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showing how to derive knowing how

1   introduction

Jason Stanley's *Know How* is a rich and fascinating book, and an excellent example of the value of focused philosophical inquiry. Stanley's book is deeply motivated by the understanding that with good philosophical judgment, we can choose focused topics for detailed inquiry which nevertheless have broad and philosophically important implications. His book also shows that even focused inquiry can itself be wide-ranging in its appeal to data, inspiration, and methodology. He is just as comfortable quoting Heiddeger as Evans, just as illuminating in expositing Ryle as Groenendijk and Stokhof, and just as interested in criticizing Korsgaard as Lewis. It's a remarkable book.

The lead idea of the book is that knowledge how is factual knowledge. Very roughly, to know how to do something is just to know, of some way in which you can do it, that you can do it in that way. But Stanley holds not only that this analysis of knowing how is right in its own terms, but that it is predicted by the compositional structure of sentences of the form, 'Emile knows how to get his dad's attention'. And this is a good thing. For insofar as we use sentences like this to ascribe knowledge how, and insofar as they have compositional structure, something about how they are composed must constrain how we manage to talk about knowledge how by using them.

In what follows I am going to argue that Stanley's semantic treatment of embedded wh-interrrogatives is inadequate, show where the inadequacy comes from, and show how to repair it. The inadequacy is particularly sharp, given that it is inadequacy in his own terms, because the compositional semantics fails to generate the result that even Stanley intuitively agrees is the right result. However, I will argue that my solution is arguably conservative enough to re-capture the main substance of Stanley's view.

2   mention-all and strong exhaustivity in groenendijk and stokhof

The semantics Stanley adopts for embedded wh-interrogatives is a minimal adaptation of the framework of Groenendijk and Stokhof. It is important to note that Stanley suggests that his use of their framework is

merely "for the sake of perspicuity" [60], and that he insists that he could have done just as well to use an alternative standard framework with at least as much expressive power. Indeed, it appears that the only reason that he chooses to work with it, is that since it is a strictly more coarse-grained framework than that of Lauri Karttunen, the other main off-the-shelf linguistic framework for embedded interrogatives, success within this framework would arguably show that the same picture could be extended to any viable linguistic framework for embedded questions. Nevertheless, as we will see, working within this framework directly incurs very specific and problematic commitments for Stanley. It will be important to understand how it works, in order to understand why.

According to Groenendijk and Stokhof (henceforth G&S), the semantic values of both declarative and interrogative clauses can be thought of as functions from worlds to propositions. But whereas a declarative clause is associated with a constant function, an interrogative clause is associated with a non-constant function. Importantly, the job of this non-constant function is intuitively to map each world to the unique true answer to that question at that world.

The assignment of both declarative and interrogative clauses to the same kind of semantic value allows us to give a single semantic entry for 'knows' without appeal to type-shifting, and hence to explain why sentences like 'Max knows that he has a gun and how to use it' are intelligible. Moreover, it lets us treat all question-embedding verbs as taking arguments of the same type. Some question-embedding verbs, like 'wonders', have semantic entries that are indifferent to the value of the function at the world of evaluation, and this explains why 'Sophia wonders whether Obama will be re-elected' is true just in case 'Sophia wonders whether Obama will not be re-elected' is true. But other question-embedding verbs, like 'knows', have semantic entries that are sensitive *only* to the value of the function at the world of evaluation. Hence, whether 'Sophia knows whether Obama will be re-elected' is true depends only on whether Sophia stands in the right relation to the unique true answer to the question whether Obama will be re-elected. This is why, even though the verb 'knows' doesn't directly relate agents to propositions, but to enriched semantic values that consist of functions from worlds to propositions, 'knows' claims still report facts that obtain wholly in virtue of agents standing in an appropriate relation to propositions. So in some sense, even though this view treats 'knows' as expressing a relation to something other than propositions, it doesn't interfere with the basic idea that knowledge is at bottom a relation to propositions.

