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## Interference and the Knowability Principle

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Semantic anti-realists take truth to be epistemic in nature. They often take this to entail the knowability principle, that all truths are knowable. According to Joseph Melia (1991) and Michael Hand (2003), the knowability principle is false and not, in fact, a consequence of the thesis that truth is epistemic. Hand suggests a restricted version of the knowability principle, according to which a true statement is knowable only if there is no "interference" among the verification procedures for the "pieces" of the statement. (More on the notions of "interference" and "pieces" later.) According to Hand, the semantic anti-realist is only committed to this restricted version of the knowability principle.

The aim of this paper is to critically examine the Melia-Hand rejection of the knowability principle, as well as Hand's restricted knowability principle. I argue that the putative counterexample given to the knowability principle by Melia fails, because there is an alternative interpretation of the knowability principle that is not

falsified by Melia's example. The upshot is that the anti-realist need not appeal to the notion of "interference" in order to retain some version of the knowability principle and avoid Melia's purported counterexample.

### **1 Interference and Knowability**

Melia (1991) offers the following putative counterexample to the principle that all truths are knowable. Let  $p$  be the statement "The number of flashes in room A at time  $t$  is three", and let  $q$  be the statement "The number of flashes in room A at time  $t$  is never counted". Suppose that the only way to know  $p$  is to count the number of flashes in room A at time  $t$ . This supposition guarantees that if  $q$  is true, then  $p$  is never known, regardless of whether  $p$  is true. Suppose further that both  $p$  and  $q$  are true. Then, according to the knowability principle, the truth of both  $p$  and  $q$  is knowable. Consider a possible world in which the truth of both  $p$  and  $q$  is known. Since the truth of  $q$  is known,  $q$  must be true at this world, since knowledge is factive. However, since  $p$  is known and the only way to know that  $p$  is true is to count the number of flashes in room A at time  $t$ ,  $q$  must also be false at this world. Hence, there is no possible world at which the truth of both  $p$  and  $q$  is known. Since the knowability principle entails that there is such a world, the principle is to be rejected.

Melia's diagnosis of why his example is a counterexample to the knowability principle is that some statements change their truth-value when we try to verify them. Yet Melia is not ready to abandon anti-realism entirely. He further claims that such statements differ from statements whose truth-value is unknowable because their truth-value cannot be discovered no matter what we do. He asserts that his example is an instance of the former kind of statement, and that the anti-realist can be committed to denying the existence of statements that are

unknowable no matter what we do, without denying the existence of statements that change their truth-value when we try to verify them.

Hand (2003) provides details to substantiate Melia's claims. Hand notes that anti-realists usually construe the epistemic nature of truth to be the claim that a statement is true only if there is a performable verification procedure for the statement (cf. Dummett 1978, p. 227; Tennant 1997, p. 202). This claim, conjoined with the claim that a statement is knowable if it has a performable verification procedure, commits anti-realists to the knowability principle. Since Hand agrees that cases like Melia's are counterexamples to the knowability principle, and since he accepts that statements with performable verification procedures are knowable, Hand proposes to modify the usual construal of the epistemic nature of truth. According to Hand, the claim that truth is epistemic should be taken to be the claim that a statement is true only if there is a performable verification procedure for each "piece" of the statement. Hand does not explicate what he takes the "pieces" of a statement to be. A reasonable assumption, which I adopt for the remainder of this paper, is that they are the truth-functionally simple components of the statement; this means, for example, that the "pieces" of a conjunction are its conjuncts.

Hand argues that his construal of the epistemic nature of truth does not entail the usual construal, because there can be "interference" among the verification procedures for the pieces of a statement. This interference occurs just in case the joint performance of these procedures cannot result in a verification of the statement itself, even though the isolated performance of the verification procedure for each piece of the statement can result in a verification of that piece. When there is interference among the verification procedures for the pieces of a statement, "the composition of performable verification procedures does not preserve performability" (Hand

2002, p. 219; cf. p. 222). Hence, when there is interference among the verification procedures for the pieces of a statement, there can be a performable verification procedure for each piece of the statement without there being a performable verification procedure for the statement itself.

