Apriorism about Modality

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Abstract

I argue that apriori reflection is at best a fallible guide to modality (both possibility and necessity). I also claim its usefulness as a guide turns on what I call the "bounty" of modality: if possibility turns out to be plentiful-- in a sense to be glossed-- apriori reflection will be a good-but-fallible guide to it; if necessity turns out to be meagre-- in a dual sense of that gloss-- apriori reflection will not be a mark of possibility. I argue our take on bounty itself should turn on how best to systematises thought, so our take on apriorism about modality should turn on the deepest of philosophical concerns.

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0.   The issue.

Modal beliefs concern how things can or must be, and they arise in various ways. Sometimes they are based on reliable evidence, and sometimes they are not. Apriorism about modality is the view that modal beliefs based on apriori reflection are reliably based. As I shall put the point: it is the view that apriori reflection is a _mark_ of modality.

In this paper, I argue that apriori reflection is at best a fallible guide to modality (both possibility and necessity). I also claim its usefulness as a guide turns on what I call the "bounty" of modality: if possibility turns out to be plentiful-- in a sense to be glossed-- apriori reflection will be a good-but-fallible guide to it; if necessity turns out to be meagre-- in a dual sense of that gloss-- apriori reflection will not be a mark of possibility. Our take on bounty itself should turn on how best to systematises thought, so our take on apriorism about modality should turn on the deepest of philosophical concerns. Or so I will argue.

1.   Apriorism about possibility.

Three questions structure debate about apriori reflection and belief in possibility. The first is

> Question 1:   Is apriori coherence a guide to possibility?

Those who say _yes_ think an apriori feature of a claim is a mark of its possibility. Specifically, they think a claim's withstanding apriori reflection indicates it is possible. When a claim is not ruled out by such reflection, they say, that is a mark of its possibility.

This is not yet to say what kind of mark is in play, but a _yes_ to Question 1 does entail that withstanding apriori reflection indicates possibility. Those who say _no_, therefore, are non-apriorists about possibility.[1] They deny apriori coherence is a mark of possibility. They say a view's withstanding apriori reflection is no modal indication at all. Hence they avoid

> Question 2:   Is apriori coherence a fallible guide to possibility?

Those who say _yes_ here think withstanding apriori reflection is a fallible mark of possibility. This goes some way toward saying what kind of mark is in play. It comes to the view, after all, that failing to be ruled out apriori is an imperfect mark of

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[1] Edgington (2004), Leeds (2001), Putnam (1990).

possibility. That is just what most philosophers think. They say withstanding apriori reflection is a good-but-fallible guide to possibility. They are modest in their apriorism. They are *apriori fallibilists about possibility*.[2]

Yet a growing number disagree. They answer Question 2 *no*, claiming that apriori coherence is an *in*fallible mark of possibility. On their view: when a claim withstands ideal apriori reflection, that guarantees it can be true. This is *apriori infallibilism about possibility*. It naturally prompts
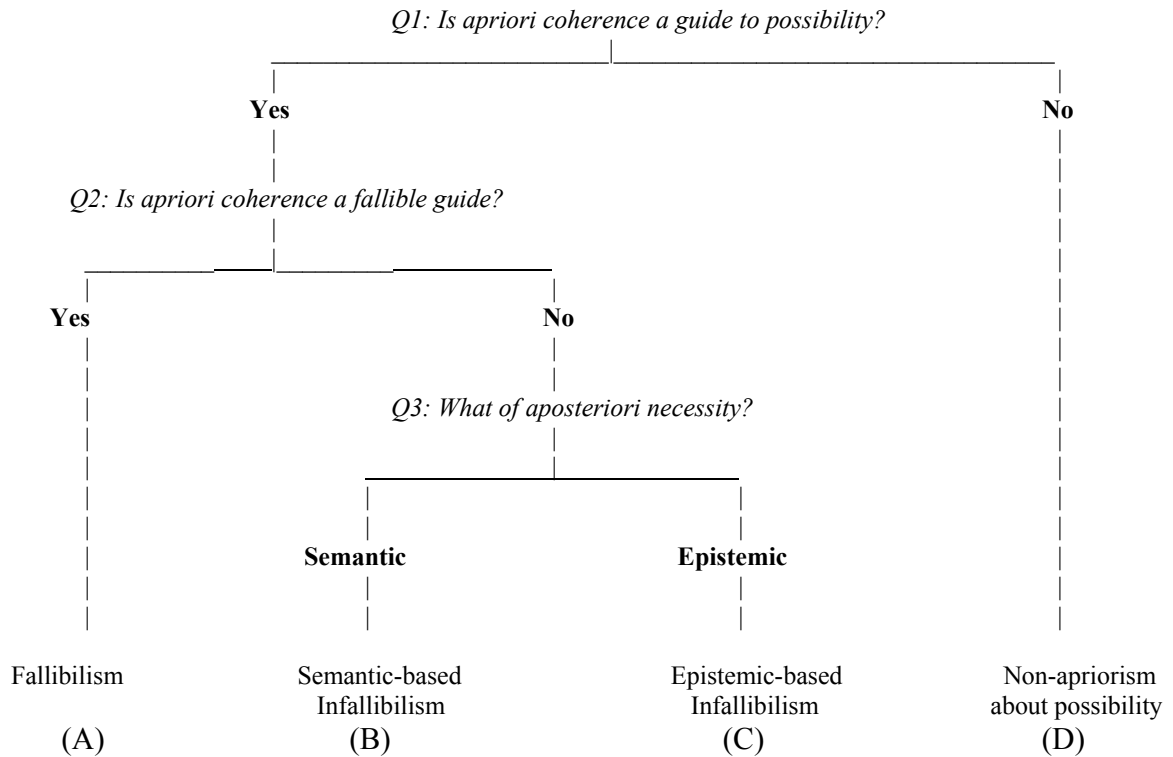
Question 3: What of aposteriori necessity?

And now we face a challenge. We are asked to reconcile infallibilism about possibility with intuitions which lead many to embrace aposteriori necessity. Most who attempt it do so by semantic means. As we will see in §4, they use *two-dimensional semantics* to argue that intuitions which drive Kripkean thoughts on necessity are consistent with infallibilism. They put forth a *semantic*-based reconciliation of infallibilism about possibility and the intuitions which prompt belief in aposteriori necessity. That is the dominant strategy amongst such infallibilists. Eventually we shall reject the position.[3]

But notice: a much more direct line is available. One might respond to Kripkean intuitions by concocting a tougher apriori test of possibility. One might finesse putatively infallible apriori conditions, saying that they involve *more* than withstanding apriori reflection. Then one could deny that apriori coherence infallibly depicts possibility yet maintain finessed apriority does the job. One could put forth two claims at once: apriori coherence is a fallible guide to possibility; finessed apriority is an infallible guide to possibility. This would be an *epistemic*-based reconciliation of infallibilism about possibility and Kripkean intuition. §3 shows the view is easy to construct and demonstrably resistant to Kripkean counter-instance.

In sum: Questions 1-3 induce a nice structure on the debate:

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[2] Kripke and Putnam have done most to promote apriori fallibilism about possibility. Kripke has been the dominant influence, so I describe Kripke- and Putnam-like considerations on the topic as "Kripkean". That makes for ease of expression and puts credit where it is mostly due. Also, I leave out the qualifications "apriori" and "about possibility" when context permits. See Kripke (1980) and Putnam (1975); and for related discussion see Levine (1998) and (2001), Papineau (2002), Robertson (1998), Salmon (1989), Sidelle (1989), Sturgeon (2006) and (Forthcoming), Tichy (1983), and Yablo (1993) and (2002).

[3] Two-dimensional semantics grew from Davies and Humberstone (1981), Evans (1979), Kaplan (1979) and (1989), Lewis(1979) and Stalnaker (1979). It is in the work of Chalmers and Jackson that we find the most forceful use of it to defend apriori infallibilism. See Chalmers (1996), (1999), (2002), Jackson (1998), and Chalmers and Jackson (2001). I also think, somewhat hesitantly, that early time-slices of Lewis were infallibilist. His discussion of temporal bi-location in the preface of (1986b) looks to be, though later time-slices seem to have given up the view. See related discussion in (1994a) and (2005). I do not know what prompted the shift if it is there, although two reasons for it can be found in §§7-8 of Sturgeon (2006). See also Balog (1999), Block and Stalnaker (2000), Hill and McLaughlin (1998), Loar (1999), Rosen (2006) and Yablo (2002).

Q1: Is apriori coherence a guide to possibility?

Yes   **No**

Q2: Is apriori coherence a fallible guide?

Yes   **No**

Q3: What of aposteriori necessity?