As I noted, G&S treat this function as telling us the unique true answer to the question at each world. Intuitively, however, you might think that in contrast to yes-no questions, wh-questions do not have any unique true answer. For example, you might think that 'Bob', 'Sue', and 'Al' could all be true answers to the question, 'which students are coming to the party?', if Bob, Sue, and Al are all students who

are coming to the party. However, there is also a sense in which each of these answers is incomplete. If Bob, Sue, and Al are all coming to the party, and Kristin only knows that Bob is coming to the party, then we would not, I take it, ordinarily say that Kristin knows who is coming to the party. In order for her to know who is coming to the party, she must, at a minimum, know of *each* of the students who are coming, that they are coming. This is what is known as the *mention-all* feature of wh-interrogatives like 'which student is coming?'.

As I noted, G&S do not treat interrogatives as having multiple true answers – the function they assign to each interrogative tells us its unique true answer at each world. But their account explains the mention-all feature of wh-interrogatives, because it builds the universal quantifier *into the content* of what is known. According to G&S, the unique true answer to the question 'which students are coming?' is the one that says, of the students who are in fact coming, that they are all and only the students who are coming. Since knowing of the students who are actually coming that they are students who are coming entails knowing of each, that she is a student who is coming, G&S's view therefore entails the mention-all feature of wh-interrogatives. But it does more. By wrapping up what needs to be known into a single content, instead of treating the question as having multiple answers, they are also able to explain why wh-questions are what Stanley calls *strongly exhaustive* without taking on overly strong commitments.

The idea behind the notion of strong exhaustivity is that it is not sufficient, to know which students are coming to the party, to know of each student who is in fact coming, that she is coming. For someone could satisfy that condition, while also falsely believing of other students, that they are coming. G&S rule this out by requiring that what is known is not just of the students who are coming that *all* of them are coming, but that *all and only* they are coming. It is important to get this result that the 'all and only' quantifier appears inside the scope of what is known. If we require instead that you must know, of all and only the students who will in fact come, that they will come, that does not rule out someone who falsely believes, and hence does not know, of some other students that they will come. So the quantifier has to be *part of* what is known, for this move to work.

G&S claim, and Stanley specifically discusses and touts, their treatment of strong exhaustivity as a special virtue of their account. In particular, it contrasts favorably with an alternative proposal considered by Karttunen, according to which we could capture strong exhaustivity by keeping the quantifier outside of what is known, by supposing that to know which students are coming, you need to know, of each student, *whether* she is coming. But this, Karttunen and G&S both hold, is too strong, because it requires having knowledge of students everywhere that they are not coming. The virtue of G&S's alternative treatment is that it avoids making precisely this prediction. It's a bit peculiar that Stanley, of all people, seems to find

this bit of reasoning convincing, since it would at least seem natural to try to use quantifier domain restriction to answer this problem. But it's even more peculiar, given the special constraints that G&S's treatment places Stanley under when it comes to explaining one of the most important features of knowledge how: that it is intuitiely *mention-some*.

3   mention-some questions

In contrast to finite wh-interrogatives, for which knowing which student is coming requires knowing of each student who is coming, that she is coming, it intuitively seems that someone can know how to do something without knowing, of every way in which she can do it, that she can do it in that way. So one of the major tasks of Stanley's compositional derivation of the semantics for knowledge how is to explain how to generate so-called 'mention-some' readings for 'how to' interrogatives.

Stanley's main idea is essentially to replace the 'all and only' quantifier in G&S's account with an existential quantifier. This makes sense. If you think that the difference between 'mention-all' and 'mention-some' readings of wh-interrogatives is aptly named, then it is natural to think that if you replace a quantifier with universal force with one with existential force, you will be able to capture this difference. Stanley's idea is that all wh-infinitives get assigned values which incorporate this existential content, and hence get mention-some readings, whereas other wh-questions get assigned values with the 'all and only' content, and hence receive the mention-all reading.