Hand's construal of the epistemic nature of truth and his assumption that a statement is knowable just in case it has a performable verification procedure, yield the following, restricted knowability principle:

If a statement is true, then the statement is knowable if and only if there is no interference among the verification procedures for its pieces.

This version of the knowability principle restricts the kinds of truths that are knowable in a way that the usual version does not.

If there is interference among the verification procedures for the pieces of Melia's conjunction "p and q", Hand's version of the knowability principle allows that conjunction to be true but unknowable, in a way that is compatible with Hand's construal of the epistemic nature of truth, and in a way that conforms to Melia's diagnosis of his example. And, indeed, there is interference among the verification procedures for the pieces of the conjunction "The number of flashes in room A at time t is three but the number of flashes in room A at time t is never counted". For, given the supposition that the only way to verify the number of flashes in room A at time t is to count those flashes at that time, any performance that verifies the conjunct "The number of flashes in room A at time t is three" makes it impossible to verify the conjunct "The number of flashes in room A at time t is never counted", because the performance that verifies the former conjunct renders the latter conjunct false and thereby unverifiable. So, according to Hand's version of the knowability principle, Melia's conjunction

"p and q" can be true despite being unknowable, but only because there is interference among the verification procedures for the pieces of this conjunction. This allows the anti-realist to accept the existence of statements such as Melia's while denying the existence of truths that are unknowable despite there being no interference among the verification procedures for their pieces. All of this bears out Melia's claims about how the semantic anti-realist might respond to his example without abandoning the commitment to the epistemic nature of truth.

## **2 Alternative to Hand's Proposal**

An alternative response to Melia's example is to reinterpret the knowability principle so that knowledge is relativized to "epistemic situations". According to this version of the knowability principle, which I will call the situation-theoretic version, to say that a statement is knowable (by us) at a time  $t$  is to say that the statement is part of an epistemic situation that is, in some sense, possible relative to our epistemic situation at time  $t$ . Our epistemic situation at a given time is just the state of our knowledge at that time; an epistemic situation is a state in which some statements are known to be true, others are known to be false, and still others are left undecided. For example, our current epistemic situation is one in which it is known that the largest Venn diagram that can be created with circles consists of three circles, and in which it is undecided whether every even number greater than two can be written as the sum of two primes (Goldbach's conjecture).

The situation-theoretic version of the knowability principle is the claim that, for every truth, there is an epistemic situation that is possible relative to our current situation, in which that truth is known to be true. Three adequacy conditions seem to be reasonable impositions on the accessibility relation between epistemic

situations. These are intended to ensure appropriate kinds of continuity between current situations and possible extensions thereof. First, one situation is accessible from another only if the former sufficiently overlaps the latter, so that every possible extension of an epistemic situation contains sufficiently many members of that situation. This is intended to disallow the appropriateness of knowledge acquisition through a wholesale rejection of what is known. If the only way to come to know some statement from a given epistemic situation is to jettison that situation in its entirety, it seems better to say that the statement is not knowable than to say that it is, lest there be no constraint at all on continuity of content between an epistemic situation and its possible extensions. At the same time, it might be overly harsh to render inappropriate knowledge acquisition through a partial rejection of what is known; that is, requiring that one situation contain another as a part in order for the former to be accessible from the latter might be too stringent. Whether this is so, and what counts as sufficient overlap if it is, is much beyond the scope of this discussion, which does not require precision on this point in order to address Melia's purported counterexample.

Two further requirements constrain continuity between environments of inquiry and between knowers in those environments. Specifically, according to the second constraint, one situation is accessible from another only if the former is physically possible relative to the latter. This is intended to disallow the appropriateness of knowledge acquisition through the violation of natural laws. Finally, according to the third constraint, one situation is accessible from another only if the knowers in the former situation are at most finite extensions of the knowers in the latter situation. This is intended to ensure an appropriate resemblance between ourselves and our possible future selves or descendants.

