Knowing-‘*wh*’, mention-some readings, and non-reducibility

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Abstract

This paper presents a new criticism of *reductive* approaches to knowledge-‘*wh*’ (i.e., those approaches on which whether one stands in the knowledge-‘*wh*’ relation to a question is determined by whether one stands in the knowledge-‘*that*’ relation to some answer(s) to the question). It argues in particular that the truth of a knowledge-‘*wh*’ attribution like ‘*Janna knows where she can buy an Italian newspaper*’ depends not only on what Janna knows about the availability of Italian newspapers, but on what she believes about the matter. This dependence of Janna’s knowledge-‘*wh*’ on her (possibly false) beliefs is incompatible with the reductive approach.

1 Knowledge-‘*wh*’ and Reducibility

This paper presents a problem for the hypothesis that knowledge-‘*wh*’ is reducible to knowledge-‘*that*’ - i.e., that standing in the knowledge relation to a ‘*wh*’ question consists of knowing suitable answers to that question. This hypothesis is a typical point of departure in studies of knowledge-‘*wh*’.

A representative formulation of the reductive approach can be found in Higginbotham (1996), who offers (1) as a proposed generalization regarding the semantics of question-embedding ‘*know*’, where x is an individual and π is a question.

- (1) HIGGINBOTHAM’S REDUCTIVE KNOWLEDGE-*wh*:¹
 $know(x, \hat{\pi}) \leftrightarrow (\exists p)(know(x, p) \ \& \ p \text{ answers } \pi)$

For example, if the unicorn is in fact hiding behind the sofa (and nowhere else), then, on this type of account, (2-a) will be true iff (2-b) is:

- (2) a. William knows where the unicorn is hiding.
 b. William knows that the unicorn is hiding behind the sofa.

The particular choice of existential quantification over answers in (1) is not observed by all accounts of knowledge-‘*wh*’, so let us instead engage with the following weaker hypothesis:

- (3) ANSWER-QUASIREDUCTIBILITY FOR KNOWLEDGE:
 If $\{p : p \text{ answers } \pi \ \& \ a \text{ knows } p\} = \{p : p \text{ answers } \pi \ \& \ b \text{ knows } p\}$,
 then the knowledge-‘*wh*’ relation relates a to π iff it relates b to π .
 (Where a and b are individuals and π is a question.)

I include the *quasi*- in (3) as a hedge: I do not claim that the satisfaction of the principle in (3) is obviously *sufficient* to guarantee that knowledge-‘*wh*’ is intuitively reducible to knowledge of answers, but I do claim that answer-quasireducibility is necessary for such a reduction to be possible.²

¹For Higginbotham, the arguments of ‘*know*’ are an entity and the *intension* of a question. The distinction between which semantic properties of a question belong to its intension and which belong to its extension often hinges on considerations internal to a particular theory of questions, and I will, in what follows, put these theory-specific details aside, but in this example I preserve the notation $\hat{\pi}$, indicating the intension of an interrogative expression π , out of a desire to be faithful to Higginbotham’s formulation.

²We could formulate analogous answer-quasireducibility principles for forgetting, being surprised, and numerous other attitudes. Many of these are just as intuitively appealing as the version for knowledge above. The reader is referred to Higginbotham (1996), Lahiri (2002), George (2011), and Egré and Spector (2013) for some discussions of reducibility

I further understand the notion of *answer* in both (1) and (3) as a theory-dependent technical term. It may not be that every assertion that constitutes a pragmatically adequate *reply* to a question expresses an *answer* to that question - rather, different theories of questions may reasonably understand the notion of answerhood differently. For example, if (5-a) is true, one theory might consider all the information in (5-a) necessary for an answer to the question (4) (something along these lines is advanced by Spector (2007)), while another might hold that (5-b) is the unique answer to (4) (this is the *strongly exhaustive* answer of, among others, Groenendijk and Stokhof (1984)). Still others (in the tradition of Hamblin (1973) and Karttunen (1977)) would consider (5-c) an answer, and in certain circumstances the case might be made for going even further and admitting *partial answers* like the disjunctive (5-d). Meanwhile, (5-e), although not generally considered any kind of answer by standard theories of questions, is nevertheless a reasonably cooperative conversational response to somebody asking (4).

