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On A Priori Knowledge of Contingency

MARGOT STROHMINGER AND JUHANI YLI-VAKKURI

Abstract

Many philosophers have proposed principles according to which the general modal status (contingency or non-contingency) of either all sentences or some broad range of sentences is knowable a priori. Nearly all such principles have fallen victim to decisive counterexamples. Recently, Kipper (2017) discusses a principle of this kind, restricted to atomic sentences, to which no decisive counterexamples have been presented. Kipper himself argues against the principle, but his purported counterexamples depend on highly contentious epistemological and metasemantic assumptions, so they are far from decisive. We show that uncontentious counterexamples to Kipper's principle arise in virtually any non-trivial first-order theory that deals with contingent subject matter.

1. Introduction

In a famous passage in *Naming and Necessity* (1980), Kripke says that cases in which we come to know that it is necessary that *p* a posteriori by deducing it from (i) the a posteriori known fact that *p* and (ii) the a priori known fact that if *p* then it is necessary that *p* '*may* give a clue to a general characterization of a posteriori knowledge of necessary truths' (159).[1] Attempts to provide such a characterization have preoccupied many epistemologists of modality since, but nearly all extant attempts at such characterizations have fallen victim to decisive counterexamples.[2] The most widely discussed such attempts in the recent literature are close variants of the following principle.[3]

(A1) If *S* knows whether ϕ is contingent, then *S* is in a position to know a priori whether ϕ is contingent.

[1] See also Kripke (1971: 153).
[2] See Strohminger and Yli-Vakkuri (2017: §3) for discussion.
[3] See, e.g., Casullo (2003: 195-96, 2010: 348, 357-58), Gregory (2011: 7) and Hale (2012: 259). Kipper also (2017: 2) attributes the view to Whewell (1840: 59-61), Chisholm (1966: 74-75), Bealer (1987), Horvath (2009) and Barnes (2007), but we found no compelling textual evidence for these attributions.

Casullo (2010: 357–58) describes a variant of (A1) as an 'intuitively plausible, widely accepted principle that […] faces no clear counterexamples'. Clear counterexamples to (A1) are by now well known;[4] however, all of the well-known counterexamples involve logically complex (i.e., non-atomic) sentences ϕ. Recently, Kipper (2017) discusses restrictions of similar principles along the following lines, which escape these counterexamples.

(A2) If ϕ is an atomic sentence and *S* knows whether ϕ is contingent, then *S* is in a position to know a priori whether ϕ is contingent.

(Here we will only discuss (A2) instead of Kipper's own similar principle; nothing in our discussion will turn on any differences between the two.[5]) Kipper attempts to produce counterexamples to such principles, but his examples are at best highly contentious: each involves either contentious assumptions concerning what is a priori knowable about natural kinds or—even more contentiously—a combination of such assumptions with a commitment to Chalmersian two-dimensionalist ideology.

In taking on these commitments, Kipper's discussion is symptomatic of certain widespread misconceptions in the literature. On the one hand, it is widely thought that the plausibility of various principles connecting apriority to necessity turns on subtle issues in the semantics, metasemantics, and metaphysics of natural kind terms and natural kinds (which are controversial notions in their own right[6]). On the other, it is less widely—but

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[4] See Anderson (1993: 11-13).

[5] The principle that Kipper discusses is

(ANC) The general modal status of any minimal sentential component of any G-necessary sentence can be known priori (Kipper 2017: 3).

By 'G-necessary' Kipper means *non-contingent* (either necessarily true or necessarily false), and the 'general modal status' of a sentence is either contingency of non-contingency. The principle, then, is this: If ϕ is non-contingent and ψ is an atomic constituent of ϕ, then it can be known a priori whether ψ is non-contingent. Note, however, that every atomic sentence is trivially an atomic constituent of a non-contingent sentence. (For example, any sentence—and therefore any atomic sentence—ψ is a constituent of the non-contingent sentence $\kappa \vee (\psi \vee \neg\psi)$, where κ is some non-contingent sentence.) (ANC), then, is equivalent to (ANC′).

(ANC′) The general modal status of any atomic sentence can be known priori.

Because (ANC) is equivalent to (ANC′), the counterexamples we will discuss present in §3 work as well against (ANC) as they do against (A2): they are examples of atomic sentences whose general modal status cannot be known a priori.