However, in the case of mention-some readings, this is the wrong place for the quantifier. Knowing of the X's that all and only they are Y entails knowing of each of the X's that it is Y. But knowing of the X's that some of them are Y does not entail knowing of any of the X's that it is Y. Since knowledge distributes across the universal quantifier in this way, G&S can make the right prediction about mention-all questions by requiring knowledge only of a unique true answer. But since knowledge does not distribute across the existential quantifier in the same way, the analogous treatment that Stanley proposes is not adequate to derive the intuitive 'mention-some' readings of the questions which he originally set out to get.

I've been claiming that on a 'mention-some' reading, it is not enough to know, of the true answers to a question, that one of them is true – you must also know of one of them, that *it* is true. But you might rightly wonder whether this is the case. Consider the following example:

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Hotel Key
Rawling has just checked into the Hotel Del Mar and gotten the key to his room. He knows how to insert a key into a lock and turn it to the right, and he knows how to insert a key into a lock and turn it to the left, and he knows that one of these is a way in which he can unlock the door to his room, but believes, based on his experience with room keys at other hotels, that the other will not work. However, unbeknownst to Rawling, all of the keyed locks at the Hotel Del Mar open when the key is turned in either direction, and so both are in fact ways in which he can unlock the door to his room.

In this case, it seems like there are two ways in which Rawling can unlock the door to his room, and that he knows of them that one is a way in which he can do it, but that neither is such that he believes, and hence neither is such that he knows, it to be a way in which he can unlock the door. Yet my guess is that I have said nothing to make you doubt whether Rawling knows how to unlock the door to his room. So this case might make you wonder whether knowing of the correct answers that one of them is correct is enough for a mention-some question, after all, and hence whether Stanley's treatment really is correct after all.

However, it is important not to miss the fact that in this example, there are actually more than two ways in which Rawling can unlock the door. It is true that he can unlock it by inserting the key and turning right. And it is true that he can unlock it by inserting the key and turning left. But he can also unlock it by inserting they key, turning right, trying the knob, and if it doesn't turn, then turning the key left. And there is a similar strategy starting with turning left. Rawling does know that he can unlock the door in each of *those* ways. So there really is a way in which Rawling can open the door, such that he knows of it in particular, that he can open the door in that way, in this case.

So if we are going to test the difference between knowing existential answers and existentially knowing an answer, we need a case in which sequential strategies are ruled out. Here is such a case:

Bomb Squad
Will, who works on the bomb squad, has been dispatched to the basement of the Empire State Building, where a ticking time bomb is about to go off. Will knows that bombs of this kind always have a wire which will disarm the bomb if it is grounded, and knows how to ground a wire. He also knows, however, that since bomb-makers don't generally want their bombs to be disarmed, they usually include another wire which will set the bomb off early if it is grounded. Having found exactly two wires, a red wire and a blue wire, that are loose in the bomb, he justifiedly believes that this is just such a bomb, and hence that exactly one wire will disarm the bomb and one will set it off early, destroying much of midtown Manhattan. However, Will is wrong. Both of these wires will disarm the bomb if they are grounded, and neither will set it off early.

In this case, Stanley's compositional account predicts that Will knows how to disarm the bomb, since he knows, of the ways in which he can in fact disarm the bomb – namely, by grounding the red wire and by grounding the blue wire – that one of them is a way in which he can disarm the bomb. But intuitively, I believe, Will does not know how to disarm the bomb. In fact, I believe that Will is positively unsure how to disarm the bomb, and that being unsure how to do something is pretty good evidence that one does not know how to do it. In contrast, I don't think that Rawling was unsure how to unlock the door at all – intuitively because he was sure that he could successfully employ a sequential strategy. This shows, I believe, that the 'mention-some' feature of knowledge how is really best understood as the idea that there are multiple true answers to the question, 'how to disarm the bomb', and that knowing how to disarm the bomb requires knowing one of these answers in particular.[1]

