

Reducing Modality*

THEODORE SIDER

June 2, 2007

Does the formula “necessity is truth in all possible worlds” constitute a *reduction* of modality? Only if possible worlds both exist and can be nonmodally defined. David Lewis’s (1986) concrete possible worlds are non-modally defined¹, but it is very difficult to believe that they exist. Perhaps it is easier to believe in abstract possible worlds, for example Alvin Plantinga’s maximal consistent states of affairs. But Plantinga and others use modal notions to characterize consistency, and so cannot — and do not — claim to reduce modality.² Other attempted reductions of possible-worlds talk are combinatorialist, fictionalist, or both (Armstrong 1989, 1997; Rosen 1990), but I have argued elsewhere (2002; 2005) that these projects fail to reduce modality.

A very different strategy for reduction does not appeal to possible worlds at all, but rather locates modality, somehow, in linguistic convention. This strategy has been unpopular in the last thirty years, among other reasons because conventionalism is apparently inapplicable to Kripke and Putnam’s examples of the necessary a posteriori (and, relatedly, to *de re* modality), because of other failures of conventionalism to provide a materially adequate account of modality, and above all, because of dissatisfaction with the idea of truth by convention.

These were good reasons to reject the crude conventionalism of the positivists, Wittgensteinians, and ordinary language philosophers. But I think that an attractive theory can be salvaged from its wreck. The new theory assumes a realist approach to metaphysics, semantics and epistemology that is utterly at odds with the approach of the traditional conventionalists. It renounces truth by convention, and sheds little light on the epistemology of modal truths. Despite these differences from traditional conventionalism, linguistic convention plays a leading role in the new theory. And the new theory has the *metaphysical* payoff the conventionalists sought: an account of modality free of objectionable

*Very rough draft; please forgive and do not cite. Thanks to Eliza Block, David Braun, Ben Caplan, Deniz Dagci, Antony Eagle, John Hawthorne, Ishani Maitra, Europa Malynicz, Tom McKay, Peter Momtchiloff, Mike Rea, Tim Schroeder, Adam Sennett, Ernie Sosa, Brian Weatherston, Zoltan Szabó, seminar participants at Syracuse and Rutgers, and audiences at Brown, Cornell, Manitoba, St. Andrews, and Yale, for valuable comments.

¹Although see Shalkowski 1994; Divers and Melia 2002; I reply in my 2003.

² See Adams 1974; Plantinga 1976; Stalnaker 1976.

metaphysical posits. It fits modality into a fundamentally nonmodal world. The new theory can, therefore, be regarded as “quasi-conventionalist”.

I will begin by presenting and then rejecting crude conventionalism. The bulk of the paper then presents and defends a quasi-conventionalist account of *de dicto* necessity. Finally, I sketch an account of other modal notions. At that stage I do bring in possible worlds — defined using the quasi-conventionalist notion of *de dicto* necessity — in order to analyze other modal notions, for instance *de re* necessity and possibility.

I Why reduction?

But first I should justify the project. Why bother? My motives are more metaphysical than the familiar epistemic ones. For some, the point of reducing modality is to show how modal knowledge is possible.³ These philosophers want to fit modality into their epistemology; I, on the other hand, want to fit modality into an attractive metaphysics, a metaphysics without dubious primitive notions.

Consider those metaphysicians who think that there are “ungrounded” or “brute” counterfactuals: counterfactuals that are true but have no basis in the way things *are*.⁴ And consider those who believe in brute dispositional properties that are not based in nondispositional properties.⁵ And consider those presentists who reject the existence of all but currently existing things, but who nevertheless speak using irreducible tense operators, for example “it was the case five minutes ago that ϕ ”.⁶ And imagine a solipsist who nevertheless employs A. N. Prior’s (1968) “person-tenses”: unanalyzable sentential operators of the form “Person_{*n*}(ϕ)”. We non-solipsists think that ‘Person_{*n*}(ϕ)’ is true iff ϕ is true of the *n*th person in a certain ordering of the persons (say, in terms of birth date), but the solipsist denies this analysis and takes the operator as primitive.⁷ Intuitively, these metaphysicians “cheat”, by accepting the existence of truths without accepting an ontology robust enough to underwrite or ground those truths.

A very hard “meta-ontological” question is that of what *general* constraints

³For example Peacocke 1997, 1999.

⁴References??

⁵References??

⁶See my 2001*b*, Chapter 2.

⁷Prior did not advocate such a view.

should be placed on the ontological enterprise in order to rule out ontologies that cheat in this way. My best answer is a requirement of “categoricity”: *the fundamental properties, relations and propositions in an ontology should be categorical, not hypothetical*. I have no definition of the categorical/hypothetical distinction, but perhaps the following remarks will enable the reader to catch on. Categorical facts flow from the actual nature of things. They concern how objects *are*; they inhere in actuality; they are immanent. The hypothetical, on the other hand, is “outward looking”. Hypothetical facts do not concern how things *are*, but rather how they might, or were, or would be.

These scholastic thoughts are, for me, the upshot of the slogans that “truths must have truthmakers” (Armstrong 1997, especially chapter 8), and “truth supervenes on being” (Bigelow 1988, pp. 130-133, and Lewis 1992, pp. 215-219). The slogans are supposed to catch the ontological cheaters. But without any constraint on what counts as a truthmaker, truthmakers are cheap. A truthmaker for S is supposed to be an object whose very existence suffices for the truth of S. Truthmakers are generally thought of as *facts*. But one could invoke “counterfactual facts”, “personally tensed facts” and so on. An analogous point holds for the principle that truths must supervene on being. This principle requires that all truths supervene (globally) on what objects there are and what properties and relations they have.⁸ But this is cheap if one allows, for instance, counterfactual or personally tensed properties. For the slogans to have their intended force, the allowable truthmakers, properties and relations must be restricted — to categorical ones, I say.

Indeed, John Bigelow himself, one of the proponents of the supervenience of truth on being, is a presentist, and takes pains to reconcile presentism with the supervenience of truth on being.⁹ His trick is to ground tensed statements in the instantiation of irreducible tensed properties of the entire universe: the universe has the property of **previously containing dinosaurs**. I say that postulating irreducible tensed properties is just as much of a cheat as is postulating brute counterfactual or personally tensed properties; each violates the categoricity requirement.

And so would primitive modality — that is what motivates my search for a reduction.

The distinction between the categorical and hypothetical leaves a lot to be

⁸Lewis restricts the properties and relations to natural ones, but without constraints on naturalness, supervenience on being will still be cheap.

⁹Bigelow 1996.

desired. The distinction is hard to explain in more basic terms, and hard to apply to new cases. Fortunately, that distinction bears little weight in the present paper. Though I use the categoricity requirement at various points to motivate my analysis of modality, the notions of the categorical and hypothetical do not occur in the analysis. Skeptics may regard “hypothetical” as a placeholder for whatever is bad about the dubious ontological posits considered above.

2 Crude conventionalism¹⁰

The old-fashioned “linguistic” or “conventionalist” theory of necessity has few contemporary adherents, for the most part with good reason. In *Language, Truth and Logic*, A. J. Ayer states conventionalism about necessity and a priority (Ayer equates these two notions, as was then common — his index entry for “Necessary propositions” reads “See *A priori* propositions”):

The views which are put forward in this treatise derive from the doctrines of Bertrand Russell and Wittgenstein, which are themselves the logical outcome of the empiricism of Berkeley and David Hume. Like Hume, I divide all genuine propositions into two classes: those which, in his terminology, concern “relations of ideas,” and those which concern “matters of fact.” The former class comprises the *a priori* propositions of logic and pure mathematics, and these I allow to be necessary and certain only because they are analytic. That is, I maintain that the reason why these propositions cannot be confuted in experience is that they do not make any assertion about the empirical world, but simply record our determination to use symbols in a certain fashion. (p. 31)

A proposition (statement) is analytic, Ayer goes on to say, “when its validity depends solely on the definitions of the symbols it contains...” (p. 78). Analytic propositions can be known a priori because they are “devoid of factual content” (p. 78), because they merely “record our determination to use words in a certain fashion”.

Though Ayer is mostly concerned with epistemology, with claiming that the a priori status of logic and mathematics is explained by their analyticity, he also says that a truth is necessary iff it is analytic in this sense. Analytic truths, for Ayer, “say nothing about the world”. One might hope, then, that

¹⁰Parts of the next two sections are based on parts of Sider 2003.

this theory of necessity could help to banish non-categorical primitive notions from ontology.

Something like this view of necessity was once widely held, by logical positivists, Wittgensteinians, and ordinary language philosophers.¹¹ The core of the view is that an analytic truth, for instance the truth that all horses are horses, is true purely by virtue of linguistic conventions. By adopting certain rules governing the use of logical words like ‘all’, language users make ‘all horses are horses’ true.

Some criticisms are familiar. There is, for example, the argument that conventionalism renders apparently necessary statements contingent. If the sentence ‘all horses are horses’ “records our determination to use symbols in a certain way”, as Ayer says, does this mean that the sentence is *about* our determinations, that it *says* that we are determined to use symbols in certain ways? In that case, the sentence would be contingent, for it is contingent how we use symbols (Broad, 1936, p. 107).

A related argument may be adapted from Casimir Lewy (1976, p. 9). We first interpret the crude conventionalist as saying that (1) gives the meaning of (2):

- (1) ‘Vixen’ means the same as ‘female fox’
- (2) Necessarily, something is a vixen if and only if it is a female fox

We then object that (2) could be true while (1) is false: imagine that we used ‘Vixen’ as we actually do but used ‘female fox’ to refer to a kind of ice cream. Hence, (1) and (2) do not mean the same thing after all.

Do these objections misinterpret Ayer? Perhaps his view is not that (1) and (2) *mean* the same thing, nor is it that ‘all horses are horses’ *says* that we are determined to use words in certain ways. But then, just what does he mean by saying that analytic truths record our determination to use words in certain ways?

The best-known argument against truth by convention is Quine’s argument in “Truth by Convention”. Consider the following sentence, allegedly true by convention:

¹¹Conventionalists include Ayer, Britton 1947, Carnap 1937, §69 and 1950, and Malcolm 1940. Pap 1958, chapter 7 contains a thorough (critical) discussion of conventionalism. See also Lewy 1976, especially chapter 5, and Boghossian 1997.

(B) Something is a bachelor iff it is an unmarried man

Pretend that, as a matter of convention, ‘bachelor’ means the same as ‘unmarried man’. Thus, (B) means the same as the following logical truth:

(A) Something is an unmarried man iff it is an unmarried man

The introduction of the convention governing ‘bachelor’ therefore makes (B) have the same truth value as (A); but this on its own does not render (B) true by convention. The truth of (B) requires the “prior” truth of (A). As Quine says, “...definitions are available only for transforming truths, not for founding them” (Quine, 1936, p. 81).

(B) *would* be rendered true by convention if the logical truth (A) itself were true by convention. But as Quine famously went on to argue, logical truths do not in any interesting sense owe their truth to conventions. A would-be legislator of logical truth cannot explicitly legislate each logical truth, for there are infinitely many of them. He must instead resort to general legislations, which result in infinitely many legislated truths. These general legislations come in two sorts. The first sort says that every sentence of a certain form is to be true, for instance:

(I) Let every instance of the following schema be true:

If ϕ then ϕ

The second sort says that *if* certain statements are true, then others are to be true as well. Here is an example:

(II) If a statement ϕ and a statement ‘If ϕ then ψ ’ are true, then let ψ be true as well.

It is not sufficient to make legislations of sort (I), for any such legislation can only issue truths of a certain fixed logical form. One also needs conditional legislations. The displayed legislation (II) is designed to insure that the legislated truths are closed under the application of modus ponens. The hope of the conventionalist is that a conditional legislation of the sort (II), together with an appropriate finite list of legislations of form (I), would make true all the truths of propositional logic. For there exist complete axiomatizations of propositional logic with finitely many axiom schemas in which the only rule of

inference is modus ponens; each axiom schema could be legislated in style (I), and modus ponens could be legislated by proclaiming (II). One could then go on to legislate the truths of predicate logic in a similar fashion.¹²

According to Quine, the problem for conventionalism thus understood is that logic is needed to apply the conventions, and cannot therefore be grounded in the conventions. Consider, for instance, the use of (II). Suppose that statements ϕ and 'if ϕ then ψ ' have been legislated to be true by legislations of sort (I). (II) now says that *if* these sentences are true, then ψ is to be true as well. To derive from this the result that ψ is indeed true, we must perform modus ponens — we must use logic. But logic is exactly what the legislations are supposed to ground.