Semantic   **Epistemic**

Fallibilism	Semantic-based Infallibilism	Epistemic-based Infallibilism	Non-apriorism about possibility
(A)	(B)	(C)	(D)

[Figure 0]

(A)-(C) are apriorist views of possibility. They say withstanding apriori reflection is a mark of possibility. (A) claims it is a fallible mark, (B) and (C) claim it is an infallible one. (D) disagrees upstream: it denies that withstanding apriori reflection is a mark of possibility at all. (D) is a non-apriorist view.

       In the next two sections I work up epistemic-based infallibilism. §3 then explains why it has no Kripke-style refutation, why the view can withstand Kripkean intuition about aposteriori necessity. That will show that rejecting infallibilism must rest on *more* than such intuition, on larger philosophical commitment, on deeper philosophical concern. §4 looks at two large-scale worries and uses them to reject epistemic-based infallibilism. §5 then explains how they cut against semantic-based infallibilism too (i.e. how they cut against two-dimensional semantics as a ground for modal epistemology). §§4-5 thus make for a general case against infallibilism about possibility. There are deep reasons to reject the view in both its epistemic and semantic guise. Reflecting on them makes clear how one should decide whether apriorism about possibility is true. That is explained in §§6-7.

2.   Modality.

Modal operators will stand for *genuine* modality throughout: ˚◆ø˚ will mean ø is genuinely possible; ˚■ø˚ will mean ø is genuinely necessary. This will be our label for what is sometimes called "metaphysical modality" and other times called "logical

4

modality".[4] A new label is called for, in this context, for a simple reason. It is
normally assumed that logical modality is shot through with apriority; and even
metaphysical modality is often said to be "logical" when logic is "broadly construed".
Later we will see why that is so, by the way; but for now we note merely that both of
the standard labels are apt to bias the discussion. Both are liable to suggest that there
is an internal link between modality and apriority. I must blanche the discussion of
just that bias, so I use new terms. They leave open whether our target modality is
shot through with apriority, whether it deserves the honorific "logical". By genuine
modality I shall mean simply this: *the most absolute realistic modal space*. The idea
can be glossed via possibility or necessity.

     For instance: when ø is genuinely possible, it is a mind- and language-
independent fact that ø can happen. That fact does not spring from how we think or
talk (even in the rational ideal). It can be individuated independently of mind- or
language-related phenomena. Genuine possibility is like genuine actuality: it does
not depend on us for its existence or its nature. It is a realistic domain. Realism is a
component of genuine possibility; and so is weakness: whenever there is a realistic
sense in which ø can happen, ø is genuinely possible. Such possibility is the weakest
kind of realistic possibility. It includes every kind of realistic possibility. The
"diamond face" of genuine modality is a two-part affair: it is the most inclusive
realistic space of possibility.

     Similarly: when ø is genuinely necessary, it is a mind- and language-
independent fact that ø must happen. That fact does not spring from how we think or
talk (even in the rational ideal). It too can be individuated independently of mind- or
language-related phenomena. It too is like genuine actuality. Realism is a
component of genuine necessity; and so is strength: when ø is genuinely necessary, it
is necessary in any realistic sense. Genuine necessity is the strongest kind of realistic
necessity, including in every realistic necessity. The "box face" of genuine modality
is a two-part affair: it is the least inclusive realistic space of necessity.

     Think of it this way: genuine possibility contains all realistic possibility. It
contains, for instance, nomic possibility; so if there are counter-legal genuine
possibilities-- as is usually supposed-- then nomic possibility nests within genuine
possibility. In pictures:

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[4] By Kripke and Lewis respectively. Genuine modality is meant to capture the presently-relevant core
aspects of modality common to their otherwise very different approaches to the topic.
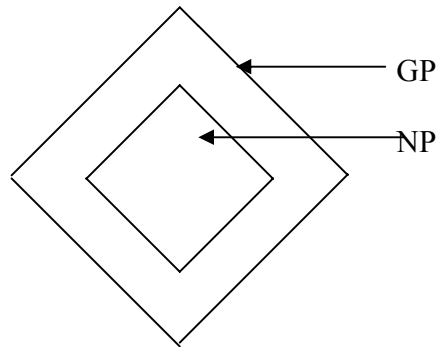
[Figure 1]

NP contains all nomically possible claims, GP contains all genuinely possible claims. Genuine possibility is the weakest realistic modal space, so all realistic diamonds nest within GP.

Similarly: genuine necessity is contained within all realistic necessity. It is contained, for instance, within nomic necessity; so if there are genuinely contingent nomic necessities-- as is also usually supposed-- then genuine necessity nests within nomic necessity. In pictures:
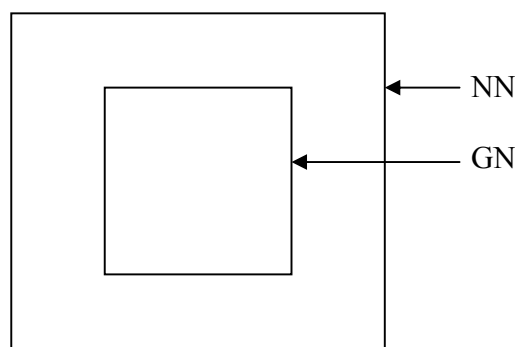
[Figure 2]

NN contains all nomically necessary claims, and GN contains all genuinely necessary claims. Genuine necessity is the strongest realistic necessity, so it nests within all realistic boxes.

In a nutshell: genuine modality is the most absolute realistic modality. It is logical and/or metaphysical modality cleansed of the *assumption* that such modality enjoys an internal link to apriority. With that in mind, we turn to apriorism about possibility.

6

3.   The epistemic-based view.

Let us say ø is *prima facie apriori coherent* when it is coherent after a bit of apriori reflection. The idea, roughly, is that ø does not get ruled out by what turns up during such reflection. Let us write ˚pfac(ø)˚ to express that basic idea. In the event, super-naïve apriori infallibilism is the view that this schema has no counter-instance:

(p) $\text{pfac}(\text{ø}) \supset \blacklozenge\text{ø}$.[5]

If that is so, then belief in ø's genuine possibility based on its prima facie apriori coherence is infallible. But the line is obviously not right. After all, apriori reflection can self-correct. When we see that not all clear concepts yield extension sets, or that not all infinite sets are equinumerous, for instance, apriori reflection self-corrects. Genuine *im*possibilities are often prima facie apriori coherent. Inferring $\blacklozenge$ø from pfac(ø) is at best a fallible affair.

So let us idealise and say ø is *limit coherent* when it is coherent at the limit of apriori reflection. The idea here is that ø remains coherent in light of all that is rational after ideal apriori reflection. We permit maximal time for thought, concentration, memory, computational power, etc. We maximise smarts, as it were, along purely epistemic dimensions. When ø is not ruled out by what turns up, it is limit coherent. Let us write ˚lim(ø)˚ to express that basic idea. In the event, naïve apriori infallibilism is the view that this schema has no counter-instance:

(l) $\text{lim}(\text{ø}) \supset \blacklozenge\text{ø}$.

If that is so, then belief in ø's genuine possibility based on its limit coherence is infallible. The view here allows that everyday apriori coherence is a fallible guide to genuine possibility, but it insists that limit coherence is infallible.[6]

It is not obvious this is wrong. After all, refuting the view was a key move in Kripke's war to segregate limit coherence and genuine modality, yet most think he won the war. They think he showed that limit case apriori reflection does not infallibly mark genuine possibility, that non-modal fact can rub out limit coherence. On their view, something coherent at the limit of apriori reflection can be genuinely *im*possible; and apriori reflection on non-modal fact can show it to be so.

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[5] At this stage of discussion I shall understand the validity of schemata to consist in their lack of a counter-instance which is logically simple or the negation of such. That keeps things where they initially belong, on base-case bother. Later we'll drop this restriction when it is apt to do so.

[6] **(l)** uses idealising assumptions which cannot, in fact, be satisfied by humans. This is common within epistemology but not without bother. After all: when idealising assumptions become *too* extreme, epistemology has no purchase on real subjects. Yet idealising assumptions are crucial to normative epistemology. So we are left with a good question: when does idealisation go too far? We cannot hope to resolve that here. We must assume, for the sake of argument, that **(l)** and its ilk are not too idealised, that they can throw light on how we should reason. Divergent views on epistemic idealisation can be found in Cherniak (1986), Christensen (2005), M.Kaplan (1996), Lewis (1988), Pollock (1989), Stalnaker (1991) and (1999a), Sturgeon (Forthcoming) and Weirich (2005).

For instance: let K be the claim that Mark Twain is Sam Clemens. Both K and ¬K are limit coherent. No amount of apriori reflection can show Twain is Clemens, no amount can show he is not. The matter is not apriori. Twain *is* Clemens, as it happens; but that cannot be shown apriori. You have to look. Since they are one, though, they cannot help but be so. There is no way to pull them apart. Not only is K true, it is genuinely necessary. ¬K is genuinely impossible. Despite its limit coherence, ¬K fails to be genuinely possible. It is a counter-instance to **(l)**. Or so it is said.