- (4) Which papers is Anne required to read?
- (5)
 - a. Anne is required to read both *Über Sinn und Bedeutung* and *Logic and Conversation*, and is further required to read either *Universal Grammar* or *General Semantics* (either one will suffice), and is under no other paper-reading requirements.
 - b. Anne is required to read both *Über Sinn und Bedeutung* and *Logic and Conversation*, and there is no other paper that she is required to read.
 - c. Anne is required to read *Über Sinn und Bedeutung*.
 - d. Either Anne is required to read *Logic and Conversation* or she is required to read *A Plea for Excuses*.
 - e. Alas, I cannot help you, for I have no idea what papers Anne is required to read.

Our position regarding which of the items in (5) constitute *answers* to (4) will, have major implications for our theory of knowledge-‘*wh*’, even if we keep to the reductive approach of (1).

Here, I will attempt to maintain a reasonable level of neutrality between these sorts of options, and in particular, I will assume that the theorist is entitled to reasonable freedom to decide which propositions constitute answers as a matter of theory. Of course, some of the propositions in (5) are better conversational replies to the question (4) than others, and a full

and related ideas as applied to other attitudes.

theory of questions should have something to say about this, but, in my formulation of quasi-reducibility, I do not wish to restrict attention to just those reductive accounts in which the notions of *reply* and *answer* are closely aligned.

What I will assume is that for a proposition to be an answer, it ought to bear on the question, and that it should, in some sense that I wish to leave vague, contain no information that does not bear on the question. I will also assume that whether a particular proposition constitutes an answer depends only on its connection with the question, and, perhaps, on whether the proposition is true, but on no other facts of the world, and in particular that the same propositions constitute answers for all people, if the question is held constant. These assumptions seem inoffensive for the reductive program as it is most often pursued.

Answer-quasireducibility is supported by nearly all accounts of knowledge-‘*wh*’ in the formal semantics tradition.³ In particular, the influential accounts of Groenendijk and Stokhof (1984) and Karttunen (1977) conform to answer-quasireducibility. In the philosophy literature, the idea of a clean connection between knowledge-‘*wh*’ and knowledge-‘*that*’ has met with more skepticism: famously, Ryle (1945) argued for a strong separation between knowledge-‘*how to*’ (which is naturally understood as kind of knowledge-‘*wh*’) and knowledge-‘*that*’. More recently, Schaffer (2007) has argued against a reductive approach to knowledge-‘*wh*’, while Stanley (2011) offers a reductionist reply to both Ryle and Schaffer.

In this paper, I intend to present a new challenge, based on a new type of explicit counterexample to answer-quasireducibility. That is, the challenge presented will describe a scenario in which two people know the same propositions, but stand in the knowledge-‘*wh*’ relation to different questions. This challenge will attempt to get by without making any especially strong assumptions about what constitutes an answer - this distinguishes it from the challenge of Schaffer (2007), which employs a specific set of intuitions about what constitutes an answer to a question.

2 The Counterexample and a Descriptive Picture

My proposed counterexample to answer-quasireducibility focuses on questions, like (6-a), that accept mention-some answers. That is, questions that accept incomplete answers of the form exemplified by (6-b):

³Spector (2005) and George (2011) are conspicuous exceptions.

- (6) a. Where can one buy an Italian newspaper,
- b. One can buy an Italian newspaper at Newstopia.

Such questions typically retain their mention-some flavor as objects of knowledge: (7) does not require that Janna know of every salient place where one can buy an Italian newspaper: it can be true when she knows of only one such place.

- (7) Janna knows where one can buy an Italian newspaper.

Now, if answer-quasireducibility is true, then, whenever Janna and Rupert know exactly the same answers to (6-a), it will follow that (7) is true iff (8) is true.

- (8) Rupert knows where one can buy an Italian newspaper.

To produce a conterexample, then, what we should do is construct a scenario where Janna and Rupert know the same answers to (6-a), but (7) is true and (8) is not. The construction of the scenario proceeds by noting that the truth of (7) and (8) depends not just on what answers Janna and Rupert know, but on what answers they think they know or firmly believe.