For various reasons, it seems to me that Quine's objection — that logic will be needed to legislate the infinity of logical truths — does not get to the heart of the matter. First, imagine a finitary conventionalist, who tries to introduce conventional truth in a language whose set of well-formed formulas is finite. Or imagine a conventionalist with an infinitary mind, who can legislate each of the infinitely many logical truths individually. The opponent of conventionalism will surely want to claim that logic would not be true by convention in either of these cases, but in neither case does Quine's objection apply.

Moreover, the conventionalist might reply that legislations of form (II) are *legislations of rules* rather than *legislations of statements of rules*. Quine assumes that the proclamation of (II) results in the *truth* of a statement of the rule modus ponens. Such a statement is a (quantified) conditional; from the truth of such a conditional, one cannot infer anything without using rules of inference such as modus ponens.¹³ But suppose instead that a proclamation of the form (II) does not merely result in the truth of a statement of modus ponens; it results in the rule's being in effect. On this view, legislation (II) has a form fundamentally different from that of (I). Form (I) merely results in something being true, even if that something is the statement of a rule, whereas (II) results in a rule being in force. Not that any of this makes any sense. But the question is whether Quine's critique is effective. Quine in effect grants the conventionalist for the sake of argument that the words pronounced in (I), "Let any statement of the following form be true..." have their desired effect. But of course the words are not magic: something about the pattern of beliefs, dispositions, etc., in the linguistic community that results from the pronouncement of those words

¹²[Discuss Godelian limitations of applying this procedure to mathematics.]

¹³This is Lewis Carroll's (1895) point.

is what allegedly does the trick: certain sentences become true. If Quine is willing to grant that these words have this effect, should he not also grant that a different pattern of beliefs and dispositions, which result from pronouncements of the form (II), have a different effect: a rule comes to be in force?

Quine's argument does not go far enough. An adequate critique must challenge the very idea of something's being "true by convention". Even an infinite mind, or a conventionalist with only finite aspirations, or a conditional legislator, could not make the logical truths, or any other sentence for that matter, true by convention (unless the sentence is *about* conventions). The components of this critique are not new, but are nevertheless worth repeating.

The critique begins with conceptual clarification (for conventionalism gains spurious plausibility from conceptual confusion). First, some general reflections on the nature of truth. "Truth by convention" has a hope only if the relevant notion of truth is that of the truth of a *sentence*. Now, even contingent sentences depend in part for their truth on convention. The sentence 'The acceleration at the earth's surface due to gravity is 9.8m/s^2 ' is true in part because of its meaning; it would not be true if we used '9' to mean 8 or 'gravity' to mean electromagnetism. But of course, that's only part of the story. Convention grants the sentence its meaning, but then the world must cooperate: the world must be as the sentence says it is. The acceleration due to gravity at the earth's surface must really be 9.8m/s^2 . On the face of it, the same holds for all truths, even logical truths. In virtue of our conventions, the sentence 'If it is raining then it is raining' means that if it is raining then it is raining; but in order for the sentence to be true, the world must cooperate: the world must really be as the sentence says it is. It must really be that if it is raining then it is raining. It is easy to miss this last point since it is obvious that if it is raining then it is raining. Since logical truths — the simple ones commonly used in examples, anyway — are obvious, it is easy to miss the fact that the world must cooperate even in the case of logically true sentences.

The critique continues by highlighting the obscurity in various claims that conventionalists tend to make. A conventionalist might reply to the argument of the last paragraph by saying that a logical truth like 'if it is raining then it is raining' "automatically" becomes true upon being endowed with its meaning; there is no further requirement that the world cooperate by being a certain way. But what does 'automatically' mean here? It could be understood in terms of necessity: it is necessarily true that if 'if...then' means what it does then 'if it is raining then it is raining' is true. Thus understood, the claim is correct, but only because it is necessarily true that it is raining if it is raining. Thus

understood, the claim that logical truths “automatically” become true upon being endowed with their meanings lends no support to conventionalism, for it is compatible with a robust realism about logical truth and necessity. And what other sense could be given to ‘automatically’? Other conventionalist claims exhibit similar obscurity. Earlier I complained at length about Ayer’s claim that analytic truths “record our determinations” to use words in certain ways. Ayer also says that analytic truths say nothing about the world; but it is hard to attach any sense to this saying that makes it both true and non-trivial. ‘If it is raining then it is raining’ *seems* to say something about the world: that it is raining if it is raining. Of course, the thing it says is a logical truth. The thing it says is indeed “trivial”, if that means that it is a logical truth. But so what? — the claim that logical truths “say nothing” in this sense can play no role in explaining the epistemology or metaphysics of logical truth or necessity.

The critique goes on to question whether the conventionalist’s central claims even make sense. Here are two ways to press this. First, when the conventionalist says that logical truths are true “purely in virtue of” our conventions, the phrase ‘purely in virtue of’ is intended to indicate an intimate relation of dependence of the truths of logic upon our conventions. But just what relation of dependence is this? In what sense does the logical truth that all green things are green depend on our conventions? The conventionalist will surely want to deny *counterfactual* or *temporal* dependence, at least of the sort that would imply absurd statements like the following:

Before we introduced our conventions, not all green things were green

If we had introduced no conventions, not all green things would have been green

Of course, metalinguistic counterfactual and temporal statements such as the following are unproblematic:

Before we introduced our conventions, the sentence ‘all green things are green’ was not used to express a truth

If we had introduced no conventions, the sentence ‘all green things are green’ would not have been used to express a truth

So there is a sense of counterfactual and temporal dependence that the conventionalist can admit. But even opponents of conventionalism agree with

these latter two statements, and so can admit counterfactual and temporal dependence in the second, metalinguistic, sense. It remains unclear just what dependence relation of truth upon conventions is supposed to be distinctive of conventionalism.

Second, consider the would-be truth-legislator, who says: “Let every sentence of the form ‘If P then P’ be true”. What on earth does this mean? What could this possibly accomplish? The legislator could be resolving to use the word ‘true’ in a new way; he could be listing the sentences to which this new term ‘true’ applies. But *that* wouldn’t make logic true by convention; it would merely introduce a new (and uninteresting) sense of ‘true’. On the other hand, the legislator could be placing a constraint on the intended meaning for ‘if...then’ by appeal to the truth value of propositions expressed by sentences using that locution. The constraint would be that ‘if...then’ is to stand for a binary operation on propositions, R, only if for any proposition, p, the proposition R(p,p) is true. But that wouldn’t amount to logical truth by convention either, for it assumes an antecedent notion of propositional truth.

This last point bears emphasis. We should all agree that one way to secure the meaning of an expression, E, is to stipulate that E be interpreted so that certain sentences containing E turn out true. It can seem that such a stipulation creates truth on its own, but in fact it does not. Suppose, for instance, that one stipulates that ‘bachelor’ be interpreted so that (B) turns out true. That is, one stipulates a certain necessary condition that a meaning M must satisfy in order to be meant by the word ‘bachelor’: M must be such that (B) turns out true when ‘bachelor’ means M (and when the other terms in (B) mean what they in fact mean). This stipulation (assuming that it is nondefeasible) insures that if ‘bachelor’ means anything at all, then (B) is true. But it does not on its own insure that (B) is true. For if there is no meaning M that satisfies this condition (or if no meaning satisfies this condition and also satisfies other nondefeasible conditions on the meaning of ‘bachelor’ we have laid down), then ‘bachelor’ will not mean anything at all, and so (B) will not be true. The world must cooperate by supplying a meaning, M, that meets the condition. Now, in fact there is a meaning that satisfies the condition: the property of **being an unmarried man**. For (B) is true under this assignment of meaning to ‘bachelor’: it is true that something is an unmarried man if and only if it is an unmarried man. That is, (A) is true. So the world does indeed cooperate. But part of the world’s cooperation is that a certain logical truth be true: (A). Our stipulations concerning ‘bachelor’ insure that (B) is true if ‘bachelor’ has a meaning, but the existence of a meaning for ‘bachelor’ depends on the truth of

(A).

The critique so far has not produced an argument against conventionalism; it aspires merely to clear away obstacles to understanding. Moreover, it does not really meet the conventionalist on neutral ground, for it speaks of propositions and properties. As for the second point, the goal here is not to force Rudolf Carnap and Ludwig Wittgenstein to change their minds, but rather to figure out what we, now, should believe. And as for the first point, this kind of conceptual clarification can be powerful. I can report from my own case that conventionalism lost what appeal it once had, once I appreciated the critique.

Nevertheless, direct arguments against conventionalism would be welcome. Here are two direct arguments that I find convincing.

Consider the statement: “my computer monitor has been thrown out the window”. I cannot make this statement true by mere legislation. Since I lack magical powers, I cannot affect this particular bit of the world by simply wishing or pronouncing or legislating. I must resort to throwing the monitor out the window myself, or paying or inciting someone else to do it. My lack of magical powers results in a fairly general inability to make statements true solely by pronouncement. The only limit to this inability comes from statements *about* conventions (and about related matters, for example noises I make). These I can make true, simply by pronouncing. Facts about our conventions, after all, just are facts about *us*.

Thus, only statements *about* conventions (and related matters) are made true by our pronouncements. Statements about monitors, or bachelors, or rain, are about parts of the world that we cannot affect simply by pronouncement. To think otherwise would be to grant ourselves magical powers. The first argument, then, is this. The statement that it is raining is not about conventions, or about noises we make, or about any other part of the world that we can affect simply by pronouncement. It is about *rain*. Likewise, the statement that it is *not* raining is also about rain. But a disjunction of statements about rain is itself about rain, for a disjunction simply states that one of its disjuncts holds. So, since I cannot affect the world in the matter of rain simply by pronouncement, I cannot make the statement ‘either it will rain or it will not rain’ true simply by pronouncement.

Here is the second argument. I cannot make it the case that ‘it is raining’ is true simply by pronouncing, nor can I make it the case that ‘it is not raining’ is true simply by pronouncing. But if I cannot make ϕ true simply by pronouncement, nor can I make ψ true simply by pronouncement, then I cannot make the disjunction ‘ ϕ or ψ ’ true simply by pronouncement. For a

disjunction states simply that one or the other of its disjuncts holds; to make a disjunction true one would need to make one of its disjuncts true. Of course, to *know* (or believe, or promise, or...) a disjunction, one needn't know (or believe, or promise, ...) one of its disjuncts. But the principle for *making true* seems correct. Therefore, I cannot make it the case that either it rains or it doesn't rain, simply by pronouncement.

The arguments will not convince everyone, for they rest on deniable premises about the logic of 'about' and 'I can make it the case by pronouncement that'. My own view is that the arguments have considerable force. At any rate, I will henceforth assume that, for one reason or another, the idea of truth by convention is unacceptable.

3 “Conventionalism” without truth by convention¹⁴

Neither logic nor mathematics owes its truth to convention, except in the uninteresting sense in which every true sentence partly owes its truth to the conventions that secure its meaning. But it may yet be a convention to call logical and mathematical truths necessary. If so, it is analytic to 'necessary' that logical and mathematical truths are necessary. 'Necessary' is a word used for truths of certain kinds.

Pretend for the moment that only logical and mathematical truths are necessary. One could then hold that 'necessary' just means 'is either a logical or mathematical truth'. This theory does not invoke truth by convention, but nevertheless is reductive in the sense sought in this paper. According to this theory, there is a convention to call logical and mathematical truths necessary. So, provided that ' $2+2=4$ ' is a mathematical truth, the following sentence will be true:

Necessarily, $2+2=4$

Convention can do this much. It need not play any role in making it true that $2+2=4$, or in making this truth be a mathematical truth. ' $2+2=4$ ' is made true by whatever makes mathematical truths true generally (facts about numbers in Platonic heaven, for all I know); its status as a *mathematical* truth is secured by whatever generally makes mathematical truths mathematical (perhaps the fact that its subject matter is solely mathematical). On the face of it, no primitive

¹⁴Compare Heller 1996, 1998 and Peacocke 1997, 1999.

non-categorical notions have been invoked. Of course, I have not shown that the ultimate accounts of truth in mathematics and of mathematicalness will be categorical, but it is not my present aim to dispel spooks from all branches of philosophy, only from the philosophy of modality.

