14 Truthmakers for What?[1]

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1 INTRODUCTION

Despite the arguments of Simons and others (Mulligan, Simons et al. 1984 §5; Fox 1987; Simons 2000), we do not all agree that truths need truthmakers (Beebee and Dodd 2005), and those of us who do agree differ about which truths have them (Forrest and Khlentzos 2000). Many follow Martin (1996) and Armstrong (2003) in taking the *maximal* truth maker view that *all* truths have truthmakers. I share with Heil (2000) and others the *moderate* view that

> only some truths, the *primary* ones, have truthmakers, while other truths and falsehoods are derivable from the primary truths by means of truth conditional semantics.
>
> (Forrest and Khlentzos 2000, 3)

In this paper I restate the case for moderate truthmaking, adding what I think determines which truths are primary but starting by saying why I think at least some are.

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1 The immediate ancestor of this chapter was discussed at a conference on Truth and Reality held in January 2007 at the University of Otago, who met my considerable travel expenses. Remoter ancestors have been discussed from 2001 on at the Universities of Nottingham, Durham, London, Stirling, Melbourne, and Cambridge, the Australian National University, and the Universität Zürich. Repeated revisions of the chapter owe much to these and other discussions. I am also indebted to the British Academy for a research grant to meet my expenses in travelling to and from the Australian National University in 2002 to work on truthmaker theory. A German translation of the chapter's Zürich ancestor is published in Mellor (2004).

2 TRUTHMAKING AND ENTAILMENT

For present purposes we may take the principal bearers of truth to be propositions, which I write ⟨ . . . ⟩, as opposed to sentences that express them, which I write " . . .". Besides not being sentences, it will not matter what (within reason) propositions are: whether, for example, they are sets of possible worlds, true if they contain our actual world and false if not.

My main assumption, following Bigelow (1988, 132) and others, is that, as Bigelow puts it, "truth is supervenient on being." This I take to mean that only if two possible worlds differ in being can a proposition be true in one and false in the other, where "differences in being come in two sorts . . . differences in whether something is . . . and differences in how something is" (Lewis 2003, 25). This implies, for example, that all worlds where the proposition ⟨The earth is round⟩ (⟨ER⟩ for short) is false either lack our earth[2] (a difference in what there is), or their earth is not round (a difference in how it is).

I assume moreover that all such worlds (¬ER-worlds for short) must also differ from ours in the truthmakers they contain (Rodriguez-Pereyra 2005, 17). This, however, does not require our world to contain a specific truthmaker for ⟨ER⟩ that all ¬ER-worlds lack, as moderate truthmaking does not require ⟨ER⟩ to be a primary proposition, that is, one that needs a truthmaker to make it true. But if ⟨ER⟩ is ***not*** primary, its truth can only supervene on being if its truth-value depends on whether some primary propositions with truth-values of which, in any given ¬ER world, at least one differs from what it is in our world, are true or false. That is why I take the supervenience of truth on being to require some propositions to be primary.

I also take truth's supervenience on being to imply that the truthmaker S of a primary truth ⟨P⟩ will generally not be another proposition.[3] In other words, S's truth-making relation to ⟨P⟩ will generally be what Armstrong calls *cross-categorial* (2003, 13). If this seems obvious, it has a less obvious but important consequence: because entailment relations between propositions are not cross-categorial, the truth-making relation cannot be identified with the entailment of ⟨P⟩ by the proposition ⟨S exists⟩. To say this is not to denigrate the role of entailment in transmitting truth from one proposition to another, merely to observe that being entailed by other truths cannot be what makes primary truths true.

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2 Or one or more counterparts of it (Lewis 1973, ch. 1.9), an alternative reading that for brevity I hereafter take as read.

3 Sometimes it will be, as when a proposition ⟨A⟩ being primary makes true the proposition ⟨B⟩ that ⟨A⟩ *is* primary. Such exceptions we may ignore for present purposes, noting merely that in none of them will ⟨B⟩ be identical to the proposition ⟨A⟩ that is, or is a constituent of, what makes ⟨B⟩ true.

3 TRUTHMAKING AND TRUTH

Taking truthmaking to relate a true proposition ⟨P⟩ to a generally non-propositional entity S may make theories of truthmaking look like correspondence theories of truth. But they are not. Theories of truth tell us, rightly or wrongly, what it *is* for a proposition ⟨P⟩ to be true, which need no more tell us what *makes* ⟨P⟩ true than saying what it *is* to be a prime minister (to head a government) tells us what *makes* someone a prime minister (commanding a parliamentary majority). And as with prime ministers, so with truth; and what truthmaker theories aim to tell us is what *makes* propositions true, not what it is for them to *be* true.

Truthmaker theorists therefore still need a theory of truth. For to say what makes ⟨P⟩ true is to say what gives ⟨P⟩ whatever it takes for ⟨P⟩ to be true, and what that is depends on which theory of truth is the right one. But the right theory need not be a correspondence theory, and for moderate truthmaking it will not be, because nonprimary truths that have no non-propositional truthmakers need not correspond to any worldly fact. Nor, for any truthmaker theorist, can the right theory of truth be an identity theory which says that every apparently worldly fact P just is the corresponding truth ⟨P⟩ (Candlish 2005). This thesis, that no true proposition owes its truth to anything nonpropositional, is incompatible with the whole idea of truthmaking: that true propositions generally owe their truth to something else.

