

Elusive Knowledge Hyperintensionalized

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RAT and Lewis's RAT

Exact Truthmaker Semantics

Hyper RAT

Examples

RAT — Relevant Alternatives Theory

- ▶ The *Relevant Alternatives Theory (RAT)* (Dretske 1970, 1981, Stine 1976, Goldman 1976):

*“I propose to think of knowledge as an evidential state in which all **relevant alternatives** (to what is known) are eliminated.”*

(Dretske 1981, 367)

- ▶ RAT goes well with *contextualism* about knowledge:
*“With respect to many propositions, to establish a knowledge claim is to be able to support it as opposed to a limited number of alternatives— i.e., only those which are relevant **in the context.**”*

(Stine 1976, 259)

Lewis's RAT — Knowledge Ascriptions

- ▶ Lewis, in “Elusive Knowledge,” adopts a version of RAT:

“S knows that P iff S’s evidence eliminates every possibility in which not-P — Psst! — except for those possibilities that we are properly ignoring.”

(Lewis 1996, 566)

- ▶ Lewis's RAT is a theory of *knowledge ascriptions*:

“I could have taken great care to distinguish between (1) the language I use when I talk about knowledge, or whatever, and (2) the second language that I use to talk about the semantic and pragmatic workings of the first language. If you want to hear my story told that way, you probably know enough to do the job for yourself. If you can, then my informal presentation has been good enough.”

(Lewis 1996, 566–67)

Lewis's RAT — Propositions

- ▶ Lewis uses a possible worlds-style semantics:

"What I choose to call 'propositions' are individuated coarsely, by necessary equivalence."

(Lewis 1996, p. 551)

- ▶ Possibilities are, essentially, centered possible worlds:

"We needn't enter here into the question whether these are concreta, abstract constructions, or abstract simples."

"A possibility will be specific enough if it cannot be split into subcases in such a way that anything we have said about possibilities [...] applies to some subcases and not to others."

"But [...] they also include possibilities as to which part of the world is oneself, and as to when it now is."

"[W]e cannot limit ourselves to 'real' possibilities that conform to the actual laws of nature, and maybe also to actual past history."

"Neither can we limit ourselves to 'epistemic' possibilities for S—possibilities that S does not know not to obtain."

(Lewis 1996, 552–53)

Lewis's RAT — Elimination

- ▶ For Lewis, elimination of possibilities is a question of conflicting perceptual experience and memory:

“Here I say that the uneliminated possibilities are those in which the subject’s entire perceptual experience and memory are just as they actually are. There is one possibility that actually obtains (for the subject and at the time in question); call it actuality. Then a possibility W is uneliminated iff the subject’s perceptual experience and memory in W exactly match his perceptual experience and memory in actuality.”

(Lewis 1996, 553)

- ▶ It’s not (necessarily) a question of propositional content:

“Let E have propositional content P . Suppose even — something I take to be an open question — that E is, in some sense, fully characterized by P . I say that E eliminates W iff W is a possibility in which the subject’s experience or memory has content different from P .”

(Lewis 1996, 553)

Lewis's RAT — The *Sotto Voce*

"The rest of (modal) epistemology examines the sotto voce proviso [the "Psst!"]. It asks: what may we properly presuppose in our ascriptions of knowledge? Which of all the uneliminated alternative possibilities may not properly be ignored? Which ones are the 'relevant alternatives'? - relevant, that is, to what the subject does and doesn't know? In reply, we can list several rules."

(Lewis 1996, 554)

- ▶ Lewis states seven rules, *Actuality*, *Belief*, *Resemblance*, *Reliability*, *Method*, *Conservatism*, and *Attention*. E.g.:
 - Actuality*. The possibility that actually obtains for the subject is always relevant.
 - Attention*. Any possibility explicitly under discussion is always relevant.
 - Resemblance*. Any possibility that saliently resembles a relevant possibility (made relevant by any rule other than Resemblance itself) is always relevant.

Lewis's RAT — Summary

- ▶ Lewis's RAT:
 - ▶ That S knows that P is true in context C iff E 's evidence eliminates all $\neg P$ -possibilities relevant in C , where the relevant possibilities are determined by the rules of *Actuality*, *Belief*, *Resemblance*, *Reliability*, *Method*, *Conservatism*, and *Attention*.
- ▶ Nice features:
 - ▶ *Answer to skepticism*: Only when skeptical scenario's are explicitly under discussion, they need to be eliminated (cf. *Attention*).
 - ▶ *Handling of Gettier-cases*: *Actuality* and *Resemblance* provide a good analysis.
 - ▶ *Technical elegance*: E.g. we can derive the truth condition for knowledge via *Actuality*.

Lewis's RAT — Closure

- ▶ Where Dretske and others spot a failure of closure, Lewis spots a change in context instead:

“What Dretske says is close to right, but not quite. Knowledge is closed under implication. Knowing that I have hands does imply knowing that I am not handless and deceived. Implication preserves truth – that is, it preserves truth in any given, fixed context. But if we switch contexts midway, all bets are off.”

