## Actually

by

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My topic is the metaphysics and epistemology of actuality and possibility, plus the semantics and pragmatics of the language we use to talk about it. By *actuality* I mean the actual world-state. By *possibility* I mean all possible world-states, both the metaphysically and the epistemically possible. The actual world-state is the way the world is. Metaphysically possible states are ways the world could have been. Epistemically possible states are ways the world can coherently be conceived to be. In what follows I will sketch a conception of what these world-states are, and explore how we know about them.

To that end I will examine two characterizations of epistemic possibility.

- EP1. A world-state w is epistemically possible iff w is a way the world can coherently be conceived to be, which it cannot be known apriori not to be.
- EP2. A world-state w is epistemically possible iff w is a way the world can coherently be conceived to be, and one cannot know apriori that w is not a way the world could be (or have been).

Since knowing that w is a way that the world could not be (or have been) involves knowing that w is a way that the world is not, but not vice versa, EP1 is more restrictive than EP2. I will, therefore, take it to be the default definition.<sup>1</sup> One of my tasks will be to determine whether or not it needs to be liberalized.

In addition to limning the nature of world-states, and distinguishing different types of possibility, I will also explain the semantics and pragmatics of our talk about actuality and possibility. All of this, I will argue, leads to the resolution of certain puzzling problems about the necessary aposteriori and the contingent apriori.

## Two Uses of Actually

<sup>&</sup>lt;sup>1</sup> This is the definition I adopted in *Reference and Description*, (Princeton: Princeton University Press), 2005; "Saul Kripke, the Necessary Aposteriori, and the Two Dimensionalist Heresy" in M. Garcia-Carpintero and J. Macia, eds. *The Two-Dimensional Framework: Foundations and Applications*, (Oxford: Oxford University Press), 2006, 272-292; and "Kripke on Epistemic and Metaphysical Possibility: Two Routes to the Necessary Aposteriori," in Alan Berger, ed., *Saul Kripke*, (Cambridge: Cambridge University Press), forthcoming.

I begin with the standard philosophical semantics of the actuality operator. This semantics presupposes that sentences are evaluated for truth or falsity at pairs of world-states – one, the designated "actual state," which provides the interpretation of *actually*, and the other, which may be any possible state, which is needed to evaluate sentences containing *necessarily* and *possibly*. As David Kaplan taught us, the first of these states may be thought of – along with a designated time, place, and agent – as a *context of utterance*, which, together with the meaning of the sentence uttered, determines the proposition the sentence expresses. The second world-state is a *circumstance of evaluation* at which that proposition is assessed for truth or falsity.<sup>2</sup>

Syntactically, the actuality operator combines with a formula to form a more complex formula. Semantically, it is an indexical, the content of which it varies from context to context. For example, the sentence *Actually Kaplan wrote "Demonstratives*," used by anyone at the actual world-state, @, expresses the proposition that Kaplan wrote "Demonstratives" at @, while the same sentence used by a speaker at a world-state w expresses the proposition that Kaplan wrote "Demonstratives" at @, while the same sentence used by a speaker at a world-state w expresses the proposition that Kaplan wrote "Demonstratives" at w. In this way, *actually*, stands for the world-state  $C_w$  of the context in a manner analogous to the way in which *now* stands for the time, and *I* stands for the agent, of the context. When p is the proposition expressed by S in C, [Actually S] expresses the proposition that p is true at  $C_w$  (which predicates, of  $C_w$ , the property of being a world-state in which p is true). Since this proposition doesn't change truth value from state to state, [Actually S] is true at an arbitrary pair C, wiff S is true at C,  $C_w$ .<sup>3</sup> Thus, when S is true at  $C_w$ , [Actually S] is a necessary truth, and when [the x: Fx] denotes a unique individual o at  $C_w$ , [the x: actually Fx] denotes o at C,w, for all world-states w at which o exists, and never denotes anything else at C, w\*, for any w\*. Hence, *actually* is a rigidifier. However, [the x: actually Fx] is not

<sup>&</sup>lt;sup>2</sup> David Kaplan, "Demonstratives," Almog, Perry and Wettstein, eds., *Themes from Kaplan* (New York: Oxford University Press), 1989. Whereas Kaplan takes circumstances of evaluation to time/world-state pairs (because he takes the truth values of propositions to be temporally changeable), I take circumstances to be world-states (because, I agree with Nathan Salmon -- "Tense and Singular Propositions," in *Themes from Kaplan* -- that propositions have their truth values eternally).

 $<sup>^{3}</sup>$  To say that S is true at C,w is to say that the proposition expressed by S at C is true when evaluated at w.

directly referential, since its content is not an object but a descriptive condition, (expressed by) *the unique object which is F at C*<sub>w</sub>.<sup>4</sup>

So understood, the actuality operator is a useful logical tool. However, does it capture the ordinary meaning of the English word *actually*? Initially, there appears to be evidence on both sides. On the positive side, (1) provides evidence that both the adverb *actually*, and its adjectival cousin *actual*, are rigidifiers.

1. It could have been the case, had just a few things gone differently, that the actual winning general (the general who actually won) at Chancellorsville lost that battle.

What I say in assertively uttering (1) is true iff the general who won the battle at the actual world-state @ – Robert E. Lee – lost the battle at a world-state w differing in only a few respects from @. This is just what we should expect, if *actual* and *actually* are rigidifiers. On the negative side, (2a) and (2b) seem to provide evidence that S and [Actually S] differ only rhetorically.

2a. Actually, I live in California.

b. I live in California

In uttering (2a), I assert the information carried by (2b), while signaling that it may be unexpected. In general, [Actually S] is used rhetorically to indicate that the information expressed by S, which one is asserting, may contrast with possibilities that one's hearers find salient.

Thus, we are faced with a dilemma. The all-too-ubiquitous rhetorical use of *actually* seems to suggest that, in ordinary language, it is a purely rhetorical device that is logically and semantically inert, while its apparently rigidifying use points in the opposite direction. In what follows, I will show that this dilemma is merely apparent: the rhetorical use is fully explainable on the hypothesis that the ordinary word *actually* is simply the actuality operator of philosophical semantics. However, there is more to be done before we reach that result.