In essence, the line here plumps for the *existence* of counter-examples on purely apriori grounds. An instance of it runs thus:

(1)	K or ¬K	premise
(2)	If K, then ∎K	premise
(3)	If ¬K, then ∎¬K	premise
(4)	lim(K)	premise
(5)	lim(¬K)	premise

so,

(6)	∎K or ∎¬K	from (1)-(3)

so,

(7)	Either K or ¬K is a counter-instance to **(l)**.	from (4)-(6).

The premises are meant to be apriori obliged: (1) is got by appeal to propositional logic, (2) and (3) are got by appeal to our notion of strict identity, (4) and (5) are said to spring from philosophical insight that K is aposteriori. We are thus meant to be led apriori to the view that **(l)** is blemished, that it has a counter-instance. We cannot say apriori whether K or its negation is the rub, but we can say apriori that one of them must be. Naïve infallibilism is kaput. Or so Kripkeans argue.[7]

Think of it this way. First, set aside claims involving 'here', 'now', 'I', 'actually', and so forth. Then set aside Kripke's metre-rod, Evans's zip-inventor and suchlike. In a nutshell: set aside claims our grip on which comes by indexicality and/or stipulation. These are (what I shall call) *unusual* claims. They create wrinkles in our topic that need not concern us, so focus on usual claims. Our grip on them does not come by indexicality and/or stipulation.[8] Put them in a region and go through them one by one. Consider everything apriori to see whether each can be true (its logical form, conceptual content, relation to apriori obliged usual views, etc.). Assume a claim is possible unless shown otherwise. This yields an apriori partition:

7 Kripke (1980).
8 Unusual claims have been used [...] priori. For relevant discussion see Donnellan (1979), Evans (1979), [...]0), Salmon (1987) and Sutton (2001).
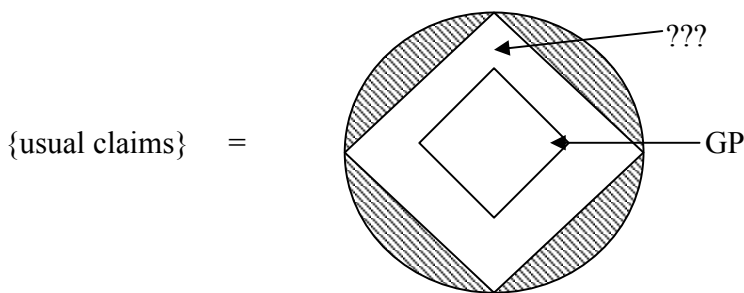
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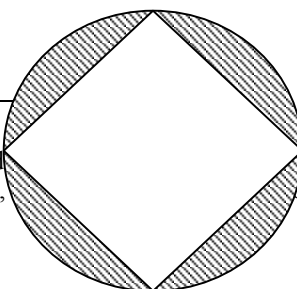
{usual claims}   =

[Figure 3]

The shaded region contains limit _in_coherence. The inner diamond contains limit coherence.

It is tempting to equate this divide with that between genuine possibility and impossibility. Kripke's argument is then meant to show, in effect, that the latter divide nests within the unshaded region.[9] In pictures:

{usual claims}   =   ???   GP

[Figure 4]

The inner diamond divides genuine possibility and impossibility. The outer diamond divides limit coherence and incoherence. The queried space is the _Kripke Zone_. It harbours usual claims, like ¬K, which are limit coherent yet genuinely impossible. It harbours counter-instances to **(l)**, showing that limit coherence does not infallibly mark genuine possibility.

Kripke's strategy runs on claims which are

•   non-modal;

•   both they and their negation are limit coherent;

and

•   it is apriori obliged the matter they raise is non-contingent. [10]

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[9] The "in effect" hedge is needed because this way of setting things up presupposes limit _in_coherence ensures genuine _im_possibility. It presupposes ¬lim(ø) is sufficient for ¬◆ø. We discuss that in §7.

Thus it is with K, the view that Twain is Clemens. Not only is it aposteriori whether K is true, one is apriori obliged to regard the matter as non-contingent. It is apriori obliged that if K is true, it is necessary; and likewise for ¬K. However things stand it could not have been otherwise, yet both K and ¬K are limit coherent. Hence limit reflection does not infallibly mark genuine possibility. That was Kripke's line. How should we react?

Well, let us say _Kripke claims_ are claims like K and ¬K. They are non-modal, both they and their negations are limit coherent, yet it is apriori obliged the matter they raise is non-contingent. Then we define: ø is _Kripke coherent_ when it is limit coherent in light of Kripke _truths_. And we write °kc(ø)° to express that. We set

$$kc(\text{ø}) \; = \; \lim(\text{ø}/\mathcal{K}),$$

with $\mathcal{K}$ the set of true Kripke claims.[11]

The most conservative reaction to Kripke is then simple. It admits there are counter-instances to **(l)** but insists that Kripke coherence infallibly marks genuine possibility. It swaps **(l)** for

(k) $\qquad$ $kc(\text{ø}) \;\; \supset \;\; \blacklozenge\text{ø}.$

This is less-naïve apriori infallibilism. The view admits the space of limit coherence exceeds that of genuine possibility. To reach the latter from the former, it says, one must shave down the space of limit coherence; but the view claims that one need _only_ throw out false Kripke claims. If that is right, limit coherence marks genuine possibility unless Kripke truth rubs out the coherence.

What should we make of this? Should we accept that Kripke coherence infallibly marks genuine possibility? Should we embrace Kripke's argument in the most conservative way? In our terminology: should we say the queried region of Figure 4 contains _only_ false Kripke claims?

No. There are Kripke coherent claims that are not genuinely possible. There are counter-examples to **(k)**, and the argument for their existence echoes Kripke's line on **(l)**. Consider the view that Lewisian worlds truthmake claims of genuine modality. The idea, basically, is that points in the space of genuine possibility are

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[10] There is debate about which claims satisfy these conditions. In particular, there is debate about which claims underwrite apriori "bridge laws" like the necessity of identity and the necessity distinctness. Kripke argues certain claims about constitution and aetiology do so as well. We only make use of claims about identity here, assuming the necessity of identity and the necessity of distinctness are apriori obliged. See Kripke (1980), especially note 56, Robertson (1998), and references therein.

[11] Note false Kripke claims are not Kripke coherent. K's negation, for instance, is not. After all, K is a Kripke truth; and it is apriori obliged the matter K raises is non-contingent; hence it is limit _in_coherent that ¬K is true in light of Kripke truth, for ¬K is ruled out by such truth. And the point holds in general: no Kripke falsehood is Kripke coherent. All such falsehood is ruled out by Kripke truth.

Lewisian worlds. Such worlds are mereological sums of a certain sort, so the claim is one of identity: sums of that sort are identical to maximal genuine possibilities.[12]

Call the view "L". Both L and ¬L are prima facie coherent, and they look limit coherent too. There may be aesthetic reasons to favour L or its negation in one's total theory, but neither gets definitively ruled out apriori. Neither view is apriori obliged, so a question is presently sharp: are there non-modal truths to rub out their coherence? Are there truths expressible in non-modal idioms to rule out L or ¬L?

I doubt it. Both L and ¬L look Kripke coherent:

(8)   kc(L)

(9)   kc(¬L).

In English: it is Kripke coherent that maximal genuine possibilities are Lewisian; and it is Kripke coherent they are not. Take apriori reflection to the limit, throw in Kripke truth, both L and ¬L stay coherent. Neither gets definitively ruled out.

This spells trouble for **(k)**. For (8), (9) and **(k)** jointly yield

(10)   ◆L

and

(11)   ◆¬L.

But consider the view that Lewisian modal metaphysics is true but genuinely might not have been:

(12)   L & ◆¬L.

This is genuinely impossible. Its first conjunct entails its second is true only if there is a Lewisian truthmaker at which there is no such truthmaker. (12)'s conjuncts cannot both be true, so we have

(13)   ■ (L ⊃ ¬◆¬L).

Yet this and (10) yield

(14)   ■L

which conflicts with (11), so (10) rules out (11). Similarly, consider the view that Lewisian modal metaphysics is false but genuinely might have been true:

(15)   ¬L & ◆L.

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[12] See Lewis (1986b). For other counter-examples to **(k)** see Rosen (2006) and Sturgeon (2006).

This too is genuinely impossible, for its possibility implies that of its right-hand side, yet that leads back to (10). As we have just seen, though, (10) leads via (13) to (14); and (14) conflicts with (15)'s left-hand side.[13]

The moral is clear: whichever of L and ¬L turns out true, it is genuinely necessary as well. (10) and (11) cannot both be true, so at least one Kripke coherence is genuinely impossible. There are counter-instances to (k). Not surprisingly, the schema breaks down on the metaphysics of genuine modality. There are Kripke coherent claims about that metaphysics which genuinely cannot be true. Less-naïve infallibilism breeds conflict in modal metaphysics. One should not react, then, in the most conservative way to Kripke's efforts to segregate limit coherence and genuine modality. A more radical reaction is needed, but what should it be?