Let's begin by setting up a situation in which there is a possibility of false belief. The facts about stores and Italian newspapers in our scenario will be as follows:

- (9) a. There are two salient stores: Newstopia and PaperWorld.
- b. Newstopia stocks newspapers from all over the world, including Italy.
- c. PaperWorld is a stationery shop, and doesn't sell newspapers at all.

Now, let's turn to Janna's and Rupert's relationships with the various answers. For succinctness, I will write '*believes*⁺' for the relationship of having a mental state that, for all introspective purposes, is indistinguishable from that associated with knowledge. That is, I say that Janna believes⁺ a proposition iff she believes with confidence sufficient for knowledge, believes it on evidence that seems to her sufficient to justify knowledge, thinks that her beliefs constitute knowledge (or would if she reflected on the matter), and so on. The reader is invited to fill in the details of '*believes*⁺' based on their preferred understanding of what cognitive state is involved in knowledge, or to leave the matter unresolved. The main requirements on belief⁺ are that it be entailed by knowledge, and that a person who believes⁺ a false

proposition p should be under the impression that they know p , or, more precisely, should be able and strongly disposed to form such an impression with a little straightforward introspection.

With this notation out of the way, let us turn to Rupert and Janna's beliefs⁺ and knowledge:

- (10) a. Janna knows that one can buy an Italian newspaper at Newstopia.
- b. Rupert knows that one can buy an Italian newspaper at Newstopia.
- c. Janna has no further beliefs⁺ concerning the availability of Italian Newspapers.
- d. Rupert further believes⁺ that one can buy an Italian newspaper at PaperWorld.
(This belief⁺ of course does not constitute knowledge, because it is false that one can buy an Italian newspaper at PaperWorld.)
- e. Neither Rupert nor Janna has any other beliefs, beliefs⁺, or knowledge concerning the availability of Italian newspapers.

In a condensed tabular form, the facts of our scenario are as follows:

Italian paper available at ...		Newstopia?	PaperWorld?
(11)	Janna's beliefs ⁺ :	Y	?
	Rupert's beliefs ⁺ :	Y	Y
	facts:	Y	N

I claim that, in this situation, (7) is true but (8) is untrue:

- (7) Janna knows where one can buy an Italian newspaper.
- (8) Rupert knows where one can buy an Italian newspaper.

(7) is a classic, and as far as I know uncontroversial, attribution of knowledge with respect to a mention-some question. The judgment for (8) is less clear, and some hesitate to assert its negation or to proclaim it false (perhaps suggesting that (8) suffers presupposition failure in this case). Still, there is a great deal of reluctance to affirm it or proclaim it true - after all, fully half of Rupert's beliefs⁺ on the matter are just plain wrong. If I tell you that Rupert knows where one can buy an Italian newspaper, and he subsequently directs you to PaperWorld, it seems difficult for me to protest that I was even *technically* right by virtue of his knowledge of Newstopia.

What, then, is involved in knowledge-‘*wh*’, of a mention-some question? It seems that (7) is true iff (roughly) the following conditions hold:

- (12) a. There is some place x such that Janna knows one can buy an Italian newspaper at x .
- b. For every place y , if Janna believes⁺ that one can buy an Italian newspaper at y , then Janna knows that one can buy an Italian newspaper at y .

Generalizing this, for an arbitrary individual a and mention-some question π , (16) characterizes what is necessary to make a knowledge-‘*wh*’ ascription true.⁴

- (16) Knowledge-‘*wh*’ relates an individual a to a questions π iff the following conditions hold:
 - a. There is p such that p is a mention-some answer to π and a knows p .
 - b. For every p' that is a mention-some answer to π , if a believes⁺ p' , then a knows p' .

The issue, informally, is that the condition in (16-b) is not testable against a ’s knowledge-‘*that*’, but only against a ’s (possibly false) beliefs⁺-‘*that*’, which are not recoverable from simple facts about knowledge. Thus,

⁴Several variations of (16) are possible. For example, it might be that belief, rather than belief⁺ is the proper attitude for the antecedent of the conditional in (16-b), giving rise to something like (13) or that the property required of all believed⁽⁺⁾ propositions is not knowledge, but merely truth, giving rise to something like (14).