Fortunately, as correspondence and identity theories are not the only tenable theories of truth, truthmaker theorists need accept neither. In fact all they need assume about truth is the relatively uncontentious *equivalence principle* (EP) that, for all nonparadoxical ⟨P⟩,

(EP) ⟨P⟩ is true if and only if P.[4]

But although (EP) may tell us what it is for ⟨P⟩ to be true, it cannot tell us what makes ⟨P⟩ true. To see this, consider apparent truths like ⟨Murder is wrong⟩ or ⟨Neutrinos have no charge⟩, which seem to be about values or theoretical entities. Those who believe in values and neutrinos may claim that these two propositions are made true by the substantial facts, respectively, that murder is, as a matter of objective fact, wrong, and that all neutrinos are uncharged. But as Musgrave (1993, 266), Dyke (2007, 5),

4 (EP) is not completely uncontentious. It fails for nonclassical logics in which, for example, "if 'P' is indeterminate (as it is if it is a future contingent), 'It is true that P' is false (rather than being itself indeterminate)" (Bourne 2006, 94). Here, however, I take (EP) for granted and leave others to say how truthmaking would fare if it failed.

and others have observed, such claims can hardly be entailed by the corresponding instances of an uncontentious (EP):

> ⟨Neutrinos have no charge⟩ is true if and only if neutrinos have no charge; and ⟨Murder is wrong⟩ is true if and only if murder is wrong.

For an (EP) that did entail these claims would at once refute (i) antirealists who say that these apparent propositions have no truth-values and so need no truthmakers (Ayer 1946); (ii) ethical naturalists who think that ⟨Murder is wrong⟩ is made true by natural facts (Foot 1978); (iii) empiricists who think that ⟨Neutrinos have no charge⟩ is made true by observable facts (Ramsey 1929b); and (iv) physicalists who take psychological truths to be made true by physical facts (Armstrong 1993). And no one thinks (EP) can do all that: no one expects a theory of truth to settle the ontologies of value, scientific theories, or the mind.

(EP)'s inability to identify truthmakers is also evident in M. L. Wilson's (1994, 540) rainbow example. To vary this slightly, suppose ⟨P⟩ says truly that there is a rainbow east of a car *c* driving north. Then (EP) tells us that

> ⟨P⟩ is true if and only if there is a rainbow east of *c*.

So for (EP) to tell us what makes ⟨P⟩ true, the world would have to contain this rainbow—call it *r*—and that poses a problem. For even though *r* is clearly where some rain is falling east of *c*, *r* also keeps pace with *c* as *c* moves north, which implies either that *c* causes *r* to move with it, or that *r* is as far east of *c* as the sun is west. Both alternatives are incredible, the first causally and the second spatially. But an incredible entity can hardly be part of what makes ⟨P⟩ true; and it need not be, as ⟨P⟩ need not be a primary proposition. ⟨P⟩ can simply be entailed by there being many raindrops east of *c* reflecting and refracting sunlight back to *c* at angles that vary with its frequency. A moderate ontology need include no rainbows at all.

4 ONTOLOGICAL COMMITMENT

Yet how, if there really are no rainbows, can (EP) let ⟨P⟩ be true, when (EP) says that if ⟨P⟩ *is* true then there *is* a rainbow east of *c*? The short answer is that (EP) is a biconditional that can just as well be written as

> (EP) P if and only if ⟨P⟩ is true.

In other words, for there to be a rainbow east of *c* is just for ⟨P⟩ to be true, which it is. But what *makes* ⟨P⟩ true is another matter and need no more include a rainbow than whatever makes ⟨There is nobody in the house⟩ true

need include an entity (nobody) that is both larger than the universe and smaller than a point, both of which nobody is.

This, however, still leaves the semantic question of how to reconcile the nonexistence of rainbows and of nobody with the truth of instances of ⟨There is a rainbow . . . ⟩ and ⟨There is nobody . . . ⟩. We can do it for the latter by saying that their "logical form" is really ⟨There is *not* a person . . . ⟩, that is, by taking these propositions to be *negative* existentials. But this will not work for ⟨There is a rainbow . . . ⟩, as rainbows are only causally or spatially, not logically, incredible: the *logical* form of ⟨There is a rainbow . . . ⟩, if there is such a thing, is undeniably that of a positive existential. Although this may only show that "inferences grounded in 'logical form' can . . . lead us astray" (M. L. Wilson 1994, 519), we still need to see when and how they do so.

To do this, we must first recall that truthmaker theorists need not take any true proposition ⟨P⟩ to entail the existence of a specific truthmaker S. The entailment here, if any, goes the other way, from ⟨S exists⟩ to ⟨P⟩. So the problem here is not for truthmaking but for Quine's criterion of ontological commitment:

> . . . we are convicted of a particular ontological presupposition if, and only if, the alleged presuppositum has to be reckoned among the entities over which our variables range in order to render one of our affirmations true.
>
> (Quine 1948, 13)

The question then is whether rainbows have "to be reckoned among the entities over which our variables range in order to render" some instances of ⟨There is a rainbow . . . ⟩ true. For Quine, this depends on whether (to adapt his example) we can

> devise some way of so paraphrasing the statement [about rainbows] as to show that the seeming reference to [rainbows] on the part of our bound variable was an avoidable way of speaking.
>
> (Quine 1948, 13)

Can we, for example, restate all true instances of ⟨There is a rainbow . . . ⟩ in sentences that refer only to raindrops and sunlight? If we can, the "seeming reference to rainbows" in a true ⟨There is a rainbow . . . ⟩ may well be just "an avoidable way of speaking."

Whether such paraphrases of "There is a rainbow . . ." can really rid our ontology of rainbows is a very moot point (Mellor and Oliver 1997a, §§5–6; Dyke 2007, ch. 1); and even if they can, we still need a criterion for *when* sentences stating true propositions tell us what there is and when they do not. And (EP) can certainly not be that, because all the sentences, "P1," "P2," . . . that we take to state a proposition ⟨P⟩ generate sentential counterparts of (EP)—

"P1" is true if and only if P1;

"P2" is true if and only if P2; . . .

—between which (EP) itself can evidently not discriminate.

