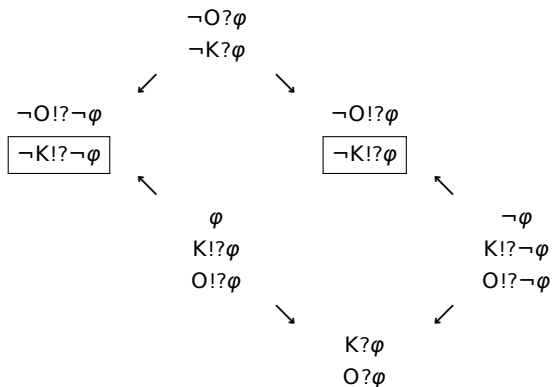Why expressivism?
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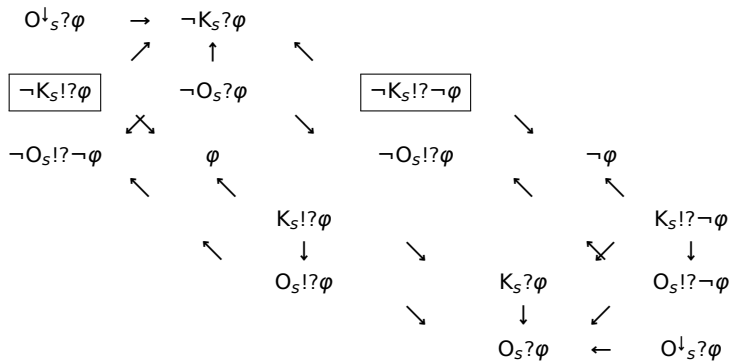Logic of knowledge
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- ▸ The next two slides show intuitively compelling entailment patterns regarding first- and third-person knowledge and opinion claims (both propositional and with embedded questions). I argue in detail elsewhere that the expressivist view predicts these patterns. After displaying the patterns I will make a few comments.
- ▸ Some abbreviations:
    - ▸ $O_s\omega$: s has an opinion as to ω
    - ▸ $O_s!?\varphi$: s's opinion is that φ
    - ▸ $O^{\downarrow}_s\omega$: s's opinion as to ω is not to be trusted
- ▸ Unsubscripted K and O concern first-person 'avowal' rather than third-person 'ascription':
    - ▸ $K\omega$: I know ω
    - ▸ $K!?\varphi$: I know that φ
    - ▸ $O\omega$: I have an opinion as to ω
    - ▸ $O!?\varphi$: my opinion is that φ

First-person entailments

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Third-person entailments

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$$O^{\downarrow}{}_s?\varphi \quad \rightarrow \quad \neg K_s?\varphi$$

$$\boxed{\neg K_s!?\varphi} \qquad \neg O_s?\varphi \qquad \boxed{\neg K_s!?\neg\varphi}$$

$$\neg O_s!?\neg\varphi \qquad \varphi \qquad \neg O_s!?\varphi \qquad \neg\varphi$$

$$K_s!?\varphi \qquad\qquad K_s!?\neg\varphi$$

$$O_s!?\varphi \qquad K_s?\varphi \qquad O_s!?\neg\varphi$$

$$O_s?\varphi \quad \leftarrow \quad O^{\downarrow}{}_s?\varphi$$

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Comments

1. The boxed sentences are sentences for which the logic of actual knowledge-ascription diverges from a sort of 'ideal epistemic logic' I will discuss at the end of these slides:
   - The boxed sentences in the first-person chart are intuitively inconsistent: my claim here is that the theory predicts this rather than stating that they are equivalent to the sentences they share a cell with. (Roughly, what they are doing in those cells is being the real-world correlates of ideal sentences inhabiting those positions that are consistent.)
   - The boxed sentences in the third-person chart are in the 'opposite' positions to those occupied by their ideal sentences, and the entailment arrows running out of them run in the 'wrong' direction.

2. Note a number of failures of contraposition: these tend to be the mark of discourse requiring a 'test' semantics.

3. I know of no factivist attempt to accommodate all this data.

Expressivism on modern epistemology

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- Expressivism predicts a range of features of modern epistemology:
  1. The right to be sure
  2. Smith, Jones, and Brown
  3. NFL
  4. Luck
  5. Gettierology
  6. Contextualism and relativism
  7. Knowledge-norms
  8. Skepticism

The right to be sure

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- Ayer did not have a JTB view. He is best read as saying that we make pragmatically-driven decisions about whom to trust. That is more-or-less my view.