- (13) For every p' that is a mention-some answer to π , if a believes p' , then a knows p' .

- (14) For every p' that is a mention-some answer to π , if a believes p' , then p' is true.

It might also be that the notion of answerhood needed for clause (16-b) is not that of mention-some answers but of something weaker, like *partial* answers (whether defined as in Groenendijk and Stokhof (1984), Lahiri (2002), or George (2011), or in some other way), giving rise to a condition like (15):

- (15) For every p' that is a partial answer to π , if a believes⁺ p' , then a knows p' .

The exact choice among these options does not affect the core point about reducibility, so I leave the details unresolved.

Further, as suggested above, it might be that failures of the condition in (16-b) (or that in (13), (14), or (15)) give rise to simple falsehood, or to presupposition failure, or that they can give rise to one or the other, depending on other factors. All that matters here is that they give rise to lack of truth.

two people can know the same answers while only one stands in the knowledge relation to the question, violating quasi-reducibility.

3 Aside on Strong Exhaustivity

The knowledge-‘*wh*’ conditions described in (16) bears a certain resemblance to the phenomenon of *strongly exhaustivity* in questions. Under strong exhaustivity, a knowledge-‘*wh*’ ascription like (17) is true iff Alex knows the identity of everybody at the party, and also knows that nobody else was at the party.

(17) Alex knows who was at the party.

What (16) has in common with strong exhaustivity effects is that it intuitively gives knowledge-‘*wh*’ a ‘negative’ or ‘and nothing else’ component. This similarity makes it tempting to try to unify the case above with the strongly exhaustive reading.

It may well be that strong exhaustivity and the effect discussed above can be brought together within a unified framework, and, if this is possible, it would of course be desirable, but I will not pursue the matter further here.

What I do want to do is point out that knowledge-‘*wh*’ facts described above are not simply an example of strong exhaustivity, and that strong exhaustivity is not a challenge to reducibility in the same way that our new counterexample is.

Regarding the first point, note that a strongly exhaustive reading does succeed in making (8) untrue, because Rupert’s belief⁺ that PaperWorld sells Italian newspapers contradicts the strongly exhaustive answer, which includes the information that Newstopia is the only place that sells Italian newspapers, so Rupert does not know the true strongly exhaustive answer. The reason that strong exhaustivity does not handle this case is that it still fails to distinguish (7) from (8). This is because Janna also does not know a strongly exhaustive answer either: although she knows that Newstopia sells Italian newspapers, she does not know that it is the only place that does, and it is in fact entirely compatible with her beliefs⁺ that PaperWorld does as well. Thus, while a typical reductive mention-some approach would make both (8) and (7) true, a strong exhaustivity approach makes them both untrue. Both approaches fail to differentiate between the two knowledge-‘*wh*’ ascriptions in the scenario described.

Moving to the second point, it is worth noting that strong exhaustivity is entirely compatible with the reductive approach, if we allow some flexibility

with regard to which notion of answerhood is relevant.

In particular, the strongly exhaustive answers to (18) are those with the shape exemplified by those in (19):

- (18) Who was at the party?
- (19)
 - a. Anne was the only one at the party.
 - b. Nobody as at the party.
 - c. Anne, Alex, Rupert, Janna, and Will were the only ones at the party.
 - d. Janna and Daniel were the only ones at the party.

In general, a strongly exhaustive answer is a proposition that can be paraphrased (up to truth-conditional equivalence) as follows, for some set S :

- (20) For all x , $x \in S$ iff x was a person at the party.

Now, given this, the truth-conditions of (17) are given reductively by (21):

- (21) $\exists p$ s.t. p is a strongly exhaustive answer to (18), and Alex knows p .

Note that this amounts to saying Alex knows the (unique) true strongly exhaustive answer, because knowledge of propositions is factive.

What this illustrates is that strong exhaustivity is fully compatible with quasi-reducibility, so strong exhaustivity is not a problem in the way that our key mention-some example is.