This is why parties to ontological disputes need more than (EP) to link what there is, and how it is, to what is true. They need theories of truthmakers—not of what truthmakers *are*, but of what truthmakers *exist*—theories which, to revert to the examples of §3, may or may not postulate values, theoretical entities, or nonphysical mental states. Those are the theories about which, in any field, realists about that field will argue with their opponents.

But then why *not* take a theory of truthmakers to be a theory of truth itself: why not admit that truth-maker theory is really a correspondence theory of truth under another name? The reason is that a theory of truthmakers that is also a theory of truth will have to give *all* truths truthmakers; and this begs the question against moderate truthmaking by assuming that *every* truth is made true by something other than its entailment by another truth. It also begs the question of *what* makes propositions true, as a theory of truth can only give truthmakers for all propositions ⟨P⟩ by rewriting (EP) as

⟨P⟩ is true if and only if it is made true by P,

where P is defined by its correspondence with ⟨P⟩.

But this, as we have seen, begs the question against empiricists who think theoretical truths like ⟨Neutrinos have no charge⟩ are made true, not by corresponding theoretical facts but by quite different observable ones: and similarly in the other examples given in §3. It also invites a familiar vacuity objection to correspondence theories, as it cannot specify the fact P, which it says is what makes ⟨P⟩ true, independently of ⟨P⟩. It is precisely to escape this objection that truthmaker theorists need to supplement (EP) with independent theories of what truthmakers there are. But then these theories will only be theories of truthmakers, not of truth; and the only theory of truth they will need is (EP).

5 REALISM

There is, however, a vacuity objection to correspondence theories that does apply to truthmaker theories (Hornsby 2005). Consider the propositions that we use to say what make *other* propositions true: for example, propositions like ⟨Fred is in brain state C⟩ which, according to physicalists, tell us what make propositions like ⟨Fred has toothache⟩ true (Armstrong 1968a). If we now ask what makes ⟨Fred is in brain state C⟩ true, any nontrivial

answer will itself be a proposition that invites the same question—what makes it true?—thus starting an endless and arguably vicious regress.

This objection has a hidden assumption, made explicit in Putnam's attacks on what he calls "metaphysical realism," the thesis that even our best scientific theories might be false because the world is not as they say it is. The assumption is that "*we* interpret our languages or nothing does" (Putnam 1980, 482), meaning that nothing in the world outside us constrains what our best theories are about. The argument for this is that any statement of an external constraint on what a theory is about, and in particular of what would make that theory true, merely extends the theory, whose extended form we can then always interpret so as to make it come out true.

The right response to this argument is to reject the assumption that nothing other than ourselves can constrain what our scientific theories are about and hence what makes them true or false. In other words,

> realism needs realism. That is: the realism that recognises a nontrivial enterprise of discovering the truth about the world needs the traditional realism that recognises objective sameness and difference, joints in the world, discriminatory classifications not of our own making.
>
> (Lewis 1984, 228).

This is the realism I am here taking for granted because without it the whole idea of nonpropositional truthmakers would make no sense nor, therefore, would the question of which truths have such truthmakers and which do not.

Note, by the way, that this "traditional realism" does not require properties to be ***universals***. The natural properties (temperatures, masses, charges, etc.) that embody objective samenesses and differences in our world could equally well be sets of exactly resembling particulars (Rodriguez-Pereyra 2002) or tropes (Williams 1953). For truthmaker theorists, any theory of natural properties (hereafter *properties* for short) will do, provided it does not reduce them to shadows of predicates privileged on merely linguistic grounds—as, for example, Goodman's (1965, ch. IV) "projectibility" criterion of inductive respectability does. But that criterion is back to front anyway. Our using "blue" in inductive predictions is not what makes blue a property. It is the other way round: what makes "blue" a better predicate for this purpose than Goodman's "grue" is that it corresponds, as "grue" does not, if not to a single property then at least to a disjunction of conjunctions of them (Mellor 1991).

6 TRUTHMAKERS AND TRUTH CONDITIONS

This distinction, between properties on the one hand, and predicates and hence concepts on the other, implies that, as Dyke (2007, ch. 2) and others

observe, a theory of truthmakers is no more a theory of *meaning* than it is of truth. In particular, therefore, the truth*makers* of propositions must not be identified with their metalinguistic truth *conditions*.

Take the physicalist thesis that all psychological propositions—about what we feel, see, think, want, intend, etc.—that have truthmakers have physical truthmakers. Neither this thesis nor its negation follows from the meanings of sentences saying that you see this, think that, or want or intend the other. For statements of the truth conditions of English sentences, like

> "Fred has toothache" is true if and only if Fred has toothache,

are simply applications of the equivalence principle (EP) to sentences instead of propositions. And as such, they can no more tell us what would make these sentences true than (EP) itself can tell us what would make true the propositions they express. Physicalism about the mind can hardly be disproved by giving the truth conditions of sentences like "Fred has toothache" using the very same predicates that occur in those sentences.

The idea that truth conditions link meaning and ontology derives from an ambiguity in the expression "giving a sentence's truth conditions." The ambiguity is between saying what would *make* the sentence true and using a Tarskian metalanguage to say when it is true, which need tell us nothing about what, if anything, makes it true. To see this, recall that it is only to protect so-called object languages from the Liar and other paradoxes that Tarski deports their semantic predicates, like "true" and "false," into metalanguages that we can then safely use to say when object-language sentences are true (Tarski 1944, §9). And doing this does not require a metalanguage's *non*semantic predicates to differ from those of its object language. Yet unless some of them do differ, a metalinguistic statement of a sentence's truth conditions, like

> "Fred has toothache" is true if and only if Fred has toothache,

will tell us no more than (EP) does about what makes "Fred has toothache" true. For a metalanguage to tell us that, its nonsemantic predicates must differ from those of its object language and do so in a way that gives ontological authority to its statements of truth conditions. But then it takes a *non*linguistic argument, like that from the so-called "causal closure" of physics (Papineau 2007, §1.6), to justify granting this authority to a sentence like

> "Fred has toothache" is true if and only if Fred is in a brain state (of type) C,

which physicalists think does tell us what makes "Fred has toothache" true.