4   fixing the account

I think it's clear, however, where the problem is coming from. Stanley adopts G&S's semantics for embedded questions because he wants to show that any standard semantic approach to embedded questions will have the resources to predict his account of knowledge how, and since the main competitor to G&S's approach, that of Lauri Karttunen, has strictly more expressive power, he thinks that by showing how to deal with mention-some readings within G&S's approach, he can make the case that this problem can be solved no matter what your approach to embedded questions. What we've seen is that this looks like a mistake. G&S run together distinct answers to wh-questions into a single true answer in a way that works fine with mention-all readings, but which cannot be extended to mention-some readings. So I think the moral is that it was a mistake for Stanley to adopt G&S's approach in the first place.

That is not to say, however, that G&S's approach cannot be used as a scaffold from which to build a more general view that makes exactly the same predictions that Stanley needs. I suggest that the way to

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[1] One reason you may be balking at this point is that in switching from *Hotel Key* to *Bomb Squad*, I did more than one thing. I removed the possibility of sequential strategies, but I also in some sense 'raised the stakes'. But if you know much about Stanley's body of work, this may make you suspicious, because Stanley himself independently thinks that it is harder to know when the stakes are higher. I share Stanley's view that in some intuitive sense, high stakes can make it harder to know, so it's important to address this worry. However, I don't believe that stakes play any essential role in the intuitions generated in *Bomb Squad*. Imagine that Carlie is a four-year-old invited onstage at a magic show, and that the magician has asked her to guess which hand holds a penny, promising her a lolly-pop if she gets it right, and that Carlie believes there is a penny only in one hand, but that in fact there are pennies in both hands. Intuitively, I think, Carlie does not know how to get a lolly-pop.

    Moreover, I actually think the stakes *couldn't* be playing a role in *Bomb Squad*. Although there is some intuitive sense in which the stakes are high, I've argued elsewhere that they are not in fact high in the way relevant to making it more difficult to know, because in this case the exact same cost is at stake for failing to make up your mind about which wire to ground as for having a mistaken view. In general – including in Stanley's own bank cases – intuitively high stakes make knowledge more difficult to come by only when the cost of being wrong is higher than the cost of not having made up one's mind. (See Schroeder [forthcoming].)

do so is simple, and conservative in its predictions, but not conservative in accepting the same type theory as G&S or in accepting the same semantic entry for 'knows'. All that we need to do, is to replace G&S's functions from worlds to propositions with functions from worlds to *sets* of propositions. Intuitively, we keep the idea that the members of these sets are the true answers to the question at that world, but we simply relax the assumption that there needs to be a *unique* true answer. For mention-all questions, we allow that the answer is indeed unique, and hence that these sets are singletons whose members are as described by G&S. But for mention-some questions, we allow that there are multiple true answers. Finally, we say that the semantic entry for 'knows' tells us that to know Q at some world, you need to stand in the propositional knowledge relation to *one* of the members of the value of Q at that world. Though more would need to be said in order to fully implement this approach compositionally, it succeeds at being fully conservative with respect to G&S's predictions while accounting for mention-some readings not by being true to their conception of the relevant type, but by following a strategy Stanley elsewhere endorses in the book: by generalizing to the worse case.

5   conclusion

In these brief remarks, I've taken the basic outlines of the view Stanley aims to defend as given, and concentrated on what I take to be one of the main purported virtues of the view – namely, that it fits smoothly with our best accounts of the compositional semantics for knowledge-how attributions. I've argued that Stanley's case for this is incomplete, because of his inadequate semantics for mention-some readings of questions. Rather than being an idiosyncratic feature of Stanley's view, I showed that this is a direct upshot of his strategy of attempting to work within the confines of the simplest off-the-shelf linguistic framework for embedded interrogatives. Fortunately for Stanley, however, I showed how to get around this problem. And showing how, after all, is a good first step toward knowing how.

references

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