Well, K-style counter-examples to (l), and L-style counter-examples to (k), share two features emphasised by Kripke in his discussion of these issues:

(κ_1) both they and their negation are limit coherent;

and

(κ_2) it is apriori obliged that the matters they raise are non-contingent.

When a claim satisfies these principles it cannot be ruled out apriori, cannot be ruled in apriori, yet the claim and its negation concern a subject matter that can be seen apriori to be non-contingent. Hence we can see on purely apriori grounds that apriori reflection must be insensitive to impossibility somewhere. Either the claim or its negation is the rub. Either the first cannot be true despite remaining in play at the limit of apriori reflection, or its negation cannot be true despite remaining in play at that limit. Impossibility slips through the net of apriori reflection somewhere.

This means there will be further systematic misalignments between apriori coherence and genuine possibility. For instance, let R be any claim satisfying (κ_1) and (κ_2). Neither R nor its negation can be ruled out apriori, yet it is apriori that R is either necessary or impossible. Consider next any contingent claim C which is apriori independent of R and its negation. If R is necessary, (C&¬R) is limit coherent yet impossible. If R is impossible, (C&R) is limit coherent yet impossible. And this is because, of course, claims which satisfy (κ_1) and (κ_2) _logically embed_ to generate systematic apriori blind spots, places at which apriori coherence and genuine possibility misalign.

More generally, whenever R is a claim which satisfy (κ_1) and (κ_2) there will be a host of other claims with these two features:

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[13] The step from (13) to (14) leans on S5 for genuine modality. That is contentious of course: see Forbes (1985), Salmon (1989) and references therein. But note that L is an identity claim. The conclusion of the argument can also be got by appeal to the necessity of identity and that of distinctness. And that appeal entails nothing about the logic of genuine modality. I present the S5-argument because I think it best edifies L's modal status, because I accept its underlying logic. We will see in §7 how that might be epistemically grounded.

(κ_1) both they and their negation are limit coherent;

and

(κ_3) it is apriori for at least one of them that it is non-contingent in light of the truth-value of some claim satisfying (κ_1) and (κ_2).

To see how this works, let R be any old chestnut satisfying (κ_1) and (κ_2), say the claim that Hesperus is Phosphorus. In the event, consider this claim about position:

P   =   The claim that Hesperus is in one place while Phosphorus is in another.

Both P and its negation are limit coherent: neither can be ruled out by apriori reflection alone, not even ideal apriori reflection. It is apriori true, however, that _if_ R is true then P _must_ be false. It is apriori true, in other words, that if Hesperus is Phosphorus then it cannot be the case that Hesperus is in one place while Phosphorus is in another. And since all this is apriori, as is the fact that R satisfies (κ_1) and (κ_2), it follows that P satisfies (κ_3). More generally for any feature F, it will be apriori—due to the apriority of Leibniz's Law, of course—that _if_ R is true, then it cannot be the case that Hesperus has F while Phosphorus lacks F. And the same kind of thing will hold true apriori of any such claim that satisfies (κ_3). Claims of this form will have a modal status which is apriori linked to the truth-value of claims satisfying (κ_1) and (κ_2). In turn that will signal real danger of misalignment between apriori coherence and genuine possibility.

      Claims which satisfy (κ_1) and (κ_2) are _apriori red flags_: both they and their negations are in play at the limit of apriori reflection, yet it can be seen apriori that their subject matter is non-contingent. Claims which satisfy (κ_1) and (κ_3) are _apriori yellow flags_: both they and their negation are in play at the limit of apriori reflection, yet it can be seen apriori for at least one of them that it is non-contingent in light of a red flag's truth.

      By trading on (κ_1) and (κ_2) Kripke has argued for the existence of counter-examples to **(l)**. By trading on (κ_1) and (κ_2) I have argued for the existence of counter-examples to **(k)**. One can locate further potential modal blind spots by seeking claims which satisfy (κ_1) and (κ_3). Since a claim's satisfaction of (κ_1) and (κ_2) entails its satisfaction of (κ_3), it follows that an apriorist about modality can avoid this _entire_ line of thought by constructing apriori conditions which rule out (κ_3).

      So let us say ø is _apriori open_-- or _open_ for short-- when two things happen

(κ_1) both ø and ¬ø are limit coherent;

but

$\neg(\kappa_3)$ it is _not_ apriori for at least one of them that it is non-contingent in light of the truth-value of some claim satisfying (κ_1) and

(κ_2).

And let us write ˚o(ø)˚ to express that. When ø is open, both ø and ¬ø are coherent at the limit of apriori reflection, but it is not apriori that at least one of them is non-contingent if some red flag turns up true. Condition (κ_3) fails. The thought is then to swap **(k)** for

(o) $\qquad\qquad$ o(ø) $\supset$ $\blacklozenge$ø.

This is seasoned apriori infallibilism. It is the view that openness infallibly marks genuine possibility. If a claim and its negation are limit coherent, and it is not apriori that at least one of them is linked to a red flag, then both claims are genuinely possible. What should we make of the idea?

$\qquad$ The first thing to note is this: there can be no purely philosophical counter-instance to **(o)**, for such a claim would be an open apriori impossibility. Yet no claim can be open and apriori impossible, the latter precludes the former. If a claim is apriori impossible, it is apriori obliged that the matter it raises is non-contingent, so the claim is apriori ruled out. It thus satisfies neither clause in the definition of openness; and so that is why there can be no purely philosophical counter-instance to **(o)**.

$\qquad$ The second thing to note is this: Kripke-style arguments for the _existence_ of counter-instances do not work against **(o)**, for they turn on showing apriori of a claim or its negation that the non-contingency of their subject matter is linked to the truth of a red flag. But that is ruled out by ¬(κ_3); and so neither K-style claims, nor L-style claims, nor P-style claims are open. None satisfy the antecedent of **(o)**. It is apriori obliged that the non-contingency of their subject matter is linked to the truth of a red flag. That is why they can play spoiler in Kripkean discussion of naïve and less-naïve infallibilism. That is why they can be used apriori to plump for the existence of counter-instances to **(l)** and/or **(k)**. But this very fact precludes their cutting against **(o)**. Openness rules out the second condition used in the Kripkean line, so the strategy is inapplicable. It is impossible to argue in a Kripkean way against the validity of **(o)**. The schema is immune to such an attack.

$\qquad$ Having said that, there is an obvious problem with **(o)**'s scope; for the schema is too restricted. The definition of openness guarantees that it is closed under negation: ø is open just if its negation is too. **(o)** has no counter-instance, therefore, only if openness marks contingency. **(o)** is problem-free only if this schema is too:

(o)* $\qquad\qquad$ o(ø) $\supset$ ø is contingent.

The problem is that there are non-contingent possibilities marked by apriori reflection: that everything is self-identical, for instance. Surely we mark this possibility with apriori reflection. **(o)** misses it altogether. The schema is suited to contingent possibilities if suited to anything. It skips non-contingent ones so we need a condition designed for apriori necessity.

Let us say that ø is *apriori forced*-- or *forced* for short-- when three things are true:

(i)   ø is limit coherent,

(ii)   ¬ø is not limit coherent,

but

(iii)   it is apriori obliged that the matter they raise is non-contingent.

And let us write °f(ø)° to express that. Then we say ø is *apriori apt*-- or *apt* for short-- when ø is open or forced, we write °apt(ø)° to express that, and we swap **(o)** for

(a) $apt(ø) \supset \blacklozenge ø.$

This is highly seasoned apriori infallibilism. It amounts to endorsing the validity of

(o) $o(ø) \supset \blacklozenge ø$

and

(f) $f(ø) \supset \blacklozenge ø.$

The view here is that aptness infallibly marks genuine possibility, and the putative mark is built from two conditions. One is designed for apriori necessity, the other for when there is no limit-case barrier to contingency. What should we make of the view?

Well, we have seen that there can be no apriori counter-instance to **(o)**. There is such a counter-instance to **(a)**, therefore, only if a claim can be forced and apriori impossible. Yet these too are incompatible: if you show something apriori to be impossible, it is apriori obliged the claim is false. That means the claim is apriori ruled out, so it is not limit coherent, so the claim is not forced. It fails condition (iii) above. Just as there can be no apriori counter-instance to **(o)**, there can be none to **(a)**. It too side-steps direct refutation.

Moreover, there is no way to press the Kripkean line against **(a)**, for that would require locating claims so that

(κ_1)   both they and their negation are limit coherent;

and

(κ_3)   it is apriori for at least one of them that it is non-contingent in light of the truth-value of some claim satisfying (κ_1) and (κ_2).