Some philosophers, however, deny that any metalanguage can have such ontological authority. Carnap, for example, distinguishes two kinds

of ontological questions: those internal to a given language, or "linguistic framework," and those external to it. Internal questions, raised within (say) a "thing language," such as "Is there a white piece of paper on my desk?"; "Did King Arthur actually live?"; "Are unicorns real or merely imaginary?"; and the like . . . are to be answered by empirical investigations. . . .

> From these questions we must distinguish the external question of the reality of the thing world itself . . . [This question] cannot be solved because it is framed in the wrong way. To be real in the scientific sense means to be an element of the system; hence this concept cannot be meaningfully applied to the system itself.
>
> (Carnap 1950, 242–243)

In other words, although we can use a metalanguage of things to answer questions about whether certain pieces of paper, King Arthur, or unicorns exist, we cannot question the metalanguage's ontology. To do so, by using a "meta-metalanguage," only starts a hopeless regress: for we must stop somewhere if we are to give truth conditions at all; and wherever we stop, we cannot then question the ontology of the metalanguage we stop at. For Carnap, therefore, the justification for using a "thing language" lies in its *utility*, not in the existence of the entities it postulates.

This doctrine seems to me both false and a false dichotomy. The dichotomy is false because the utility of our "thing language" depends on there being entities of most of the kinds it recognizes. What, after all, if not the existence, effects, and microstructure of water, makes the predicates "is water" and "is H_2O" more useful parts of our "linguistic framework" than "gruified" alternatives like "is watgin" (true of water in daylight and of gin at night)? And the doctrine is false because "to be real in the scientific sense" does *not* mean "to be an element of the system," and Carnap no more shows that this is all it can mean than we saw in §4 that Putnam does. Indeed, given the traditional realism I am taking for granted, it is the other way round: it is the finding of new kinds of physical entity that requires physicists to add "elements" to their theoretical systems, not their additions that entitle us to call those elements real. Truth supervenes on being, not being on truth.

7 DIRECT AND INDIRECT TRUTHMAKING

Having defended truth's supervenience on being, and argued against taking theories of truthmakers to be theories of meaning or of truth, I return to the first of my two advertised questions: do all truths have truthmakers? Before saying why I think some do not, I propose to introduce some terminology. I showed in §2 how truth can supervene on being even if some

truths lack truthmakers. Yet to say that a truth that has no truthmaker is made true by "what there is and how it is" may still appear paradoxical. To mitigate that appearance I propose to say that whereas truths with truthmakers are made true *directly*, those that supervene on being without having truthmakers are made true *indirectly*.

I take this terminology from that used to distinguish beliefs that perception gives us *directly*—as when I "believe what I see"—from beliefs that it gives us *indirectly*, by inference from those we get directly. And though this is indeed a different distinction, it is analogous enough to that between direct and indirect truthmaking to make the same terminology apt.

One analogy can be illustrated by the fact that experienced microscopists can see directly what novices can only infer from the colored patches that are all they can see directly. Similarly in everyday life: like novices in microscopy, we infer truths about what we do not see directly from what we do see directly. And similarly with truthmaking: nonprimary truths may be (or seem to be) about entities like rainbows to which, as we saw in §4, no primary truths refer.[5]

The other analogy between perception and truthmaking is more important. To see it, note that we may draw the line between perception and inference in at least two ways. We may draw it in response to empirical facts about what people (say they) can or cannot perceive directly with or without instruments like microscopes. Or we may draw it on the basis of philosophical theories of perception, as in the theory that we only ever perceive sense data, from which all our other beliefs must therefore be inferred. But whichever way we draw the line, it can hardly imply that a belief's perceptual justification depends on which side of the line our criterion makes it fall. The dependence here, if any, goes the other way: as in the argument that, because only beliefs about sense data can be fully justified, they are all that perception can give us directly, with all our other beliefs being inferred from them.

Yet even if the distinction between perception and inference does have epistemological implications, that between primary and other truths has no analogous implications for truth, if only because truth, unlike justification, cannot come by degrees: nonprimary truths, that is, truths without truthmakers, are no less true than primary ones. So if, as assumed in §2, nonprimary propositions are complete truth functions of primary ones, nonprimary truths will also supervene on being, just as primary truths do. That is all I mean by saying that they too are made true, albeit indirectly, by what there is and how it is.

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5 This analogy must not be pressed too far. Our inability to see microscopic entities may make the empiricists mentioned in §3 doubt their reality but not for the reasons mooted in §4 for declining to quantify over rainbows: it is not being unobservable that makes rainbows ontologically suspect.

8 THE MERITS OF MODERATION

We have seen that taking truth to supervene on being no more forces us to credit all truths with truthmakers than deriving truth conditions from the equivalence principle (EP) does (§5). But nor does it require any truths to lack truthmakers. Why should we think that some do? Here are five reasons.

I Ontological economy

I remarked in §2 that truth's supervenience on being requires truthmaking to be a generally cross-categorial relation, between a true proposition ⟨P⟩ and a nonpropositional entity S. From this it follows, as noted in §2, that there must be more to truthmaking than the fact, if it is a fact, that ⟨S exists⟩ entails ⟨P⟩. Yet as being entailed by another truth does ensure ⟨P⟩'s truth, and as many truths are entailed by others that are *not* of the form ⟨S exists⟩, it is not obvious that all such truths need nonpropositional truthmakers. And if they do not, then Ockham's razor tells us not to credit them with truthmakers they do not need.