4 A Pragmatic Reply?

There are a number of possible replies to the above claims about knowledge-*wh*'. One kind of reply involves simply denying the core intuitions regarding the difference between the two knowledge-*wh*' attributions, but there are a number of subtler responses. One especially natural reply is to say that our uneasiness with (8) does not result from the knowledge-*wh*' ascription being untrue, but from its having an unsatisfied conversational implicature. That is, the reasoning might go, (8) is in fact true in the scenario described, but we feel that it is odd because, roughly, there is something uncooperative about asserting it.

At this level of generality, a reply of this kind is almost impossible to conclusively refute - it is too difficult to exhaustively exclude all the possible ways that an example like (8) might be said to be an uncooperative descrip-

tion of the situation described. I do, however, think that some intuitions support the view that (8) is not true *even on a technicality*, and that one of the simpler ways to try to explain the uncooperativeness of (8) runs into some difficulties.

I will first try to briefly sketch what seems to me to be the most natural kind of pragmatic reply. In typical circumstances, our purpose in attributing knowledge-*wh* is to identify a person as a good information source. In such cases of uttering (8), the question of which I am attributing knowledge-*wh* has been raised, and I am unable to answer it myself, so I am identifying somebody who does know an answer to the question. Now, identifying somebody who knows an answer to the question will not do much good if that person is not actually a good source of reliable answers. Just as, in Grice (1967), it is noted that it is infelicitous to reply to ‘*Where can I get some petrol?*’ with ‘*There is a garage around the corner.*’ if the garage is not likely to be a good source of petrol (because it is closed, or for any other reason), so, presumably, it is infelicitous to reply to ‘*I need to buy an Italian newspaper.*’ with ‘*Rupert knows where you can do that.*’ if Rupert cannot be relied upon to provide an accurate answer. If this type of exchange is the context implicit in this type of knowledge-*wh* attribution, then we should expect (8) to seem odd in cases, like that in the scenario, where Rupert is as likely to give bad information as good.

This story is appealing, but it does not seem sufficient to account for all our intuitions. Suppose that Anne wishes to buy an Italian newspaper, and, knowing this, I utter (8). Anne then consults Rupert, who directs her to PaperWorld. When Anne goes to PaperWorld, she discovers it is a stationery store that does not sell Italian newspapers, and never has. Anne then takes me to task. If Anne merely claims that I gave her unhelpful advice, she is quite right, but what if she says that I was wrong to report that Rupert knew where she could buy an Italian newspaper? Here, in the absence of other details, we are also inclined to say she is right: my statement seems not to have been merely unhelpful, but actually incorrect. But now suppose other facts emerge. Suppose, for example, that it turns out that Rupert knew full well that PaperWorld didn’t sell Italian newspapers, and that Newstopia did, but, as a result of some ulterior motive, he wished to deceive Anne regarding this fact. In this case, I can reply that I was quite right, however useless my being right was rendered by Rupert’s duplicity.⁵ If, on the

⁵Similarly, if Rupert knows all the facts, but refuses to tell Anne anything, he is useless to her as an information source, but that doesn’t make my knowledge claim any less true. We can also concoct more exotic scenarios, such as one in which Rupert has a peculiar brain lesion that causes him to randomly substitute one proper name for another when

other hand, Rupert sincerely and confidently believed the false answer he gave Anne, but happened to also have in his stock of knowledge the fact that Newstopia sold Italian newspapers, I am in a worse position to use this as an excuse: Anne is more credible in describing my knowledge-‘*wh*’ attribution as *wrong* in the case where Rupert is ill-informed but honest than she is in the case where Rupert is a well-informed liar. Further, if we are recounting these events years after Rupert’s death, when his reliability as an information source has faded from relevance, if I say that Rupert in fact did know, it would seem that Anne is within her rights to correct me.

If knowledge-‘*wh*’ attributions are like the example with the petrol, it is not clear why one form of unreliability should be privileged in this way, or why it should be appropriate to describe (8) as incorrect at all.⁶ This at least shows that the advocate of a pragmatic account will need to do some more work to flesh out the details. In addition, the above isolates the contrast with a representative case where (8) is true but uncooperative. In one case, my utterance is merely counterproductive, but, in the other, we are more inclined to call it inaccurate.