Yet openness is defined expressly to preclude (κ_3); and forcedness is defined, at condition (iii), to preclude (κ_1). This means nothing remotely like Kripke's strategy is applicable to **(a)**. Highly seasoned infallibilism is immune to Kripkean attack.

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4.   *Contra* epistemic-based infallibilism.
I reject the validity of **(a)**. I have no direct counter-instance to offer, of course, as the schema does not permit one. Nor do I have a Kripke-inspired existence proof to cut against **(a)**'s validity, as the schema precludes that too. But I do have a pair of large-scale worries. One cuts against infallibilism *per se*, the other cuts against views which respect Kripkean intuition yet defend some style of apriori infallibilism about possibility. I press the points here against epistemic-based infallibilism. I press them in the next section against its two-dimensional cousin.

1.   To begin, note humans tend to blur epistemic and metaphysical matters: credence with chance, certainty with truth, apriori tie with causal determination. We see this in our students all the time, and in ourselves more than we'd like. Call it the *ep-&-met tendency*. In my view, it explains why it is so natural to say that apriori reflection infallibly depicts genuine possibility. The temptation springs from our disposition to blur epistemic and metaphysical fact. Specifically, it springs from our tendency to blur apriori coherence, conceivability and such with genuine possibility.

But temptation should be resisted, for genuine possibility is mind-and language-independent, a non-epistemic domain. This alone should ensure that purely epistemic procedures, like idealised apriori reflection, are *fallible* guides to genuine possibility. After all, that is how good epistemology and metaphysics fit together. When doing the former on mind- and language-independent fact, the result is humble pie, epistemology cleansed of magical error-free capacities to interrogate mind-independent reality. The result is fallibilism.

Think of it this way. Whether a claim is limit coherent is a purely epistemic fact about it, an idealised epistemic mark, one signalling that norms which govern apriori reckoning fail to rule out a claim. But whether a claim is genuinely possible is a purely metaphysical fact about it, a non-epistemic mark, one indicating that a region of modal reality-- a set of genuinely possible worlds, say-- is correctly described by a claim. There is two-way independence between the two marks. Limit coherence is not individuated by genuine possibility. Genuine possibility is not individuated by limit coherence. Fallibilism *should* characterise the link from the latter to the former. That is how epistemology and metaphysics fit.

For instance, visually based belief is a case in point: the process takes visual experience as input and yields worldly belief as output; and it fallibly targets non-epistemic fact. The same is true of other experience-to-belief procedures: they all fallibly target non-epistemic fact; and so the moral I am pressing here is well known in epistemology: externally-directed belief based in "internal" evidence is fallible. That is true throughout non-modal epistemology. It should also be true of belief in genuine possibility based on (something like) aptness.

Some will doubt the analogy:

> "Hang on!", they will say, "Belief in genuine modality based on
> (something like) aptness is meant to be epistemically *ideal*. The
> proper analogy is with ideal visual belief; yet that kind of belief is

based on veridical perception, not mere visual experience. That kind of belief _is_ infallible. The proper analogy sees modal belief based on (something like) aptness as modal belief based on _modal perception_. It too should be infallible."

But this cannot be right, for idealisation works differently in the two cases. Consider: believing a cat is before you, on the basis of seeing one, _is_ an infallible process. But one cannot manage it alone. A cat must pitch in. Seeing a cat requires feline support, cat participation, and the point holds for perceptual belief in general. It leans on the world, obliging world-involvement. That is why it can be infallible yet non-magical at once. When one idealises _from_ belief based on hallucinatory experience _to_ that based on veridical perception, one idealises _toward_ world-involvement, toward belief grounded in its truthmaker.

This has no echo in the modal case, since idealisation works differently there. In particular, it does not reach into modal reality. The idealisation used by highly seasoned infallibilism maximises smarts along epistemic dimensions-- time for thought, memory, computational capacity, and so on-- but it does _not_ make for genuine-modality-involvement. When ø is apt, for instance, that does not consist in ø's genuine possibility, not even in part. The modal fact does not pitch in. Aptness springs from a certain kind of internal coherence in the epistemic limit, but it is non-modal-involving. The link from it to modality _should_ be fallible. There is no scope here for talk of modal perception. The belief-forming process envisaged is infallible only if it is magic. Call this the _Objection from Magic_.

It is based, at bottom, on our best view of the fit between epistemology and metaphysics. That view cuts against apriori infallibilism about possibility. We thus face a choice: either the epistemology of genuine modality is special, or infallibilism is wrong. We have no good reason to make an exception, so far as I can see, so we should not complicate theory. The simplest view should be ours. We do feel the tug of the ep-&-met tendency, of course, but that is no reason to complicate theory. It is just our tendency wrongly to blur epistemology and metaphysics.

2.   My second point springs from an observation. As we have seen, the Kripkean line focuses on claims so that

(κ_1) both they and their negation are limit coherent;

and

(κ_2) it is apriori obliged that the matter they raise is non-contingent;

and the more general worry, which grows from the Kripkean line, focuses on claims that satisfy (κ_1) and

(κ_3) it is apriori for at least one of them that it is non-contingent in light of the truth-value of some claim satisfying (κ_1) and (κ_2).

The epistemic strategy side-steps the line entirely by using apriori conditions which rule out (κ_3). It then claims the result is an infallible guide to genuine possibility. This presupposes limit reflection goes modally wrong _only_ in cases that fall under (κ_3)'s purview. That is extra magic. The idea, after all, is that limit coherence marks genuine possibility except when apriori red or yellow flags warn of modal mishap. The epistemic strategy presupposes this thought:

(X) Limit-case apriori reflection infallibly depicts genuine possibility _unless when admitting a claim and its negation as coherent it also admits there is danger of their non-contingency_.

That is hard to believe.

To see why, suppose you had a pair of fallible glasses. Sometimes they serve-up veridical experience of your environment, sometimes delusive experience; but whenever they serve-up delusive experience they also produce a warning at the foot of your visual field. "Beware!" it says, "There is a good chance this experience is delusive". Suppose the glasses are _metaphysically guaranteed_ to yield veridical experience unless they produce such a warning. The idea makes sense on its face, of course, but it is also an incredible one. The glasses cry out for explanation. We should accept that a given pair of glasses work this way only if we understand how they _could_ do so.

Highly-seasoned infallibilism sees limit coherence as a pair of magic glasses. It says such coherence stands to genuine possibility as the glasses stand to the world. Limit coherence is said to be almost delusion proof, to go wrong only if it serves-up a warning. This too is coherent on its face, of course; but it's also incredible. After all, the suggestion is that a purely epistemic procedure is perforce 100% reliable about non-epistemic fact save when it warns of bother. I take it commitment to this kind of view is why philosophers sometimes call metaphysical modality "logical" when logic is "broadly construed". The construal obviously leans on apriori red and yellow flags as emphasized in the text.

In my view, however, we should believe such a story only if we have a clue how it might work. But we have no idea how such exact reliability, such exact fine tuning might come to pass between limit coherence and genuine possibility. It would be little short of miraculous, after all, if limit coherence always had in-built corrections to hand. That would be like sensory belief being outright infallible except when one sensed that one suffered delusion. It seems to me that such a view tempts only when blinded by the ep-&-met tendency. Once that tendency is resisted, however, the view looks obviously wrong; and so it should be with views like highly-seasoned infallibilism, for they perfectly align two-way independent phenomena. Call this the _Objection from Extra-magic_.

The Objections from Magic and Extra-magic rule out epistemic-based infallibilism about possibility. As we are about to see, however, they also cut against semantic-

based infallibilism. Reflecting on that makes clear how to determine whether apriorism about possibility is true.

5.   The semantic-based view.

It is common these days to see two-dimensional semantics pressed into service in order to reconcile modal infallibilism and Kripkean intuition. The approach begins with a simple thought: concepts like *Hesperus*, *Phosphorus*, *water* and *H₂O* have two readings (or functions-to-extension) associated with them. That is the view's main semantic claim. It then says one of the readings-- which we will call reading 1-- captures "pure apriori import"; and that builds a bridge from the view's main semantic claim to modal epistemology. In turn the bridge implies that claims of the form

$$X \text{ is } Y$$

can be read (at least) four ways:

(i) X_1 is Y_1
(ii) X_1 is Y_2
(iii) X_2 is Y_1
(iv) X_2 is Y_2.

Subscripts mark when a concept is read in the apriori/non-apriori way. It is with readings like these that two-dimensionalism aims to reconcile modal infallibilism and Kripkean intuition.