II Negative truths

Let ⟨P⟩ be a primary proposition, that is, one that does, if true, have a truthmaker, S. If ⟨P⟩ is false, then in classical logic its negation ⟨¬P⟩ will be true and therefore, if all truths have truthmakers, will have a different truthmaker, S′. Then the classical laws of noncontradiction and excluded middle, which tell us that ⟨P⟩ and ⟨¬P⟩ cannot both be true but that one of them must be, tell us that S′ can exist if and only if S does not exist. Yet why is this so, if S and S′ are distinct entities? To stipulate the incompatibility of S′ with S, without an independent reason to do so, is merely to restate in the language of ontology two laws of logic whose validity a theory of truthmakers should be able to explain.

And so it can, provided it takes ⟨¬P⟩'s truth to follow, not from the existence of its own truthmaker S′ but from the nonexistence of ⟨P⟩'s truthmaker S. For the fact that ⟨¬P⟩ is true if and only if ⟨P⟩ is false follows from applying classical logic, not to all pairs of contradictory propositions but only to those where one member has the form ⟨S exists⟩, a form that all truthmaker theorists take to account, one way or another, for all truth-values. This being so, we can take the laws of noncontradiction and excluded middle to hold, where they do, as a consequence of two ontological facts: *all entities must either exist or not and cannot do both; and the truthmaking relation between any S and any primary proposition ⟨P⟩, like all relations, can only relate entities that exist.* This is why the truth-making relation can only make a primary proposition ⟨P⟩ true if its truthmaker S exists and why, if ⟨¬P⟩ is true if and only if S does not exist, ⟨P⟩ and ⟨¬P⟩

will satisfy the laws of noncontradiction and excluded middle. As will all complete truth functions of primary propositions, and hence, in the present view, all nonprimary propositions.[6]

III Disjunctive truths

If crediting true negations of primary propositions with truthmakers they do not need limits the explanatory power of truthmaker theory, crediting true disjunctions with them has more dire consequences. Take a true disjunction ⟨P ∨ Q⟩ of two primary propositions ⟨P⟩ and ⟨Q⟩ made true, if they are, by truthmakers S and T. What makes ⟨P (Q⟩ true? Presumably, if ⟨P⟩ is true and ⟨Q⟩ is not, S does; and if ⟨Q⟩ is true and ⟨P⟩ is not, T does. In short, the truthmaker, if any, of a disjunction with only one true disjunct will also be what makes that disjunct true.

Now suppose that ⟨P⟩ is true, ⟨Q⟩ is ⟨¬P⟩, and the disjunction ⟨P ∨ ¬P⟩ is made true by ⟨P⟩'s truthmaker S. But this disjunction is a necessary truth and therefore, in classical logic, is entailed by every proposition, including every truth that asserts the existence of *any* truthmaker. So if truthmakers make true every proposition their existence entails, then *all* of them are truthmakers for *every* necessary truth, including ⟨P ∨ ¬P⟩. But then, if the truthmaker of a disjunction with only one true disjunct also makes that disjunct true, it follows that all truths have the same truthmakers, namely all truthmakers.

This result, which Restall (1996, 334) calls "truthmaker monism," is, as he says, "not acceptable for any philosophically discriminating account of truthmakers." Restall himself blocks the result with a restricted concept of "real entailment" that lets ⟨P⟩ really entail a proposition ⟨R⟩ only if, in every world, every truthmaker for ⟨P⟩ is a truthmaker for ⟨R⟩. But this presupposes the maximal truthmaker thesis that is here in question. For unless true negations have truthmakers, Restall will not let them "really entail" anything, which is absurd.

This offers us a choice: to restrict classical entailment or to deny that true disjunctions have truthmakers and, in particular, that ⟨P ∨¬P⟩ has one. I think the reasons given in II for denying that true negations have truthmakers make this by far the better option.

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6 Taking nonprimary propositions to be *complete* truth functions of primary ones may seem to presuppose the law of excluded middle by requiring all such propositions to be either true or false. And so it would if we excluded "neither true nor false" as a possible value of a complete truth function. But we need not do this. For if, as I argue here, all *primary* propositions are either true or false, no credible truth function of any number of them will ever be neither true nor false.

IV Conjunctive truths

What makes the conjunction, ⟨P ∧[Q⟩, of any two primary propositions ⟨P⟩ and ⟨Q⟩ true? Because ⟨P ∧ Q⟩ is true if and only if ⟨P⟩ and ⟨Q⟩ are, its truthmaker needs to exist if and only if both their truthmakers, S and T, exist. The only entity that fits this bill is their so-called *mereological sum*, S+T, which, by definition, S and T compose. So ⟨P∧ Q⟩ can only have a truthmaker if S+T exists; and all conjunctions of primary truths can only have truthmakers if the truthmakers of any number of these truths always have a mereological sum.

But this principle, of *unrestricted mereological composition* (Lewis 1986, 211–213) is highly contentious and, I have argued, false (Mellor 2006). I see no independent reason to suppose that every two entities, however disparate—like me and the Second World War—compose a third. And without some such reason, it is gratuitous to postulate S+T just to provide a truthmaker for ⟨P ∧ Q⟩ when that conjunction is already entailed by ⟨P⟩ and ⟨Q⟩.