## Actual and Actually

<sup>&</sup>lt;sup>4</sup> If, when evaluating [the x: actually Fx] at w, 'x' ranges over all possible individuals, then its denotation at C,w need not exist at w. If the range of 'x' at w is restricted to things existing at w, this is not so, leading to complications noted in *Reference and Description*, 29-30. For simplicity, I let 'x' be unrestricted, unless otherwise indicated.

First a word about the relationship between the adverb *actually* – which can be prefixed to a sentence, [Actually S] – the adjective *actual* – which modifies a noun, [actual N] – and the predicate, *is actual*. To the extent that these forms are interdefinable, their grammatical differences are philosophically unimportant. Taking the indexical semantics of *actually* as basic, one naturally understands [the actual N] as equivalent to [the x: actually x is N], thereby explaining the apparent rigidity of the former. However, the predicate *is actual*, used by philosophers to express the property of being a world-state that obtains (or is instantiated), is another matter. Although it applies only to the way the world is, it could have applied to any way the world could have been, thereby making (3a,b) true.

3a. Every metaphysically possible world-state is one that could have been actual.

b. No world-state can be known apriori to be actual.

Though equivalent to (4a), this predicate is not equivalent to (4b), which -- when used at @ -- expresses the property (4c), which is equivalent to the property *being* @.

- 4a. *is a world-state that obtains (is instantiated)*
- b. *is a world state that actually obtains (is instantiated)*
- c. being a world-state that obtains (is instantiated) at @ -- i.e. being a world-state that would obtain (be instantiated), if @ obtained (were instantiated)

Since this property would make (3a,b) trivially false, *is actual* – as used by philosophers -- is not definable in terms of the actuality operator.

Given this use of *is actual*, one can, of course, define a corresponding use of [the actual N] in which it is synonymous with [the thing that is N at whatever world-state is actual]. However, on this use, *actual* is not a rigidifier, since [the actual N] is trivially equivalent to [the N]. Since this interpretation doesn't explain the apparently rigidifying effect of adding *actual* or *actually* to descriptions in English, I will assume that these descriptions contain the indexically-defined operator. I will further assume that this is the operator in [Actually S], since, as I will show, the rhetorical effects of assertively uttering that sentence pose no problem for this hypothesis. I use the phrase *the actual world-state* to name the way, @, that the world is. A different, but referentially equivalent, understanding assimilates it to *the world-state w such that actually w is instantiated* -- which, when

used at @, has the same content as *the world-state w such that if* @ *were instantiated, then w would be instantiated*. On this understanding, it is knowable apriori that @ is the actual world-state – even though it is not knowable apriori that @ obtains (or is instantiated).<sup>5</sup>

## Actuality, Necessity, and Apriority

With these linguistic matters in place, I turn to the metaphysics and epistemology of actuality and possibility. Since adding the actuality operator to a contingent truth produces a necessary truth, and since it is widely assumed that adding it to a truth that is knowable only aposteriori preserves aposteriority, the actuality operator is often seen as a rich source of the necessary aposteriori. A related point is made about the contingent apriori. When S is contingent, the proposition expressed by [S iff actually S] is also contingent, even though it is knowable apriori. Although these results appear obvious, it is wise to withhold judgment on them until we have a clearer picture of what the actual world-state really is. Since the proposition expressed by [Actually S], is a singular proposition that attributes the property of being a world-state at which p is true to @, knowing it, and thereby satisfying [x knows that actually S], involves having *de re* knowledge of @. Surely, the nature of @ is relevant to whether we have such knowledge, and, if so, how we come by it. Thus, in order to assess the role of the actuality operator in generating instances of the necessary aposteriori and the contingent apriori, we need to clarify what world-states are.

#### The Nature of World-States

My account is based on three leading ideas. From Robert Stalnaker, I take the idea that world-states are not Lewisian alternate concrete worlds (universes), spatially and temporally disconnected from ours. Rather, they are properties specifying ways the world could be, or be coherently conceived to be.<sup>6</sup> From Saul Kripke, I take the idea that world-states may be specified in

<sup>&</sup>lt;sup>5</sup> If *the actual world-state* were understood as *the world-state that is actual (i.e. obtains)*, then it would be nonrigid, referring, at each w, to w itself. On that construal, one can't know apriori that @ is the actual world-state.

<sup>&</sup>lt;sup>6</sup> Robert Stalnaker, "Possible Worlds," *Nous*, 10, 1976, 65-75. Whereas Stalnaker identifies ways the world could be with ways they can be conceived to be, I distinguish the two.

terms of the objects and properties we find around us, and so need not be given purely qualitatively. As Kripke puts it:

Don't ask: how can I identify this table in another possible world, except by its properties? I have the table in my hands, I can point to it, and when I ask whether it might have been in another room, I am talking, by definition, about it. I don't have to identify it after seeing it through a telescope.<sup>7</sup>

From Nathan Salmon, I take the idea that the space of world-states includes not only the actual and genuinely possible, but also some that are metaphysically impossible.<sup>8</sup> The actual world-state is the maximal, world-constituting property that the world really instantiates. Metaphysically possible world-states are maximal, world-constituting properties that could have been instantiated. Epistemically possible world-states are maximal, world-constituting properties that could have been instantiated. Epistemically possible world-states are maximal, world-constituting properties that we can coherently conceive to be instantiated, and (assuming E1) that we cannot know apriori not to be instantiated.

For insight into these properties, I turn to Rudolf Carnap's classic notion of *a state description*, used in giving the semantics of an elementary first-order language L.<sup>9</sup> Details aside, a Carnapian statedescription is a complete, consistent set of atomic sentences of L, or their negations (resulting in a complete assignment of truth values to atomic sentences). Truth values of complex sentences relative to a state description are determined using familiar recursive clauses for quantifiers, truth functions, and modal operators. In updating this picture, I replace Carnap's atomic sentences with structured, Russellian propositions expressed by atomic formulas, relative to assignments of objects to variables. Complete, consistent sets of such propositions, and their negations, are used to define world-states, at which complex sentences, and the propositions they express, are evaluated.

Let D be the domain of objects talked about, and B the set of properties expressed by simple predicates of L, including an existence predicate. A world-description  $S_w$  is a set each member of which is either an atomic proposition, consisting of an n-place property from B plus an n-tuple of

<sup>&</sup>lt;sup>7</sup> Saul Kripke, *Naming and Necessity*, (Cambridge: Harvard University Press), 1980, pp. 52-3.

