

The Uniformity of Knowledge Attributions

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There is a philosophical tradition going back at least to Gilbert Ryle's 1948 *The Concept of Mind* of distinguishing "knowledge *how*" from "knowledge *that*", in which the latter is taken to be a kind of propositional attitude, while the former is taken to be a kind of ability or capacity. Paradigm examples are, respectively:

Sally knows how to ride a bike. (1)

Sally knows that she owns a bike. (2)

More recently, this distinction has come under renewed scrutiny, notably with [Stanley and Williamson, 2001] arguing that there really is no such distinction, and that "knowledge *how*" is really a species of propositional knowledge, though the proposition is known under a different "mode of presentation" than the types of knowledge typically expressed by "knowledge *that*" attributions. Their suggestion is that all knowledge claims are syntactically and semantically uniform, so that philosophical argumentation would be needed to support Ryle's distinction. In addition, they show that Ryle's argument was flawed, and provide an account that deals with many other philosophical worries, while giving *prima facie* evidence that, contrary to what one might expect, (1) is not actually talking about an ability.

They argue first that Ryle's argument in favor of a distinction was incorrect. Then they suggest that linguistic evidence recommends a uniform analysis for all uses of the word "know". Finally, they consider various philosophical arguments that might motivate a departure from the linguistic structure, and find them wanting. Thus, they suggest that we should stick with the uniformity of knowledge ascriptions that is suggested by the linguistic data.

I will argue that the linguistic data are not as clear-cut as they suggest. Although they have shown that some ascriptions of the "knowledge *how*" form are syntactically best treated like "knowledge *that*", they have not shown that *all* must be. I will give evidence that three similar constructions are best treated with a non-uniform syntactic analysis, and some *prima facie* evidence that this construction should be as well. It is not clear what sort of data would conclusively settle the syntactic question one way or the other. But if the linguistic argument is not conclusively settled one way or the other, then they will need to put forward positive philosophical arguments for their position, rather than merely refuting philosophical arguments against their position.

Stanley and Williamson argue first that in a sentence like (1), “knows how” should not be taken as a constituent, because the content of Sally’s knowledge (whether propositional or not) can also be the object of attitudes like “learn”, “recall”, “ask”, “wonder”, etc., as in (3).

Hannah asked how to ride a bike. (3)

Thus, “how to ride a bike” should be a constituent in both sentences. In each case, the structure of the constituent must be something like the following:¹

how (PRO [(to ride [a bike]) *t*]) (4)

But then the sentence (5), which is an example of “knowledge *wh-*”, contains a corresponding constituent of nearly identical structure.

Sally knows [how (Bill [(rides [a bike]) *t*])]. (5)

Since (5) obviously expresses propositional knowledge, Stanley and Williamson argue that there are no syntactic grounds to object to the claim that (1) does as well. “The syntactic difference between sentences such as [(1)] and [(2)] is just that the former contain embedded questions with untensed clauses.” [Stanley and Williamson, 2001, p. 8]

Once they have established the syntactic parallel, they work to show that there is no relevant semantic distinction either. They first point out that “PRO” is traditionally either coreferential with an overt NP in the main clause² (in this case, “Sally” is the only possibility), or interpreted as a generic, like “one”. Then they suggest that infinitives can either have deontic force (roughly, “the screwdriver to use is a Phillips” means the screwdriver one *ought* to use is a Phillips³) or modal force of possibility (roughly, “John asked where to board the plane” means John asked where he *could* board the plane, not where he *ought to* board). With the two possibilities of interpretation for “PRO” and two possibilities for the infinitive, they then argue that on each of the four accounts, the knowledge referred to must be propositional. Roughly speaking, using slightly modified Karttunen semantics for questions, they suggest that “how to ride a bike” denotes the set of completions of “X is a way for Sally to ride a bike”, and that (1) is true iff Sally knows one of these completions to be true.⁴

¹“PRO” is a phonetically unrealized pronoun that occurs frequently in English, always anaphoric upon some earlier noun in the sentence. “*t*” is a trace left by the adjunct “how” to the VP “to ride a bike” when it moves to the front of the clause, as required in “*wh-*” clauses.