V Necessary truths

Although the case made in III for denying that true disjunctions have truthmakers applies to necessary truths like ⟨P ∨ ¬P⟩, it does not apply to all necessary truths and, in particular, not to truths of identity like ⟨S = S⟩. And that may seem right, as S seems as natural a truthmaker of ⟨S = S⟩ as it is of ⟨S exists⟩. Nevertheless, for the reason given in III, I propose to deny truthmakers to these truths too. For the fact that in classical logic ⟨S = S⟩, like all necessary truths, is entailed by every existential truth makes it as hard to say why S alone makes ⟨S = S⟩ true as it is to say why S alone makes true ⟨S exists ∨ S does not exist⟩.[7]

The only necessary truths that I think may have truthmakers are *existential* ones like "There are prime numbers" if, unlike "There is nobody in the house," they cannot be paraphrased as negative existentials. For only by granting these truths *some* truthmakers can we avoid concluding that only contingent entities can exist at all. But that is not an issue I need to settle here. For as every necessary proposition is true in all possible worlds, and is therefore a complete truth function of every primary proposition, its truth will supervene on being anyway, albeit trivially: because its truth-value is the same in all possible worlds, it cannot have different truth-values in any two worlds that do not differ in being.

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7 S might still have a unique ontological relation to ⟨S = S⟩ if that proposition, although true in all possible worlds where it exists, only exists in S-worlds. S could then be the truthmaker, if not for ⟨S = S⟩ itself, then at least for the related but contingent proposition ⟨⟨S = S⟩ exists⟩. But as whether this is possible depends on what propositions are—they could not, for example, be sets of possible worlds—I do not pursue the idea.

9 PRIMARY PROPOSITIONS: ATOMIC

Whatever truthmaker theorists say about necessary truths, their main job is to account for contingent ones, to which the rest of this paper will therefore be confined. And then, setting aside necessary truths, my second advertised question is this: if all and only primary propositions are made true, if they are, by truthmakers, what determines which propositions these are? As Molnar (2000, 72) and others have argued, it cannot be the linguistic form of sentences in any everyday language. Take a language in which, by definition, the weather is *fine* if and only if it is not *dull*: the ontology of meteorology can hardly depend on which of the terms "fine" and "dull," as applied to the weather, is used to define the other. So this cannot be what determines which, if either, of the propositions ⟨The weather is fine⟩ and ⟨The weather is dull⟩ has, if true, a truthmaker,that is, is a primary proposition, of which the other is a nonprimary negation.

What then does determine which propositions are primary? The answer to that question is implicit in the traditional realism, endorsed in §5, that "recognizes objective sameness and difference" and hence the contingent properties, such as masses, temperatures, charges, and durations, that embody this sameness in and difference between different things and events. If, then, a proposition ⟨P⟩ credits a thing or event *a* with some such property *F*,[8] then ⟨P⟩ is a primary proposition which, if true, is made so by *a*'s being *F*; and similarly for contingent relations, such as the spacetime separations of special relativity.

What truthmakers like *a* being *F* are—tropes, combinations of particulars and universals, or something else again—depends on what contingent particulars, properties, relations, times, etc., are. But that is not our business, which is only to say what determines *which* entities there are, not of what kinds those entities are. This is why, as noted in §5, properties need not be universals: belief in truthmakers is compatible with any view of them "that does not reduce them to shadows of predicates privileged on merely linguistic grounds."

Equally, we can take any view of particulars that (i) is consistent with our view of properties and (ii) does not reduce them to shadows of terms—in this case singular terms—that are privileged on merely linguistic grounds. Within these limits, we can take particulars to be "bare," haecceities, bundles of properties, tropes, or aggregates (Bigelow 1998).

This is not to deny that what particulars there are may depend on what kinds of entities there are. If, for example, events are particulars (Davidson 1970a), there will be more particulars than if events are facts

8 Or, if *F* is changeable, with being *F* at a time *t*, a qualification I hereafter take as read.

about changeable things; as there will if spacetime or its points or regions are particulars (Nerlich 1994) or if temporally extended things have temporal parts (Hawley 2004). Conversely, if reality is limited to what is present (or present and past), there will be fewer particulars than if past, present, and future ones are equally real (Dyke 2005).

These are contentious issues but not ones I need to settle here. Here I need only say how they affect which propositions are primary, which I say they do by affecting the output of a test that I call *Quine's test*, derived from his (1948) criterion of "ontological commitment" (§4): *the particulars that exist are those over which our first-order quantifiers must range for any truth to be statable without using names or other singular terms* (Mellor 1995, ch. 15.7). This, I maintain, is what determines which particulars, and of which kinds, are (constituents of) truthmakers and, therefore, part of what determines which propositions are primary.

Similarly for properties if, as I and others hold (Shoemaker 1980; Mellor 1995, ch. 15), there is no more to them than the causation or the laws of nature they figure in: there is no more to masses than the laws of motion, gravity, etc. that contain them; no more to temperatures than the laws of thermodynamics, statistical mechanics, etc.; no more to beliefs, desires and other intentional mental states than the laws, if any, of intentional psychology; and so on. In this view of properties and laws, what properties there are can be determined by what I call *Ramsey's test*, analogous to Quine's test for particulars: *the properties that exist are those over which our higher-order existential quantifiers must range for any law of nature to be statable without using predicates*. In other words, the properties that exist are those that the existential quantifiers of the Ramsey sentence $\sum$ of all laws would have to range over for $\sum$ to be true (Mellor 1995, ch. 15.4–6).[9]

There is much more to be said about Quine's and Ramsey's tests, but only one of their implications is immediately relevant. This is that no complex (i.e., negative, disjunctive, or conjunctive) *particulars* pass Quine's test, and no complex *properties* pass Ramsey's test (Mellor 1995, §15.7). In Quine's test, this is because quantifiers that range over particulars a and b need not also range over $\neg a$, $a \vee b$ or $a \wedge b$ to enable us to state negative, disjunctive, or conjunctive truths about a or b without using names or other singular terms. Similarly for Ramsey's test: existential quantifiers that range over properties F and G need not also range over $\neg F$, $F \vee G$ or $F \wedge G$ to enable us to state laws involving negations, disjunctions, or conjunctions of F or G without using predicates.