It was objected earlier that crude conventionalism turns statements about logic and mathematics into statements *about* conventions, which then inherit the contingency of conventions. The present theory has no such consequence, nor does it imply that statements that logical or mathematical truths are necessary are about conventions, nor does it imply that such statements are mind-dependent. It is a convention to call logical and mathematical truths necessary, but the *content* of a statement of mathematics is just mathematical, and the content of a statement of necessity is just that a certain sentence or proposition is a logical or mathematical truth, which has nothing to do with convention.

Crude conventionalists wrongly granted a special status to convention and analyticity as a source of truth. This was an essential part of their epistemology. Ayer used this claim to explain our knowledge of logical (and mathematical) truths. But if we are not trying to fit modality into a demanding epistemology, we do not need analyticity to play this role.

Crude conventionalists also seemed to regard truth by convention as an essential ingredient to a reductive theory of necessity. As Paul Boghossian (1997, p. 336) puts it:

Guided by the fear that objective, language-independent, necessary connections would be metaphysically odd, [crude conventionalists] attempted to show that all necessities could be understood to consist in linguistic necessities. . . Linguistic meaning, by itself, was supposed to generate necessary truth; *a fortiori*, linguistic meaning, by itself, was supposed to generate truth.

But the theory sketched above shows that we do not need truth by convention to avoid the “metaphysically odd” in our account of modality. Moreover, truth by convention would not have demystified modality on its own anyway. Like many writers, Boghossian seems to presuppose that if linguistic meaning generates truth, then it automatically generates *necessary* truth, but this does not immediately follow. Some account of necessity is still required to bridge the gap between ‘ ϕ is true by convention’ and ‘it is necessary that ϕ is true’. A convention that ‘necessary’ means ‘true in all Lewisian possible worlds’ would bridge the gap, for then the conventions that make ϕ true would make ϕ true

in all possible worlds (provided that the same conventions were adopted for talk about worlds other than our own). But no conventionalist had *this* in mind. More likely, the thought was to bridge the gap by the convention that ‘necessary’ means ‘made true by convention’. But then, truth by convention was never really needed, for ‘necessary’ could just as well be regarded as obeying a different convention, one that does not require truth by convention, for example the convention that ‘necessary’ applies to the truths of mathematics and logic.

There is a fundamental divide between *governance* and *classification* conceptions of necessity. According to the governance conception, necessity is a source of truth. When ‘ $\Box\phi$ ’ is true, ϕ is true *because* ‘ $\Box\phi$ ’ is true. The necessity of ϕ somehow produces its truth. (Compare the governance conception of laws of nature, on which laws “guide” the evolution of the world.¹⁵) On the classification conception, on the other hand, the truth of ϕ comes first. Necessity plays no role in truthmaking. To say that a true proposition is necessary is to classify that proposition as being of a certain sort, but the proposition is true on its own merits. The theory to be developed is on the classification side of this divide. (As is combinatorialism, and Lewis’s modal realism. What is most fundamental for Lewis is truth from the perspective of the pluriverse; necessities are just certain kinds of truths about the pluriverse.¹⁶ For the combinatorialist, a necessary truth is a truth that remains true in all combinations.) Everyday thinking about modality, however, probably fits the governance conception (much as everyday thinking about laws of nature arguably fits the governance conception.)¹⁷

¹⁵See Beebe 2000; Loewer 1996

¹⁶This is the source of a certain kind of objection to Lewis; see, for instance, Jubien 2007, section 1:

Suppose it’s necessary that all A’s are B’s. This is supposed [by the possible worlds theorist] to mean that in every possible world, all A’s are B’s. So the necessity arises from what goes on in all the worlds taken together. There’s nothing about any world individually, even in all of its maximal glory, that forces all of *its* A’s to be B’s. It’s as if it just *happens* in each world that all of its A’s are B’s, that from the strictly internal point of view of any world, it’s *contingent*, a mere coincidence. But then shouldn’t we expect that this internal contingency will not be repeated in every world, that there will be worlds where some A’s “happen” not to be B’s? After all, nothing within any given world prevents it, and these are supposed to be *all* the possible worlds.

¹⁷Recent theories of modality by Kit Fine (1994a; 1994b) and Michael Jubien (2007) seem

In what follows I will enrich the theory sketched above to a point where it approaches genuine plausibility. The core idea will remain that necessary truths are truths *of a certain kind*; the hard work will be to spell out the relevant list of kinds of truths, in addition to logical and mathematical truths.

Perhaps this theory should no longer be called “conventionalist”, since convention now plays no more of a truth-making role than it plays in the truth of ‘Snow is white’. Nevertheless, the theory shares enough of importance with crude conventionalism to deserve the name I will give it: “quasi-conventionalism”. First, quasi-conventionalism shares with crude conventionalism the virtue of accounting for necessity without appeal to heavy-duty metaphysics.

Second, because quasi-conventionalism defines necessity by a somewhat arbitrary list, it renders necessity conventional in one sense of ‘conventional’ that I will now explore. Consider, first, the convention here in the United States to drive on the right-hand side of the road. Why is this a “convention”? Roughly because: i) we do in fact drive on the right-hand side, but ii) there is something else we could have done (*viz.*, drive on the left-hand side) that would have equally well achieved our goal of organizing our motorways. Turning to language, it is natural to say that the truth of the sentence ‘The screen of this computer monitor measures 19 inches’ involves an element of conventionality, since the choice of the inch as a unit of measure of length is conventional. By saying this, we clearly do not intend anything about truth by convention: the length of a thing is as robust and worldly a fact as one could ask for. Nor are we merely expressing the banal truth that the sentence, like every other sentence, has its meaning in virtue of linguistic conventions. We do, I think, mean something about linguistic convention, but something less banal than that. Our feeling of an element of conventionality derives from the facts that i) we have chosen a certain unit of length to be expressed by ‘one inch’, but ii) there are other lengths we could equally well have chosen to mean by ‘one inch’ while still achieving our goals of communication about lengths.

By claim ii), I have two specific things in mind. First, the actual meaning of ‘one inch’ is not a more “natural” or “eligible” meaning, in Lewis’s sense (1984; 1983*a*; 1986, pp. 59-69) than certain alternate meanings. According to Lewis’s view about how words get their meanings, our *use* of an expression — certain facts about our linguistic behavior and dispositions — only goes part of the way toward determining what it means. The intrinsic eligibility to be

to be governance theories.

meant by candidate meanings — their naturalness — also plays a role. A word means the candidate meaning that maximizes fit with use and eligibility. The second thing I have in mind is that adopting any of the alternate meanings would have counted as achieving the “same semantic goal” as was achieved by our adoption of the actual meaning. Words for lengths are introduced to achieve a certain semantic goal: we want to speak of the absolute and relative lengths of things. And the task of the word ‘one inch’ is to stand for a smallish everyday length, a length convenient for measuring the kinds of things we typically hold in our hands. This task could have been accomplished by many lengths within a certain range. But if ‘one inch’ had meant one mile, ‘inch’ would not have accomplished exactly the same semantic goal that it actually achieves, since ‘inch’ would no longer have been a convenient measure for things the size of computer monitors. And if ‘one inch’ had meant something other than a length — for instance, if it had meant happiness — then it would not have achieved anything like its actual semantic goal. This is not to deny that words could have had entirely different meanings. The point is rather that on some alternate meanings, words would still have achieved what intuitively counts as their actual semantic goal, whereas on other alternate meanings, they would have achieved entirely different goals.

Thus, conventionality in the sense I am describing amounts to the *existence of semantic alternatives* — alternatives that are equally natural, and which would have achieved the same semantic goals. Conventionality in this sense should be contrasted with vagueness. Vague expressions do indeed involve numerous potential semantic values that are equally natural. But conventionality differs from vagueness in that one of the candidate semantic values has, in fact, been chosen as the meaning of the expression.¹⁸ Of course, conventional choices can themselves be vague, in which case the semantic choice is of a vague range of semantic values (whatever that means exactly).

Units of measure are paradigmatically conventional in my sense, but there are other cases. In the realm of drinking implements, we distinguish “cups” from “glasses”, but a linguistic community with a slightly different distinction, or none at all, would not seem linguistically alien. Nor would a community that counted boys and the pope as “bachelors”. (Clearly linguistic alienness is a matter of degree.)

¹⁸Epistemicism-friendly rewording: unlike vagueness, conventionality involves a knowable choice of one of the candidates.

Aesthetics (and perhaps even ethics) may supply further cases. A simple¹⁹ model of the semantics of ‘beautiful’ is that it expresses a property determined by the aesthetic standards of the utterer. There is no hidden indexicality or relativity to standards on this view. Yet despite this parallel with more “objective” discourse, we can recognize aesthetic conventionality thus: alternate linguistic communities with different standards could express different properties using ‘beautiful’ without seeming semantically alien, and without failing to carve reality at its joints.

Quasi-conventionalism renders necessity conventional in the sense I have introduced. For if necessity is defined by a mere list, and membership in that list is not defined by some further criterion, then alternate lists are semantic alternatives. Our word does not particularly carve the world at the joints; we could have meant something else and gotten by perfectly fine.²⁰

I do not say that our ordinary conception of necessity is conventionalist. The governance conception may well be the ordinary one. But on my view, nothing answers to that ordinary conception. I grant the conditional: if some candidate meaning corresponds to the governance conception, then it is the semantic value of ‘necessary’. But if, as I think, there is no such candidate meaning, then the quasi-conventionalist candidate may well be the semantic value of ‘necessary’.

4 Quasi-conventionalism refined

A proposition is necessary iff it is true and of a certain kind. A proposition is possible iff its negation is not necessary; i.e., iff its negation is not a truth of one of the specified kinds.

More carefully: there is a list of kinds of propositions, which I call *basic modal kinds*. I call the truths falling into these kinds *basic modal truths*. I call them *basic modal* truths because they turn out necessary on the theory in question, but the goal is to characterize the list non-modally; otherwise the theory would fail to be reductive. The list will be expanded, but for now it just contains mathematical truths. For purely qualitative²¹ propositions, P, the theory says

¹⁹For a more subtle semantic treatment, see Egan et al. 2005.

²⁰A closely related, “projectivist”, account would agree with conventionalism that there exist semantic alternatives that are just as natural as our own semantic value for ‘necessary’, but would claim that for biological or psychological or sociological reasons, our semantic choice is nonarbitrary.

²¹Section 5 extends the account to singular propositions. Since the English predicate ‘is

that the proposition that **P is necessary** is the proposition that **P is a logical consequence of the class of true propositions of kind K_1 or K_2 or ...**, where the K_i s are the basic modal kinds. (The reason for dropping logical truths from the list of basic modal truths in favor of closing the class of necessary truths under logical consequence is that logical consequences of propositions of different basic modal kinds may not fall under a basic modal kind, but are nevertheless necessary. Logical truths themselves are logical consequences of any propositions whatsoever, and so do not need to be included as a separate basic modal kind.)

Several worries about this account immediately surface:

1. How can the notions of logical truth and mathematical truth be characterized?
2. Analytic truths should be necessary
3. Quine was right about analyticity
4. Philosophical truths are necessary
5. What about the necessary a posteriori?
6. David Lewis's problem of micro-reduction

In this section I develop the quasi-conventionalist account by responding to these worries with a combination of refinement and argument. This section deals only with *de dicto* necessity; section 5 briefly takes up modality *de re*.

4.1 “How can the notions of logical truth and mathematical truth be characterized?”

Basic modal kinds are properties of *propositions*, so the notions of logical consequence and mathematical truth must apply to propositions. The most straightforward way to make sense of this requires a structured²² or algebraic²³ conception of propositions, according to which propositions have quasi-syntactic features.

necessary' presumably expresses a single property applicable to both qualitative and singular propositions, the present account should really be taken as an account of an intermediate notion, call it qualitative necessity, which is used in section 5 to characterize necessity simpliciter. Thanks to Deniz Dagci.

²²See Kaplan 1989; King 2001; Soames 1987

²³See Bealer 1993.