Before getting to that, though, a remark is in order about the origin of the subscripted semantic dimensions. It turns out they can be motivated in various ways. Mostly it is done by appeal to one of two things: facts about reference fixation or those concerning the way that suppositional reasoning works. But we need not adjudicate the details of this debate within two dimensionalism; nor need we accept the general two-dimensionalist approach to semantics. All we need to do is postulate- - for the sake of present argument-- two semantic dimensions one of which captures apriori import. That permits the semantic-based reconciliation of modal infallibilism and Kripkean intuition, no matter how the machinery is motivated. [14] The line runs as follows:

> Apriori reflection is an infallible guide to genuine possibility.
> Appearances to the contrary deceive. Specifically, they result from
> projecting the modal status of readings like (ii)-(iv) onto readings

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[14] For reference-theoretic two-dimensionalism see Chalmers (1996), Jackson (1994), (1998), Lewis (1994b), Stalnaker (1979) and Tichy (1983). For supposition-theoretic versions see Chalmers (2002), (2004), Davies and Humberstone (1981) and Weatherson (2001).

like (i). If a claim is apriori coherent when read in the purely apriori way—when read wholesale along the apriori dimension 1--that claim is genuinely possible. Or again: if a claim is apriori coherent when all its constituent concepts are read in the pure apriori way, that claim is genuinely possible. Apriori reflection secures possibility after all. To think otherwise is to mix-up semantic dimensions, wrongly to pair epistemic intuition about one dimension with modal intuition about another.

When apriori reflection and _im_possibility look to cohabit, says the view, that is because we "cross read" claims, hearing some concepts involved along the apriori dimension and others not. Then we illegitimately link intuitions about apriority concerning one dimension with those about modality concerning another. The result is said to be illusion of apriori coherence without genuine possibility.[15]

This line is subject to the Objection from Magic, and its semantic dimensions yield extra-magic of their own. Let me explain why.

1.   Semantic-based infallibilism is like its naïve cousin; and the latter view, recall, says that limit coherence infallibly marks genuine possibility. The view is that this schema has no counter-instance:

$$\textbf{(l)} \qquad \lim(\text{ø}) \quad \supset \quad \blacklozenge \text{ø}.$$

The semantic view almost agrees, insisting that ø-concepts be read along the apriori semantic dimension. The view claims that limit reflection yields genuine possibility when run along that dimension.

Let us mark it with **bold-face** and *italics*. In the event, semantic-based infallibilism swaps **(l)** for

$$\textit{\textbf{(l)}} \qquad \textit{\textbf{lim(ø)}} \quad \supset \quad \blacklozenge\textit{\textbf{ø}}.$$

It is the view that *(l)* has no counter-instance; and if that is right, of course, belief in the genuine possibility of [ø-read-along-the-purely-apriori-semantic-dimension] based on that reading's limit coherence is infallible. The process is said to move, without hiccup, from the purely epistemic to veridical belief in the purely metaphysical.

This seems like magic. After all, the semantic view—as thus presented anyway—simply _helps itself_ to a semantic dimension limit reflection along which is said infallibly to mark genuine possibility. The view so far simply _assumes_ that naïve infallibilism is true along the apriori semantic dimension. That conflicts with our best take on the fit between epistemology and metaphysics, for it yields an infallible link between two-way independent conditions: purely apriori limit coherence and genuine

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possibility. Why should we accept such a view? Doesn't it face the Objection from Magic squarely along its apriori semantic dimension?

It is a striking fact that semantic-based infallibilists provide almost _no_ positive argument for their infallibilism. David Chalmers's classic work on the topic, for instance, consists almost exclusively of arguments against arguments against semantic-based infallibilism. (But nowhere does he consider _our_ arguments against the view.) In fact, his only positive argument for the view turns on the idea that we should locate

> the roots of our modal concepts in the rational domain....when one
> looks at the purposes to which modality is put, it is striking that
> many of these purposes are tied closely to the rational and the
> psychological: analysing the contents of thoughts and the
> semantics of language, giving an account of counterfactual
> thought, analysing rational inference. It can be argued that for a
> concept of possibility and necessity to be truly useful in analysing
> these domains, it must be a _rational_ modal concept, tied
> constitutively to consistency, rational inference, or
> conceivability.[16]

The quotation here is the full backbone of Chalmers's positive argument for semantic-based infallibilism. By my lights, the considerations within it are simply _outweighed_ by those canvassed here, by our theoretical need to keep epistemology and metaphysics distinct, by our desire to be fully realistic about the world and our place within it.

Note how the worry I am pressing applies even if two-dimensional semantics is correct. We should reject semantic-based infallibilism about genuine possibility even if we _accept_ its semantics. Even if concepts like _Hesperus_, _Phosphorus_, _water_ and H_2O have two semantic dimensions, and even if one of those dimensions captures apriori import, there is _still_ insufficient reason to think best reflection along it _guarantees_ genuine possibility. Modal infallibilism is bad epistemology even if two-dimensionalism is good semantics. It is bad epistemology no matter how it is semantically clothed.

2.   Recall that highly-seasoned infallibilism sees limit coherence as almost delusion proof; and it adds that such coherence goes wrong only if it warns of modal mishap. For this reason, the view sees limit coherence as a pair of magic glasses: fallible about its target yet failsafe to warn of bother. Not only does the view say finessed apriori conditions are magically infallible, it also says limit reflection warns of its own fallibility whenever it must. But that too is magic, extra magic.

Similarly, semantic-based infallibilism says limit coherence is fully delusion proof along the apriori dimension of meaning. It adds that apriori reflection reveals

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[16] Chalmers (2002): 193.

just where modal muddle is _apt_ to occur, for the view says that one can detect apriori when there is potential divergence across dimensions of meaning; and it uses that divergence to diagnose apriori what is then said to be modal mishap. Specifically, the semantic approach uses meaning divergence across dimensions to account apriori for Kripkean intuition. A failure to recognise the cross-dimensional nature of such intuition is said to lead people to misjudge the contours of modality. The view presupposes, therefore, that one can detect apriori when there is danger of modal muddle. But that too is magic, extra magic. Once again we find the idea that apriority contains in-built alarms. The semantic view says that whenever one is apt to fall prey to bogus Kripkean intuition, further apriori reflection will unmask the temptation to muddle.

We should believe the story here only if we have a clue how it might work; but we have no idea how such exact reliability, such exact fine tuning might come to pass between limit coherence and genuine possibility. It would be little short of miraculous, after all, if apriori reflection always had in-built corrections to hand. That is true along one semantic dimension, to be sure; and it remains true along two of them. The two-dimensional approach to modal infallibilism generates its own Objection from Extra-magic.

The Objection from Magic applies squarely to semantic-based infallibilism's story about reflection along the apriori semantic dimension. The Objection from Extra-magic applies to its diagnosis of Kripkean intuition. The view is unacceptable for the same basic reason its epistemic cousin is unacceptable: both tell a bad story about the fit between epistemology and metaphysics, both accept magic correlation between the two.

6.   Chasing the moral.
Suppose, then, that modal infallibilism is false. No reading of

   (◆)   ¬limit-reject(ø) ⊃ ◆ø

is infallible. What difference does that make? What is the moral of infallibilism's demise?

It is tempting to say this:

(!)   Limit coherence is obviously _some_ kind of guide to genuine
         possibility. The question is what kind. Infallibilism says it is an
         infallible guide, but the truth is more modest. Limit coherence is a
         fallible guide to genuine possibility. When ø passes apriori muster,
         that is reason to think ø can genuinely happen; but the reason is
         fallible. It is a good question why that is so, but it is not a good
         question whether that is so. There is no question but that limit
         coherence fallibly marks genuine possibility. That fact is a
         cornerstone of our modal practice, without it no practice remains.

I used to accept this line of thought, and I think many still do accept it; but it now strikes me that the line's plausibility is induced by the ep-&-met tendency I have been at pains to avoid.[17] Seeing why helps make clear whether apriorism about modality is true.

To begin, note the first sentence of (!) is just false. It is not obvious that passing apriori muster is a guide to genuine possibility. It is only obvious that doing so is a guide to possibility *full stop*. The bedrock datum is unqualified:

(BEDROCK)   Limit coherence is some kind of guide to possibility.

This *is* a datum: failing to be ruled out apriori is obviously a mark of possibility. For this reason, we must find truth in (BEDROCK); but the principle's quotidian status has a key consequence, to wit, that its modal notion is *pre*-theoretic. (BEDROCK)'s status as a datum ensures that its modal notion is a quotidian notion, an everyday notion, a pre-theoretic notion. Therein lies the rub.

To see why, recall that there are objective, subjective and purely mathematical notions of probability just as there are such notions of possibility.[18] Yet none of the probabilistic notions-- credence, chance, Popper-Rényi function-- are *pre*-theoretical. They are all highly theoretical successor notions, jointly replacing our pre-theoretic notion of probability so as to correct practice. They allow unequivocal grip on problems which are distinct in nature but alike in structure. Our pre-theoretic notion of probability elides key differences between them. Successor notions are literally tailor made to respect those differences. That is why replacing the former with the latter is advance, why doing so corrects practice.