<sup>&</sup>lt;sup>8</sup> Nathan Salmon, "On the Logic of What Might Have Been," *Philosophical Review*, 98, 1989, 3-34.

<sup>&</sup>lt;sup>9</sup> Rudolf Carnap, *Meaning and Necessity*, (Chicago, University of Chicago Press), 1947.

objects from D, or the negation of such.  $S_w$  is complete iff for every atomic proposition, either it or its negation is a member of  $S_w$ . It is consistent iff its members cannot be known apriori not to be jointly true. The world-state w corresponding to  $S_w$  is *the property of making the propositions in*  $S_w$ *true*. To conceive of w as instantiated is to conceive of every member of  $S_w$  being true, while taking the objects in the universe to include only those the existence of which is required by  $S_w$ . The propositions in  $S_w$  are, of course, not the only ones true at w. Others include those expressed by nonatomic, nonmodal sentences the truth of which is determined from  $S_w$  by recursive clauses for quantifiers and truth-functional operators.

All states in the structure are epistemically possible. The one that is instantiated is *actual*. The ones that could have been instantiated are *metaphysically possible*. The rest are *metaphysically impossible*. [Possibly S] is true at w iff S is true at some world-state that is metaphysically possible from w -- similarly for [Necessarily S]. World-states that are metaphysically possible from one state may differ from those that are possible from another. For example, suppose that  $P_1$  and  $P_2$  are mutually exclusive, essential properties of anything that has them (so that having one precludes having the other). Suppose further that one can determine whether an object has these properties only by empirical investigation. It follows that if it is true at w<sub>1</sub> that o has  $P_1$ , and true at w<sub>2</sub> that o has  $P_2$ , then the world-states metaphysically possible from the two states are different.

Since each world-state is epistemically possible, it can coherently be conceived to be instantiated. For each such state  $w_1$ , there is a set of states  $w_2$  that would be metaphysically possible, if  $w_1$  were instantiated. These are properties the universe could have had, if it had had  $w_1$ . For each such  $w_2$  there is a set of states  $w_3$  that would be metaphysically possible, if  $w_2$  were instantiated. These are properties that would be metaphysically possible, if  $w_2$  were instantiated. These are properties that it could have been the case that the universe could have had.<sup>10</sup> This process is repeatable. The truth values, at w, of the propositions expressed by sentences containing modal operators are determined not by w itself, but by its position in the overall space of world-states.

<sup>&</sup>lt;sup>10</sup> This is not a stutter. As Nathan Salmon argues in "The Logic of What Might Have Been," (for ship of Theseus type examples) it should not be assumed that if w is (metaphysically) possibly possible, then w is (metaphysically) possible.

Finally, we introduce the actuality operator, allowing each metaphysically possible world-state to be the designated state of a possible context.<sup>11</sup> Taking @ to be designated in our present context, and S to express p, our use of [Actually S] expresses the proposition that p is true at @. The truth value of this proposition at an arbitrary state w is determined, not by the content of the world-describing set  $S_w$ , nor by the world-states metaphysically possible from w, but simply by the truth value of p at @. [Actually S] is true at any world-state iff the proposition expressed by S is true at @.

To sum up, a world-state w is a property that gives a complete story of what the universe would be like if w were instantiated. Since it is no part of that story to specify what the universe would be like if other world-states were instantiated, the propositions in terms of which w is defined don't contain explicit information about other world-states. This is compatible with the fact that, for any world-state w\* and proposition p, we can always evaluate the truth value of the proposition  $\frac{\text{that}}{\text{that}}$  p is true at w\* at any world-state whatsoever. We need only remember that a proposition can be true at a world-state without being one of the propositions that define it.

There are, of course, limitations to this framework. Like Carnap, I have introduced a space of states to evaluate sentences of a simple first-order, modal language L (and the propositions they express). As a result, some features of this space are tied to features of L. The properties in terms of which world-states are defined are those expressed by simple predicates of L, and the objects mentioned in the definition are those that L is used to talk about. If richer languages had been chosen, the world-states would have been richer, and the rules for determining truth at a state would have been more complex. This raises two questions.

Q1. Would the choice of a more complex language invalidate essential features of this framework?

Q2. Should the relativization of the space of world-states to particular languages, and contextually varying inquiries involving them, be discarded in favor of an absolute space of world-states, equally relevant for all inquiries in all languages?

Stalnaker addresses Q2.

<sup>&</sup>lt;sup>11</sup> There are some niceties excluding certain world-states from playing this role. However, these won't matter to us.

One might ask, are there such things as possibilities, or possible worlds, in this sense [maximal properties that the world might have had]? I doubt that it is plausible to believe that there is, independent of context, a well-defined domain of absolutely maximally specific possible states of the world, but I do not think the proposed conception ... requires such a domain. The alternative possibilities ... must be exclusive alternatives made in the context at hand. But one can make sense of this requirement even if there is no ultimate set of possibilities relative to which any possible distinctions might be made. One might think of possible worlds as something like the elements of a partition of a space, rather than as the points of the space. The space might be partitioned differently in different contexts, and there might be no maximally fine partition.<sup>12</sup>

There is, I think, something right about this. World-states are properties attributed to the universe. When attributed, they are taken to capture everything relevant to the inquiry at hand. However, it is reasonable to suppose that for every inquiry that might be undertaken, there is another requiring a finer level of detail and specificity, for which a more fine-grained, and fully-articulated set of worldstates would be needed. If so, then there may be no absolute sense in which a world-state is a maximally informative story about the universe that answers every conceivable question, and evaluates every conceivable proposition. Rather, world-states are properties treated as maximal for particular purposes. The stories they tell are maximally informative in the sense of answering every question relevant to a given inquiry. This doesn't mean that world-states are made up to suit our interests. The properties are there independently. It is the use to which we put them that is relative to us.

Thus, it is no defect in the framework I have sketched that it doesn't provide an absolute conception of maximality for world-states. It would be a defect, however, if the framework couldn't be liberalized to overcome limitations of the simple Carnapian conception of world-states, and generalized to accommodate languages richer than L. Later, I will discuss ways of doing so. However, we already have enough to resolve some puzzles, and record some results.