Smith, Jones, and Brown

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- Whether or not Smith is to be trusted on whether Jones owns a Ford is of no bearing on whether Smith is to be trusted on the status of whether (Jones owns a Ford or Brown is in Barcelona). Weakening a proposition strengthens its denial: if it's easier for them to get the right answer on one side it's harder for them to get the right answer on the other side.

- Bullwinkle is the exceptional case. Ordinarily we do not use someone as a mere information dump: we cooperate with them on figuring out related stuff. If someone has a false view about subjects closely related to something about which they have a true view, cooperating with them on that issue might easily lead one astray. That is why we do not bestow trustworthiness when someone's view is 'based on a false lemma'.

Luck

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- The same goes for luck. We tend to be conservative, so a belief true by dumb luck is a sign of a false lemma somewhere.
- Note also that what counts as luck is a matter of what we are ignoring, which is associated with pragmatic decisions we make, which in turn influence whom we regard as trustworthy.

Gettierology

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- Gettierology presupposes factivism, which is a false view, so of course Gettierology is a failure.
- Note also that divergent 'intuitions' observed with students are likely to have to do with their difficulty with (and our inarticulacy about) adopting the 'right' perspective: we've told them that Smith's view is right, so why isn't Smith trustworthy? They need to embed themselves at a position in the story where they turn off that aspect of it while keeping it running in the background. Knowledge ascriptions are usually made with some purpose in mind. What purpose is the student supposed to have in mind? The fact that we are telling them a story makes them have to do a great deal of filling in.

Contextualism and relativism

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- These are both views according to which its truth-value is a significant part of a knowledge-ascription: not so for the expressivist view.
- Both contain a grain of truth:
  - Whether someone would rightly say *Bullwinkle knows* in light of all the information in the story depends on what they are doing. (FBI: 'let the moose go—he didn't know anything, that crazy guy just had the dumb luck to get caught up with a couple of sinister characters'.)
  - That 'stakes' play a role in which knowledge ascriptions we make is clear enough: if we are taking seriously an expansive range of possibilities out of the need for extreme care, we may find that once things get weird a person's opinion on a question gets loose from the answer to the question (cross-examination in court as against ordinary gossip)
- The difficulty we have in assessing which of these views (or some kind of invariantist) is correct has to do with the mutually mistaken assumption that truth-value matters.

Knowledge-norms

- First-person: φ, 'I believe that φ', and 'I know that φ' are all equivalent, so a knowledge-rule adds nothing to a belief- or truth- or true belief-rule in terms of self-regulation.
- Third-person: these are inequivalent, but
    - If one believes that P one believes one knows that P, then if one believes that P but doesn't know that P one has made at least one mistake—namely, one's belief that one knows that P is false
    - A reason for action is a belief
    - One doesn't believe that the lottery ticket will lose, one just has a high credence that it will (or if one has both, one is incoherent)
    - 'Sam shouldn't assert what she doesn't know'—if we think Sam's belief is not knowledgeable we would recommend others not trust her, so in particular they shouldn't accept her opinions, so in particular they should reject her assertions
    - When we think someone is untrustworthy that is typically because they have made a mistake elsewhere; a more specific criticism of their action (they took an unacceptable risk because they overlooked a certain possibility that would have been real bad) than 'they didn't know' is typically 'programmed for' by that sort of criticism.
- Finally, the factivist nonreductivist who posits knowledge-norms seems to be committed to a pretty heavy load of metaphysics. Knowledge-norms are maybe data but certainly not theory.