[6] In the work of Lewis (1983), Sider (2011), and Dorr and Hawthorne (2013) the notion of a natural kind is replaced by a comparative notion of naturalness. Plausibly the kind *water* is less natural than the kind *hydrogen*, and the kind *electron* is more natural than both. If a natural kind is a kind that is maximally natural, then hardly any of the standard illustrations of natural kinds are natural kinds.

in our view nevertheless too widely—thought that the proper assessment of such principles requires two-dimensionalist ideology. If we are right, both thoughts are incorrect.

We agree with Kipper that (A2) (or his variant of it) is false. However, as we will show, there are completely straightforward counterexamples to (A2) which have nothing to do with natural kinds or natural kind terms and which can be appreciated even by those who find two-dimensionalist ideology unintelligible. These counterexamples only require extremely minimal logical resources of the kind one finds in virtually any non-trivial first-order theory that deals with contingent subject matter.

2. Kipper's examples

Kipper proposes that the following sentences are counterexamples to (his variant of) (A2).

(1) Air is airy stuff.

(2) Water is watery stuff.

(3) The nucleus of a gold atom contains 79 protons.

It is not very clear to us what (1) and (2) mean, although their meanings may seem clear to someone thoroughly immersed in the theoretical framework of Chalmers' (2006, 2012) two-dimensionalism. Two-dimensionalists subscribe to a kind of deviant global descriptivism, according to which each expression α is associated with a 'primary intension' C, a kind of qualitative condition that determines α's reference in each epistemic possibility or 'scenario' s—in the sense that it is 'a priori scrutable' from a canonical description of s which thing in s uniquely satisfies C and therefore is the referent of α in s. Thus, for example, 'air' is associated with a qualitative condition A such that it is a priori that air is the stuff that satisfies A, and similarly for 'water'. If these alleged counterexamples work at all, it will be because 'the airy stuff' and 'the watery stuff' have the same primary intensions as 'air' and 'water' respectively.[7] If so, by the two-dimensionalist's lights, (1) and (2) will both be knowable a priori, but it will not be knowable a priori whether each is contingent, since it is not knowable a priori whether either of 'air' or 'water' are natural kind terms. Whether each is a natural kind term will depend on facts about the stuff to which the term refers, which in turn can only be known a posteriori. If, for example, 'air' turns out to refer to a natural kind (which it in fact does not), then (1) will be contingent, because that kind could have manifested itself in non-airy ways. But if 'air' turns out not to refer to a natural kind, then (1) will be necessary, because airy manifestation is all there is to being that unnatural kind. This, in rough outline, is Kipper's argument concerning (1) and (2).

[7] Or because of certain a priori entailments, but see note 9.

That two-dimensionalism is controversial limits the dialectical efficacy of this argument. But the argument has an even more serious flaw: two-dimensionalism is not committed to the view that English or any other language has any expressions with the same primary intensions as 'air' or 'water', other than 'air' or 'water' themselves—certainly not 'airy stuff' and 'watery stuff', in the ordinary senses of these expressions.[8],[9] This is why we called two-dimensionalism a 'deviant' form of global descriptivism: it is committed to each word having a kind of qualitative content, but not to the content of that word being expressible using any other expression, except perhaps in 'some extreme cases of deference'.[10]

(It's worth emphasis here that it is far from clear that (1) and (2) are even *true* in the ordinary senses of 'airy' and 'watery'. For example, the fact that all samples of ice are samples of H_2O, and so are samples of water, yet are not watery, may present a counterexample to (2). This is especially plausible if '*K*-y' means something like 'like stereotypical *K*'; plausibly, *water* is not like stereotypical water, but only some samples of water—the stereotypical ones—are.)

What about (3)? Here Kipper seems to be on more solid ground. Let us suppose, following post-Kripkean orthodoxy, that it is necessary that (i) gold is the element with atomic number 79. Let us further suppose that it is necessary that (ii) the atomic number of an element is *n* if and only if the nucleus of an atom of it contains *n* protons. (i) and (ii) entail (3), so, given that (i) and (ii) are non-contingent, so is (3). Yet, one might think, the non-contingency of (3) is only knowable a posteriori.

But one might also think not. Instead, one might follow Salmon:

> The term 'element' is a technical term of science, and with the advent of modern atomic theory there is at least the possibility that the term is now defined in such a way that the principle in question is ultimately analytic (Salmon 2005: 258).