<sup>&</sup>lt;sup>12</sup>"Indexical Belief," *Context and Content*, (Oxford: Oxford University Press), 1999, p. 136; originally *Synthese*, 49, 1981.

## The Necessary Aposteriori Revisited

Kripkean instances of the necessary aposteriori are propositions that predicate essential properties or relations of objects that can be known to possess them only empirically.<sup>13</sup> The function of empirical evidence needed for knowledge of these propositions is to rule out epistemically possible, but metaphysically impossible, world-states at which they are false. The same cannot be said for what are widely taken to be examples of the necessary aposteriori involving the actuality operator. Whenever S expresses a contingent truth p, [Actually S] expresses the necessary truth that p is true at @. However, since [Actually S] is trivially inferable from S, and since the proposition it expresses often doesn't seem to be knowable in any other way, it has seemed to be knowable only aposteriori, whenever p is. This is problematic. If p is true at @, then the proposition that p is true at @ is true, not just at every metaphysically possible world-state, but at every epistemically possible state as well. What, then is the role of empirical evidence needed for aposteriori knowledge? If there are *no* possible world-states at which this proposition is false, why is empirical evidence required to know it?

Strictly speaking, it isn't. World-states are properties we can conceive the universe as having – properties of making certain world-describing sets of propositions true. Imagine, then, a tiny universe consisting of two blocks side by side, with a third on top. This world-state, *Tiny*, is (in effect) *the property of containing blocks 1 and 2 side by side, with block 3 on top*. Since we have no trouble comprehending the content of this property, we can know, just by thinking about it, that if it were instantiated, then block 3 would be sitting on blocks 1 and 2. So, when p is the proposition that block 3 is sitting on those blocks, it is knowable *apriori* that p is true at Tiny.

The point generalizes. If, as often seems plausible, the world-states relevant to an inquiry are finitely specifiable, then, for every such state w, and every proposition p the truth of which is calculable from those defining w, the proposition <u>that p is true at w</u> is knowable apriori. Since this result applies to the actual world-state (relative to an inquiry), as much as to any other, the

proposition expressed by uses of [Actually S] is often knowable apriori. *Knowable*, though not, necessarily, *known* apriori. Since the actual world-state, relative to many inquiries, will be much more complex than Tiny, we may not be able grasp it in the non-demonstrative way we grasp Tiny – in which case we won't have any way of calculating the truth values of propositions from a complete specification of @. In such cases, our only practical way of coming to know that p is true at @ is by inferring it from p. Thus, when p is aposteriori, our knowledge of the proposition expressed by [Actually S] may be aposteriori, even though *what we know* can, abstracting away from our cognitive limitations, also be known in another way.<sup>14</sup>

How, for example, do I come to know the necessary truth that actually over 600,000 soldiers died in the American Civil War? I derive it indexically. To say that *actually* over 600,000 soldiers died is just to say that *at this very world-state* – the one that is instantiated – over 600,000 died. Hence, if I know from historical research how many soldiers died in the Civil War, I know how many died *at this very world-state*, and I can express this knowledge by saying: *Actually, over 6000,000 soldiers died in the Civil War*. In so doing, I demonstrate @, and say of it that a certain proposition is true at it, in something like the way in which, in another context, I demonstrate Southern California, and say of it that it is warm there, by uttering: *It is warm here*. Just as in the latter case, I demonstrate a certain large territory, and say something about it, on the basis of my limited acquaintance with it -- even though my ignorance of the territory greatly exceeds my knowledge of it -- so, in the former case, my limited familiarity with the way the world is allows me to refer to it indexically, and say something about it, despite being ignorant of much of its content. In this way, I come to know, aposteriori, the necessary truth that at @, over 600,000 soldiers died in the Civil War, by deriving it from a contingent truth that I know aposteriori.

<sup>&</sup>lt;sup>13</sup> See my "The Philosophical Significance of the Kripkean Necessary Aposteriori," *Philosophical Topics*, 16, 2006; and my "Kripke on Epistemic and Metaphysical Possibility."

<sup>&</sup>lt;sup>14</sup> This position is suggested in *Reference and Description*, n16, 304-5, and in "Understanding Assertion," in J. J. Thomson and Alex Byrne, eds. *Content and Modality: Themes from the Philosophy of Robert Stalnaker*, (2004), 231-32,

The inference also runs in the other direction. To know that *actually* over 600,000 soldiers died in the Civil War is to know that over 600,000 soldiers died in the Civil War, *at this very world-state* -- from which one may trivially conclude that over 600,000 soldiers died then. Why, then, isn't it knowable apriori <u>that over 600,000 soldiers died in the Civil War</u>? After all, I have argued, (i) that the necessary truth <u>that at @, over 600,000 soldiers died in the Civil War</u> is, in principle, knowable apriori, and (ii) that there is a certain way of knowing this truth, when @ is presented indexically, such that when one knows it this way, one can derive the contingent truth <u>that over 600,000 soldiers died in the Civil War</u> from it. Thus, the contingent truth is an apriori consequence of an apriori truth. How, then, can it fail to be knowable apriori?

It fails to be knowable apriori because the route to it from the necessary proposition that at @, over 600,000 soldiers died in the Civil War is different from, and at odds with, the route to the apriority of the latter. In order to derive p from the proposition that p is true at @, @ must be given as this very word-state (the one that is instantiated). However, in order for one to know apriori that <u>p is true at @</u>, @ can't be given in this way, but must be known by grasping the propositions that define it. The proposition that p is true at @ is entertainable in two radically different ways. One way – which, as a practical matter, may exceed our cognitive abilities -- involves grasping the propositional content of @. One who entertains the proposition in this way can know it apriori by deriving p from the propositions that define @. But when @ is presented in this way, there is no way of knowing that it is instantiated. Hence, when one entertains the proposition that p is true at @ in a way that allows one to know it apriori, there is nothing in one's knowledge that allows one to infer p from it. The second, indexical, way of entertaining the proposition that p is true at @ -which is how it is presented using the actuality operator – does not involve grasping the full propositional content of @. When presented with the proposition in this way, we cannot determine it to be true apriori, though we can move apriori from it to p, and vice versa. Since on neither way of knowing that p is true at @ is there a way of establishing p apriori, p is knowable only aposteriori.