The 'skeptical paradox'

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- A Moorean antiskeptical argument:
  1. I know that I have hands
  2. If I have hands, I'm not a BIV
  3. So I know I'm not a BIV
- This can seem problematic: the second premiss is surely true, the first is extremely plausible, the argument appears sort of valid, and the conclusion is weird: not least because sometimes we want to accept 'I don't know I'm not a BIV'
- I'm going to argue that this is because considering (3) forces a shift of context from that against which we were considering (1)

Expanding the context-set

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- ▶ 'I know I'm not a BIV' presupposes that it is a live issue (if only suppositionally) whether I am a BIV
- ▶ But if so, the context-set contains both non-BIV and BIV possibilities
- ▶ We probably need to accommodate in order to make that so: probably ordinarily there are no BIV possibilities in the context set
  - ▶ After all, since I believe that I have hands, the context set contains no non-'I have hands' possibilities, and any BIV possibility is a non-'I have hands' possibility
  - ▶ So considering the argument makes me expand the context set to include possibilities beyond the discourse-initial set, possibilities in which BH is a BIV
- ▶ I will now argue that this accommodation explains the weirdness of (3)

Accommodation and alienation

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- Making this accommodation compels me to take a sort of 'alienated' take on myself:
  - It is in the nature of the tradition to suppose that most of what a brain in a vat believes is wrong;
  - But $\varphi \dashv\vdash B\varphi$;
  - So if I am to take seriously the hypothesis that someone is a brain in a vat, I must treat that person under the third-person perspective: avowals take on the form of ascriptions to the person speaking
- Reading the full argument along the lines (3) compels it looks like this:
  1. That person knows he has hands
  2. If that person has hands, he is not a BIV
  3. That person knows he is not a BIV

Does he know that?

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- We now have two contexts in play: our 'main' context and the one required for taking seriously whether that person is a BIV
- Are these the same? —They are just if the hypothesis to which we shift in the accommodation is treated 'indicatively' rather than 'subjunctively':
  - If not, then perhaps throughout the main context that person's opinion about whether he is a BIV is accurate
  - If so, then there are worlds in the main context in which that person's opinion about whether he is a BIV is inaccurate
- So if they are the same, we should reject (3); otherwise, we may accept (3).

Constraints on the 'main' context?

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- ▸ Presumably I shouldn't allow BIVs into the main context unless either:
  - ▸ There might (consistently with my evidence and expectations) be BIVs around (now or soon, perhaps as a result of something I might do)
  - ▸ I am talking with someone who thinks there might be BIVs around
    - ▸ I need to watch out for being in a conversation in which each of us mistakes the other as thinking there might be BIVs around—a self-fulfilling mistake!
    - ▸ Perhaps this is what happens in the 'epistemology room'
- ▸ Perhaps I can get myself into the view that there might be BIVs around by:
  - ▸ Fiddling with my interpretation of my evidence, perhaps by asking metacognitive questions: perhaps at the risk of incoherence, if I *mis*interpret my evidence as a result
  - ▸ Setting aside a sufficiently large number of expectations—perhaps what people who are fond of 'stakes' and 'standards' talk have in mind—perhaps at the cost of bogging myself down
- ▸ None of this is cost-free, so I don't think I'm privileging the maximally permissive skeptical context (unlike Lewis)

The skeptical frame of mind

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- I find (3) problematic when:
  - I accommodate to take seriously the prospect that someone is a BIV
  - I take up an alienated stance on my own psychology
  - I take with (at least temporary) genuine seriousness—as more than just an entertaining hypothesis known to be false—that there are some BIVs around
- Of course, this alienation is unsustainable and not really genuine in the first place, because we *do* in fact occupy the first-person perspective (and must take it for granted if we are to get anything done)
- So our problem with (3) is not merely that it strikes us as false: it also strikes us as *true*; moreover, in entertaining this incoherent package we maintain both an 'engaged' and an 'alienated' point of view on ourselves
- (3), that is, is really weird!

Validity?

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- The argument uses a 'closure under entailment' rule:
    1. $K_s \varphi$
    2. if φ, ψ
    3. $\therefore K_s \psi$
- Unpacking:
    1. $K_s!?\varphi$
    2. if φ, ψ
    3. $\therefore K_s!?\psi$
- Unpacking still further:
    1. $K_s?\varphi$ presupposing φ
    2. if φ, ψ
    3. $\therefore K_s?\psi$ presupposing ψ
- As we saw under the discussion of Gettier, trust on a polar question isn't closed under entailment of the affirmative answer: weakening the affirmative strengthens the negative
- So closure is *invalid* (though, as we will see, this is not the problem)

Closure from the first-person

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- For knowledge-avowals, things look different. The first-person closure rule runs:
  1. $K\varphi$
  2. if φ, ψ
  3. $\therefore K\psi$
- Unpacking all the way:
  1. $K?\varphi$ presupposing φ
  2. if φ, ψ
  3. $\therefore K?\psi$ presupposing ψ
- As we have seen, φ entails $K?\varphi$; φ and if φ, ψ entail ψ, which entails $K?\psi$; so first-person closure would seem to be valid

Paradoxicality from closure?

