

SOLITARY AND EMBEDDED KNOWLEDGE

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In this talk I want to argue for the usefulness in epistemology of the distinction between knowledge that is, and knowledge that is not, acquired in such a way as necessarily to be acquired along with other knowledge so acquired. Knowledge of the former sort I shall say is *embedded*; knowledge of the latter sort, *solitary*. What is useful about this distinction is that we can use it to frame descriptions that are both true, and not stipulative-seeming, of certain phenomena that have resisted such description in traditional epistemological terms. I'll illustrate this by considering in detail Saul Kripke's claim (in *Naming and Necessity*) that one can gain non-linguistic knowledge by linguistic stipulation. But at the end I'll explain why I think that the point applies to other issues as well.

1.

In *Naming and Necessity* (1972, 1980) Kripke argued, against venerated philosophical opinion, that there can be *a priori* knowledge of contingent truths. The first thing I'm going to do is to argue that the examples he used to support that claim don't support it. They show nothing about the possibility of the contingent *a priori*. But they are puzzling nonetheless. All Kripke got wrong was how to *characterize* what's puzzling about them. I'll try to formulate a more satisfactory characterization after rejecting Kripke's (and a second one).

A representative example goes as follows (Kripke 1980, 54-6). Suppose that a person *A* "fixes the reference" of the term "meter" using the description "the length of stick *S* at t_0 ," where *S* is a stick *A* knows to exist but has not measured. (Call that **the stipulation**.) On the "picture" of reference that Kripke recommends, this means three things. First, the term "meter" is one that *A* can use both to make assertions and to express beliefs. Second, the reference of the term "meter," in any context of use, is the length that stick *S* actually has at t_0 . Third, the term "meter" is not synonymous with the description "the length of stick *S* at t_0 ."¹

Having made the stipulation, *A* would sincerely and assertively utter the sentence, "The length of stick *S* at t_0 is one meter." From the commitments just attributed to Kripke it follows that:

1. After the stipulation, *A* believes that the length of stick *S* at t_0 is one meter.

2. It is *contingently true* that the length of stick *S* at t_0 is one meter.
 3. The belief that the length of stick *S* at t_0 is one meter is *different from* the belief that the length of stick *S* at t_0 is the length of stick *S* at t_0 . It is consistent with (3) to make it part of the example, as Kripke does, that:
 4. Before making the stipulation, *A* did *not* believe that the length of stick *S* at t_0 is one meter.²
- And I shall follow Kripke even in agreeing to the following:
5. After the stipulation, *A* *knows* that the length of stick *S* at t_0 is one meter.

In the next two sections I shall explain why I don't think the usual ways of summing up the example don't get at what's puzzling about it; then I shall give what I think is the right description of what's puzzling about it, and explain how to resolve the puzzle by showing that *that* description is *false*. Doing that will involve distinguishing between solitary and embedded knowledge.

2.

Kripke claims that what we have here is a case of someone's possessing *a priori* knowledge of a contingent fact (1980, 63n.26). In other words, he claims that (1)-(5) entail (6):

6. After the stipulation, *A* knows *a priori* that the length of stick *S* at t_0 is one meter,

which in turn entails:

7. It is possible to possess *a priori* knowledge of a contingent truth.

I should note that I will not take issue with Kripke's setting-up of the example,³ only with the upshot he claims for it. I'm going to deny that the example shows us anything about the possibility of the contingent *a priori*.

To see this, we should first note that *A*'s belief that the length of stick *S* at t_0 is one meter rests for its justification on *A*'s belief that he performed the stipulation.⁴ Imagine that *A* suffers a blow to the head that causes him to lose his belief that he performed the stipulation, but not to lose his belief that the length of stick *S* at t_0 is one meter. Then we would not say that *A* *knows* that the length of stick *S* at t_0 is one meter. (Imagine asking him *how* he knows that—he would have nothing to say.) Thus the situation is unlike cases in which one's merely *having*—not *remembering*—some experience is a necessary condition for possessing some knowledge.⁵

Next we need to articulate the following principle: that nothing that is known *a priori* rests for its justification on anything that is known *a posteriori*.⁶ Call that the **Downwards Closure Principle** about the *a priori*.⁷ I won't be relying on any particular account of what *a priori*

knowledge exactly is, but the downwards closure principle should be entailed by any account that squares with our understanding of what is distinctive of mathematical and logical knowledge.⁸

Now we come to the disjunctive step in the argument: either *A*'s belief that he performed the stipulation is not *a priori*, or it is. This depends on whether one's conception of the *a priori* is liberal or strict. By a **liberal conception** of the *a priori*, I mean a conception according to which *some* experiences count as *a priori*: namely, first-person, "introspective" experiences of mental states and events.⁹ Downwards Closure would then allow for *a priori* beliefs justified by experiences of this special sort. By a **strict conception** of the *a priori*, I mean a conception according to which *no* experience counts as *a priori*. By Downwards Closure then, no belief even partly justified on the basis of an experience could count as *a priori*.

