How Knowledge Entails Truth

Eliran Haziza

(forthcoming in *The Journal of Philosophy*)

Abstract. It is widely accepted that knowledge is factive. This claim is typically justified linguistically: ascribing knowledge of a falsehood sounds contradictory. But linguistic arguments can be problematic. In a recent article, Brent G. Kyle argues that the factivity of knowledge can be proved deductively, without appeal to ordinary language. I argue, however, that his proof relies on a premise that can only be justified linguistically.

The thesis that knowledge is factive is one of the most widely accepted in philosophy. Where 'K' denotes a given agent's knowledge, it is the claim that, for any proposition p, necessarily:[1,2]

Factivity $Kp \to p$

In a recent article, Brent G. Kyle provides a deductive proof for Factivity.[3] Kyle argues that, even though it is widely accepted, Factivity rests on shaky grounds, since the standard arguments for it appeal to ordinary language uses of 'know'. For instance, Nagel (2014, p. 8) argues for Factivity on the grounds that we "can't ordinarily say" a sentence like the following:

(1) Jill knows that her door is locked, but her door isn't locked.

[1] For simplicity, I omit necessity operators and quantification over agents and propositions.

[2] Some authors distinguish between factivity and veridicality (e.g., Egré (2008)). A verb is factive if it presupposes the truth of its complement, whereas a verb is veridical if it entails its complement. In this sense, Factivity is the claim that 'know' is veridical, though typically anyone who accepts it also accepts that it is factive. I nevertheless use 'factive' since that is the prevalent term in the philosophical literature.

[3] Kyle (forthcoming).

Non-factivists (as we may call them), on the other hand, argue that Factivity fails to respect all ordinary language uses of 'know'. In particular, they claim, 'know' is sometimes used in a way that does not entail truth. Hazlett (2010, p. 501) illustrates this with examples such as:

(2) Everyone knew that stress caused ulcers, before two Australian doctors in the early 80s proved that ulcers are actually caused by bacterial infection.

Defenders of Factivity counter that such examples involve non-literal uses of 'know',[4] while non-factivists introduce further arguments against Factivity.[5]

Ordinary language arguments are controversial.[6] Whether Factivity is true is of great importance in philosophy. It would be good if we could do better than appeal to ordinary language to establish it. Can we do better? Kyle argues that we can. His proof of Factivity, he claims, is one that doesn't rely on ordinary language, and it is one that even those who reject Factivity on linguistic grounds should accept.

I think that Kyle's proof of Factivity is sound. But, as I shall argue, it rests on grounds no firmer—nor shakier—than ordinary language arguments for Factivity. In particular, at least one of the premises of the proof can be justified only by appeal to ordinary language.

1 Knowing whether

Kyle's proof of Factivity has three premises, the first two of which involve knowing-whether. Using '$?p$' to mean 'whether p', they can be formulated as follows:

That→Whether $Kp \to K?p$

Whether→That $(\neg p \wedge K?p) \to K\neg p$

Consistency $Kp \to \neg K\neg p$

[4] E.g., Turri (2011), Stokke (2013), and Buckwalter (2014).
[5] E.g., Bricker (2018, 2022) and Buckwalter and Turri (2020).
[6] See Hansen (2014) for an overview of some of the issues.

Taken together, these premises straightforwardly entail Factivity. The premise Whether→That will be the main focus of this paper. But first, since knowing-whether figures crucially in these premises, it will be useful to start with the semantics of 'whether' clauses.

1.1 'Whether' semantics and Q-factivity

Many verbs take both 'whether' and 'that' complements. They include 'know', 'remember', 'see', 'tell', 'announce', 'decide', among others. The expression 'whether p', when embedded under such verbs, is standardly taken to denote an answer to the question of whether p: either p, or $\neg p$. That is, for any such verb V, the following holds:

Any Whether $V?p \leftrightarrow (Vp \vee V\neg p)$[7]

I call this 'Any Whether' because the 'whether' clause could denote any answer, not necessarily the true answer, to the 'whether' question. Thus, to know whether it is raining is to know that it is raining or to know that it is not raining; to announce whether there is beer is to announce that there is beer or to announce that there is no beer; to decide whether to leave is to decide to leave or to decide not to leave.

Sometimes, however, 'whether' clauses are given a different semantics, with the idea that 'whether p' denotes not just any answer, but the true answer to the question of whether p. For such verbs, the following holds:

Factive Whether $V?p \leftrightarrow ((p \rightarrow Vp) \wedge (\neg p \rightarrow V\neg p))$[8]

Which of these 'whether' semantics is right depends on the verb. All verbs satisfy Any Whether,[9] but not all verbs satisfy Factive Whether. Consider:

(3) Ann decided whether she will go skiing.