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- ► No: the context set against which we evaluate (1) and (3) differs (validity assumes a fixed context). Although closure is not valid, its status here is neither here nor there.
- ► Ignoring BIV worlds, we can be perfectly accurate in both whether we have hands (sometimes yes, sometimes no) and whether we are BIVs (always no).

The status of the skeptical paradox

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- ▶ Forcing a first-person reading all the way through, the argument is valid and the conclusion is unproblematic
  - ▶ However, a first-person reading is hard to force, for reasons we have seen
  - ▶ We can think of the forced argument as something that gets to be sound when we are not paying attention to it
  - ▶ This is somewhat Lewis-like
- ▶ If the conclusion is problematic, that is because we lapse into a quasi-third-person or 'opaque' reading of the avowal
  - ▶ But once we expand the main context set to include cases in which someone is a BIV, they stop being trustworthy throughout the possibilities we are taking seriously on whether they have hands as well, so we should stop accepting (1)
  - ▶ This does not mean that we should always be skeptics about other people: in ordinary contexts we ignore the prospect that there are a lot of BIVs around, so they get to be trustworthy as well

Is skepticism about knowledge?

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- ► Note finally that this knowledge-free antiskeptical argument is just as 'weird' as the knowledge-laden argument:
    1. I have hands
    2. If I have hands, I'm not a BIV
    3. I'm not a BIV
- ► Maybe also:
    1. I'm gonna land this barrel roll!
    2. If I'm gonna land this barrel roll this insurance policy won't pay off
    3. This insurance policy won't pay off
- ► The same diagnosis goes for the knowledge-free antiskeptical argument. When I withhold judgement on (3) in that argument, that forces me to go back and withdraw (1). But I soon return to the first-person perspective and re-assert (1) (ignoring the question whether I am a BIV).
- ► Knowledge doesn't have much to do with skepticism. Maybe skepticism has more to do with the inevitable fragmentation of cognition stemming from the purpose-drivenness of cognition and the fragmentation of purposes.

Knowledge and the ideal

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- ► Let's define a series of increasingly weak question-operators
- ► These are sort of 'ideal' first- and third-person doxastic and epistemic question-operators
- ► We can come close to reconstructing these using off-the-shelf conceptual resources for doxa plus the concept of trust: the epistemic operator is the 'real' knowledge-operator
- ► Thus the expressivist view is an adequate piece of 'conceptual archaeology'

An 'alethic' operator

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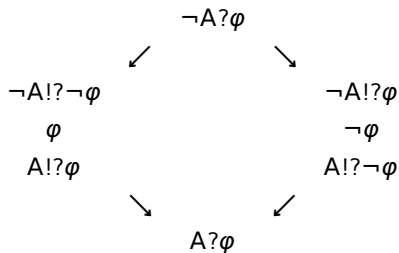Mere true belief
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1. A?φ is the strongest claim weaker than both A!?φ and A!?¬φ;
2. A is 'transparent' in application to !?φ:
   2.1 A!?$\varphi \vdash \varphi$ (operator elimination);
   2.2 A!?$\varphi \dashv \varphi$ (operator introduction);
3. A commutes with negation:
   3.1 ¬A!?$\varphi \vdash$ A!?¬φ (negation importation);
   3.2 ¬A!?$\varphi \dashv$ A!?¬φ (negation exportation).