Is it strange that the proposition that p is true at @ should, in principle, be knowable apriori, even though, in practice, our knowledge of it is often aposteriori? Not when one realizes the kind of

proposition it is – namely, one that relates one propositional content (a particular proposition) to another propositional content (a particular world-state that is itself propositionally defined). As the example about the miniature world-state Tiny shows, propositions of this kind are, in general, knowable apriori. The fact that the complexity of world-states often exceeds our psychological limitations is balanced by the fact that many other apriori truths do, too. Some arithmetical truths are too complex for us to effectively evaluate, even though they are expressed by theorems of correct arithmetical theories. We shouldn't deny that these propositions are knowable apriori -- even if our psychological limitations afford us no way of knowing them, short of using aposteriori methods, like running a reliable computer program for a long time. The point about propositions expressed by uses of [Actually S] is similar.

## A Puzzle About The Contingent Apriori

In explaining Kripkean instances of the necessary aposteriori, I argued that the function of empirical evidence required to know them is to rule out metaphysically impossible, but epistemically possible, world-states in which they are false. This may seem to suggest (5).

5 If p is false at some epistemically possible world-state, then p isn't apriori. So, if p is apriori, then p isn't false at any epistemically possible world-state, and so (we may assume) p is true at every such state.

But then, if p is contingent apriori, it will follow that p is true at all epistemically possible world-states, while being false at some metaphysically possible state. Thus, if (5) is correct, some metaphysically possible world-states are epistemically impossible.

How can that be? A metaphysically possible world-state is a property the universe could have had. But surely, one is inclined to think, if the universe could have had w, then there can't be anything incoherent, or apriori inconsistent, in supposing that it does have w. And, if there is no such inconsistency, then w won't be knowable apriori not to be instantiated. In short, any metaphysically possible world-state should be epistemically possible. Since this contradicts our earlier result, one of the suppositions leading to the contradiction must be abandoned – either (i) that there are instances of the contingent apriori, (ii) that (5) is correct, or (iii) that it is never apriori inconsistent to suppose, of any metaphysically possible world-state, that it is instantiated.

That there are instances of the contingent apriori is shown by the fact that, when S is contingent, anyone who, at @, knows the apriori (6a) is in position to derive the contingent (6e) by steps that can be known apriori to be truth-preserving.<sup>15</sup>

6. (a) S iff S

- (b) So, it is true at this very world-state (said demonstrating @) that  $\underline{S \text{ iff } S}$
- (c) So, it is true at this very world-state (said demonstrating @) that <u>S iff it is true at this very</u> world state (said demonstrating @) that <u>S</u>
- (d) So, S iff it is true at this very world-state (said demonstrating @) that S
- (e) So, S iff actually S

The step from (a) to (b) is based on the principle that for any proposition p, if at world-state w, an agent A knows p, then A needs no further justifying evidence to come to know, of w, that it is a world-state at which p is true. Thus, our apriori knowledge of proposition (a) is sufficient to allow us to come to know (b) – i.e. to know, apriori of @, that it is a world-state at which proposition (a) is true. But if we know, of *this very state* @, that it makes the proposition expressed by [S iff S] true, then we need no further information to come to know the same thing about the proposition expressed by [S iff it is true at *this very state* that S]. Thus, proposition (c) is knowable apriori. The next step, to (d), is based on the principle that if a use, at w, of [It is true at this very world-state that R] (said demonstrating w) expresses knowledge based on evidence E (where E may be null), then a corresponding use of R does too. Given the apriori priori of (c), we conclude that the proposition expressed by (d) and (e) is also knowable apriori – despite being contingent. Hence, there is an instance of the contingent apriori for each contingent truth.

Niceties aside, we may, therefore, take it that for every metaphysically possible world-state  $w \neq @$ , there is a proposition (expressed in @ by (6e)) which is false at w, despite being knowable apriori. So, if (5) is true, all metaphysically possible world-states other than @ are epistemically impossible. However, (5) isn't true. The temptation to think otherwise is linked to the temptation to accept (7) – which (in the presence of EP1) is interderivable with (5).

<sup>&</sup>lt;sup>15</sup> A version of this argument is given on pp. 120-122 of *Reference and Description*.

7. If p is true at w, and it can be known apriori that p is false, then w can be known apriori not to be instantiated (in which case w is epistemically impossible).

The initial plausibility of (7), as well as its ultimate falsity, is illustrated by (8).

8a. Saul philosophizes iff actually (i.e. it is true at @ that) Saul philosophizes

b. ~ Saul philosophizes & actually (i.e. it is true at @ that) Saul philosophizes

Since it is contingently true that Saul philosophizes, there is a metaphysically possible world-state w at which (the proposition expressed at @ by) (8a) is false, and (8b) is true -- despite the fact that (8b) is knowable apriori to be false. Thus, the antecedent of (7) is true for <w, (8b)>. If (7) were true, it would follow that w was knowable apriori not to be instantiated. But (7) isn't true.

World-states, it will be remembered, are properties defined by sets of basic, worlddescribing propositions – where the propositions true at w exceed, not only those that define w, but also those the truth of which is calculable from the ones that do. Crucially, the truth values, at w, of propositions that ascribe truth values to propositions at other world-states are determined, not by the complete story about the universe told by w, but by the space of world-states of which w is a part. The following table applies this idea to example (8).

. . . . . . .

$\underline{\mathbf{A}}$	Simplified Space	e of World-Sta	tes
P1 = the proposition that Saul Kripke philosophizes P2 = the proposition that Scott Soames philosophizes			
@	W	$W^*$	w#
P1	~P1	P1	~P1
P2	P2	~P2	~P2

Here we pretend that complete world-stories can be told in terms of P1 and P2. Of course, in any realistic example, the number of basic propositions would be greater, and the world-state-defining sets larger, and more numerous. However, this doesn't affect our result, as long we retain the assumption that world-states are not defined in terms of the truth-values of propositions at other world-states. Given this, we can reduce the question *Can the world-state w in which (8b) is true be known apriori not to be instantiated*? to the question of *Can it be known apriori that the propositions defining w*, ~*P1 and P2, aren't jointly true*? Since this can't be known apriori, it can't be known apriori that w isn't instantiated. Thus, the consequent of (7), (7) itself, and (5) are all false – as is  $(7_{AP})$ .