(The principle Salmon is discussing here is equivalent to (ii).) And one might think that any principle that, like (ii), is both analytic and contains no occurrences of indexicals is both necessary and knowable a priori to be necessary and therefore knowable a priori to be non-contingent. Kipper, for his part, is following Kripke and much of the subsequent

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[8] Could a two-dimensionalist *stipulate* the required extraordinary senses for these words—say, by stipulating that, say, 'airy' expresses the qualitative condition associated with 'air'? No: according to two-dimensionalism primary intensions encode speakers' dispositions to apply words under indicative suppositions (suppositions to the effect that things are 'actually' thus and so). We do not have the ability to stipulate facts about our dispositions to use language.

[9] Of course, one might also think that the primary intensions of 'air' and 'water' underwrite a priori entailments from '*K* = air' to '*K* is airy' and '*K* = water' to '*K* is watery', but the existence of such entailments is also no commitment of two-dimensionalism. To see how such entailments could fail to exist on two-dimensionalist assumptions, consider a word whose primary intension is an infinite disjunction of qualitative conditions. Even if English had a predicate for each of the conditions, it might not have any predicate that expresses the whole disjunction (other than possibly the original word, if it is a predicate), and that disjunction is the only non-trivial a priori entailment of the condition.

[10] See Chalmers (2012: 283).

literature in supposing that the non-contingency of (i) is knowable a priori. If we further accept the widely held view that any logical consequence of an a priori knowable sentence is also a priori knowable, then we will have to accept, *contra* Kipper, that it is a priori knowable that (3) is non-contingent.

We do not take Salmon-style considerations in favor of the a priori knowability of the non-contingency of (3) to be decisive. Our point is simply that the example is contentious.

3. Simpler examples

Luckily, it turns out that there is no need to wade into debates about natural kinds terms or to take on any two-dimensionalist commitments to appreciate why (A2) is false. There are a plethora of relations that hold contingently (if at all) between distinct individuals but hold or fail to hold non-contingently between each individual and itself: *being at least as tall as*, and *being older than* are examples, as are various equivalence relations, such as *being the same height as*, *being the same age as*, and so on. Pretty much any predicate for such a relation gives rise to counterexamples to both (A1) and (A2) (as well as to Kipper's version of (A2)). Consider the following sentences.

(4) Bob Dylan is at least as tall as Robert Zimmerman.

(5) Bob Dylan is at least as old as Robert Zimmerman.

(6) Bob Dylan is more famous than Robert Zimmerman.

None of (4)-(6) are knowable a priori to be contingent. Nor are any of them knowable a priori to be non-contingent. Yet each is atomic, and we know that each is non-contingent (because we know that Bob Dylan is Robert Zimmerman), so each is a counterexample to (A2).

The only objection we can think of to the above is this. Someone might argue that (4)-(6) are not atomic sentences after all, on the grounds that the correct syntax of English posits silent operators in each of them. (Perhaps, for example, the main operator of each is a quantifier over events or states.) Even at best, this objection would save the letter but not the spirit of (A2)-like principles; presumably the philosophers who propose such principles mean to include sentences like (1)-(6) when they speak of 'atomic sentences' or 'minimal sentential components' (as Kipper [2017: 3] does), and accordingly they would think of the non-a-priori-knowability of the non-contingency of each of (4)-(6) as a counterexample to the principles they *thought* they were articulating. After all, according to the kind of syntax we have in mind, nothing or almost nothing that we ordinarily call a 'sentence' is an atomic sentence, and it is not plausible that principles like (A2) are meant to be vacuously or almost vacuously true as applied to natural languages. But, in any case, the objection would only work against putative counterexamples in natural languages. There is no hidden structure in formal languages, and formal languages with the syntax of first-order logic provide a plethora of counterexamples to (A2)-like principles.

Indeed, it bears emphasis that virtually any non-trivial first-order theory that deals with contingent subject matter will provide counterexamples. Virtually any such theory will have at least one two-place predicate R such that an atomic sentence $R(a, b)$ is contingent if $a \neq b$ is true and is non-contingent otherwise. Such an R might, for example, express the relation of being at least as massive, which relates distinct individuals contingently (if at all) and relates each individual to itself necessarily.

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