It is of first importance to realise that the clean-up job is obliged. Our pre-theoretic notion of probability-- and the practice that goes with it-- is enslaved by the ep-&-met tendency. It blends epistemic and metaphysical considerations beyond repair, resulting in fallacy-ridden cognition. That is why we must jettison the old notion and replace it with better ones. They should be cleansed of the ep-&-met tendency. They should answer to purely metaphysical, epistemic, mathematical fact. They should guard against probability-based fallacies induced by our intellectual inheritance, properly gripping tasks over which our pre-theoretic notion equivocates.[19]

Modality is no different. Our pre-theoretic modal notions-- and the practice that goes with them-- are enslaved by the ep-&-met tendency. They too blend epistemic and metaphysical matters beyond repair, resulting in fallacy-ridden cognition. They too should be replaced. To the extent we are clear about that,

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[17] For instance: Hill (1997), Levine (1998), Sturgeon (2006) and (Forthcoming), and Yablo (1993).

[18] This is to be expected, of course, as probability is a measure on a space of possibility. What makes for the objectivity or otherwise in a given kind of probability is the nature of things within its domain.

[19] There is debate about which notions are needed to correct practice. There is no debate about whether successor notions are needed. See Carnap (1945), Glymour (1992), Howson and Urbach (1989), Lewis (1980), Pollock (1990), Roeper and Leblanc (1990).

however, the epistemology of modality becomes murky. Just think of (BEDROCK) cleaned up twice over, with an epistemic and metaphysical reading:

(E)   Limit coherence is a guide to conceivability.

(M)   Limit coherence is a guide to genuine possibility.

(E) is perfectly obvious: passing apriori muster is one way of _being_ conceivable, after all, so it's plausible that that fact sources our taste for infallibilism about "possibility." That taste grows from the trivial status of **(E)**. We can easily find truth in (BEDROCK), but the point does nothing to secure **(M)**.

Once it is clear that genuine possibility is in play-- and neither a partial nor full epistemic analogue-- it is intuitively _un_clear that passing apriori muster is a guide to the phenomenon. It is unclear that apriorism about genuine possibility is true, and the reason is just that the issue is not pre-theoretic. After all, the issue is whether failing to be ruled out apriori reliably indicates the most inclusive mind- and language-independent space of possibility. That is not something everyday commitment can resolve, nor is it something everyday intuition can resolve. The issue is not common-sense: only theory can say whether such failure is a guide to such possibility.

The same point applies to apriori reflection and genuine necessity. Consider the rule:

(■)   limit-adopt(ø) ⊃ ■ø.

The possibility rule (◆) is fallible just if a genuine impossibility is not ruled out apriori. We have seen at least one parade case: that Sam Clemens is not Mark Twain. The necessity rule **(■)** is fallible just if a genuine non-necessity is ruled in apriori. We have not seen a parade case of that. But we _have_ seen reason to expect one; for everything mentioned of late about apriori reflection and genuine possibility carries over, _mutatis mutandis_, to the relation between such reflection and genuine necessity. Whether a claim is ruled in apriori is a purely epistemic fact about it, an idealised epistemic mark signalling that norms which govern apriori reckoning oblige adopting a claim. But whether a claim is genuinely necessary is a purely metaphysical fact about it, a non-epistemic mark indicating that all of modal reality is correctly described by a claim. Yet there is two-way independence between the two marks. Limit obligation is not individuated by genuine necessity. Genuine necessity is not individuated by limit obligation. Fallibilism _should_ characterise the link from the latter to the former. That is how epistemically based belief in external fact is best understood. That is how apriori epistemology and metaphysics fit together.

This threatens cognitive discord. After all, fallibilism about genuine necessity requires a non-necessity to be apriori obliged, a conceptual obligation must turn out to be possibly false. At least one claim must be epistemically like the view that red things are coloured yet modally like the view that red things exist. This can _look_

incoherent, for it can look "conceptually true" that conceptual obligations are necessary. And for this reason, it can look as if no such obligation can be false; but if that is right, fallibilism about genuine necessity is a conceptual non-starter.

But look again. The line just sketched leans on a muddled schema:

(BEDROCK)*   If limit reflection rules in ø, then it must be ø.[20]

This *is* a datum: being ruled in apriori is obviously evidence of necessity. We must find truth in (BEDROCK)*; but here too the quotidian status of the principle guarantees its modal notion is pre-theoretic. (BEDROCK)*'s status as a datum ensures its modal notion is an everyday notion, the kind of notion that blends epistemic and metaphysical matters. The datum can be heard two ways:

(E)*   If limit reflection rules in ø, then it must be adopted ø.

(M)*   If limit reflection rules in ø, then it is genuinely necessary ø.

(E)* is perfectly obvious: being ruled in apriori is the same as limit obligation, the same as one kind of must. It is plausible that this fact sources our taste for the view that limit obligation brings "necessity" with it. That taste grows from the trivial status of **(E)***. We can easily find truth in (BEDROCK)*, but the point does nothing to secure **(M)***.

Once it is clear that genuine necessity is in play-- and neither a partial nor full epistemic analogue-- it is intuitively unclear that limit obligation is sufficient for genuine necessity. After all, the issue is whether limit obligation marks the least inclusive realistic space of necessity. That is not something everyday commitment can resolve; nor is it something everyday intuition can resolve. Only theory can say whether it is so.

When it comes to apriori reflection and genuine modality, then, we face a double-barrel theoretical question. How do these schemata fare:

(◆)   ¬limit-reject(ø) ⊃ ◆ø

(■)   limit-adopt(ø) ⊃ ■ø?

Folk wisdom cannot answer the question, for it is too theoretical. In the next section I propose how we should go about answering it.

7.   The crux.

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[20] For instance: if limit reflection rules in that flounders snore, then it must be that flounders snore; if limit reflection rules in that red things are coloured, then it must be that red things are coloured; and so on.

The first step is to note that (■) is equivalent to (◆)'s converse. To see this, contrapose (■):

(i)   ¬■ø ⊃ ¬limit-adopt(ø).

Next turn the negated box into a possible negation:

(ii)   ◆¬ø ⊃ ¬limit-adopt(ø).

Then note a sound schema holds for a claim just if it holds for its negation, so we can rewrite (ii):

(iii)   ◆ø ⊃ ¬limit-adopt(¬ø).

Yet an ideal agent should reject a claim just if she adopts its negation, so we can rewrite (iii):

(iv)   ◆ø ⊃ ¬limit-reject(ø).

Thus we find that (■) is equivalent to (◆)'s converse. Our two modal principles jointly entail

(v)   ¬limit-reject(ø) ≡ ◆ ø.

This affords progress.

      After all, idealised apriori rejection aligns with _conceptual impossibility_, with impossibility grounded in conceptual content. This means the left-hand side of (v) aligns with conceptual possibility, with possibility ground in conceptual content. That is a murky notion, to be sure, but it helps to work with it; so let us write ˚♦(ø)˚ to express that ø is conceptually possible. In the event, we have this by hypothesis:

(vi)   ¬limit-reject(ø) ≡ ◈ø.

In the ideal case: a claim should fail to be ruled out apriori just if it is conceptually possible. Or again: a claim should be ruled out apriori just if it is conceptually impossible. This and (v) yield the key biconditional:

(≡)   ◈ø ≡ ◆ø.

Apriorism about genuine modality turns on two schemata: **(◆)** and **(■)**. They lead directly to **(≡)**. This means apriorism about genuine modality turns on the link between conceptual and genuine possibility, on the alignment between the two.[21]

Think of it this way. Put all usual claims in a region, mark out conceptual possibilities from the rest, and paint their region yellow:
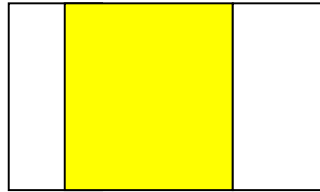
Now put all usual claims in a new region (organised as before), mark out genuine possibilities from the rest, and paint their region blue:
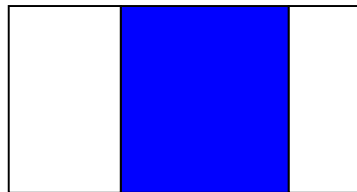
Next superimpose the Figures:

[Figure 7]

Apriorism about genuine modality turns on the extent to which green dwarfs yellow and blue in Figure 7. Yellow claims are conceptually possible but not genuinely possible, counter-examples to

(◆)   ¬limit-reject(ø) ⊃ ◆ø.