²Most of their examples have only one NP in the main clause, so there are no issues about deciding which one (or more) to coindex “PRO” with. They also neglect to mention that in some cases “PRO” has a plural denotation involving both an NP in the main clause and some other contextually salient entity. Fortunately, this possibility doesn’t arise in the cases considered here.

³This fact seems to me to be irrelevant to their main point, because syntactically, “the screwdriver to use” is an NP, while “how to ride a bike” is some sort of sentential complement. This point arises later in consideration of the sentence (10).

⁴Their account of the knowledge relation here relies on a Russellian view of a proposition

Thus, Stanley and Williamson argue that it is possible to give an account of “knowledge *how*” that parallels the standard account of “knowledge *that*” exactly in the syntax, and with semantic differences that still allow it to be propositional knowledge. “We take our view of ascriptions of knowledge-how to be the default position. From a linguistic perspective, very little is special about ascriptions of knowledge-how. It is hard to motivate singling them out for special treatment from the rest of a family of related constructions. Our view of ascriptions of knowledge-how is the analysis reached on full consideration of these constructions by theorists unencumbered by relevant philosophical prejudices.” [Stanley and Williamson, 2001, p. 19] Finally, they consider various “philosophical prejudices” about “knowledge *how*” and show that their account deals with each.

My argument is not that any of these philosophical concerns are improperly addressed (though such arguments have been made by [Noë, 2005] and others). Rather, I would suggest that there may yet be purely syntactic issues that aren’t completely addressed by their argument. They have established that at least *some* sentences of the “knowledge *how*” form are best analyzed identically to sentences of the “knowledge *that*” form, but they haven’t established that *all* are.

For a parallel, consider the following examples:

John knows (that) he should call in case of trouble. (6)

John knows who he should call in case of trouble. (7)

John knows who to call in case of trouble. (8)

John knows which person to call in case of trouble. (9)

John knows the person to call in case of trouble. (10)

Stanley and Williamson take sentences (6) and (7) to be paradigmatic for the others. Both of those clearly attribute propositional knowledge - the difference is just whether the subject knows the proposition *as* the answer to a question, or just knows it *simpliciter*.⁵ Sentences (8) and (9) both seem to be of the general sort as “knowledge *how*”, ie “knowledge *wh- to*”, which Stanley and Williamson argue to have only irrelevant differences from (7).

(10) is a more troubling case - this is one in which the complement of “knows” is grammatically an NP rather than a clause of some sort. This is what [Lahiri, 1991, p. 46] and other linguists call a “concealed question”. The

as an ordered sequence of properties and objects, each with a specific mode of presentation. A “way” is, on their account, a property that applies to particular token actions that exemplify that way, and not to other actions. The relevant mode of presentation for “knowledge *how*” cases is what they call a “practical mode of presentation”. If Sally didn’t know how to ride a bike, but Susan pointed to John riding by and said “*That* is a way for you to ride a bike”, then Sally would know the same proposition, but under a “demonstrative mode of presentation” rather than a practical one. [Stanley and Williamson, 2001, pp. 16-18]

⁵But see [Schaffer,] for a discussion of whether there is any difference underlying this distinction.

existence of this type of knowledge attribution suggests that it might be difficult to tell whether (8) is of this form, rather than having an overt embedded question, as we standardly expect.⁶

To illustrate this point, consider the following sentence:

John knows what Mary knows. (13)

There are two readings of this sentence, which can be made true in very different circumstances. John and Mary may be two astronomers, who have both independently discovered a comet that will hit the Earth, though neither of the two knows of the existence (or astronomical research) of the other. Or alternately, Mary may be a spy, and John may be a spy following her. John may know that Mary has just discovered where a bomb is located, though John has not yet been able to find out the location himself. In the former interpretation, “what Mary knows” is interpreted as an NP concealed question, roughly synonymous with “the information that Mary knows”. In the latter, it is interpreted as an overt question, meaning “the answer to the question, ‘what does Mary know?’”, namely, the location of the bomb.