Let's consider the liberal conceptions first. If we maintain that a stipulation can be performed as a purely mental act, then we can, consistently, make it part of the example that *A* knows *a priori* that he performed the stipulation. All we need to add to the example is that the stipulation is a purely mental one.¹⁰ Then we *do* get the entailment of (6), which in turn entails (7). But then the example isn't doing the work Kripke claims it is doing. For since it is a contingent fact that *A* performed the stipulation, the claim that he has *a priori* knowledge of *that* fact entails (7) all by itself; the rest of the example, which supports (6), isn't needed.

Now consider the strict conceptions of *a priori* knowledge. On a strict conception, *A*'s belief that he performed the stipulation is certainly not *a priori*, for even if we do allow for the possibility of mental stipulations of the sort that *A* performs, *A*'s belief that he performed the stipulation would have to rest for its justification on his experience of performing that action (or on his "introspecting" his performing that action).¹¹ But if *A*'s belief that he performed the stipulation is not *a priori*, and (as we argued above) it is part of what justifies *A*'s belief that the length of stick *S* at t_0 is one meter, then (by Downwards Closure) neither is the latter belief *a priori*.

If we work with a liberal conception of the *a priori*, then we should say that (7) is not supported by Kripke's example so much as by that conception itself, for that conception already allows for *a priori* knowledge of contingent facts, *viz.* facts about one's own mental states. If, on the other hand, we work with a strict conception, then all that is required to *reject* (7) is commitment to Downwards Closure and to the claim that in Kripke's example, *A*'s knowledge that the length of stick *S* at t_0 is one meter is justified partly by his knowledge that he performed the stipulation. So if there is anything remarkable, or puzzling, about Kripke's meter stick example, it is

not adequately reflected in (7), for (7) is either false or supported independently of the example.

3.

I'm also going to reject, without careful argument, a second way in which one might want to characterize what is puzzling about Kripke's example. One could say that what's puzzling is that A's stipulation gains him knowledge of *non-content facts*. For what is a stipulation, but the fixing of some content fact—here, a fact about the content of the word “meter”? And how could one's fixing of a content fact gain one knowledge of a fact of some other sort—here, a fact about the length of some stick?

But the thought that *this* is what's puzzling about the example is undercut in two ways.

First, we must observe that not just anyone, in any situation, can perform the stipulation that A performed. We may differ over the details of what exactly is required; but if any knowledge of non-content facts is required to *perform* the stipulation, then the appearance of a puzzle in its *issuing* in knowledge of that sort is greatly reduced.

Second, though, one might object on externalist grounds to the very idea of a useful distinction between knowledge of content facts and knowledge of non-content facts. For suppose we say that *knowing that one is employing the concept WATER* is knowledge of a content fact, and that *knowing that concepts are externally determined* is also knowledge of a content fact—knowledge arrivable via reflection on the content of the concept CONTENT. (Externalism is, after all, a philosophical thesis.) Then one can infer from these two pieces of knowledge, that there is an externality that answers to the concept WATER. And that seems to be knowledge of a *non-content fact*.¹² So the externalist might very well *deny* that there's any useful distinction to be drawn between knowledge of content facts and knowledge of non-content facts. And then we'd have to wait on the results of the debate over semantic externalism before deciding whether we are even entitled to the vocabulary used in this way of attempting to characterize what's puzzling about Kripke's example.

4.

I don't think it's useful to try and describe what's puzzling about Kripke's example in terms of a philosophical notion of the *a priori*, or in terms of a dubious distinction between knowledge of content facts and knowledge of non-content facts. But we shouldn't find that conclusion very troubling. For since the puzzle can be *presented* in non-technical terms, we

should expect that an adequate *description of what's puzzling about it* can be framed in non-technical terms. Let's try to formulate such a description.

I think the best way to describe what's puzzling about Kripke's example is as follows. We think of knowledge of a stick's length as knowledge that is usually gained by *measurement*. Yet in the example, it appears, we have another way to gain such knowledge. We appear to have, here, a way to gain by stipulation what we usually gain by measurement. And that is something that is puzzling: it calls out for explanation, or for being explained away.

Here, I think, we are getting to the nub of the issue, and only here can we resolve it satisfactorily. That is what I propose to do by means of the distinction between solitary and embedded knowledge. For once we appreciate that distinction we see why we should *deny* what seems *utterly obvious* about the example as Kripke sets it up: that it is a case in which someone gains by stipulation what is usually gained by measurement. And when we do that, I'll suggest, we'll have succeeded in explaining away what's puzzling about the example.

5.