Quasi-conventionalism is incompatible with some theories of logical consequence. Obviously, any modal account would render the theory circular. The simplest modal account is that logical consequence is simply necessary consequence; another modal account says that logical consequences are modal consequences that involve only logical words essentially, in Quine's sense (see below).

One alternative to modal accounts of logical consequence is primitivism. Would primitivism about logical consequence threaten the reductive status of quasi-conventionalism? The question is not easy to answer. Two vague thoughts. First, logical consequence seems better-understood and less metaphysically objectionable than nonlogical modality²⁴; thus, quasi-conventionalism plus primitivism about logical consequence would be an advance over primitivism about modality. Second, primitive logical consequence would seem to be consistent with categoricism, for it concerns the "shapes" of propositions.

Other accounts of logical consequence and logical truth do not threaten the reductive status of quasi-conventionalism, but yield implausible modal consequences. For example, Quine once defined logical truths as those which involve only logical words essentially:²⁵

First we suppose indicated, by enumeration if not otherwise, what words are to be called logical words; typical ones are 'or', 'not', 'if', 'then', 'and', 'all', 'every', 'only', 'some'. The logical truths, then, are those true sentences which involve only logical words *essentially*. What this means is that any other words, though they may also occur in a logical truth (as witness 'Brutus', 'kill', and 'Caesar' in 'Brutus killed or did not kill Caesar') can be varied at will without engendering falsity.

But if '=' is counted as a logical word, certain true sentences specifying information about the number of things, for example ' $\sim\exists x\forall y x=y$ ' ("it is not the case that there exists exactly one thing") count as logical truths. *Pace* Williamson (1998, 2002) and Wittgenstein(??), these sentences surely do not express necessary truths. Even if '=' is not a logical word, ' $\exists x(x \text{ is human} \vee \sim x \text{ is human})$ ' turns out a logical truth; but it is arguably possible that there should have existed nothing at all, in which case this sentence is not a necessary truth.²⁶

²⁴See Field 1984, 1991.

²⁵Quine 1960a; p. 103 in Quine 1966.

²⁶If numbers (say) exist necessarily then it would not be possible for there to exist nothing at all. But a reduction of modality should be consistent with a philosophy of mathematics on

Whatever its other merits, this theory of logical truth cannot be combined with the quasi-conventionalist account of modality.²⁷

A model-theoretic conception of logical consequence (allowing empty domains) meshes well with quasi-conventionalism.²⁸ This criterion (and Quine's as well) faces the problem of how to delineate the class of logical words. Only logical words receive constant interpretations in all models, and hence choice of which words are to be treated as logical affects the resultant notion of logical consequence.²⁹

The quasi-conventionalist theory is mostly neutral on the correct characterization of mathematical truth, provided the characterization is non-modal and plausibly yields necessary truths. One vague conception: a mathematical truth is a truth that concerns just mathematics and is true.³⁰ But there is a problem parallel to that of giving a list of the logical words: what is to count as a part of mathematics?

On the other hand, semantic indeterminacy or arbitrariness in what counts as 'mathematics', and indeed, what counts as 'logic', should be tolerable to the quasi-conventionalist, who will not mind corresponding indeterminacy or arbitrariness in 'necessary'. If there are sharp lines to be drawn around logic and mathematics then necessity here is sharp; if not, not. The spirit of conventionalism is that necessity is not a realm to be discovered. Rather, *we* draw the lines around what is necessary. It should be no surprise that we

which numbers and the like do not exist. Moreover, the contextualist (see below) might want to allow contexts in which mathematical truths are dropped from the list of basic modal truths.

²⁷Joseph Almog explores the merits of this theory in his interesting paper "Logic and the World". Another problem with combining the Quinean definition with the present theory of modality is that the combination would be plausible only for languages that are sufficiently rich. Imagine a language with only the existential quantifier, variables, and the predicates 'is human' and 'is a mammal'. The only sentences in this language are ' $\exists x x$ is human' and ' $\exists x x$ is a mammal'; each is true; therefore each turns out a logical truth in this language; but neither is necessary. The problem could be resolved by tying the definition of 'necessary' to logical truth in some particular chosen language, but which?

²⁸But see Etchemendy 1990.

²⁹The set of logical words should *not* include modal words. That would threaten circularity; also, some modal languages arguably have logical truths, for example sentences of the form 'If P then Actually P', that are not necessary.

³⁰A more precise version of this for arithmetic would be as follows. Where N is any sentence in the language of arithmetic, let N* be N with all its quantifiers explicitly restricted to numbers. One might then define a sentence, S, as an arithmetic truth iff for some N in the language of arithmetic, i) S is logically equivalent to N*, and ii) N is true in the standard model of arithmetic. One might give a similar account of the truths of the other branches of mathematics.

sometimes do this incompletely or arbitrarily.

Note that the quasi-conventionalist need not assume that mathematical statements are true. If they are not then there are no mathematical truths, and hence no true mathematical necessities, which would seem to be the right consequence given this philosophy of mathematics.

4.2 “Analytic truths should be necessary”

Granted. But does this require adding analyticity as a basic modal kind?

Perhaps not. Perhaps the proposition that all bachelors are unmarried just is the logical truth that all unmarried males are unmarried, in which case it was already counted as a necessary proposition on the old theory. But on the other hand, perhaps some analytic sentences (for instance ‘nothing is both red and green all over’) cannot be converted to logical truths by substituting analytically equivalent expressions. In that case, analyticity would need to be included in the list of basic modal kinds.

But its inclusion raises some issues. Analyticity is in the first instance a property of sentences, whereas we need a property of propositions. One can define an analytic proposition as one expressed by an analytic sentence, but then, to say that a proposition is analytic is to say something about language. The quasi-conventionalist theory would then be that the proposition that **P is necessary** is the proposition that **P is a logical consequence of the class of mathematical truths and true propositions expressed by analytic sentences**. But that makes the proposition that **P is necessary** a proposition about language, which is intuitively incorrect.

Instead, I define the property of being an analytic proposition as the property of **being either proposition P₁ or proposition P₂ or...**, where the P_is are all those propositions that are in fact expressed by analytic sentences. The proposition that a proposition is analytic no longer concerns language. Of course, on this view, speakers of languages with different analytic sentences thereby pick out different properties with this definition. But this consequence may be tolerable from a quasi-conventionalist point of view: it is merely more arbitrariness in the meaning of ‘necessary’.

If analytic sentences are not those that may be transformed into logical truths by substitution of synonyms, just what are they? While I have no reductive account to offer, I can say a few things.

Return to Lewis’s view that meaning is determined by use plus eligibility. The use of an expression consists of i) speakers’ actual use of the term to describe

actual circumstances, ii) speakers' dispositions to use the term in discussion of counterfactual circumstances, and iii) speakers' dispositions to use the term in various counterfactual circumstances. Think of these features as determining a *use function*: a function that assigns to each sentence a numerical weight (a *use value*) indicating how important (so far as use is concerned) it is for an ideal interpreter to interpret the language so that the sentence comes out true.

Lewis's theory also appeals to an *eligibility function*: a function that assigns to each candidate semantic value (properties and relations at least) a measure of its naturalness. The most fundamental properties and relations of the world are perfectly natural, and other properties are more or less natural depending on how simply they may be defined in terms of the perfectly natural properties and relations.

Global assignments of meanings to sentences and subsentential expressions may be rated with respect to the use and eligibility functions. The rating with respect to use depends on how many of the sentences with high use values turn out true on the interpretation. The rating with respect to eligibility is a measure of the naturalness of the meanings assigned to the *words* in the language. The correct global assignment is that one that somehow achieves the best balance of these ratings. If a fairly natural candidate meaning meshes well, but not perfectly, with our use of an expression, it may still be the correct meaning; eligibility can trump use.

Suppose a sentence scores very highly on the use function, and turns out true under the winning global assignment. I then call it analytic, and the proposition it expresses an analytic proposition.³¹ Analytic sentences are, in effect, constraints laid down on the meanings of the terms involved. Perhaps 'Nothing is red and green all over' constrains the meanings of 'red' and 'green': the high use-value of this sentence generates pressure on an ideal interpreter to assign to 'red' and 'green' properties R and G only if there is nothing that is R and G all over. Rehashing an earlier theme, it does not follow that 'nothing is red and green all over' is true by convention; in order for it to be true, there

³¹There are some issues from Australia here. First, the meaning of a term might not satisfy all the "platitudes" connected with that term, provided it satisfies enough of them. The platitudes that are not satisfied (e.g., things are in *contact* only if there is no space between them) are something like both analytic and false. That is why I defined analytic sentences are those that get a high use rating and are also *true*. Second: some of the true platitudes are not necessary. I have in mind paradigm cases, e.g. that I am *justified* in believing I have hands, or that baseballs come into *contact* with baseball bats. These reference-fixing platitudes must somehow be distinguished from analytic truths. This is a serious problem.

must exist, independent of our conventions, properties R and G satisfying this necessary condition (plus any other conditions laid down on ‘red’ and ‘green’). The role of use is simply to select some of the true propositions to be counted as analytic propositions.

I think of this as extending even to logically true sentences. Those sentences have, I take it, maximally high use-values, and, moreover, turn out true under the winning assignment. So they are analytic, and the propositions they express are analytic.³² Thus, sentences that can be turned into logical truths by substitution of same-meaning expressions count as analytic. For suppose that the facts of use and eligibility are such that two distinct expressions, E_1 and E_2 , each has meaning M . In that case, the sentence ‘ $\forall x(E_1x \leftrightarrow E_2x)$ ’ would express a logical truth — the same proposition as that expressed by ‘ $\forall x(E_1x \leftrightarrow E_1x)$ ’. And since logically true propositions are analytic propositions, the proposition counts as analytic.

Analyticity is often accompanied by conventionality in the sense of section 3, i.e., the existence of semantic alternatives. For when there exist semantic alternatives, use has free rein, so to speak. Consider the sentence:

(Y) A thing is a yard long iff it is three feet long

which is both analytic and conventional. (Y) has a high use-value. But that does not on its own insure its analyticity, for use can be trumped by eligibility. If, for instance, the length *2.9 feet* were highly natural, far more so than other lengths, then it rather than *3 feet* might be meant by ‘yard’, in which case (Y) would be false and so not analytic. Since we do not believe that any one length is more natural than any other, we are confident that (Y)’s high use-value will prevail, and that ‘yard’ will be assigned the semantic value *3 feet*. In general, if the words in a sentence have ranges of equally natural candidate semantic values, and if the sentence has a high use-value, then the sentence will tend to be analytic, for the high use-value generates pressure for an ideal interpreter to interpret the sentence’s words so that the sentence comes out true, and there is no danger that eligibility will trump this claim to truth.

However, analyticity and conventionality come apart when there is a fortuitous convergence of use and eligibility. Take the logical truths, for instance. My own view is that naturalness applies to meanings for logical constants as well as to meanings of predicates and names. The meaning *conjunction*, for

³²Might the appeal to logical consequence in the statement of quasi-conventionalism be replaced with an appeal to analytic consequence?

instance, is a far more natural meaning than the meaning of a binary sentential connective Δ defined thus:

$$P \Delta Q =_{df} (P \& Q \ \& \ \text{snow is white}) \vee (P \& \sim Q \ \& \ \text{snow is not white})$$

There are no alternate things we could mean by the logical constants, which differ only slightly from their actual meanings, which are just as natural as their actual meanings, and which would accomplish the same semantic goals as their actual meanings. Thus, the logical truths are not conventional. But they are analytic, for the use function assigns them high values and they are true.

4.3 “Quine was right about analyticity”

No he wasn't! I reject the claims of Quine (1936, 1951, 1960a) and his minions that analyticity is an incoherent notion. This is no place to go into the immense literature on this topic; a few brief remarks must suffice.³³

Part of the Quinean attack (especially in “Truth by Convention”) is directed at the positivist's claim that logic and mathematics are true by convention. More generally, Quine was attacking the role of analyticity in logical positivism, whereas I do not recruit analyticity in service of restrictive epistemology or philosophy of language. So part of the attack is irrelevant to quasi-conventionalism.