(4) In a few minutes, the detective will announce whether Bob is guilty.

[7] See, e.g., Spector and Egré (2015), Uegaki (2019).

[8] See, e.g., Lewis (1982) and Egré (2008).

[9] Perhaps a more accurate claim is that all verbs for which the 'whether' form is reducible to the 'that' form satisfy Any Whether, since it's not clearly true for verbs like 'care' and 'check', for which the 'whether' form might be the more basic one. On 'care', see Elliott et al. (2017).

In (3), 'whether she will go skiing' does not necessarily denote the true answer to the question. It is possible that Ann will not, in fact, go skiing, even if she decided that she will. Likewise, the detective's announcement could turn out to be false. For 'decide' and 'announce', then, only Any Whether holds.

Let us say that any verb that satisfies Factive Whether is *Q-factive*. Q-factive verbs are, by definition, factive when embedding questions: for any Q-factive verb V, if you V whether p then you V the true answer to whether p. Let us also say that any verb that is factive when embedding propositions, i.e., such that $Vp \rightarrow p$, is *P-factive*.

Some verbs are considered to be both Q-factive and P-factive: 'know', 'remember', 'see', for example. But Q-factive verbs are not necessarily P-factive. One example of this is the verb 'tell', which has the following inference pattern:[10]

(5) a. The detective told Ann whether Bob was guilty.
    b. Bob was guilty.
    c. Therefore, the detective told Ann that Bob was guilty.

What this shows is that telling whether p is telling the truth about whether p; 'tell' is Q-factive. Plausibly, however, the detective might tell you that Bob was guilty even though Bob was not guilty.[11] So 'tell' is not P-factive.

1.2 From Q-factivity to P-factivity

What Kyle's proof shows, I submit, is that *provided that* 'know' is Q-factive, it is P-factive. But why think that 'know' is Q-factive? I shall argue that Kyle gives no good reason for this assumption.

Let us first see why Kyle's proof amounts to a proof that 'know' is P-factive on the assumption that it is Q-factive. Here are, again, Kyle's three premises:

That→Whether $Kp \rightarrow K?p$

Whether→That $(\neg p \wedge K?p) \rightarrow K\neg p$

[10] See Lewis (1982), Lahiri (2002), and Egré (2008).

[11] Though see Egré (2008) for the view that 'tell' is ambiguous between a verb that is factive with respect to both 'whether' and 'that' complements, and a non-factive verb that takes only 'that' complements.

Consistency $Kp \rightarrow \neg K \neg p$

The premise That→Whether corresponds to the non-factive semantics of 'whether' clauses: Any Whether. The premise Whether→That corresponds to the Q-factive semantics, Factive Whether, in the following sense: given Any Whether, which holds for all 'whether' embedding verbs, Whether→That is equivalent to the 'know' instance of Factive Whether:

Factive Whether$_{\mathbf{K}}$ $K?p \leftrightarrow ((p \rightarrow Kp) \wedge (\neg p \rightarrow K \neg p))$

It should not be hard to intuitively see why: Whether→That is just another way of saying that if you know whether p, then you know the true answer to the question of whether p.

Let us see this more formally. Start with the observation that $K?p$ is equivalent to $K?\neg p$. That is, knowing whether p is the same as knowing whether $\neg p$, and both can be described as 'knowing whether or not p'. This equivalence claim follows from Any Whether. Given this equivalence, the following is equivalent to Whether→That:

Whether→That′ $(p \wedge K?p) \rightarrow Kp$

To see that Whether→That entails Factive Whether$_{\mathrm{K}}$, assume Whether→That and $K?p$. Assume for contradiction that 'know' is not Q-factive. That is, either p and $\neg Kp$, or $\neg p$ and $\neg K \neg p$. If $\neg p$, then Whether→That entails $K \neg p$. If p, then Whether→That′ entails Kp. Either way, we get a contradiction. This shows that Whether→That entails the left-to-right direction of Factive Whether$_{\mathrm{K}}$. For the other direction, assume Whether→That and $(p \rightarrow Kp) \wedge (\neg p \rightarrow K \neg p)$. Then $Kp \vee K \neg p$. Given the 'know' instance of Any Whether, we get $K?p$.

To see that Factive Whether$_{\mathrm{K}}$ entails Whether→That. Assume Factive Whether$_{\mathrm{K}}$ and $\neg p \wedge K?p$. Then $K \neg p$ follows from Factive Whether$_{\mathrm{K}}$.