The crucial claim I'll be making is that when one comes to know a thing's length by measuring it, then *necessarily* one also comes to know *other* things by measurement. In this section I'll explain why this is so.

Measuring is a species of comparing. Think of how one performs the simplest of measurements, for example, measuring the length of a cabinet. One puts the measuring-tape up against the cabinet, then reads off a number from the tape. In doing so one gains knowledge not only of the length of the cabinet, but of the length of the segment of the measuring-tape that is laid against it. One then gains knowledge of the lengths of two things (and of the fact that they are the same in length). And one gains knowledge of those things *by performing that measurement*. One does not *just* acquire knowledge of the length of the cabinet. The same may be said of more complex methods of measurement, e.g. triangulation. In triangulation one must measure two angles, and one length, before coming to know a second length by measurement.¹³

Or think of the measurement of temperature. One dips a thermometer into a liquid and reads off a number from it, thereby gaining knowledge of the temperature of the liquid. Now it would be false to say, analogously with what I just said about measurement, that one also necessarily gains knowledge of the *temperature* of something else—say, the liquid within the thermometer. For some of us have no idea how thermometers work.¹⁴ But even these people would gain knowledge of the height of the liquid in the

thermometer. So we should not say that by measuring how *F* a thing is, one necessarily comes to know how *F* something else is; what we should say, less strongly, is that by measuring how *F* a thing is, one necessarily comes to know how *G* something else is, for some measurable quality *G*. As long as one is using a tool to measure some quality of a thing, one acquires knowledge of how the tool stands, in *some* measurable respect, *vis-à-vis* the item being measured. And it is of the essence of measurement, that some measuring tool or instrument is involved.

If this is right then we should say the following: that when one gains by measurement knowledge that *p*, one necessarily also gains, by measurement, knowledge that *q*, where knowledge that *q* is distinct knowledge. Knowledge acquired by measurement necessarily comes *embedded among* other knowledge so acquired. So I'll call knowledge acquired by measurement **embedded knowledge**.

6.

If what I argued in the previous section is right, then the noun phrase “the knowledge that is gained by measurement *M*” never denotes a *single* piece of knowledge—it never denotes merely the knowledge, of some one thing, that it has some one measurable quality to some particular degree. It always denotes a plurality of distinct pieces of knowledge of that sort.

Now recall our description of what is puzzling about Kripke's example: that it is a case in which *A* gains by stipulation what is usually gained by measurement. To see why this description is false, we merely need notice that the knowledge of *S*'s length that *A* gains by stipulation is knowledge that comes unaccompanied by any *other* knowledge, of some thing, that it has some measurable quality to some particular degree. When we appreciate this, we see that *A*'s stipulation does *not* gain him what he could have gained by measurement. For the knowledge it gains him is not embedded among other knowledge gainable by measurement. He just gets one solitary bit of knowledge of the degree to which a thing possesses some measurable quality; but *measurement* is a method whose yield of knowledge could never be that meagre.

So once we appreciate that knowledge gained by measurement is necessarily embedded among other knowledge so acquired, we see why it's *false* to say what seemed *obviously true* about the example as Kripke set it up: that it is a case in which someone gains by stipulation what he could have gained by measurement.¹⁵ And, I submit, when we see why the *best description of what's puzzling* about an example is in fact a *false* description, we see why we should not longer be puzzled by it.

7.

Our solution to the puzzle from Kripke rested on the observation that the knowledge *A* gains by stipulation isn't embedded among knowledge of other measurables, as knowledge gained by measurement necessarily is. But is it *embedded, simpliciter*, as we defined that notion? That is, was it necessarily accompanied by knowledge *also gained by stipulation*?

We agreed with Kripke that *A*'s stipulation gains him knowledge of the length of stick *S*. But that isn't knowledge that he need have gained in performing that stipulation. It is plausibly regarded as having been inferred from the knowledge that *A* did, necessarily, gain in performing the stipulation: knowledge that the reference of her term “meter” is fixed by the description “the length of stick *S* at *t₀*.” That piece of knowledge, gained by the stipulation, *needn't* have been accompanied by any distinct piece of knowledge so gained. So it is solitary rather than embedded knowledge.

8.

Knowledge gained by measurement is embedded; knowledge gained by stipulation is not. So our distinction is really a distinction among *methods of acquiring knowledge*.

Consider some other methods of gaining knowledge. The method we use to extend our mathematical knowledge is usually that of *proof*; and in proving something—something that is not utterly trivial, at any rate¹⁶—one proves other things along the way. So knowledge gained by mathematical proof is embedded knowledge. But suppose we maintain that one can also gain mathematical knowledge by *computer proof*. Since it is possible for a theorem-proving computer to spit out only *one* result, knowledge gained by computer proof is not embedded. Or consider knowledge by testimony: since it is possible to gain by testimony only *one* piece of knowledge, *no* knowledge gained by testimony is embedded knowledge.