(Lewis 1996, 564)

- ▶ So knowledge is closed under implication, according to Lewis. This leads him to a somewhat unfortunate account of (non-ideal) reasoning, we think:

“Suppose two or more premises jointly imply a conclusion. Might not someone who is compartmentalized in his thinking - as we all are? - know each of the premises but fail to bring them together in a single compartment? Then might he not fail to know the conclusion? Yes; [...] But I suggest that we might take not the whole compartmentalized thinker, but rather each of his several overlapping compartments, as our 'subjects'.”

(Lewis 1996, 565)

Lewis's RAT — Hyperintensionality

- ▶ Since Lewis works in possible worlds semantics, his RAT is *intensional*:

"[T]here is only one necessary proposition. It holds in every possibility; hence in every possibility left uneliminated by S's evidence, no matter who S may be and no matter what his evidence may be. So the necessary proposition is known always and everywhere. Yet this known proposition may go unrecognised when presented in impenetrable linguistic disguise, say as the proposition that every even number is the sum of two primes. [...] These problems of disguise shall not concern us here. Our topic is modal, not hyperintensional, epistemology."

(Lewis 1996, 551–52)

- ▶ We think this is a problem:

"Lewis's parting comment is odd, since epistemology is evidently a hyperintensional topic. There is no such topic as "modal epistemology." [...] And Lewis's talk of disguise is odd as well, insofar as disguises are in no way integrated into his positive theory. [...] So [Lewis's RAT] still entails that [Ann knows that $5 + 7 = 12$] is true iff [Ann knows that Fermats Last Theorem holds.] is true, for any context c. The seeming counterexample stands untouched."

(Schaffer 2015, 479)

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Truthmaker Semantics

- ▶ Truthmaker semantics is a recent alternative to possible worlds semantics (Fine 2017a, Yablo 2012, Leitgeb 2018, Jago 2018):

“The idea of truthmaking is the idea of something on the side of the world—a fact, perhaps, or a state of affairs—verifying, or making true, something on the side of language or thought a statement, perhaps, or a proposition.”

(Fine 2017a, 556)

- ▶ In truthmaker semantics, worlds are replaced with *states*:

Under our alternative truthmaker semantics, the pluriverse of possible worlds is replaced with a space of possible states—the monolithic blobs shatter into myriad fragments. Thus not only will there be a possible world in which I am sitting, you are standing, we are talking, and so on; there will also be a possible state of my sitting, a possible state of your standing, a possible state of my sitting and your standing, and so on.

(Fine 2012a, 233)

- ▶ We rephrase Lewis's RAT in truthmaker semantics.

Exact Truthmaking

There are a number of different ways in which a state or fact can be said to be a truthmaker for a sentence. It can simply necessitate the sentence; or it can necessitate the sentence while being partially relevant to its truth; or it can necessitate the sentence while being wholly relevant to its truth.

(Fine and Jago 2017, 1)

- ▶ Exact Truthmaking
 - ▶ s exactly truthmakes A iff s necessitates A 's truth while being wholly relevant to it;
 - ▶ s exactly falsemakes A iff s necessitates A 's falsity while being wholly relevant to it.
- ▶ Examples:
 - ▶ *Socrates being a philosopher* exactly truthmakes that Socrates is a philosopher.
 - ▶ *Socrates being a married philosopher* doesn't exactly truthmake that Socrates is a philosopher, since him being married is irrelevant.

Exact Exclusion

- ▶ Truthmaker semantics has a more fine-grained notion of elimination:

Exclusion is a form of incompatibility; if s excludes s then s is incompatible with s . But two states may be incompatible without either excluding the other, since it is also required that the excluding state should be wholly relevant to the exclusion of the state that it excludes. Socrates being a Greek philosopher, for example, will not in the relevant sense exclude his being a Roman philosopher, since his being a philosopher plays no role in preventing him from being a Roman philosopher; and similarly, his being a Roman philosopher will not exclude his being a Greek philosopher. His being Greek, on the other hand, will exclude his being Roman.

(Fine 2017b, 634–35)

- ▶ Several intuitive properties can be postulated for exclusion (but needn't be):
 - ▶ if s excludes t and t is part of t' , then s excludes t' ,
 - ▶ if t has t_1, t_2, \dots as its parts and s excludes t , then s excludes t_1 , or t_2 , or

Impossible States

One of the things that has struck me about this [truthmaker] semantics is how easily it is able to accommodate the impossible. Rather than being an artificial addition to the possibilist semantics, the impossible emerges as a natural—one might almost say inevitable—extension of the possible, in much the same way in which the system of real numbers emerges as a natural extension of the rational number system or the system of complex numbers emerges as a natural extension of the real number system. It is the aim of this paper to show how this is so; and, if I am successful, then this will constitute an argument for the admission of the impossible into semantics - something which I myself have been slow to appreciate - but also for truthmaker semantics itself as a viable and valuable alternative to the possible worlds approach.