 $7_{AP}$  If it can be known apriori both (i) that p is false, and (ii) that p is true at w (i.e. that if w were instantiated, then p would be true), then it can be known apriori that (iii) w is not instantiated (in which case w is epistemically impossible in the sense of EP1).

When p is (8b), and w is a world-state in which p is true, we have already shown that (i) is knowable apriori, and that the consequent of  $(7_{AP})$  is false. Thus,  $(7_{AP})$  is false iff (ii) – which amounts to (9) – is knowable apriori.

9. If it were true that (~P1 & P2), then it would be true that (~P1 & it is true at @ that P1).

This is knowable apriori iff it is knowable apriori <u>that it is true at @ that P1</u>. But, as I argued using the world-state Tiny, when the truth of q is calculable from the propositions defining w, it is always knowable apriori that q is true at w. Since P1 is a defining proposition for @, (9) is knowable apriori, and  $(7_{AP})$  is false.

The falsity of  $(7_{AP})$  is another example of an earlier result: apriori consequences of propositions that are knowable apriori are sometimes themselves not knowable apriori. In this case, one proposition -- (i) of  $(7_{AP})$  -- can be known apriori only when @ is presented indexically -- as in *It is false that* (~ *Saul philosophizes & actually Saul philosophizes*) – while another proposition -- (ii) of  $(7_{AP})$  -- can be known apriori that Saul philosophizes at @ -- which requires @ to be presented nonindexically, in terms of its propositional content. Since there is no way of merging the apriori routes to (i) and (ii) into a single route to (iii), an agent can't derive (iii) from apriori knowledge of (i) and (ii).

To recap, propositions like those expressed by [S iff actually S] are genuine examples of the contingent apriori. Initial appearances to the contrary, the metaphysically possible worldstates at which they are false are also epistemically possible in the sense of EP1. Why, then, doesn't knowledge of these propositions require empirical evidence to rule out the epistemically possible world-states in which they are false? The answer is illustrated by (6), which shows how certain contingent propositions expressed using the actuality operator (or an analogous indexical)

can be derived, by uniformly apriori steps, from corresponding truths the necessity and apriority of which are uncontentious. Because of this, these contingent propositions can be known apriori at the world-state, @, they are about. What rules out world-states at which they are false is not empirical evidence, but the transparent, indexical reference to the very world-state at which the knower evaluates them. This contrasts with standard instances of the Kripkean necessary aposteriori, which don't involve reference to the actual world-state.

## A Unified Treatment of the Two Uses of Actually

I now return to the two uses of 'actually' with which I began. The first, rhetorical, use is one in which an utterance of [Actually S] signals that the information expressed by S, which one is asserting, may be unexpected, or may contrast with possibilities one's hearers find salient. In such cases, assertive utterances of S and [Actually S] say the same things, while differing in what they implicate or convey. The second, rigidifying, use is one in which the addition of 'actually' affects the (modal) truth-conditions of what is asserted. Despite their differences, these uses can be seen as two sides of the same coin, sharing a single indexical semantics, in which 'actually' directly refers to the world-state of the context.

This reference is responsible for its rigidifying affect on definite descriptions, and for the fact that [Actually S] is necessary when S is contingent. It follows from the nature of world-states that the former is apriori when the latter expresses an aposteriori truth, calculable from the propositions defining the referent of *actually*. As we have seen, the apriority of the proposition expressed by [Actually S] is consistent with the fact that, in practice, our knowledge of it is often aposteriori. The indexicality of *actually* allows speakers routinely to pass back and forth between S and [Actually S], even though the propositions they semantically express differ dramatically. Because of this effortless inferential interchange, an assertive utterance of either sentence standardly results in the assertion of the propositions semantically expressed by both.

This assertive equivalence is responsible for the rhetorical effect of uttering [Actually S]. Since adding *actually* doesn't change what is asserted, one who adds it is presumed to have some nonassertive reason for referring to @, and explicitly saying that the proposition p (expressed by S) is true *in it*, rather than simply asserting p by using S on its own. Standardly the reason is to contrast @ with other states that one's hearers find salient, or expect to be instantiated. For example, when I said *Actually I live in California*, I did so in recognition that some people may have thought that I still lived in Princeton. By calling attention to the actual world-state, and explicitly saying that *in it*, I live in California, I implicitly contrasted it with possible states in which I live elsewhere. Thus, the indexical semantics that gives 'actually' its logical and philosophical punch also explains its rhetorical use in ordinary conversation.<sup>16</sup> The same rhetorical effect could, of course, also be achieved by referring to @ nonindexically – as *the world state that is actual* (in the philosopher's sense of being instantiated). However, since the indexical *actually* is needed independently, the rhetorical effect provides no reason to posit a second, nonrigidifying sense. If there is such a sense in ordinary language, it must to be motivated in some other way.

## **Broader Issues**

Having illustrated a framework for thinking about actuality and possibility, I will briefly consider some challenges to it. The first concerns indexical reference to the actual world-state – which, I have argued, is the property of making a certain set of basic propositions true. Although the property that plays this role varies from inquiry to inquiry, in many cases the one that does will be very complex, often outstripping our cognitive capacities. In these cases, any knowledge <u>that p is true at @</u> which we possess will be knowledge in which @ is presented to us by the actuality operator, or some indexical variant. It is, therefore, crucial that our acquaintance with, and ability to directly refer to, complex properties should enable us to know singular propositions about them in roughly the way in which our acquaintance with, and ability to directly refer to, complex physical objects enables us to know singular propositions about them, despite being ignorant of many of their features.

<sup>&</sup>lt;sup>16</sup> This argument parallels Grice's argument that the performative effects of uttering [it is true that S], rather than S, noted by Strawson, are conversational implicatures arising from the semantics of *true*, rather than additions to that semantics. Paul Grice, "Logic and Conversation," *Studies in the Way of Words*, (Cambridge: Harvard University Press), 1989, 56-57.