---

[21] Equivalently it turns on the alignment between genuine necessity and limit obligation. To see this, note **(◆)** can be rewritten: ¬limit-adopt(¬ø) ⊃ ◆ø. Now contrapose, turn the negated diamond into a necessary negation, and drop the double negation. Then you have: ■¬ø ⊃ limit-adopt(¬ø). The negations here do no work, so rewrite again: ■ø ⊃ limit-adopt(ø). This is the converse of **(■)**, so **(◆)** and **(■)** lead to this biconditional: apriori-adopt(ø) ≡ ■ø. Apriorism about genuine modality equally turns on the alignment between genuine necessity and limit obligation.

27

Blue claims are genuinely possible but not conceptually possible. Their negations are apriori obliged but not genuinely necessary, counter-examples to

$$(\blacksquare) \qquad \text{limit-adopt}(\emptyset) \supset \blacksquare\emptyset.$$

For this reason: apriorism about genuine modality turns on the extent to which conceptual and genuine possibility line up, the extent to which they marry into a "green light". The key question is thus how big a green light do we have? How well do conceptual and genuine possibility line up?

   Here things become difficult. In §2 we pictured genuine and nomic possibility this way:
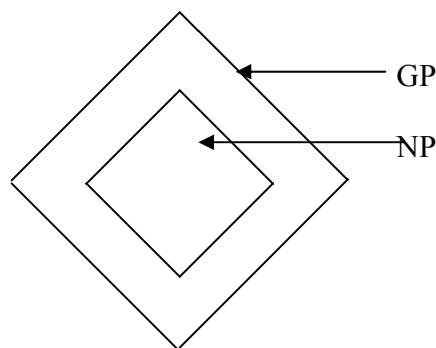
[Figure 1]

But we did so merely to echo a widespread-but-undefended *assumption*. Specifically, we drew inclusion relations to mimic the popular idea that genuine possibility outstrips nomic possibility, to allow for genuinely contingent nomic necessity. That assumption is neither obligatory nor obvious. It needs defence.[22]

   That defence will turn on an issue beyond the scope of this paper. To see why, consider a famous passage from Lewis:

   [Conceptual] space is a paradise for philosophers. We have only to
   believe in the vast realm of *possibilia*, and there we find what we need
   to advance our endeavours. We find the wherewithal to reduce the
   diversity of notions we must accept as primitive, and thereby to
   improve the unity and economy of the theory that is our professional
   concern-- total theory, the whole of what we take to be true. What
   price paradise? If we want the theoretical benefits that talk of

---

[22] Some write as if it is obvious that the space of genuine possibility outstrips that of nomic possibility. In my view that springs from the ep-&-met tendency, buying into leftover residue from pre-Kripkean days when apriority and modality were run together in thought. The view often taken as given might be true, of course; but it should not be taken as *given*. It is a theoretical view. There is nothing obvious about it.

> *possibilia* brings, the most straightforward way to gain honest title to
> them is to accept such talk as the literal truth. It is my view that the
> price is right... The benefits are worth their ontological costs.[23]

Two things happen in this passage (both central to Lewis' work on modality). One is that non-eliminativism about genuine possibility is defended. The other is that genuine possibility is aligned with conceptual possibility. Their conjunction is grounded in putative theoretical benefit brought on by its adoption, but it is important to emphasise that two views are in play. One is that genuine possibility is real. The other is that genuine possibility is conceptual possibility. The conjunction of these two views is said to make for best total theory.

      I think Lewis must be partly right. After all, the practice and analysis of science, ordinary life and philosophy itself turn on genuine possibility.[24] There must *be* such a thing as genuine possibility. The only question for our purposes is whether it aligns with conceptual possibility. Lewis thinks so and grounds that conviction in cost-benefit analysis, paying for ideological and explanatory economy in the coin of plentiful possibility. Lewis packs his ontology with countless nomically inert possibilities precisely because he thinks they best systematise total theory.

      Trade-offs like that are notoriously disputable. One person's bargain is another's excess; yet there is no way to avoid them in deciding whether genuine and conceptual possibility align, in deciding the bounty of genuine possibility. One must discern costs and benefits of views about such bounty, and one must see how they stack up. Cost-benefit analysis is obliged. To the extent that benefits of a view outweigh its costs, one should accept genuine possibility has the bounty in question. To the extent they do not, one should not. Take-home theory should mimic the best bottom line: one should believe in a plentiful bounty like conceptual possibility, a meagre one like nomic possibility, or a middling bounty in accord with the best total picture.[25]

      Constructing a total picture of the world is beyond the scope of this paper. Comparing total pictures is way beyond that scope. We must proceed, then, from assumptions rather than conclusions about the bounty of genuine possibility. We must tailor our conclusions to those assumptions; and there is a spectrum of them available. On its plentiful end lies the view that genuine and conceptual possibility

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[23] Lewis (1986a), p.4.

[24] Just as the practice and analysis of science turn on objective probability. See Lewis (1980).

[25] This echoes a choice point in the theory of universals: are they abundant in number, sparse, or somewhere in between? The choice should turn on best theory. See Armstrong (1978), Lewis (1983) and (1986a). In my view the same is true of modality. But this is not to recommend a "best system" analysis of modal bounty. I do not say that bounty turns out as it does *because* bestness turns out a certain way. My claim is purely epistemic here: one's view of bounty should turn on bestness. Bounty itself most likely turns on nothing at all, since it's most likely a fundamental aspect of reality. This means modal reality might turn out to be cruel: best total theory might use a grossly mistaken view of bounty. In the event, total theory is best systematised by a drastically unreal modal ontology. See Lewis (1994a) for a "best system" analysis of nomic modality and objective probability.

align. On it is meagre end lies the view that genuine and nomic possibility align.
The truth could be anywhere on the spectrum:

GP ≈ CP   GP ≈ NP
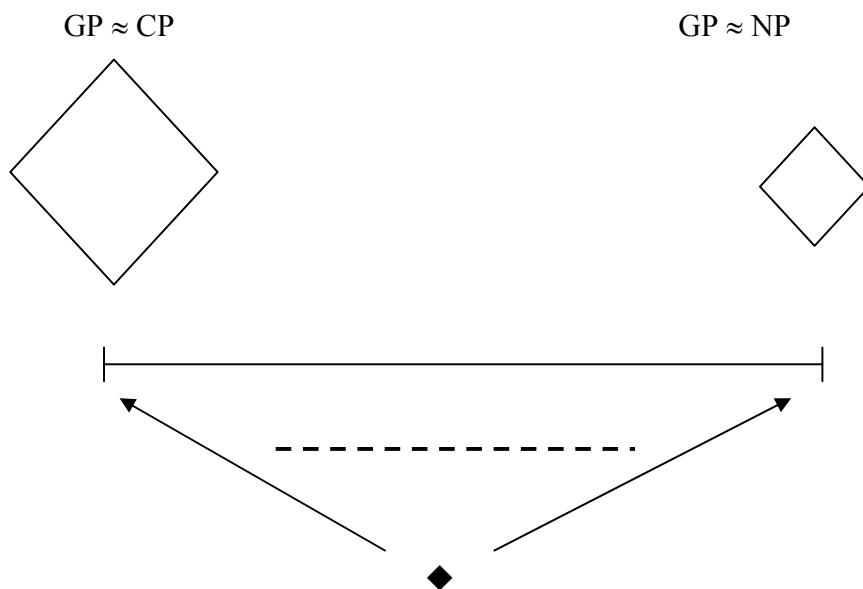
[Figure 8]

We cannot decide here where genuine possibility lies. That must await total theory.
But we can link the issue with our primary concern, for we can say this:

(✪)   Apriori reflection is a guide to genuine modality to the extent
           that genuine possibility is plentiful-- to the extent, that is, that it
           aligns with conceptual possibility. If non-trivial alignment takes
           place: limit coherence will be a useful guide to genuine
           possibility, and limit obligation will be a useful guide to genuine
           necessity. If non-trivial alignment does not take place: apriori
           reflection will be useless as a mark of genuine modality. Limit
           coherence will not mark genuine possibility, and limit obligation
           will not mark genuine necessity.

As we have seen, there is good reason to think limit coherence does not infallibly
mark genuine possibility. That reason turns on our best understanding of the fit
between epistemology and metaphysics. Yet limit coherence might well fallibly
mark genuine possibility. That will depend on the extent to which genuine and
conceptual possibility align.
       Similarly: there is good reason to think limit obligation does not infallibly
mark genuine necessity, turning as well on the fit between epistemology and

metaphysics. Yet limit obligation might well fallibly mark genuine necessity. That too will depend on the extent to which genuine and conceptual possibility align.

When it comes to alignment itself, however, our view should turn on how best to systematise thought. If postulation of plentiful genuine possibilities better systematises total theory than not doing so, then, and for that reason, we should accept alignment between conceptual and genuine modality. In turn that will mean limit coherence is a good-but-fallible guide to genuine possibility, and limit obligation is such a guide to genuine necessity. We cannot say here whether alignment takes place. But we can say that apriorism about genuine modality turns on whether it does.

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