Both these tests could be modified to admit complexes of the particulars and properties that pass the unmodified tests, but the latter are better, not

9 $\sum$, unlike Ramsey's own sentences (1929b), results from substituting existentially bound variables for *all* predicates, not just theoretical ones, in the conjunction of all true law statements.

only because they are more credible and economical but because their economy lets us extend the arguments of §8, for denying truthmakers to negative, disjunctive, and conjunctive truths, from propositions to sentences. Suppose "*a* is *F*" and "*b* is *F*" are sentences expressing primary propositions ⟨*Fa*⟩ and ⟨*Fb*⟩ which, if true, are made so by *a* being *F* and by *b* being *F*. Now suppose the sentence "*a* or *b* is *F*" is true, and we agree with §8 III that the disjunctive truth ⟨*Fa* ∨ *Fb*⟩ has no truthmaker. "*a* or *b* is *F*" could still have a truthmaker if we took it to say, not that *a* is *F* or that *b* is, but that what is *F* is the disjunctive particular *a* ∨ *b*. Quine's test prevents this by excluding disjunctive particulars like *a* ∨ *b*, just as, by excluding conjunctive and negative ones, it prevents "*a* and *b* are *F*" being made true by *a* ∧ *b* being *F* and "*a* is not *F*" being made true by ¬*a* being *F*.

Similarly for complex properties, whose common confounding with complex predicates like "is *F* or *G*" makes them more credible initially than complex particulars. Thus suppose the sentences "*a* is *F*" and "*a* is *G*" express primary propositions ⟨*Fa*⟩ and ⟨*Ga*⟩ which, if true, are made so by *a* being *F* and *G* respectively. Now suppose the sentence "*a* is *F* or *G*" is true, and we agree, as before, that the disjunctive truth ⟨*Fa* ∨ *Ga*⟩ has no truthmaker. "*a* is *F* or *G*" could still have a truthmaker if we took it to say, not that *a* is *F* or *a* is *G*, but that *a* has the disjunctive property *F* ∨ *G*. But this Ramsey's test prevents, by excluding disjunctive properties like *F* ∨ *G*, just as, by excluding conjunctive and negative ones, it prevents "*a* is *F* and *G*" being made true by *a*'s being *F* ∧ *G* and "*a* is not *F*" being made true by its being ¬*F*.

10 PRIMARY PROPOSITIONS: MOLECULAR

The primary propositions proposed in §9 are those ascribing properties (including relations) *Fx*, *Rxy*, . . . that pass Ramsey's test to particulars *a*, *b*, . . . that pass Quine's test. That makes these propositions—⟨*Fa*⟩, ⟨*Rab*⟩, . . .—atomic: by which I mean that, unlike the molecular propositions—⟨¬*Fa*⟩, ⟨*Fa* ∧ *Fb*⟩, ⟨*Fa* ∨ *Rab*⟩, . . .—whose truth-values theirs determine, they contain no other propositions.

But not all primary propositions are atomic: many propositions contain others of which they are *not* complete truth functions. Take ascriptions of mental states like ⟨X believes P⟩, propositions like ⟨Probably P⟩, or counterfactuals like ⟨¬P ⇒ ¬Q⟩. Few if any of these molecular propositions are complete truth functions of their constituent propositions if those constituents are contingent: for generally, whether a contingent ⟨P⟩ is true or false, we may or may not believe it, its truth may or may not be probable and, if ⟨P⟩ and ⟨Q⟩ are true, ⟨Q⟩ might or might not have been true had ⟨P⟩ been false. So in the present view, as the truth-values of these and many other molecular propositions are not fixed by those of their constituents, they too are primary: they too will need truthmakers to make them true.

Truthmaker theorists may of course deny that non-truth-functional molecular propositions need truthmakers by denying them truth-values at all. The rest of us, who think some of them *do* have truth-values, and *are* true, must say what in the world makes them so. Doing this is a task for specific theories of the mind, of probability, of conditionals, and so on, but I should at least mention some serious candidates.

One such candidate has of course been mentioned already: Physicalism, debates about which are debates about whether psychological truths, such as true instances of ⟨X believes P⟩, only ever have physical truthmakers. Similarly with metaphysical debates about probability. Suppose, for example, "Probably P" credits ⟨P⟩ with a greater chance of being true than ⟨¬P⟩, as in ⟨The coin toss's chance of landing heads >1/2⟩, and suppose that this proposition is true. What makes it true will still depend on what chances are: for example, frequencies, actual or hypothetical, or propensities (Mellor 2005, ch. 3–4). That is what rival theories of chance aim to tell us: what makes propositions like ⟨⟨P⟩'s chance of being true = p⟩ true for a given p. And similarly for theories of subjective and of objective epistemic probability.[10]

Similarly again for non-truth-functional counterfactuals like ⟨¬P ⇒ ¬Q⟩. For Lewis (1973), what makes this counterfactual true, if it is, when ⟨P⟩ is false, is that ⟨¬Q⟩ is true in all the possible worlds most like ours where ⟨¬P⟩ is true. For those who think that only our world exists, these conditionals need *actual* truthmakers to make them true: for example, an object a having a mass M, which makes true all instances of ⟨if a force F were applied to a that did not alter M, a would accelerate at F/M in the direction of F⟩ (Mellor 2000, §5).

11 LAWS OF NATURE

Primary propositions may not all be atomic or molecular. Statements of the laws of nature, in particular, may be neither. What makes them true will depend, for a start, on whether laws are necessary or contingent. If they are necessary, that is, hold in all possible worlds, then in the present view, statements of them, like other necessary truths, will need no truthmakers. This admittedly contentious reading of law statements does therefore forestall the question of what *does* make them true, that is, of what laws are. But Ramsey's test for properties gives this reading a less attractive implication, by making all properties figure in laws and thus exist, if at all, in all possible worlds, which puts them in the same ontological boat as numbers and other necessary entities, whose existence the present view gives us no truth-making reason to believe, as I noted in §8.