Whether→That is in this sense the assumption that 'know' is Q-factive: knowing whether p entails knowing the true answer to whether p. Given Kyle's other premises, which I will not question, his proof shows that 'know' is P-factive provided that it is Q-factive.

1.3 Arguments for Q-factivity

Kyle gives three arguments in support of Whether→That. But none of them work: if you do not already accept that 'know' is Q-factive, you have no reason to accept any of them.

The first argument is that Whether→That is entailed by the following principle (which I label 'J1' as the first justification):

J1 $K?p \rightarrow ((p \rightarrow Kp) \wedge (\neg p \rightarrow K\neg p))$

Kyle assumes this principle on the grounds that it is part of the definition of 'know-whether'. The definition he appeals to is Factive $\text{Whether}_{\text{K}}$ (labeled 'DEF2' in his paper). But neither J1 nor Factive $\text{Whether}_{\text{K}}$ can justify Whether→That. As I have argued, Whether→That is equivalent to Factive $\text{Whether}_{\text{K}}$, given a background assumption of Any Whether. And J1 can be shown to be equivalent to Whether→That even without that background assumption.[12] This should not be surprising. What J1 says, essentially, is that 'know' is Q-factive: if you know whether p, then you know the true answer to whether p. It is in this sense merely a restatement of Whether→That, and cannot justify it.

The second argument for Whether→That is that it is entailed by the following principle, where 'Q' denotes a question, and p^Q denotes the true answer to Q:

J2 $KQ \rightarrow Kp^Q$

J2 is a claim about knowledge-wh. 'KQ' can be read, for example, as in 'Ann knows where Bob is', where Q is the question of where Bob is. J2 immediately entails Whether→That: since 'whether p' is among the questions that 'Q' may denote, it follows that if one knows whether p, one knows the true answer to whether p.

But this will not do, either. J2 is the assumption that 'know' is Q-factive with respect to any kind of question (who, where, when, why, etc.) and not just 'whether' questions. In other words, J2 is a generalized version of J1 (and thus

[12] J1 entails Whether→That, as Kyle himself argues. To see that Whether→That entails J1, assume Whether→That and $K?p$. Assuming p, we get Kp from Whether→That′ (which is equivalent to Whether→That). Assuming $\neg p$, we get $K\neg p$ from Whether→That. So we get $K?p \rightarrow ((p \rightarrow Kp) \wedge (\neg p \rightarrow K\neg p))$.

of Whether→That). This is even more easily seen if we consider that J2 is the same as the following (where $p_1, p_2, \ldots$ are the possible answers of Q):

J2 (expanded) $KQ \rightarrow ((p_1 \rightarrow Kp_1) \wedge (p_2 \rightarrow Kp_2) \wedge \ldots)$

Kyle's second argument for Whether→That can therefore be understood as follows: 'know' is Q-factive with respect to 'whether' questions because it is Q-factive with respect to *all* kinds of questions. But why accept that 'know' is Q-factive with respect to all kinds of questions? We have no more reason to accept that than we have to accept that it is Q-factive with respect to 'whether' questions.

Kyle's third, and final, argument for Whether→That appeals to the connection between knowing and seeing. Using 'S' to represent seeing, it has the premises:

P1 $(\neg p \wedge S?p) \rightarrow S\neg p$

P2 $Sp \rightarrow Kp$

P3 If Whether→That is false, then it has a counterexample where the subject knows via seeing.

From these Kyle derives Whether→That. He also argues that a similar argument can be given with verbs other than 'see', such as 'remember', 'discover', and so on—verbs that are traditionally taken to be both Q-factive and P-factive.

P1 is the 'see' version of Whether→That. In other words, it is the assumption that 'see' is Q-factive. This third argument can therefore be understood as the argument that 'know' is Q-factive because 'see' (or 'remember', etc.) is Q-factive. But here, too, the argument assumes too much. We have no more reason to accept that 'see' (or 'remember', etc.) is Q-factive than we have to accept that 'know' is. Anyone who thinks that non-factive uses of 'know' should be taken literally has no reason not to think the same in the case of verbs such as 'see' and 'remember'. Indeed, non-factivists such as Hazlett (2010) deny Factivity not just for 'know' but also for verbs such as 'see' and 'remember'.[13]

[13]Hazlett discusses 'remember', 'realize', and 'learn', but not 'see', though he does seem to deny that all traditionally factive verbs are factive. At any rate, even if a non-factivist accepts that 'see' is factive, they should resist Kyle's argument by denying P3 instead of P1.

1.4 Denying Q-factivity

I have argued that Kyle's proof of Factivity is in essence a proof that 'know' is P-factive on the assumption that it is Q-factive, and I have argued that none of Kyle's arguments for the Q-factivity of 'know' works. Here I want to present another way of seeing the problems with the proof. Anyone who denies that 'know' is P-factive on the basis of ordinary language is likely to, and should, deny that 'know' is Q-factive.