The part that *is* relevant is just not compelling. This part consists of the arguments in “Two Dogmas” that analyticity is an incoherent notion. The argument that confirmation holism implies meaning holism (which is then allegedly inconsistent with the coherence of analyticity) has a dubious verification theory of meaning as a premise.³⁴ A second Quinean argument is that it is difficult to provide a reductive definition of analyticity that doesn't appeal to related notions such as meaning, rule of language, and so on. But as Grice and Strawson (1956) point out, inability to define a term should not make us doubt that term's sense. As described in the previous section, the analytic sentences of a language as used by a certain population are determined, somehow, by a complex of dispositional³⁵, psychological and historical facts

³³Whether or not analyticity must be included in the list of basic modal kinds, Quine's critique threatens the quasi-conventionalist account, for it threaten the underlying assumptions about propositions that I am making.

³⁴See Boghossian 1997, section II.

³⁵While the appeal to a causal/nomic concept may raise warning flags, there is really no cause for alarm. Either causal facts reduce to the categorical or they do not. If they do then there is no problem; if they do not then categoricism is doomed anyway, and cannot be the criterion for what primitive notions are legitimate in ontology.

about the users of that language and their environment. Turning this bland observation into an analysis is a monumental task. But all that is important to the quasi-conventionalist is that analyticity is indeed determined in this way, somehow, and thus does not involve primitive modal notions.

I do agree with the Quineans on this much: nothing can play the role traditionally associated with analyticity, for much of that traditional role presupposed the doctrine of truth by convention.³⁶ Analyticity as I define it does not play (all of) the traditional role. For instance, analytic claims were taken to be wholly epistemically secure. That is why the positivists were so keen to demonstrate the analyticity of logic and mathematics. Relatedly, analytic claims were taken to be dialectical fixed points: they were claims that one could force an opponent in a debate to accept, simply by reflection on our use of words, on pain of self-contradiction (“you can’t deny *that*, it’s analytic”). The downside of this favorable epistemic status was the apparent triviality of analytic truths (“that’s a trivial, analytic, truth”). Relatedly, there was the paradox of analysis: any correct analysis would seem to be trivial since the analysans would be synonymous with the analysandum.

On my conception, analytic sentences are neither wholly epistemically secure nor dialectical fixed points. Obviously, analytic sentences must be true, given my definition, but knowing that a given sentence is analytic is the rub. At best, we have unproblematic knowledge of the facts of use.³⁷ But no matter how high the use-value of a sentence, it may still fail to be true, for there may simply be no candidate meaning for the sentence’s words that renders it (and other high use-value sentences containing those words) true. Or some highly eligible meaning under which the sentence is false may trump the sentence’s high use-value. Even sentences whose use is *stipulated* are not immune to this danger of falsity.

High use-value is no absolutely secure refuge from the threat of skepticism, not even in the realm of logic. A. N. Prior (1960) considers the introduction of a connective ‘tonk’, stipulated to obey the rule that from ϕ -tonk- ψ one can infer ϕ and also infer ψ (‘tonk’-elimination), and the rule that from ϕ one can infer ϕ -tonk- ψ (‘tonk’-introduction). One cannot grant that these stipulations succeed in giving a meaning to ‘tonk’; otherwise one could infer any ϕ from any ψ . Other diagnoses of what is wrong with ‘tonk’ are possible, but in the present framework the diagnosis is clear: ‘tonk’ does not obey the stipulated inference

³⁶See Harman 1999, chapters 5-7, especially ??.

³⁷Even that is not epistemically unproblematic; see section 4.4.

rules, despite their high (because stipulated) use-value, since no candidate meaning vindicates the stipulations. How, then, a skeptic about logic might ask, do we know that ‘and’ obeys *its* stipulated introduction and elimination rules? Perhaps ‘and’ suffers the same fate; perhaps no candidate meaning vindicates ‘and’-elimination and ‘and’-introduction. How to answer this skeptic? This hard problem in epistemology cannot be solved by reflection on meaning.³⁸

Nor does high use-value supply dialectical fixed points. Consider debate over whether classical logic is correct. Intuitionists, dialethists, and so on, could concede that use favors classical logic, for their arguments if sound justify the conclusion that the only, or the most, eligible meaning in the vicinity of the logical constants is nonclassical.

Nor are analytic truths trivial on my conception. As we learned from Quine, even the logical truths say something about the world. Analytic sentences are not a sort of separate species, which somehow manage to be true despite not really saying anything. Like any other sentence, a high use-value sentence must measure up; the world must be as it says in order for it to be true.

My conception resolves the traditional paradox of analysis. As we will see in section 4.4, nontrivial analytic truths can arise in several ways, both from surprises from eligibility, and even from surprises from use.

There is perhaps a kernel of truth in the traditional view. In contexts where the existence and equal eligibility of many candidate meanings is not in question, high-use value sentences have the traditional features in the contexts. Consider a context in which everyone takes it as wholly obvious that there exist equally eligible properties *being an unmarried male, being an unmarried male eligible for marriage, being an adult unmarried male, being an adult unmarried male*

³⁸It is no answer to the skeptic to say, as Paul Boghossian (1997, 2003) does, that (*) if our logical constants lack meanings then we could not even entertain the skeptical doubts, since those skeptical doubts are phrased using logical concepts. Is his point that, since we clearly *are* capable of entertaining the doubts, we can thereby know that the skeptic is wrong? But the relevant sense of ‘entertaining a doubt’ is bearing the propositional attitude of doubting toward the proposition expressed by a sentence expressing the doubt. My ability to doubtfully wield the sentence is my only evidence that I am capable of entertaining the doubt, and doubtfully wielding the sentence is no guarantee of entertaining the doubt in the relevant sense. If that is not Boghossian’s point concerning (*), then what is it? Though a peculiar fact about the skeptical doubts we are considering, (*) is not in itself evidence that the logical constants are not tonklike. How else is it supposed to reassure? I reject both Paul Churchland’s (1981) eliminativism about propositional attitudes and Cian Dorr’s (2002) eliminativism about composite material objects, but knowing that if they are right then I could not doubt them does not help me to sleep nights.

eligible for marriage, and so on, and that there exist appropriately eligible candidate meanings for the logical constants. Someone then offers up a stipulative definition: ‘bachelor’ is to mean the same as ‘unmarried male’. Everyone in the conversation would then regard ‘ $\forall x(x \text{ is a bachelor} \leftrightarrow x \text{ is an unmarried male})$ ’ as epistemically secure, and as a premise in argumentation that no one could reasonably deny. And they would regard assertions of this sentence as trivial, as contributing nothing to conversations. In a certain sense, relative to this context, the stipulation generates a sentence that is trivial, epistemically secure, and a dialectical fixed point. But that is only because the facts necessary for its truth are not then in question.

Despite general rejection of truth by convention, contemporary philosophers who do not follow Quine in rejecting analyticity sometimes persist in assuming that analyticity plays its traditional role. Perhaps this results from a failure to fully appreciate the depth of the consequences of giving up on truth by convention. Indeed, one still hears analyticity described as “truth in virtue of meaning”. What can that mean, other than truth *produced* by the assignment of meaning, i.e., truth by convention?

4.4 “Philosophical truths are necessary”

Any theory of necessity must explain the role necessity plays in philosophical theorizing. Here is a common pattern: “theory X is a philosophical theory, and is therefore necessarily true if true at all. But here is a possible circumstance where X goes wrong. Therefore, X is not necessarily true, and so isn’t true at all.”

Quasi-conventionalism validates this reasoning if true philosophical theories are analytic. Whether this is so depends on what ‘analytic’ means. It is not so if analytic truths must be apparent to any linguistically competent speaker. But in the sense of ‘analytic’ developed in section 4.2, analyticity is not “transparent” in this way.

Let me illustrate with a contentious example. Suppose that the facts of use and eligibility are such that the term ‘morally right action’ has the same meaning as the term ‘action that maximizes utility’.³⁹ Thus, utilitarianism turns

³⁹It is unlikely that one naturalistic theory of morally right action provides a radically more natural candidate meaning than any other such theory; the idea here is that the utilitarian candidate fits use better than other naturalistic candidates. What of nonnaturalistic candidate meanings? Suppose there exists a nonnaturalistic *perfectly* fundamental property that fits our use of ‘morally right action’ reasonably well. Think of this property as a kind of “glow” applying

out analytically true, for it expresses the logical truth that an action maximizes utility if and only if it maximizes utility. It does not follow that the truth of utilitarianism is obvious to any competent speaker⁴⁰, for competent speakers need not know the relevant facts about use and eligibility. The right account of use may well stress the social dimension of language, to which speakers have no privileged access. And even on a more individualistic conception, speakers may not know their own dispositions.⁴¹ Further, they may not know the identity of the most natural candidate meshing with use. There may be surprising ways in which seemingly incongruous facets of our use of ethical terms can be subsumed under a single, simple formula, which would have a reasonably natural meaning.

Consider another case for illustration: the necessary and sufficient conditions for a person's persistence over time. Suppose for the sake of argument that the world consists of temporal slices and their aggregates. There are then many candidate semantic values for our predicate 'person': various properties of aggregates of temporal slices. Our use of 'person' (and analytically connected terms) together with facts about the naturalness of candidate meanings determine which semantic candidate 'person' means, and hence determine the true theory of personal identity. Perhaps use and eligibility determine that the predicates 'is a person' and 'is a sum of psychologically interrelated person stages' have the same meaning. If so, then the psychological theory of personal identity is analytic.⁴²

Many philosophical propositions turn out in this way to be analytic. Some would claim that all do, but I offer the propositions of fundamental ontology as

to certain actions. It is very hard to believe in any such glow; its rejection can be regarded as a rejection of a very strong sort of moral realism. Nevertheless, if it exists, it will be the meaning of 'morally right action', but will presumably not be the meaning of any other term. Then no philosophical thesis about morally right action would express a logical truth. Should facts about this property then turn out necessary? — tough question.

⁴⁰I do not mean to enter controversies here about the semantics for attitude sentences; the point is only that competent speakers cannot tell by simple reflection that the sentence 'an action is right iff it maximizes utility' expresses a logical truth.

⁴¹As many have observed, if our use of ethical terms is partially constitutive of facts about their meanings, that would explain why thought experiments are a good guide to the truth in ethics: our reaction to described counterfactual circumstances is partially constitutive of the truth, thought experiments simulate what our reactions might be to ethical cases, and also simulate what reactions others might have.

⁴²My own view is that personal identity talk is ambiguous between psychological and physical continuity. See Sider 2001*a*.

synthetic philosophical truths. I believe that reality is closed under mereological composition:

Unrestricted composition For every x and y , there exists a z that is composed of x and y

Unrestricted composition is not analytic. There is no obvious way, at any rate, to transform this sentence into a logical truth by substitution of co-meaning expressions; in this way it is unlike:

Something is a person iff it is a sum of psychologically interrelated person stages

which may well express the same proposition as the logical truth ‘something is a sum of psychologically interrelated person stages iff it is a sum of psychologically interrelated person stages’. Similarly, I maintain that mereological nihilism, four-dimensionalism, three-dimensionalism, presentism and eternalism, nominalism and realism (about properties, propositions, numbers, etc.), the bundle theory, the substratum theory — theories that deal with *existence* — are synthetic philosophical doctrines.

The opposing view would be that any of these doctrines that are true are analytic in virtue of conventions governing the idioms of quantification. It might be claimed, for instance, that it is part of the conventions governing ‘exists’ that there exist arbitrary mereological sums (or that there exist no mereological sums, or that there exist such sums only in certain cases). This doctrine about existence is often associated with Rudolf Carnap (1950), but it need not involve an appeal to truth by convention (which Carnap himself also accepted).⁴³ A defender of this view might hold that it is analytic that some x s have a mereological sum iff they stand in multigrade relation R , on the grounds that ‘there exists a mereological sum of the x s’ just means ‘the x s stand in R ’, without claiming that this biconditional is true by convention; for the logical truth ‘the x s stand in R iff the x s stand in R ’ might be held not to be true by convention.

I reject this picture of quantification. On my view, the meaning of the unrestricted existential quantifier⁴⁴ is a highly eligible meaning. Thus, true

⁴³Note to Hirsch and others...