Logic of A

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$$\neg A?\varphi$$

$$\swarrow \qquad \searrow$$

$$\neg A!?\neg\varphi \qquad\qquad \neg A!?\varphi$$
$$\varphi \qquad\qquad\qquad \neg\varphi$$
$$A!?\varphi \qquad\qquad A!?\neg\varphi$$

$$\searrow \qquad \swarrow$$

$$A?\varphi$$

First-person

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▸ That gives no distinction between the world and one's
  picture because gaps make for incoherence;
▸ Ditch (3.1) to allow for gaps:

Third-person epistemic

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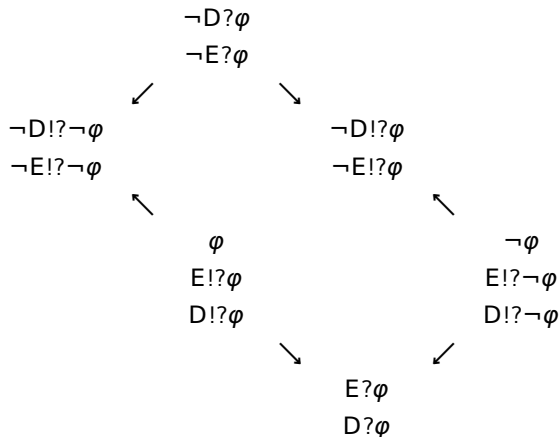Knowledge and trust
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▸ Ditch (2.2) to accommodate the perspective of the other being closed off from the world:

$$\neg E_s?\varphi$$

$$\neg E_s!?\neg\varphi \qquad\qquad \neg E_s!?\varphi$$

$$\varphi \qquad\qquad \neg\varphi$$

$$E_s!?\varphi \qquad\qquad E_s!?\neg\varphi$$

$$E_s?\varphi$$

Third-person doxastic

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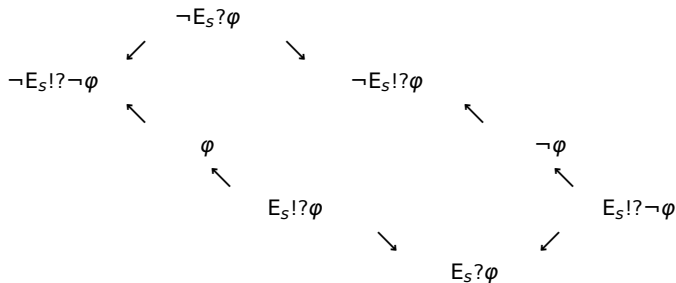
▸ Ditch (2.1) to allow for ontological novelties in the perspective of the other:

$$\neg D_s?\varphi$$

$$\neg D_s!?\neg\varphi \qquad\qquad \neg D_s!?\varphi$$

$$D_s!?\varphi \qquad\qquad D_s!?\neg\varphi$$

$$D_s?\varphi$$
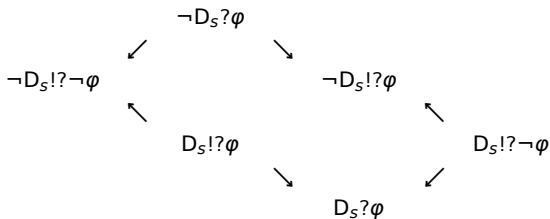
Third-person interleaving

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- Let $D^{\downarrow}_s$ mean 's's doxastic condition on the question is untrustworthy'
- Note that it is untrustworthiness—which can't arise in the first-person case—that splits doxa from episteme
- This suggests an essentially social character to episteme: Robinson Crusoe has no need for it
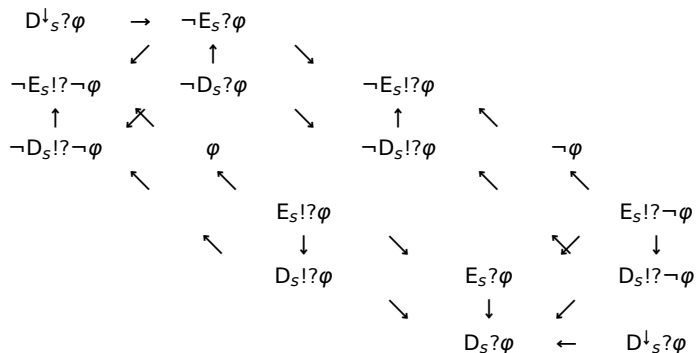
Approximation to the ideal

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▶ Comparing the data about knowledge and opinion with our ideal constructions of episteme and doxa, we note that they are very similar

▶ In light of the somewhat unruly logical character of 'knows'—it doesn't do what we would expect a modal to do—this suggests that it is cobbled together out of ideal notions of doxa plus a notion that balances (i) minimality and (ii) strength in approximating to episteme

▶ Namely, our apparatus for bestowing, keeping track of, and responding to trust