Consider the kind of sentences that non-factivists appeal to in denying Factivity. Here is an example from earlier:

(6) Everyone knew that stress caused ulcers, before two Australian doctors in the early 80s proved that ulcers are actually caused by bacterial infection.

Anyone who is willing to affirm (6) should be willing to affirm the following in the same context:

(7) Everyone knew whether stress caused ulcers.

(8) Everyone knew what caused ulcers.

We can also add a denial of knowing the true answer more explicitly:

(9) Everyone knew whether stress caused ulcers—they knew that it did—before two Australian doctors in the early 80s proved that ulcers are actually caused by bacterial infection.

(10) Everyone knew what caused ulcers: stress, before two Australian doctors in the early 80s proved that ulcers are actually caused by bacterial infection.

Anyone willing to affirm these is thereby denying that 'know' is Q-factive.

Nor will Kyle's arguments for Q-factivity help. His first argument relies on J1, which states that if you know whether p then you know the true answer to whether p, and is here contradicted by (9). His second argument relies on J2, which states that if you know-wh then you know the true answer to the 'wh' question, and is here contradicted by both (9) and (10).[14]

[14]As for Kyle's third argument, if you accept (9) and (10) you should either deny that 'see' is Q-factive or accept that 'see' is Q-factive but deny that it entails that 'know' is.

2 Conclusion

Kyle's proof of Factivity doesn't do better than ordinary language arguments for Factivity. This is because, as I have argued, Kyle fails to make a non-linguistic case for the premise Whether→That.

I think that Whether→That is true and that the proof is sound, but I think that Whether→That can be argued to be true only on the basis of ordinary language. For instance, the following sound incoherent or downright contradictory:

(11) #It's raining, and Ann doesn't know it, though she knows whether it's raining.

(12) #Ann knows whether the door is locked; it's not locked, and she doesn't know that.

The best explanation of this, in my view, is Whether→That. How convincing is this explanation? I think no more and no less than the familiar Factivity explanation of examples like the following:

(13) #Ann knows that the door is locked, but the door isn't locked.

Kyle's proof, therefore, fails to make a non-linguistic case—nor a more convincing linguistic case—for Factivity.

References

Bricker, Adam Michael. 2018. "Visuomotor noise and the non-factive analysis of knowledge."

Bricker, Adam Michael. 2022. "Knowing Falsely: the Non-factive Project." *Acta Analytica* 37 (2): 263–282.

Buckwalter, Wesley. 2014. "Factive Verbs and Protagonist Projection." *Episteme* 11 (4): 391–409.

Buckwalter, Wesley, and John Turri. 2020. "Knowledge, Adequacy, and Approximate Truth." *Consciousness and Cognition* 83 (C): 102950.

Egré, Paul. 2008. “Question-Embedding and Factivity.” *Grazer Philosophische Studien* 77 (1): 85–125.

Elliott, Patrick D., Nathan Klinedinst, Yasutada Sudo, and Wataru Uegaki. 2017. “Predicates of Relevance and Theories of Question Embedding.” *Journal of Semantics* 34 (3): 547–554.

Hansen, Nat. 2014. “Contemporary Ordinary Language Philosophy.” *Philosophy Compass* 9 (8): 556–569.

Hazlett, Allan. 2010. “The Myth of Factive Verbs.” *Philosophy and Phenomenological Research* 80 (3): 497–522.

Kyle, Brent G. Forthcoming. “Proof That Knowledge Entails Truth.” *Journal of Philosophy*.

Lahiri, Utpal. 2002. *Questions and Answers in Embedded Contexts.* Oxford University Press.

Lewis, David. 1982. “‘Whether’ Report.” In *Philosophical Essays Dedicated to Lennart Åqvist on His Fiftieth Birthday,* edited by Tom Pauli, 194–206. University of Uppsala Press.

Nagel, Jennifer. 2014. *Knowledge: A Very Short Introduction.* Oxford: Oxford University Press.

Spector, Benjamin, and Paul Egré. 2015. “A uniform semantics for embedded interrogatives: an answer, not necessarily the answer.” *Synthese* 192 (6): 1729–1784.

Stokke, Andreas. 2013. “Protagonist Projection.” *Mind & Language* 28 (2): 204–232.

Turri, John. 2011. “Mythology of the Factive.” *Logos and Episteme* 2 (1): 141–150.

Uegaki, Wataru. 2019. “The semantics of question-embedding predicates.” *Language and Linguistics Compass* 13 (1): e12308.