⁴⁴Though I accept the intelligibility of absolutely unrestricted existential quantification, this point could probably be rephrased so as not to presuppose it.

sentences of fundamental ontology are not conventional — there are no alternate semantic values for those sentences. This does not on its own imply that they are not analytic; recall the end of section 4.2. But I further doubt that those sentences are assigned high values by the use function. For one thing, pro- and con-attitudes towards ontological sentences are typically mere belief or disbelief; they are not the attitudes we take towards meaning-constituting sentences.⁴⁵ And for another, I doubt that the true sentences of ontology are those believed by typical speakers. For instance, I think it is likely that four-dimensionalism and unrestricted mereological composition are both true; but I doubt that general statements of these positions are particularly strongly believed, let alone believed in the special way that would earn them a high use-value.⁴⁶

What should we say about the modal status of these synthetic philosophical doctrines? Subject to one qualification, I think these are basic modal truths. Truths about the ontology of the world, of a fundamental and abstract sort as exemplified in the examples I have mentioned, count as basic modal truths and hence count as necessary. This is not to say that we know which ones of this group are in fact true. Whichever claims of this sort are in fact true get counted as necessary.

The qualification is that I now introduce an element of contextualism into the quasi-conventionalist theory. In this realm, I find my intuitions about what is necessary to be equivocal. In some contexts I am happy to count presentism, say, as a non-contingent thesis; but in others I am happy to entertain worlds in which presentism is true, despite my belief that presentism is actually false. So let the quasi-conventionalist theory now be that necessary truths are the logical consequences of the *contextually selected* basic modal truths, where these may include, in a way that varies from context to context, truths about the fundamental and abstract features of the world, in addition to mathematical and analytic truths.⁴⁷

A contextualist could even allow contexts in which mathematical, analytic

⁴⁵Eli Hirsch would disagree ...

⁴⁶I discuss these matters of metaontology in more detail in my Sider 2001*b*, introduction; 2001*a*; and 2007.

⁴⁷As Brian Weatherson and Adam Sennet pointed out to me, there may be some constraints on what can be contextually dropped from the set of basic modal truths. For example, perhaps some kinds cannot be dropped without certain other kinds being dropped. I leave these questions open.

or even some logical truths are dropped from the list of basic modal truths.⁴⁸ But it is unclear whether there really are contexts of this sort, contexts in which we speak of the possibility of signs that are red and green all over, married bachelors, or days when it rains but also does not.

Contextualism allows the quasi-conventionalist to dodge some embarrassing questions. “Fundamental and abstract truths about the ontology of the world” are to count as basic modal truths, but this is vague. Where exactly is the line between necessary fundamental and abstract truths and very fundamental empirical claims, for instance about the space-time structure of the world? Should substantivalism about spacetime count as a basic modal truth? (I regard the equivocal nature of my intuitions about the contingency of substantivalism as confirmation of the vague “fundamental and abstract truths” component of quasi-conventionalism.) Second, the notion of “metaphysical necessity” has always felt a bit elusive. It is supposed to be intermediate in strictness between physical and logical necessity, but where exactly is the line? The contextualist refuses to draw the line once and for all. Include a great many things as basic modal truths and we approach something like physical necessity; include fewer and we move closer to logical necessity.

It is nice to dodge these questions, but contextualism raises questions of its own. As noted, philosophers often argue that a theory is false because it has incorrect consequences in some possible circumstance. Whether this sort of argument is cogent might depend on the contextually determined strength of the necessity. For example, in Sider 2001*b* I argue that three-dimensionalism is false because it is inconsistent with certain possibilities involving time travel. The argument is only as strong as its premise that time travel is indeed possible. A three-dimensionalist who accepted my theory of modality might claim that time travel is only possible in a very broad sense of possibility, expressed in a context in which the “persistence-structure” of the world is *not* counted as a basic modal truth. To maintain my argument, I must claim that time travel is possible in a narrower sense of possibility; in essence I must argue that time travel is consistent with the actual persistence-structure of the world. But my opponent might argue that this claim is not justified by a mere intuition of the possibility of time travel; all *that* justifies is that time travel is possible in some

⁴⁸If we wish to allow contexts in which some logical truths no longer count as necessary, we will need to revise the account slightly. Earlier it was said that P is necessary iff P is a logical consequence of the basic modal truths, and logical truths were dropped from the list of basic modal truths. We will need to reinstate the logical truths as basic modal truths, but adopt an impoverished notion of logical consequence. Thanks to Brian Weatherson here.

very broad sense, a sense appropriate for a context in which very little is counted as a basic modal truth. I will not attempt to adjudicate this dispute here; my purpose is just to give a sense of the considerations that become relevant if contextualism is accepted.

4.5 “What about the necessary a posteriori?”

Hilary Putnam (1975a) argues by thought experiment that a substance on another planet with all the superficial features of water would nevertheless not count as *water* if it were not made up of H₂O, but instead of some alien molecule XYZ. He concludes that it is necessary that all water is made up of H₂O. Since it was not knowable a priori what the chemical composition of water was, we have an example of the necessary a posteriori.

As Alan Sidelle argues in his book *Necessity, Essence, and Individuation*, the necessary a posteriori provides a prima facie challenge for “conventionalist” theories of modality. A very simple conventionalism that identified necessity with analyticity would face the challenge most directly, for it is commonly thought that analytic truths are a priori. More vaguely, conventionalists reject the picture that there is an independent modal realm “out there waiting to be discovered”, holding instead that necessity, somehow, has its source in us; it is then tempting to think that all modal truths would be knowable a priori.

Sidelle defends a “conventionalist” account from this objection. His insight is that the very argument Putnam uses for the necessary a posteriori appeals to a priori truths. Though we do not know the particular chemical composition of water a priori, we *do* seem to know a priori that whatever that chemical composition turns out to be, or perhaps, whatever water’s “deepest explanatory feature” (p. 33) turns out to be, that feature is essential to water. There are analytic “principles of individuation” governing natural kind terms like ‘water’:

(W) Whatever is water’s deep explanatory feature, F, it is necessary that all water is F

The necessity of ‘all water is made of H₂O’ is then due to i) a purely non-modal fact, that the deep explanatory feature of water is in fact being made of H₂O, and ii) the analytic truth (W). In this way Sidelle “factors” a necessary a posteriori truth into an analytic component and a purely non-modal component; all its “modal force” (p. 37) is due to the analytic component.⁴⁹

⁴⁹For earlier versions of this sort of view see Coppock 1984; Hirsch 1986. See also: Forbes:

In his review of Sidelle's book, Stephen Yablo argued that (W)'s being analytic does not secure a conventionalist or reductive theory of modality. Suppose we lay down (W) as a constraint on what we mean by the term 'water', thus stipulating that nothing is to count as water unless it satisfies (W). Far from showing necessity to be emergent from linguistic convention, this would just require of the referent of 'water' that its deepest explanatory feature be essential to it! The point is reminiscent of our earlier discussion of truth by convention. Conventions select what is to be meant by a term, but do not create truths. (W), regarded as a constraint on the meaning of 'water', does not "produce" modality, but rather presupposes it.

This criticism is important, but can be answered. (W) should be regarded as analytic to 'necessary', not 'water'. It therefore places the following constraint on the meaning of 'necessary':

- (N) 'Necessary' picks out a property of propositions N only if, where E_W is the deep explanatory feature of water, the proposition that **water is E_W** has N

One must simply construct a reductive theory of the meaning of 'necessary' that vindicates (N). Quasi-conventionalism is such a theory, provided we introduce a new class of basic modal truths, the *kind propositions*:

Kind proposition: a proposition expressed by a sentence of the form 'All Fs are Gs', where F is a natural kind term and G expresses, in fact, the deep explanatory feature of the property expressed by F

Consider a sentence giving superficial necessary and sufficient conditions for being water:

- (S) Something is water iff it is a clear, colorless, potable liquid

And suppose for the sake of argument that (S) has a high use-value. Nevertheless, (S) does not turn out true, for i) there is an eligible candidate meaning — H_2O — that trumps (S)'s claim to determine the meaning of 'water', and it is not true that something is H_2O iff it is a clear, colorless, potable liquid. So (S) does not turn out as analytic, and so does not turn out necessary. The following sentence expresses a kind proposition, and so expresses a necessary truth:

"Philosophical Basis of Essentialist Theories", J Phil Log 1981, see main par on p.75; elaborated in section 4 of Ch.9 of *Metaphysics of Modality* — LOOK UP. Refer also to Jackson and Chalmers.

(H) All water is made of H₂O.

Suppose, on the other hand, that there is no underlying natural kind for water. In that case, (S)'s high use-value would be untrumped, and (S) would turn out analytic, and so necessary. And (H) does not express a kind-proposition, and so does not express a necessary truth. Are these verdicts correct? I am tentatively inclined to say that they are.

But there is a problem if H₂O is an extremely natural candidate but also meshes perfectly with use — imagine that, without exception, something is H₂O iff it is a clear colorless liquid. In that case, quasi-conventionalism implies that out *both* (S) and (H) are necessarily true. That's wrong; only (H) should express a necessary truth.

Jade might be a borderline case. Is it necessary that something is jade iff it is jadeite or nephrite? Or is it necessary that something is Jade iff it has certain superficial characteristics? This seems to be a borderline case of necessity.

How could the quasi-conventionalist account be modified to deliver these results? I'm not sure, particularly because in the case of logical truths, sentences that have both high use-values and high eligibility *do* seem to be necessarily true. (S), too, has a high use-value and high eligibility, and yet does not seem necessarily true. It's a riddle, wrapped in an enigma.

4.6 David Lewis's problem of micro-reduction

One of the chief advantages Lewis claims for his modal realism against its rivals is that it offers a reductive account of modality. His rivals, in particular the linguistic ersatzers, cannot reduce modality, Lewis argues, because of the following problem of micro-reduction (1986, pp. 150-157). Linguistic ersatzism is the view that possible worlds are maximal consistent sets of sentences in some suitable world-making language. If this definition appealed to no primitive modal notions then a reductive account of modality could be given: as truth in all ersatz worlds. But the notion of a *consistent* set of sentences is apparently modal; mere logical consistency will not rule out possible worlds with married bachelors, for instance. Lewis considers the move of defining consistency as syntactic consistency with a set of meaning postulates, but rejects it with the following argument. The argument threatens quasi-conventionalism as well.

Any aggregate of subatomic particles arranged in a certain way, X, must necessarily be a donkey. The ersatzer must therefore include a sentence of the form:

- (D) Any aggregate of micro-particles arranged in way X is a donkey

among the meaning postulates; otherwise her theory will incorrectly count it as possible for there to be particles arranged X-ly but no donkeys. But no one knows what different arrangements at the micro-level would suffice for the existence of a donkey, and so no one knows what meaning postulates of the form (D) to add.

Even if the ersatzer does not know which *particular* sentences to add, she might still produce some defining condition that would delineate the class of meaning postulates so as to include the appropriate instances of (D). But this must be done non-modally, or modality is no longer reduced. The ersatzer cannot, for instance, stipulate that all necessary truths of a certain form are to count as meaning postulates.⁵⁰

Mark Heller has recently argued that the ersatzer need not solve this problem. In Heller's (1998) version of linguistic ersatzism, possible worlds are sets of sentences in a language that only describes fundamental properties. Since the language contains no macro-vocabulary, it lacks the predicate 'is a donkey'. Consistency then becomes easy to define: any logically consistent distribution of fundamental properties over space-time points is a possible one. (A question I will not pursue: why should fundamental properties necessarily apply to points rather than regions?) The problem of micro-reduction then becomes one of how to *interpret* these worlds, how to say when it is true in one of them that there exists a donkey. But, Heller claims (1996), that need not be regarded as part of the theory of possible worlds. It is part of a project of the analysis of ordinary concepts, and is optional for a philosopher of modality.

But in fact this project is not optional if modality is to be analyzed. If all we want is an ontology of possible worlds, then we can indeed postpone solving the problem of micro-reduction. But the standard possible worlds analysis of modality, namely the Leibnizian biconditional:

It is necessary that ϕ iff it is true that ϕ in all possible worlds

⁵⁰A second argument of Lewis's is that no one knows whether it is metaphysically impossible or merely nomically impossible for a particle to be both positively charged and negatively charged, and so the ersatzer does not know whether to include a meaning postulate prohibiting this combination (1986, pp. 154-155). My response is that this is impossible iff it is analytic that nothing can be both positively charged and negatively charged. Perhaps there is no fact of the matter whether this is analytic, and thus no fact of the matter whether it is impossible.

contains the locution 'It is true in possible world w that ϕ '. If the locution remains undefined then no analysis of modality has been given. But to define it requires solving the problem of micro-reduction, for the locution must be defined in the case where w is a world with subatomic particles arranged in way X and ϕ is 'there exists a donkey'.