That it does is suggested by an example involving a box on my shelf. Three sides of it, which you can see, are square. Two others are square, and the back is a pyramid -- though you can't see them. We agree that a certain property, which we name 'S', is the shape of the box. By looking at the box, you know, of S, that its instantiation involves sides 1, 2, and 3, being square – knowledge you express you by saying: *S*, or *this (three-dimensional) shape, is one that involves sides 1, 2, and 3 being square.* In so doing, you succeed in directly referring to, and expressing your knowledge of, a complex property, despite the fact that you are only partially familiar with it's content. Adding complexity – more sides, or shapes -- doesn't seem to change the situation. Knowledge expressed using the actuality operator is a more complex version of the same thing.

It is, of course, true that direct reference plus propositional attitudes sometimes produces strange results. You may, after hearing me referred to by name, learn something that you express to me by saying *You are Scott Soames*. However, what you learned is (arguably) not the proposition semantically expressed by your sentence – which is also expressed by the uninformative *You are you*. Similar remarks apply to my box. When, after examining all sides, you say *This shape, S, is one that involves 5 square sides plus a pyramid*, you may express new (empirical) knowledge, despite the fact that the proposition semantically expressed by your sentence may (arguably) be one you have known (apriori) all along. Similarly peculiar cases can be constructed with 'actually'. Though potentially puzzling, these peculiarities arise for all directly referential expressions, and so do not count specially against the analysis given here. At most, they locate questions about it within a larger debate.<sup>17</sup>

Once indexically-based knowledge of properties like @ is accepted, the next question is whether the complexity of these properties prevents us from having the nonindexical knowledge-bycontent of them needed to know apriori that certain propositions are true at them. For many highly complex world-states, there is certainly a sense – analogous to the sense in which I can't dunk the basketball, because I can't jump high enough – in which I can't derive the truth values of

propositions from sets of propositions defining them – and so cannot know apriori which propositions are true at them -- because I am psychologically incapable of entertaining those sets. In what sense, then, is it knowable apriori that p is true at @ (or at w generally), for many propositions p? It is knowable apriori in the sense that it is *possible* to know such propositions apriori – where a use of [It is possible to know apriori that S] in a context C expresses a proposition that is true (at w<sub>1</sub>) iff there is a world-state w<sub>2</sub> that is metaphysically possible (from w<sub>1</sub>) in which we, or beings relevantly like us, know the proposition expressed by S (in C) apriori. For example, it is knowable apriori that, at @, hundreds of thousands died in the Civil War because there is a metaphysically possible world-state in which we -- or similar agents without our limitations on intelligence, memory, and attention span -- can, and do, derive the proposition that hundreds of thousands died in the Civil War from the basic propositions defining @. In this way, the possibility of knowing propositions to be true at @ apriori is explained in terms of cognitively enhanced versions of ourselves whose apriori knowledge of these propositions parallels our own unproblematic apriori knowledge of propositions true at the world-state, Tiny.<sup>18</sup>

If this is right, then, in many cases, when S expresses a true proposition p, it is possible to know <u>that p is true at @</u> either indexically, corresponding to (10a), or by content, corresponding to (10b).

10a. It is true that S at *this very world-state*.

b. It is true that S at *the world-state at which it is true that Saul is a philosopher & Alfred is a logician &...*(one conjunct for each of the basic propositions defining @)

Does this conception falsely assume that these sentences semantically express the same proposition (in their respective contexts)? I don't think so. First, it is not evident that such an assumption would

<sup>&</sup>lt;sup>17</sup> Solutions to the puzzles of direct reference are proposed in my *Beyond Rigidity* (New York: Oxford University Press), 2002, and my "Naming and Asserting," Z. Szabo, ed., (Oxford: Oxford University Press), 2005.

<sup>&</sup>lt;sup>18</sup> This modal perspective also sheds light on certain puzzling examples. Suppose that the proposition expressed by [S & it is never known that S] is calculable from the propositions defining @. Then this proposition is true, even though this is never known – at @, or any other metaphysically possible state. However, this is no barrier to the apriority of the proposition expressed by [Actually (S & it is never known that S)].

be false. If world-states are the complex properties I take them to be, then it is natural to regard the semantic contents of the italicized phrases in (10a.b) as bearing the same relation to one another as those in (11a.b) do.

11a. *This very proposition* (said demonstrating the proposition that Saul is a philosopher & Alfred is a logician & ...) is true.

11b. The proposition that Saul is a philosopher & Alfred is a logician & ...) is true.

Since the semantic contents of these phrases is, arguably, the same, the idea that (10a) and (10b) semantically express different propositions may be another of the familiar illusions connected with direct reference. Second, and more importantly, my argument doesn't assume that (10a) and (10b) express the same proposition. What it assumes is that understanding and justifiably accepting (10b), and thereby knowing the proposition it semantically expresses, is sufficient for knowing *de re*, of @, that p is true at it, and hence for knowing the singular proposition <u>that p is true at @</u> -- whether or not this proposition is semantically expressed. Since knowing the proposition in this way doesn't require empirical evidence, while knowing it when @ is presented indexically does, we get the result that it is possible to know <u>that p is true at @</u> in two different ways, without having to decide what (10b) semantically expresses. For what it is worth, I do take (10a) to semantically express the proposition <u>that p is true at @</u>, and I find it plausible to think that (10b) does too. But the latter is an optional part of the package.

The conclusion that some possible agents know apriori <u>that p is true at @</u> raises another worry. In identifying world-states with properties incorporating complete stories of what the universe would be like if they were instantiated, I argued that it is no part of the story told by any world-state to specify what the universe would be like if a different world-state were instantiated. This was one reason for excluding world-state-indexed ascriptions of truth value from the basic propositions defining worldstates. This exclusion may seem to be threatened by our recognition that agents at some world-states know certain of these ascriptions about other states. Let's see whether it is.

We may assume that when agents at a world-state w have beliefs, the set  $S_w$  of propositions defining w will include propositions ascribing beliefs to them. Since the truth, at w, of (12) requires

only the truth of p at w\*, the truth, at w, of (13) doesn't require (12) to be an apriori consequence of  $S_w$ .

12. p is true at  $w^*$ .

13. A believes truly that p is true at  $w^*$ .

What about (14) – which may take to be true at w?

14. A knows that p is true at w\*.

If (14) is apriori calculable from (13), plus members of  $S_w$  specifying the causal sources of A's belief, the reliability of A's cognitive processes, etc., then  $S_w$  needn't include any propositions from which (12) can be derived. Thus, the truth of (14) at w requires no modification of the story I have told, provided that (15) is an apriori consequence of the basic propositions about belief, reliability, etc. used in defining w.