Now it should be clear that (10) is ambiguous. On one reading (where the NP is interpreted as a concealed question), it is approximately synonymous with (7), (8), and (9). On the other reading, the NP just refers to the person, and so “knows” must be taken in the sense given by German *kennen* and French *connaitre* - if Mary is the person to call in case of trouble, then (10) is roughly synonymous with “John knows Mary”, even though he might not know her *as* the person to call in case of trouble. The existence of one ambiguity here suggests the possibility of others.

It is now unclear whether “who to call in case of trouble” in (8) is best analyzed as a question synonymous with “which person to call in case of trouble”, or as an NP concealed question synonymous with “the person to call in case of trouble”. There may even be a syntactic ambiguity here as in (13), although in this case it seems to make little or no difference to the semantic end result. Lahiri points out that “wondered” must have an overt question complement, rather than a concealed question:

John wondered which person to call in case of trouble. (14)

*John wondered the person to call in case of trouble. (15)

We note that

John wondered who to call in case of trouble. (16)

⁶Note that this doesn’t pose a problem for (9), because the phrase “which person to call in case of trouble” can’t be interpreted as an NP in the same way.

Mary is who to call in case of trouble. (11)

*Mary is which person to call in case of trouble. (12)

is grammatical, suggesting that we have an overt question rather than a concealed question here. But this doesn't rule out the possibility that both are available in (8). This should make us more cautious about analyzing the structure of a sentence by using a test on a related sentence - there may be two distinct structures possible in the first sentence even though one of the two is ruled out in the related sentence. The form of this sentence is almost exactly that of (1)⁷, so a syntactic ambiguity here would be undermine the argument that "knowledge *how*" is uniformly best analyzed like "knowledge *that*".

Sentence (17) seems to support Stanley and Williamson's argument further.

John knows to call in case of trouble. (17)

This sentence can be translated approximately as (6), just as (8) can be translated approximately as (7). Thus, just as they show that a knowledge attribution with an embedded *question* can have "PRO" and an infinitive, or else an overt subject and a finite verb, (17) suggests that the same is possible with an embedded *proposition*. In this case, there is an additional distinction in that the word "that" is possible in (6) but not (17), though it is not mandatory in the former.⁸ This seems to present an attractive hypothesis, that when the subject of "knows" is the same as the subject of the proposition known, and the proposition has a certain sort of modal (whether deontic or possibility) force, the knowledge attribution can be expressed either with overt subject and tense, or with "PRO" and an infinitive, whether the attributed knowledge is a question or declarative proposition.

But the sentence (23)⁹ seems to cause trouble here, destroying the dichotomy.

John knows Mary to own a bike. (23)

This sentence appears to have an infinitive, but no "PRO".¹⁰ In addition, this

⁷"Who" and "how" are both treated as "wh-" question words by linguists, with many similarities.

⁸Some linguists have suggested that the overt word plays no semantic or syntactic role beyond that of the "complementizer" position it fills, which is otherwise occupied by some phonetically unrealized element.

⁹Jason Stanley has pointed out that this sentence sounds at least somewhat marked, if not ungrammatical, in certain dialects. I agree that it is clear that sentences of this form are less common than sentences of the other forms mentioned above. Some searching on google suggests that these sentences are more common in questions and passives than in the active, indicative form. However, at least one of the following sentences (all actually found on the web) should convince the reader that something of this form is grammatical:

I know this to be true. (18)

I am known to laugh at my own jokes. (19)

Do you know him to yell at subordinates? (20)

The only other film role I know her to have played was the senator's daughter. (21)

Although we don't officially endorse any of the following products, we know them to work well with our site. (22)

¹⁰Sentences with "PRO" but no infinitive seem to be impossible.