The challenge for the quasi-conventionalist theory of modality is clear. "Micro-reduction laws" like (D) must count as basic modal truths, and so must be non-modally characterized. I suggest that these laws are in fact analytic, and so are already included as basic modal truths. Many will resist calling micro-reduction laws analytic precisely because of their inaccessibility to us. One can be competent with respect to English, and have no idea that (D) is true. Moreover, this ignorance isn't simply due to the length or complication of the phrase filled in for X . Even a linguistically competent person with a fantastically swift brain could understand (D) and not see that it is true. For short, (A) lacks the property of *transparency*. (My claim that certain philosophical truths are analytic perhaps also violates transparency, depending on how much we idealize the "linguistically competent speaker".)

Transparency is indeed part of what is usually called analyticity. This is born out by the usual cases: no linguistically competent person will fail to see that all bachelors are men, or that nothing is red and green all over. But the traditional notion of analyticity is a conglomeration of different notions, which may usefully be distinguished. In addition to the psychological-epistemic notion of transparency, there is a purely semantic-metaphysical notion. It is this purely latter notion that I attempted to characterize in section 4.2. Given that there can be semantic facts of which a competent speaker may be unaware, transparency may fail for this semantic conception of analyticity. It is the semantic-metaphysical sense, not the psychological-epistemic sense, of analyticity that I intend in the quasi-conventionalist analysis.

Should I claim that the reason that (D) is analytic is that it has a high-use value (and is true)? An alternate route would be to claim that (D) expresses a logically true proposition. The idea would be that the facts of use and eligibility determine that 'is a donkey' expresses the same property as would be expressed in a certain infinitary language by a predicate of the form 'is an aggregate of micro-particles in arrangement X or X_1 or X_2 or ...'. Then, assuming a notion of logical truth for propositions expressible in such an infinitary language, (D) would turn out to express a logical truth.

5 De re modality

The chief remaining obstacle to theories of modality based heavily on analyticity is that since proper names and variables under assignments do not have meanings, *de re* modality cannot be captured by these theories.

As I see it, the best strategy here is a mixed one. The quasi-conventionalist account offered in the preceding sections should be taken as an account of *de dicto* necessity, the necessity of purely qualitative propositions. This notion may be used in defining a logical space of ersatz possible worlds and individuals, in any one of the various ways that have been proposed in the literature.⁵¹ A counterpart relation may then be introduced over the ersatz possible individuals, and counterpart theory may be offered as a reduction of *de re* modality to *de dicto* modality plus the counterpart relation.⁵² Thus, ‘Ted is essentially human’ will turn out true if all of Ted’s counterparts are human. Those who are impressed with the forgoing quasi-conventionalist account but dislike counterpart theory will prefer other options here, but from my point of view counterpart theory is congenial for independent reasons.

Once logical space is in place, other modal notions, too, may be analyzed. For counterfactuals, dispositions, supervenience, and the rest arguably can be reduced to possible worlds. If so, then all of modality will have been shown to rest on an ultimately categorical foundation.

6 Outstanding issues

In this section I mention a number of problems with the theory I have presented, and in some cases sketch a line of response.⁵³

6.1 Objection: “The theory has a ‘list-like’ character”

This objection grants for the sake of argument that the quasi-conventionalist theory is extensionally adequate, but questions its acceptability as an analysis.

⁵¹See note 2.

⁵²As noted, the approach of Peacocke 1997, 1999 is similar to the present approach; and it does not invoke counterpart theory. See also the theory sketched in Kaplan 1968, section VIII. Counterpart theory is due to David (1968; 1971). As I note in Sider 2002, section III. F. and Sider MS, the introduction of a counterpart relation within linguistic ersatzism is not entirely straightforward.

⁵³This section, even more than the rest of the paper, is a work in progress.

If necessity is being a consequence of the basic modal truths, there should be something that the basic modal truths have in common, something that explains why we have a single word for their logical consequences.

To some degree, a quasi-conventionalist will just live with this. The arbitrariness of the list is what the conventionality of modality consists in. Still, partial unification of the list might be possible. (Arbitrariness of the list is a matter of degree.)

In fact, most of the basic modal truths I have listed do seem to have something in common: a prioricity. The sort of evidence we have that is relevant to logical and mathematical truths, to the kinds of fundamental and abstract truths mentioned above, and to most analytic truths, is a priori. This is not to say that they are *known* a priori (for they may not be known at all), nor that they are even *knowable* a priori (perhaps we have no way of knowing certain mathematical or mereological truths). Still, such access as we do have to their truth seems very different from the kinds of access we have to the empirical truths of everyday life or science.

Partial unification by a prioricity would help solve some of the problem of the vagueness of “fundamental and abstract features of the world”. Mereology counts as necessary because inquiry into its truth is a priori. Likewise it would help answer the worry of defining just what counts as a mathematical truth: truths that are questionably part of mathematics could be included as basic modal truths iff they resemble current (pure) mathematics in being a priori.

What exactly counts as a priori is admittedly a vexed question. For example: if we follow Quine (1960b, chapter 7) and (1971, chapters V-VIII) in arguing for the existence of sets based on their indispensability in empirical science, does set theory become empirical? The appropriate epistemology may well be Quinean here, in which little is absolutely a priori, but in which some matters are more removed from direct empirical input than others. This could be more grist for the contextualist’s mill. Truths in the center of Quine’s (1951, §6) force field of belief tend nearly always to be counted as basic modal truths. As one moves outward truths feel more empirical and hence less likely to be counted as basic modal.

The big exception here is, of course, examples of the necessary a posteriori, for example the necessary truth that water is H₂O. So the unification is only partial. And perhaps the exceptions can be sharply delineated, if we are willing to make use of the two-dimensional modal framework⁵⁴: the proposition expressed

⁵⁴Note to Jackson, Chalmers, Humberstone and Davies??

by any true “two-dimensionally constant” a priori sentence is a basic modal truth.

So some unification of the class of basic modal truths may be possible. But a quasi-conventionalist will be live with some disunification; he will be willing to admit that there is no one feature that all the basic modal truths have in common. As noted, the spirit of quasi-conventionalism is that we draw, rather than discover, the line between the necessary and contingent. Perhaps the line we draw is *not* particularly unified. Other linguistic groups might use ‘necessary’ to mark a somewhat different line without carving the world at its joints any less than we do.

6.2 Iterated modalities

The theory sketched does not in any straightforward way apply to iterated modalities. I treat necessity as a property of propositions, the property of being one of a series of listed kinds. It is difficult to see how this property could itself be one of the listed kinds (and a theory of properties that would allow this raises the threat of paradox.)

One might introduce a hierarchy of properties, NEC_1, NEC_2, \dots , and claim, for instance, that ‘ $\Box\Box\phi$ ’ says that the proposition *that ϕ has NEC_1* has NEC_2 . This seems ugly.

Another tactic would be to deny the need for iterated modalities for the broadest notion of possibility. This broadest notion allows us to construct logical space, the space of possible worlds. One then can introduce restricted modalities, by introducing accessibility relations over possible worlds thus constructed. Iterations of these restricted modalities could then be analyzed in the usual Kripkean way.

One worry about this approach, however, is that we may need iterated modalities to construct logical space. In fact, the construction I favor (Sider, 2002) uses iterated modalities to insure, for example, that logical space includes pairs of possible worlds differing only by permutations of alien properties or individuals.

6.3 Determinables and determinates

Why are distinct determinates of a given determinable incompatible?

The answer is not that this is part of the meaning of ‘determinable’ and ‘determinate’. What needs to be explained is not “It is necessary that nothing

has distinct determinates of a determinable”, but rather, “where P and Q are distinct determinates of some determinable, it is necessary that nothing has both P and Q”.

A tempting answer is that, e.g., the mass properties are incompatible with each other because it’s analytic that nothing has two masses. The sentence ‘nothing has two masses’ has high use-value — it’s a constraint on the interpretation of the term ‘mass’ — and it’s true.

But this answer doesn’t take us far enough. As Ernie Sosa pointed out to me, there may well be incompatible determinates of determinables that we haven’t discovered, and have no predicates for.

I’m inclined, instead, to subsume incompatibility between determinates under the category of “general and structural” features of reality. This requires going into the metaphysics of quantities.

The account of quantities I favor is Brent Mundy’s (1987). On Mundy’s view, numerical representation of quantities (for example mass, distance, etc.) is justified by the first-order and higher-order structure of the quantities in question. Take mass, for instance. The infinitely many determinate mass properties are structured by higher-order relations, for instance a binary relation, R, signifying “is a larger mass”. When these higher-order relations have an appropriate structure, and when the holding of the first-order mass properties obeys certain constraints, then one can prove representation theorems to the effect that there exists a unique (up to an appropriate transformation) function from the first-order mass properties into the reals that “meshes” with the holding of the higher-order relations. For instance, the number assigned to one mass property is greater than that assigned to another iff the first bears the relation R to the second.⁵⁵

The representation theorem assumes constraints both on the higher-order structuring relations (for example, R must be transitive) and on the distribution of the first-order determinate mass properties (for example, no particular can have two of them). Notice that similar constraints are obeyed by other quantities as well. Some quantities are structured *somewhat* differently; for example temperature has a zero point. Still, there is much sharing of the pattern. Propositions expressing this pattern (both its second-order portion and its first-order portion) are widespread and fundamental enough to count

⁵⁵Mundy’s view is the higher-order analog to the more common view which proves representation theorems on the basis of first-order relations over the domain of objects being measured. See Field ???, Luce, Tversky, et al.???

as “fundamental and abstract features of the world”.

In fact, I’m somewhat tempted to think that *all* irreducibly higher-order features of the world count as necessary by courtesy.⁵⁶ Whether this should be included as a separate category of basic modal truths, or whether higher-order features ipso facto count as “general and abstract”, I am not sure. At any rate, it is not the higher-order part of the pattern but rather the first-order portion of the pattern — nothing instantiates two of the determinates — to account for the incompatibility between determinates.

Some interesting test cases. Consider first discrete quantities, which don’t have the full structure that other classes of determinates have. (Quantities from particle physics?) Do these really count as determinates of some determinable? This might be unclear. And it might, I suspect, be unclear as to whether we’d think it’s impossible for a thing to have two members of such a class of properties.

Second, imagine discovering that, as a matter of fact, there is *not* the structure Mundy discusses behind the masses. There is no second-order relation over properties. As a matter of fact, the different masses are heterogeneous. Perhaps the class of masses has various subgroups that are Mundy-structures, but the entire class is not a Mundy-structure. I think then we’d be less likely to say that it’s impossible to have two masses. I deny that there is a further fact about whether the masses are in fact incompatible. Rather, it’s simply indeterminate whether the fact that nothing has two of these mass properties counts as part of a “abstract and general pattern”, and so indeterminate whether this fact is necessary.

6.4 Logical truth⁵⁷

Let us distinguish two conceptions (not the only two) of logical truth. On one, the basic notion is really just necessity — absolute necessity. Logical truths are just certain kinds of necessary truths: those whose necessity is somehow due to the nature of certain concepts, the logical ones. Of course, this conception is unavailable to me, since it presupposes necessity. But one very nice thing about it is that it doesn’t require a heavy-duty distinction between logical and non-logical concepts. that line can just be left undrawn. Whatever you want to consider as “logical”, you can then characterize the logical truths as those

⁵⁶This is straightaway inconsistent with Armstrong’s theory of laws as contingent relations between universals.

⁵⁷Thanks to John Hawthorne for helpful discussion here.

necessary truths whose necessity (truth?) is due to the nature of the chosen concepts.

On a second conception, the logical truths are just certain kinds of very general *truths*. Quine's definition of logical truths as those true sentences that involve only logical words essentially is an example of this sort of conception. Almog argues persuasively for this "worldly" conception of logical truth.

This conception fits with my categoricism, and with my acceptance of logical natural kinds. Given the latter, the logical truths would appear to be patterns in the most basic structure of the world. Indeed, logical truth could be subsumed under the heading of "abstract and general features of the world".