### 3 Rejection of Melia's Counterexample

The situation-theoretic version of the knowability principle allows one to avoid examples like Melia's without appealing to the notion of interference. According to the situation-theoretic knowability principle, statements like Melia's conjunction "The number of flashes in room A at time  $t$  is three but the number of flashes in room A at time  $t$  is never counted" are either knowable or else statements whose truth-value cannot be discovered no matter what we do, because this version of the knowability principle does not appeal to the notion of "interference". If statements like Melia's conjunction are knowable, then they are no counterexample to the knowability principle, and hence there is no need to invoke the notion of "interference" or abandon the usual anti-realist construal of the epistemic nature of truth. Presumably both Melia and Hand would deny that such statements are knowable, since they take them to be counterexamples to an unrestricted knowability principle. Of course, if such statements are statements the truth-value of which cannot be discovered no matter what we do, then Melia's distinction between statements that change their truth-value when we try to verify them and statements with undiscoverable truth-values collapses, and such statements appear to be counterexamples to an unrestricted knowability principle only because they trade on the intuition that the knowability principle is false. This is best seen by first considering a case similar to Melia's conjunction.

Let  $p^*$  be the statement 'The number of flashes in room A at time  $t$  is three' and let  $q^*$  be the statement 'The number of flashes in room A at time  $t$  is uncounted as of time  $t^*$ ', where  $t^*$  is a fixed time either at or later than time  $t$ . Suppose that both  $p^*$  and  $q^*$  are true as of time  $t^*$ , and that the only way to know the truth of  $p^*$  is to count the number of flashes in room A at time  $t$ . Then, according to the situation-theoretic knowability principle, there is an epistemic situation at a time later than  $t^*$ , possible relative to the situations prior to and including the

epistemic situation at time  $t^*$ , in which it is known that  $p^*$  is true, and in which it is known that, in every situation prior to and including the situation at time  $t^*$ , it is not known that  $p^*$  (i.e., it is known that  $q^*$ ). This is consistent with the truth of both  $p^*$  and  $q^*$  as of time  $t^*$ .

Now either there is an epistemic situation at a time later than  $t^*$ , possible relative to situations prior to and including the situation at  $t^*$ , in which both  $p^*$  and  $q^*$  are known; or the epistemic situation at  $t^*$  is one for which there is no such later epistemic situation. If the former scenario obtains, then this analogue case is not a counterexample to the situation-theoretic knowability principle. If the latter scenario obtains, then the epistemic situation at time  $t^*$  must be the epistemic situation at the end of all possible inquiry. For, according to the anti-realist, it is only at the end of all possible inquiry that whatever is unknown is unknowable -- it is only at the end of all possible inquiry that there could be a truth that is impossible to know. To deny this is to beg the question against the anti-realist by asserting the existence of an unknowable truth. Hence, if  $p^*$  is unknown at  $t^*$  and  $t^*$  is the end of all possible inquiry, then  $p^*$  is unknowable. But, according to the situation-theoretic knowability principle, the truth of  $p^*$  entails its knowability, so that  $p^*$  is known at the end of all possible inquiry, contrary to the claim that  $p^*$  could be unknown at the end of inquiry. I submit that our intuitions about the end of all possible inquiry are unclear and hence indecisive. So, if the epistemic situation at  $t^*$  is one for which there is no appropriate later epistemic situation, the analogue case is indecisive as a counterexample to the situation-theoretic version of the knowability principle.

Having established that the example involving  $p^*$  and  $q^*$  is either indecisive or ineffective as a counterexample to the situation-theoretic knowability principle, what about examples like Melia's? If, in saying that the number of flashes in room A at time  $t$  is never counted (statement  $q$ ), Melia means to say that the number of flashes in

room A at time  $t$  is uncounted as of time  $t^*$ , where the epistemic situation at  $t^*$  is one for which there is no accessible epistemic situation in which both  $p$  and  $q$  are known, then his case is indecisive for the same reason that the case invoking  $p^*$  and  $q^*$  is indecisive.