*John_i knows (that) PRO_i calls in case of trouble. (24)

infinitive clearly does not have modal force. Instead, the sentence seems roughly equivalent to:

John knows that Mary owns a bike. (26)

The only relevant distinction is that (23) seems to express John’s *de re* knowledge about Mary, while (26) expresses *de dicto* knowledge (though both interpretations seem possible for both sentences). If the syntax of these sentences is really like the others, then the arguments of Stanley and Williamson would suggest that this distinction between *de re* and *de dicto* knowledge could not be syntactically or semantically supported.¹¹ Thus, either the syntax of this sentence must be different from that of the others, or the arguments of Stanley and Williamson appear to prove too much, because they would suggest that there is no syntactic reason for one sentence to express *de re* knowledge while the other expressed *de dicto* knowledge. The constituent structure analogous to the earlier examples is:

John [knows (Mary [to own (a bike.)])] (30)

with “Mary” as the subject of the infinitive “to own”. However, a plausible alternative is:

John [(knows [Mary]) (PRO [to own (a bike.)])] (31)

This alternative is in fact realized in sentences like:

John [(persuaded [Mary]) (PRO [to buy (a bike.)])] (32)

The (linguistic) evidence that standard knowledge attributions are syntactically monotransitive rather than ditransitive relies on the fact that an expletive like “there” can occur in subject position, but not in object position. Thus, we get

John knows Mary/there to be a rider. (33)

John persuaded Mary/*there to be a rider. (34)

*John_i knows who_j PRO_i calls *tr_j* if he gets in trouble. (25)

These sentences are supposed to be roughly synonymous with 17 and 8 respectively.

¹¹Perhaps this would be no surprise; a sentence like

Lois Lane believes that someone she knows is Superman. (27)

is often considered ambiguous between the *de dicto* and *de re* readings. However, the following two sentences do both seem to be disambiguations in favor of the *de re* reading:

There is someone Lois Lane knows that she believes is Superman. (28)

Lois Lane believes someone she knows to be Superman. (29)

The former seems to be a slightly stronger disambiguation, but even the latter does genuinely appear to be a disambiguation. The different syntactic structures seem to have something to do with the disambiguation, though Stanley and Williamson would seemingly have to argue that it’s a purely pragmatic effect.

This is because the former sentence has the form

John [knows (Mary/there [to be (a rider)])]. (35)

whil the latter sentence has the form

John [(persuaded Mary/*there) (PRO [to be (a rider)])]. (36)

The explanation for the ditransitive nature of “persuade” is the fact that Mary is assigned a thematic role in the action of persuasion - it’s not just a relation between John and something propositional; Mary must be involved as well. If (23) really expresses *de re* knowledge, then it seems to be a relation involving John, Mary, and a property, rather than just John and a proposition, suggesting that it may also admit the ditransitive structure.

This test seems to suggest that (23) has the same structure as (33).

John [knows (Mary/there [to be (a rider)])]. (37)

However, I suggest that this test is inconclusive. There may in fact be two distinct sentences pronounced as “John knows Mary to be a rider.”

John [(knows Mary) (PRO [to be (a rider)])] (38)

John [knows (Mary [to be (a rider)])] (39)

Only the second can have “Mary” deleted and replaced by the expletive “there”, but both are possible in their original form. This is not surprising, if (38) really expresses *de re* knowledge - if “Mary” were replaced by “there”, then there would be no entity for the knowledge to be *de re* about. Some other syntactic test would be needed to be certain whether both forms are possible, or whether (38) is only an illusory possibility. But the interpretive ambiguity between *de re* and *de dicto* readings of the knowledge attribution suggest that some such structural ambiguity may be at play, with the first as the structure for the *de re* reading and the second for *de dicto*. And if this is possible here, then it may be possible in some of the “knowledge *wh- to*” cases.