10 This assumes that objective epistemic probabilities exist and are contingent. In the present view, true ascriptions of them will need no truthmakers if they are necessary, as many of their advocates believe (Mellor 2005, ch. 6).

Truthmaker theorists may react to this result in several ways. It may be most palatable to resemblance nominalists like Rodriguez-Pereyra (2002), who in any case take properties to be sets of possible particulars and therefore to exist necessarily if at all. But even those who take properties to be universals may accept it, given that the necessity of ⟨*F* exists⟩ need not make ⟨*Fa*⟩, ⟨*Fb*⟩, . . . , necessary: particulars that are *F* in some worlds can still be (or have counterparts that are) ¬*F* in others.

A simpler reaction is to deny that laws *are* necessary, thereby making the existence of most if not all properties unproblematic but reviving the question of what does make law statements true. One answer to that question follows from Mumford's (2004, ch. 10) view of properties as embodying the laws that contain them. This lets laws be contingent, but only on properties, as for Mumford law statements not only entail but are entailed by the existence of the properties they contain. That at least gives a clear answer to the question of what makes law statements true: properties do.

This answer will not, however, satisfy those who want properties to be as able to occur in different laws as particulars are to have different properties: to allow, for example, that the melting point of ice in other possible worlds could be slightly more or less than 0°C. They are better served by Ramsey (1928) and Lewis (1973, ch. 3.3), for whom what makes contingent truths like ⟨All *F*s are *G*s⟩ state laws is their being among the general "consequences of those propositions which we should take as axioms if we knew everything and organized it as simply as possible in a deductive system" (Ramsey 1929a, 150). As this only tells us which truths *actually* state laws, it does not prevent slightly different laws—for example, of the melting point of ice—containing the very same properties.

The Ramsey–Lewis theory may also let law statements lack truthmakers altogether. For in this theory, all it takes to make ⟨All *F*s are *G*s⟩ true, whether it states a law or not, is that all actual *F*s are *G*s, that is, that every actual particular, *a*, *b*, . . . is either ¬*F* or *G*. But this generalization is arguably equivalent to the possibly infinite conjunction

$$(\neg Fa \vee Ga) \wedge (\neg Fb \vee Gb) \wedge \ldots$$

and thus a truth function of the primary propositions ⟨*Fa*⟩, ⟨*Ga*⟩, ⟨*Fb*⟩, ⟨*Gb*⟩, . . . (Ramsey 1927, 48–49). And if ⟨All *F*s are *G*s⟩ is such a truth function, then it will need no truthmaker to make it true.

12 GENERALIZATIONS

Whatever makes law statements true, other general truths raise a question that moderate truthmaker theorists can answer far more easily than their maximalist rivals. Suppose then that ⟨All *F*s are *G*s⟩ is a merely accidental truth, like ⟨All members of the band have perfect pitch⟩, where neither "*F*"

("is a band member") nor "*G*" ("has perfect pitch") need correspond to natural properties. To see why this poses a problem for the maximalist thesis that all truths have truthmakers, suppose the band has just two members, *a* and *b*, both of whom are *G*. Now suppose the propositions ⟨*Ga*⟩ and ⟨*Gb*⟩ are both made true either directly, if "*G*" does correspond to a property, or indirectly, if ⟨*Ga*⟩ and ⟨*Gb*⟩ are nonprimary propositions entailed by other truths. What then makes ⟨All *F*s are *G*s⟩ true?

The answer mooted at the end of §11, that this generalization is a complete truth function of its instances, and therefore needs no truthmaker, faces the objection that its instances, ⟨*Ga*⟩ and ⟨*Gb*⟩, do not entail it, because they do not entail that *a* and *b* are all the *F*s there are. To get something that does entail it, we must conjoin to ⟨*Ga*⟩ and ⟨*Gb*⟩ the true proposition ⟨There are no *F*s except *a* and *b*⟩. But as this truth is contingent—the band could have had more members—and is entailed by no other truths, it seems to need its own truthmaker. Yet how can a negative existential truth like ⟨There are no *F*s except *a* and *b*⟩ have a truthmaker: what entity could there be whose existence entails that other entities do *not* exist?

Maximalists have proposed various candidates: Armstrong (1997, ch. 13) and others follow Russell (1918, ch. 5) in postulating "totality facts" as truthmakers for true generalizations; Rosen and Lewis (2003) argue that what they call "the world *qua*-just-as-it-is" (i.e., the mereological sum of everything) can make it true that, for example, there are no unicorns. To all these proposed truthmakers for negative existential truths there are equally various objections, which any theory that credits all contingent truths with truthmakers needs to meet.

In moderate truthmaker theories, on the other hand, negative existential truths need no truthmakers, because *no* negative truths need them (Heil 2000, §2). In these theories, all it takes to make ⟨There are no *F*s except *a* and *b*⟩ true is that ⟨*Fa*⟩ and ⟨*Fb*⟩ are indeed the only true instances of ⟨*F* . . . ⟩. And then whatever makes ⟨*Ga*⟩ and ⟨*Gb*⟩ true, directly or indirectly, will also make ⟨All *F*s are *G*s⟩ true, even if ⟨*Ga*⟩ and ⟨*Gb*⟩ do not entail that generalization.

If this exception to the rule that nonprimary truths are entailed by other truths seems surprising, it should not be, as it is an immediate consequence of denying truthmakers to negative truths. And once that is done, for example, for the reasons given in §8 II, the simple view it entails of what makes general truths true (and hence, on the Ramsey–Lewis view of laws, of what makes law statements true)—namely ***nothing but the truth of their instances***—is yet another reason for preferring moderate truthmaker theories to maximalist ones.