15. If S, then A knows that S

However, if (15) isn't an apriori consequence of those propositions, then  $S_w$  will have to include (14), thereby having (12) as an apriori consequence.

This presents a problem. For if the propositions defining certain world-states have worldstate-indexed truth-value ascriptions about other states as apriori consequences, then instances of the contingent apriori will create trouble for the definition of epistemic possibility given by EP1. For example, let @ be the actual world-state, and w be a metaphysically possible world-state at which the contingent apriori proposition (expressed at @ by) (8a) is false, because the proposition (expressed at @ by) (8b)) is true.

8a. Saul philosophizes iff actually (i.e. it is true at @ that) Saul philosophizes

b. ~ Saul philosophizes & actually (i.e. it is true at @ that) Saul philosophizes

Suppose further that proposition (8b) is known, at w, by some agent A, and that the proposition, (8c), ascribing this knowledge to A, is one of the propositions defining w.

8c. A knows that: ~Saul philosophizes & it is true at @ that Saul philosophizes Under these assumptions, it is knowable apriori that w isn't instantiated. First, it is knowable apriori that w is instantiated only if (8c) is true. So, it is knowable apriori that w is instantiated only if (8b) is true. Hence, (8d) is knowable apriori.

## 8d. If (8b) isn't true, then w isn't instantiated.

Second, since (8a) is knowable apriori, it is knowable apriori that (8b) isn't true. Thus, the claim that w isn't instantiated is an apriori consequence of (8a) and (8d), both of which are knowable apriori. Moreover, it is possible for us (here and now) to know both of these propositions apriori when @ is presented indexically. (It doesn't matter that A's knowledge, in w, of @ is nonindexical.) Thus, it is knowable apriori that w isn't instantiated. If one assumes, as I do, that metaphysically possible world-states, like w, are always epistemically possible, this result contradicts EP1, which defines an epistemically possible world-state as one that is not knowable apriori not to be instantiated.

In sum, if knowledge ascriptions aren't apriori consequences of more basic claims about truth, belief, and other factors, then the fact that agents at some world-states know the truth values of certain propositions at other states requires rejecting EP1, in favor of EP2. Since EP2 stipulates that w is epistemically possible iff it can't be known apriori that w couldn't be (or have been) instantiated, examples of the contingent apriori can't pose problems for it. Given that the metaphysically possible world-states in which such examples are false are, by hypothesis, states that could have been instantiated, knowing that they couldn't have been instantiated is impossible. Nor, as far as I can tell, would the replacement of EP1 by EP2 undermine other aspects of the overall picture. However, since it hasn't been shown that knowledge claims aren't apriori consequences of more basic claims, such replacement isn't mandated. I am skeptical that it can be, since doing so requires much more than showing simply that knowledge isn't definable in more basic terms. Therefore, I continue to favor EP1, while recognizing that the issue remains open.

What about other ways of liberalizing the simple Carnapian framework? In setting up the structure of world-states, I used a simple, first-order language. The basic propositions used to define world-states were expressed by atomic formulas, and their negations, relative to assignments of values to variables. The truth values of the remaining nonmodal propositions at a world-state w were determined by the basic propositions of w, plus recursive rules for quantifiers and truth-functional

operators. Truth values of modal propositions at w followed from the truth values of propositions at other world-states, related to w, in the total space of states. On this conception, both the richness of individual world-states and the scope of the total space of states, varies with the richness of the underlying language, the properties expressed by its predicates, the domain of objects talked about, and the uses to which the language is put. It is not important that there be one absolute space of world-states with respect to which all inquiries are conducted. What is important is that every space of states we need can be understood within the broad outlines of this framework.

What might an extension of this simple system look like? No matter how syntactically and semantically complex the underlying language, nothing essential to the framework is threatened by allowing many propositions expressed by nonatomic, nonmodal formulas (relative to assignments) to count as basic. How, in this setting, should we distinguish those sets of basic propositions that define world-states from those that don't? Putting aside syntactic criteria for completeness and consistency, we might stipulate that to be complete a world-state-defining set must determine (apriori) the truth value of every nonmodal proposition, and to be consistent it must be epistemically possible in the sense of EP1 (or of EP2, if EP1 turns out to be unsustainable).

What about propositions which, though not overtly modal, have consequences that are? Are they world-state-defining? They can be, and often are. Suppose, for example, that truths about what causes what are constitutive of w, without being apriori consequences of other, more basic, truths of w. On this supposition, causal propositions will play a role in defining w, even if they constrain which world-states are metaphysically possible from w. This is not unusual. It is routine for the constitutive truths of a world-state w - e.g. that Saul Kripke is a human being and that I am the father of Greg and Brian Soames – to have modal consequences by partially determining which world-states are metaphysically possible from w. The sensitivity of metaphysical possibility to the contents of world-states is no threat to the framework. There is, however, a related question that could be raised. In excluding modal propositions from those that define world-states, the framework presupposes that world-states that agree on all nonmodal facts are identical. Thus, those that support different modal

truths must also differ nonmodally. Although I find this plausible, those who don't may avoid this result by allowing definitions of world-states to sometimes to include modal propositions.

A deeper question involves the ontology of the framework. Do world-states other than @ – i.e. properties that the universe doesn't have, but which it can coherently be conceived to have – (actually) exist? Of course they do, just as other complex, but uninstantiated properties do. However, it is also true there could have been world-states different from those that actually exist. Since world-states are properties the constituents of which are objects and properties, (actually) existing world-states are those the constituents of which (actually) exist. Since there could have been many objects that don't actually exist, and since they could have been constituents of world-states, there could have been world-states that don't actually exist. Accordingly, what the truth of [It could have been that case (i.e. is metaphysically possible) that S] really requires is not that there exists a metaphysically possible world-state at which S is true, but that there could have been such a state. This, of course, precludes giving a reductive analysis of modal notions in terms of possible world-states. However, that should have been obvious anyway – since, on my account, the notion of a possible world-state is itself defined with the help of modal notions.<sup>19</sup>

<sup>&</sup>lt;sup>19</sup> Thanks to Nathan Gadd, Ali Kazmi, and David Manley for useful comments on an earlier draft.