There is, to be sure, more to be said about this, and a more developed pragmatic account may do much better. But I think the above should at least make us reluctant to dismiss this as a pragmatic effect in the absence of such an account.

5 Other Attitudes

This paper is concerned with knowledge-‘*wh*’, but it is worth noting that comparable challenges to reducibility may arise with other attitudes. For example, ‘*forget*’ seems to raise similar difficulties.

Briefly, consider the case where Rupert and Janna have both forgotten that Italian newspapers are available at Newstopia, and neither has ever forgotten any other answer, but Janna has also never known any other answer, while Rupert has long known, and persists in knowing, that Italian newspapers are available at Cellulose city. That is, suppose circumstances

speaking, but does not affect his knowledge of the underlying facts.

⁶Note that in the petrol situation, there is a clear intuition that I was technically right to say there was a garage around the corner, even if it was closed, and it is natural to accuse me of being clueless or mean-spirited, but not wrong in my assertion, and, further, that in this situation all that matters is whether the garage can be expected to provide the addressee with petrol - it doesn’t matter if this is because it is closed, out of petrol, or has a proprietor who is likely to refuse to sell petrol to some customers out of bigotry or caprice.

are as summarized in (22):

	Italian paper available at ...	Newstopia	Cellulose City
(22)	Janna:	forgot	never knew
	Rupert:	forgot	still knows

In this situation, it would appear that (23) is true, but (24) is untrue:

(23) Janna forgot where one could buy an Italian newspaper.

(24) Rupert forgot where one could buy an Italian newspaper.

These intuitions for *‘forget’* have their own complications, which I will not discuss here (the reader is referred to George (2011) for a discussion of the issues, and brief mention of some other possibly nonreducible predicates). I only wish to note that the kind of issue observed above may not be idiosyncratic to knowledge.

6 Towards an Almost Reductive Account of Knowledge-*‘wh’*

The challenges to reductive accounts found in Ryle (1945) and Schaffer (2007) are used to argue for radical departures from propositional knowledge in the analysis of knowledge-*‘wh’*, and have tried to suggest that knowledge-*‘wh’* is not properly analyzed in terms of any relationship(s) between individuals and propositions. In contrast with this, the example here suggests that a relatively conservative departure from the reductive approach may suffice to handle the troubling data.

What I have argued here is that knowledge-*‘wh’* is not reducible to knowledge-*‘that’*. But in my characterization of the knowledge-*‘wh’* relation in (16), knowledge-*‘wh’* is certainly reducible to *something* - in particular, the facts about knowledge-*‘wh’* are readily read off of the facts about propositional knowledge and propositional belief⁽⁺⁾:

- (16) Knowledge-*‘wh’* relates an individual *a* to a question π iff the following conditions hold:
- There is *p* such that *p* is a mention-some answer to π and *a* knows *p*.
 - For every *p’* that is a mention-some answer to π , if *a* believes⁺ *p’*, then *a* knows *p’*.

That is, the facts about knowledge-‘*wh*’ can plausibly be read off of the facts about some family of propositional attitudes including some combination of knowledge-‘*that*’, belief, and belief⁺. We also preserved the idea that this is mediated by the answers to the question.

Further, the description above still supports half of the standard reductive scheme. If the standard line is that knowledge-‘*wh*’ relates *a* to π iff knowledge-‘*that*’ relates *a* to some answer to π , our observations still preserve half of this biconditional, suggesting the correctness of condition (25):

- (25) If knowledge-‘*wh*’ relates an individual *a* to a question π , then there is some *p* such that *p* answers π and *a* knows *p*.

The generalization of (25) appears to work for a wide variety of other propositional predicates that can combine with questions, such as ‘*forget*’, ‘*tell*’, etc.

The picture that emerges, then, is one on which the reductive approach fails, but on which knowledge-‘*wh*’ and knowledge-‘*that*’ remain closely connected, and on which the question-answer relationship is still a key component of this connection. The exact nature of this connection, and its application to a wider range of attitudes, remain a problem for further investigation.⁷

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