There are two questions about this conception. First, can we have the advantage of the first conception, namely, of avoiding a heavy-duty distinction between logical and nonlogical concepts? It would appear that we can, especially if we are subsuming logical truth under the heading of abstract and general features. The logical truths are those patterns that emerge from the most abstract fundamental natural kinds. Fundamentality here means, at least, that the patterns are pervasive, spanning all domains (micro/macro, abstract/particular, etc.) And there may well be borderline cases here. For instance, my own view is that the relation of part to whole is similarly fundamental and pervasive. So general patterns in its holding might count, on some precisifications, as "logical truths". That seems fine.

The second question about this conception is that if identity is a logical concept, then truths about the number of objects become logical truths, and so become necessarily true. What to say about this? Two suggestions. First, one might appeal to a prioricity here. Second, one might appeal to analyticity. Some of the Quine-logical truths are analytic — they have high use-value, and they're true. Others do not, for instance $\exists x \exists y x \neq y$.

7 Conclusion

The proposed reduction of modality has appealed to various primitive notions. The construction of ersatz possible worlds requires *de dicto* possibility, which was cashed out by the quasi-conventionalist in terms of semantic truth, mathematical truth, logical consequence, and certain "abstract and fundamental features of the world". Analyticity was seen to involve causal notions, which were asserted to be non-modal. Moreover, counterpart theory requires a similarity relation I have not defined. Nevertheless, these primitive notions seem

non-modal. The theory is therefore reductive. Modality does not introduce irreducible hypothetical notions into ontology.

Rutgers University
sider@philosophy.rutgers.edu

References

- Adams, Robert Merrihew (1974). "Theories of Actuality." *Noûs* 8: 211–231.
Reprinted in Loux 1979: 190–209.
- Almog, Joseph (1989). "Logic and the World." In Almog et al. (1989), 43–65.
- Almog, Joseph, John Perry and Howard Wettstein (eds.) (1989). *Themes from Kaplan*. New York: Oxford University Press.
- Armstrong, David M. (1989). *A Combinatorial Theory of Possibility*. New York: Cambridge University Press.
- (1997). *A World of States of Affairs*. Cambridge: Cambridge University Press.
- Ayer, Alfred Jules (1936). *Language, Truth and Logic*. London: Victor Gollancz Ltd., 1946. Second edition.
- Bealer, George (1993). "A Solution to Frege's Puzzle." *Philosophical Perspectives* 7.
- Beebe, Helen (2000). "The Non-Governing Conception of Laws of Nature." *Philosophy and Phenomenological Research* 61: 571–594.
- Bigelow, John (1988). *The Reality of Numbers: A Physicalist's Philosophy of Mathematics*. Oxford: Clarendon.
- (1996). "Presentism and Properties." In James Tomberlin (ed.), *Philosophical Perspectives 10: Metaphysics*, 35–52. Cambridge, Mass.: Blackwell.
- Boghossian, Paul (1997). "Analyticity." In Bob Hale and Crispin Wright (eds.), *A Companion to the Philosophy of Language*, 331–368. Oxford: Blackwell.

- (2003). “Blind Reasoning.” *Aristotelian Society Supplementary Volume* 77: 225–248.
- Britton, Karl (1947). “Are Necessary Truths True by Convention?” *Aristotelian Society Supplementary Volume* 21: 78–103.
- Broad, C. D. (1936). “Are there Synthetic *A Priori* Truths?” *Aristotelian Society Supplementary Volume* 15: 102–117.
- Carnap, Rudolf (1937). *The Logical Syntax of Language*. London: Routledge & Kegan Paul.
- (1950). “Empiricism, Semantics and Ontology.” *Revue Internationale de Philosophie* 4: 20–40. Reprinted in *Meaning and Necessity: A Study in Semantics and Modal Logic*. 2nd edn. Chicago: University of Chicago Press, 1956.
- Carroll, Lewis (1895). “What The Tortoise Said To Achilles.” *Mind* 4: 278–280.
- Churchland, Paul M. (1981). “Eliminative Materialism and the Propositional Attitudes.” *Journal of Philosophy* 78: 67–90.
- Coppock, Paul (1984). “Review of Nathan U. Salmon, *Reference and Essence*.” *Journal of Philosophy* 81: 261–270.
- Divers, John and Joseph Melia (2002). “The Analytic Limit of Genuine Modal Realism.” *Mind* 111: 15–36.
- Dorr, Cian (2002). *The Simplicity of Everything*. Ph.D. thesis, Princeton University.
- Egan, Andy, John Hawthorne and Brian Weatherson (2005). “Epistemic Modals in Context.” In Gerhard Preyer and Georg Peter (eds.), *Contextualism in Philosophy*, 131–168. Oxford: Oxford University Press.
- Etchemendy, John (1990). *The Concept of Logical Consequence*. Cambridge, Mass.: Harvard University Press.
- Field, Hartry (1984). “Is Mathematical Knowledge Just Logical Knowledge?” *Philosophical Review* 93: 509–52.
- (1991). “Metalogic and Modality.” *Philosophical Studies* 62: 1–22.

- Fine, Kit (1994a). "Essence and Modality." In James Tomberlin (ed.), *Philosophical Perspectives 8: Logic and Language*, 1–16. Atascadero: Ridgeview.
- (1994b). "Senses of Essence." In Walter Sinnott-Armstrong (ed.), *Modality, Morality, and Belief*. New York: Cambridge University Press.
- Grice, Paul and Peter Strawson (1956). "In Defense of a Dogma." *Philosophical Review* 65: 141–158.
- Harman, Gilbert (1999). *Reasoning, Meaning and Mind*. Oxford: Oxford University Press.
- Heller, Mark (1996). "Ersatz Worlds and Ontological Disagreement." *Acta Analytica* 15: 35–44.
- (1998). "Property Counterparts in Ersatz Worlds." *Journal of Philosophy* 95: 293–316.
- Hirsch, Eli (1986). "Metaphysical Necessity and Conceptual Truth." In Peter French, Theodore E. Uehling, Jr. and Howard K. Wettstein (eds.), *Midwest Studies in Philosophy XI: Studies in Essentialism*, 243–256. Minneapolis: University of Minnesota Press.
- Jubien, Michael (2007). "Analyzing Modality." In Dean W. Zimmerman (ed.), *Oxford Studies in Metaphysics*, volume 3. Oxford: Oxford University Press.
- Kaplan, David (1968). "Quantifying In." *Synthese* 19: 178–214.
- (1989). "Demonstratives." In Almog et al. (1989).
- King, Jeffrey C. (2001). "Structured Propositions." Available online at <http://plato.stanford.edu/entries/propositions-structured/>.
- Lewis, David (1968). "Counterpart Theory and Quantified Modal Logic." *Journal of Philosophy* 65: 113–126. Reprinted in Lewis 1983b: 26–46.
- (1971). "Counterparts of Persons and their Bodies." *Journal of Philosophy* 68: 203–211. Reprinted in Lewis 1983b: 26–46.
- (1983a). "New Work for a Theory of Universals." *Australasian Journal of Philosophy* 61: 343–77. Reprinted in Lewis 1999: 8–55.

- (1983*b*). *Philosophical Papers, Volume 1*. Oxford: Oxford University Press.
- (1984). “Putnam’s Paradox.” *Australasian Journal of Philosophy* 62: 221–36. Reprinted in Lewis 1999: 56–77.
- (1986). *On the Plurality of Worlds*. Oxford: Basil Blackwell.
- (1992). “Critical Notice of Armstrong’s *A Combinatorial Theory of Possibility*.” *Australasian Journal of Philosophy* 70: 211–224. Reprinted in Lewis 1999: 196–214.
- (1999). *Papers in Metaphysics and Epistemology*. Cambridge: Cambridge University Press.
- Lewy, Casimir (1976). *Meaning and Modality*. Cambridge: Cambridge University Press.
- Loewer, Barry (1996). “Humean Supervenience.” *Philosophical Topics* 24: 101–127.
- Loux, Michael J. (ed.) (1979). *The Possible and the Actual*. Ithaca: Cornell University Press.
- Malcolm, Norman (1940). “Are Necessary Propositions Really Verbal?” *Mind* 49: 189–203.
- Mundy, Brent (1987). “The Metaphysics of Quantity.” *Philosophical Studies* 51: 29–54.
- Pap, Arthur (1958). *Semantics and Necessary Truth*. New Haven: Yale University Press.
- Peacocke, Christopher (1997). “Metaphysical Necessity: Understanding, Truth and Epistemology.” *Mind* 521–574.
- (1999). *Being Known*. Oxford: Clarendon.
- Plantinga, Alvin (1976). “Actualism and Possible Worlds.” *Theoria* 42: 139–160. Reprinted in Loux 1979: 253–273.
- Prior, A. N. (1960). “The Runabout Inference Ticket.” *Analysis* 21: 38–39.

- (1968). “Quasi-propositions and Quasi-individuals.” In *Papers on Time and Tense*, 135–144. London: Oxford University Press.
- Putnam, Hilary (1971). *Philosophy of Logic*. New York: Harper & Row.
- (1975a). “The Meaning of Meaning.” In Keith Gunderson (ed.), *Language, Mind and Knowledge*, volume 7 of *Minnesota Studies in the Philosophy of Science*, 131–193. Minneapolis: University of Minnesota Press. Reprinted in Putnam 1975b: 215–271.
- (1975b). *Mind, Language and Reality: Philosophical Papers, volume 2*. Cambridge: Cambridge University Press.
- Quine, W. V. O. (1936). “Truth by Convention.” In O. H. Lee (ed.), *Philosophical Essays for A. N. Whitehead*, 90–124. New York: Longmans. Reprinted in Quine 1966: 70–99.
- (1951). “Two Dogmas of Empiricism.” *Philosophical Review* 60: 20–43. Reprinted in Quine 1953: 20–46.
- (1953). *From a Logical Point of View*. Cambridge, Mass.: Harvard University Press.
- (1960a). “Carnap and Logical Truth.” *Synthese* 12: 350–374. Reprinted in Quine 1966: 100–125.
- (1960b). *Word and Object*. Cambridge, Mass.: MIT Press.
- (1966). *The Ways of Paradox*. New York: Random House.
- Rosen, Gideon (1990). “Modal Fictionalism.” *Mind* 99: 327–354.
- Salmon, Nathan and Scott Soames (eds.) (1988). *Propositions and Attitudes*. Oxford: Oxford University Press.
- Shalkowski, Scott (1994). “The Ontological Ground of the Alethic Modality.” *Philosophical Review* 103: 669–688.
- Sidelle, Alan (1989). *Necessity, Essence and Individuation*. Ithaca: Cornell University Press.
- Sider, Theodore (2001a). “Criteria of Personal Identity and the Limits of Conceptual Analysis.” *Philosophical Perspectives* 15: 189–209.

- (2001*b*). *Four-Dimensionalism*. Oxford: Clarendon.
- (2002). “The Ersatz Pluriverse.” *Journal of Philosophy* 99: 279–315.
- (2003). “Reductive Theories of Modality.” In Michael J. Loux and Dean W. Zimmerman (eds.), *Oxford Handbook of Metaphysics*, 180–208. Oxford: Oxford University Press.
- (2005). “Another Look at Armstrong’s Combinatorialism.” *Noûs* 39: 679–95.
- (2007). “Ontological Realism.” In David Chalmers, David Manley and Ryan Wasserman (eds.), *Metametaphysics*. Oxford: Oxford University Press.
- (MS). “Beyond the Humphrey Objection.”
- Soames, Scott (1987). “Direct Reference, Propositional Attitudes, and Semantic Content.” *Philosophical Topics* 15: 47–87. Reprinted in Salmon and Soames 1988: 197–239.
- Stalnaker, Robert (1976). “Possible Worlds.” *Noûs* 10: 65–75. Reprinted in Loux 1979: 225–234.
- Williamson, Timothy (1998). “Bare Possibilia.” *Erkenntnis* 48: 257–273.
- (2002). “Necessary Existents.” In A. O’Hear (ed.), *Logic, Thought and Language*, 233–51. Cambridge: Cambridge University Press.
- Yablo, Stephen (1992). “Review of Alan Sidelle, *Necessity, Essence and Individuation*.” *Philosophical Review* 101: 878–881.