If, however, in saying that the number of flashes in room A at time  $t$  is never counted, Melia means to say that the number of flashes in room A at time  $t$  is uncounted as of time  $t^*$ , such that there is at least one later epistemic situation accessible from the situations prior to and including the epistemic situation at time  $t^*$  in which both  $p$  and  $q$  are known, then Melia's case is compatible with the situation-theoretic version of the knowability principle, rather than a counterexample to it. Because in such a situation it is known how many flashes occurred in room A at time  $t$ , and it is known that the epistemic situation at time  $t^*$  did not know how many flashes occurred in room A at time  $t$ . In either case, examples like Melia's are not decisive counterexamples to the situation-theoretic knowability principle. Hence, they are no threat to the usual construal of the epistemic nature of truth, and so no motivation for Hand's reconstrual of anti-realism, his appeal to interference, or his restriction of the kinds of truths that are knowable.

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### **Interference and the Knowability Principle**

**Knowability Principle (KP):** Every truth is knowable.

#### **Melia's Example**

p = "The number of flashes in room A at time t is three"

q = "The number of flashes in room A at time t is never counted"

The only way to know p is to count the number of flashes in room A at time t.

Suppose both p and q are true. Then, by KP, "p and q" is knowable. If this is known, then q is known and thereby true. But if p is known then the number of flashes in A at t is counted; so q is false. So "p and q" is not knowable, contra KP. KP is false.

## Hand's Proposal

**Truth is Epistemic (TE):** A statement is true only if it has a performable verification procedure.

**Assumption:** A statement is knowable if it has a performable verification procedure.

$$\text{TE} + \text{Assumption} \rightarrow \text{KP}$$

But TE is false: If there is "interference" among the verification procedures for the "pieces" of a statement, then a statement can be true despite lacking a performable verification procedure.

- ? I assume that the "pieces" of a statement are its truth-functionally simple components.
- ? There is interference among the verification procedures for the pieces of a statement just if the joint performance of these procedures cannot result in a verification of the statement itself, even though the verification procedure for each piece of the statement can result in a verification of that piece.

**Revised TE:** p is true only if there is a performable verification procedure for each of p's pieces.

$$\text{Revised TE} + \text{Assumption} \rightarrow \text{Hand's Knowability Principle}$$

**Hand's Knowability Principle:** If a statement is true, then it is knowable just in case there is no interference among the verification procedures for its pieces.

**Hand's Response to Melia:** There is interference among "p and q". Hence, the example is no threat to Hand's Knowability Principle.

### Alternative to Hand's Proposal

**Situation-Theoretic Knowability Principle (ST-KP):** For every truth, there is an epistemic situation, possible relative to our present epistemic situation, in which that truth is known.

- An epistemic situation is a state of knowledge of some community of inquirers.

### Analog to Melia's Example

$p^*$  = "The number of flashes in room A is uncounted as of t is three"

$q^*$  = "The number of flashes in room A at time t is uncounted *as of time t\**"

The only way to know  $p^*$  is to count the number of flashes in room A at time t

Suppose both  $p^*$  and  $q^*$  are true as of time  $t^*$ . Then, by ST-KP, there is an epistemic situation at a time later than  $t^*$ , possible relative to the situations prior to and including the situations at  $t^*$ , in which both  $p^*$  and  $q^*$  are known; or the situation at  $t^*$  is one for which there is no such later epistemic situation.

- If the former, no counterexample to ST-KP.
- If the latter, the epistemic situation at  $t^*$  is the situation at the end of all possible inquiry; in this case, the analog example is indecisive as a counter-example to ST-KP.

## **New Response to Melia**

If Melia means by  $q$  that  $q^*$  is true and the situation at  $t^*$  is one for which there is no possible later epistemic situation in which both  $p$  and  $q$  are known, then Melia's example is indecisive as a counterexample to ST-KP for the same reason that the analog case is indecisive.

If Melia means by  $q$  that  $q^*$  is true and the situation at  $t^*$  is such that there is a possible later epistemic situation in which both  $p$  and  $q$  are known, then Melia's example is compatible with ST-KP, not a counterexample.

**Upshot:** Anti-realists need not reconstrue TE in order to avoid Melia's example.

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