(Fine 2018, 1)

- ▶ Impossible states can be understood as *mereological fusions* of exclusionary states:
 - ▶ The impossible state of Kant being a married bachelor is the mereological fusion of the possible state of Kant being married and of the possible state of him being a bachelor.

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Hyper RAT — Propositions, Evidence, and Exclusion

- ▶ Propositions are individuated via their exact truthmakers (Fine 2017b,c):
 - ▶ The proposition that $5 + 7 = 12$ is different from the proposition that Fermat's last theorem holds, since they have different truth and falsemakers.
- ▶ Evidential states (perception, memory, etc.) are understood as states in the sense of truthmaker semantics:
 - ▶ the state of having been told that $5 + 7 = 12$.
- ▶ Exclusion is exclusion in the sense of truthmaker semantics:
 - ▶ Ann having been told that $5 + 7 = 12$ by her reliable math teacher excludes $5 + 7 = 11$.

Hyper RAT — Relevance

- ▶ Relevance is governed by Lewis-style rules:
 - Actuality_H*. Every actually obtaining *state* is always relevant.
 - Attention_H*. Any *state* that's explicitly under discussion is always relevant.
 - Resemblance_H*. Any *state* that saliently resembles a relevant state (made relevant by any rule other than Resemblance itself) is always relevant.
- ▶ Hyper RAT:
 - ▶ That *S* knows that *P* is true in context *C* iff every exact falsemaker for *P* relevant in *C* is excluded by some of *S*'s evidential states.

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Example 1 — Closure

- ▶ Consider a subject who fails to bring together two pieces of knowledge:
 - ▶ Bjørn knows from a news report that there are forest fires in Australia, and it's currently hot throughout the country.
 - ▶ Bjørn knows that Sydney is in Australia.
 - ▶ But wondering what the weather is like for his sister, who currently is on holiday in Sydney, he fails to know it's currently hot there.
- ▶ Hyper RAT account:
 - ▶ Bjørn's evidential state of having heard the news report excludes fusion states such as that it currently is raining throughout Australia.
 - ▶ Bjørn's evidential state needn't exclude all of the component states, such as that it currently is raining in Sydney.
 - ▶ Hyper RAT thus allows a failure of closure of knowledge under implication, even within a fixed context.

Example 2 — Hyperintensionality

- ▶ Consider Schaffer's case of Ann:
 - ▶ Ann, who's not a mathematician, knows that $5 + 7 = 12$ but not that Fermat's last theorem holds.
 - ▶ Lewis can't handle this, since for him the two propositions are identical.
- ▶ Hyper RAT solution:
 - ▶ Ann's evidential states include her memory of typing $5 + 7$ on her calculator and getting 12.
 - ▶ The relevant falsemakers for $5 + 7 = 12$ are $5 + 7 = 1$, $5 + 7 = 2$,
 - ▶ Ann's evidential state excludes all of these states. So according to Hype RAT, she knows.
 - ▶ The relevant falsemakers for Fermat's last theorem are $1^3 + 1^3 = 1^3$, $1^3 + 1^3 = 2^3$, $1^3 + 2^3 = 2^3$,
 - ▶ Ann doesn't have evidential states that exclude all of these impossible states. So, according to Hyper RAT, she doesn't know.

Example 3 — Knowledge on the cheap

- ▶ The problem of **cheap knowledge** arises in contexts where alternatives are eliminated too easily, for example because none are relevant.
- ▶ A proper application of Lewis's rules would appear to rid us of such cases. However:

*"One tempting idea for solving the problem of cheap knowledge is to tinker with Lewisian contextualism, so as to ensure that there are always substantive relevant alternatives. But given that there are any propositions that are true at all worlds and that require substantive evidence to be known (e.g. that Fermat's Last Theorem holds), **this move is hopeless.**"*

(Schaffer 2015, 480)

- ▶ On a hyperintensional account of knowledge ascriptions such as Hyper RAT, such a move isn't hopeless at all.

Example 4 — The Flu

- ▶ Note that “You have a headache or you have a headache and swine flu” ($A \vee (A \wedge B)$) is logically equivalent to “You have a headache” (A).
- ▶ So on Lewis’s RAT, as a matter of semantics, you know the one iff you know the other.
- ▶ But the two statements might be regarded as carrying different information.
- ▶ Hyper RAT solution:
 - ▶ If the doctor has just checked for the swine flu and a headache is irrelevant as a symptom, her evidence might exclude all falsifiers of the swine flu.
 - ▶ So she concludes you have the swine flu.
 - ▶ It follows that she knows, in this context, where the headache is irrelevant, that $A \vee (A \wedge B)$ but not A .

Thanks!