What we have here, I think, is a distinction that cuts at a joint; and what is interesting is that the things on one side of it—the methods of gaining *solitary* knowledge—have consistently struck philosophers as more puzzling than the things on the other side. Just as philosophers have had trouble dealing accurately and non-stipulatively with Kripke's example, they've had trouble deciding whether knowledge acquired by computer proof could be *a priori*; or whether one could really *know* anything by testimony, or whether one could know anything *a priori* by testimony. I doubt that these debates will issue in results that strike nobody as stipulative. But that doesn't mean that we have to resign ourselves to a permanent feeling of philosophical puzzlement over such cases; all that's needed is to bring new concepts to bear on them.

Notes

¹ Kripke points out that this shows up in a difference in behavior in modal contexts: “The length of stick *S* at t_0 might not have been the length of stick *S* at t_0 ” is false, while “The length of stick *S* at t_0 might not have been one meter” is true.

² One might think that this doesn’t need spelling out, since the fact that the term “meter” is one that *A* introduces means that *A* *couldn't* have believed, before the stipulation, that the length of stick *S* at t_0 is one meter. But he could have, on many views of belief, if he’d had in his language a term exactly synonymous with the term “meter,” say “shmeter,” and, having previously measured the stick, found that its length at t_0 is one schmeter. So it is worth specifying that before the stipulation he did not believe that the length of stick *S* at t_0 is one meter. Note, also, that if we *rejected* (3) we’d have to reject (4) too, since before making the stipulation *A* probably did believe that the length of stick *S* at t_0 is the length of stick *S* at t_0 , which by the negation of (3) would just be the belief that the length of stick *S* at t_0 is one meter.

³ There are philosophers who have denied some of (1)-(5). I find those denials strained and implausible, but I won’t argue against them here. Donnellan (1979) denies (1), holding that *A* believes only that the sentence “The length of stick *S* at t_0 is one meter” is true. Evans (1979) denies (3), claiming that the belief that the length of stick *S* at t_0 is one meter is the same belief as the belief that the length of stick *S* at t_0 is the length of stick *S* at t_0 . (A very implausible denial of (2) would seem to follow from this, as would a denial of (4), for *A* no doubt believed, before making the stipulation, that the length of stick *S* at t_0 is the length of stick *S* at t_0 .) Sutton (MS.), while agreeing to (3), denies (4), holding that *A* “implicitly” believes that the length of stick *S* at t_0 is one meter.

⁴ We do not need to concern ourselves with the details of what is involved in the sort of stipulation Kripke is envisioning (on this see also below, n.10). One might want to maintain that mere knowledge of the description’s being uniquely satisfied is enough to use it to perform the stipulation; or one could maintain, as Nathan Salmon does, that one must “have an appropriate experience in which *S* plays a significant role” (1988, 200). We can sidestep all such questions by focusing on the role, in the example, of *A*’s belief that he performed the stipulation rather than on the role of whatever beliefs he must have in order to be able successfully to perform the stipulation.

⁵ To use an example of Salmon’s (1988, 202), if someone were to forget having had the experiences that enabled him to possess the concept BICYCLE, we would *not* say that he thereby stopped knowing that all bicycles are bicycles. And if we asked him how he knows that, he *would* have something to say: “By instantiating a logical truth.”

⁶ This leaves room for allowing that there is *a priori* knowledge that rests on *nothing* for its justification; but this is of no consequence in what follows.

⁷ This is different from, and much less tendentious than, the **Upwards Closure Principle**: If *p* is known *a priori* and *p* justifies *q*, then *q* is known *a priori*.

⁸ On the definition I’ve given, someone who comes to know a mathematical truth by testimony does not know it *a priori*, because their knowledge rests on their belief that they’ve been told the truth in question, and knowing that you’ve been told something is *not a priori* knowledge. But we can still say that that mathematical truth is *knowable a priori* to such a person. That is, such a person *could* come to know it *a priori*, and if they do, downwards closure applies: no belief that justifies *that one is a posteriori*. This is consistent with Kripke’s view (1980, 35).

⁹ Paul Boghossian, for one, finds the latter conception more natural to work with than the former (1996, 388n.4).

¹⁰ Kripke supplies almost nothing in the way of an account of what is involved in using a description to “fix the reference” of a term, so it is not by consulting his book that we could decide what to say about the possibility of purely mental stipulations. That is why the disjunctive form of argument is so useful: it swings free of such details about what stipulations or “fixings” are. (See also above, n. 4.)

¹¹ One might think of appealing to *A*’s intention to perform the stipulation; but knowledge of one’s intention to do something does not justify, sufficiently for knowledge, a belief that one will do it.

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