Stanley and Williamson have successfully argued that at least some sentences of the “knowledge *wh- to*” form are properly analyzed in an identical way to sentences of the “knowledge *wh-*” form. In order to conclude from this that compelling philosophical grounds (beyond the ones they deal with in the last section of their paper) would be needed in order to postulate a different sort of knowledge, they would need to show that *all* sentences of the form “knowledge *wh- to*” are properly analyzed in this way. Just as some sentences like (23) may be interpreted as standard *de dicto* knowledge attributions, and some may be *de re*, I would like to suggest that some sentences of “knowledge *wh- to*” form may be propositional knowledge attributions of the sort Stanley and Williamson support, while others may attribute something more like an ability.¹²

¹²They seem to provide fairly compelling arguments based on examples by Ginet that show that “knowledge *how*” is not *exactly* an ability. For instance, consider a concert pianist who loses her arms in a tragic car accident. It is still correct to say, “she knows how to play the piano”, even though she no longer has the ability. Some have objected to these examples, but I will concede them here.

Compare the pair:

Mary knows when the train will come. (40)

John wonders when the train will come. (41)

to the pair

Mary knows when to bluff when playing poker. (42)

? John wonders when to bluff when playing poker. (43)

and

Mary knows who to approach first at a party. (44)

? John wonders who to approach first at a party. (45)

In (40) and (41), there is a particular fact that Mary knows and John wonders - a single piece of information is clearly all that is relevant. I don't intend (42) and (44) to mean "whenever she plays poker, Mary knows whether to bluff" or "whenever she is at a party, Mary knows who to approach first". The parallel structures with John wondering would of course be perfectly intelligible, because they would effectively be universally quantified versions of the structure in (40) or (41). Instead, I intend them to say that Mary is a good poker player, or that she is a socially canny person. She currently has some skill that means that if she were to be in a poker game right now, she would know whether to bluff, and if she were to be at a party right now, she would know who to approach first. It is in this sense that I suggest that John can't wonder the same thing that Mary knows.

Stanley and Williamson suggest that the right analysis of (1) is that there is a "way to ride a bike" (which they regard as a property of actions) that Sally is acquainted with under a "practical mode of presentation", and that she knows, of it, that it is a way for her to ride a bike. The analogous move here would be to say that there is a strategy for bluffing, or strategy for approaching people at parties, that Mary is acquainted with this strategy in some way, and knows, of it, that it is a good strategy for bluffing, or approaching people at parties. If this strategy can be described in linguistic terms (say, "bluff whenever your opponent has a king showing and you have an ace", or "approach the person to the host's left first at any party"), then it will be no mystery how Mary can be acquainted with it and John can wonder about it. But more likely, it will not be describable in any way, and can only be thought of as some subset of the instances of poker playing, or some function from parties to people at them. While one may be able to be acquainted with a "way to ride a bike" through one (or a few) of its instances, it is less clear how one can be acquainted with a set of instances of poker playing, or a function from parties to people at them.

Instead, we might be able to get just the right distinction if we read the "wh-" clauses in (40) and (41) as questions, but as NP's in the others. We will also need to read "knows" in (42) and (44) in a sense closer to that of German *kennen* and French *connaître*. This sense of "knows" has some connection to having an ability to recognize an individual, and in these sentences, Mary seems

to have an ability to recognize times and people of a certain sort. Thus, if we postulate a syntactic ambiguity, and something like a familiar lexical ambiguity in the word “knows”, then we can get the right judgements here. The fact that this sense of “knows” doesn’t have a corresponding sense of “wonders” explains the problems with (43) and (45).

Stanley and Williamson haven’t come up with a test that shows that there is only one structure for sentences attributing “knowledge *wh- to*”. I argued above that the sentence (8) may in fact have two alternate structures, though in that instance they seem to give identical meanings. Some structural ambiguity like this may allow some sentence like (42) or (44) to have a structure distinct from the one that Stanley and Williamson allege for (1). (Interestingly, I haven’t been able to come up with any such counterexamples with “how”, “whether”, or “why”, just with “who”, “when”, and possibly “where”.) This different structure can then give rise to a different sort of meaning. Thus, although some attributions of “knowledge *wh- to*” are similar in kind to attributions of “knowledge *that*”, I suggest that the linguistic evidence does not immediately imply that all of them are.

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