PROPERTIES AS TRUTHMAKERS

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1 Introduction

A natural thought is that what is true depends on the way the world is; everything couldn't be
exactly the way it is and yet different things be true. Most of the ways of stating this intuition are
slogans, like "truths require truthmakers", "truth supervenes on being", "truths don't float free of
the world", "truths must be tied down", or the like. For any slogan, turning it into a precise
truthmaker principle has been a process fraught with difficulties. A now classical way to make it
precise is the following: "If something is true, then it would not be possible for it to be false
unless either certain things were to exist which don't, or else certain things had not existed which
do" (Bigelow 1988: 188). But modal co-variation doesn't seem to capture everything that the
dependence language in the slogans is supposed to.

Despite the challenges, many are not willing to give up the attempt to make the
truthmaker intuition precise. Because of the ubiquity of supervenience talk and the work
supervenience was made to do in the 1980s, metaphysicians initially looked to supervenience
(plus logical relations) to help explicate truthmaking:

Supervenience-Truthmaking: x makes p true =df. x exists, p is true, and necessarily, if x
exists, then p is true.[1]

But note that Supervenience-Truthmaking doesn't say that p is true *because* x exists. x's
existence *entails* p's truth, but for all Supervenience-Truthmaking says, x might *make* p true by
doing many more things other than existing; perhaps in each world, x does something, or has
certain properties, that makes p true. For all Supervenience-Truthmaking says, it's possible that

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[1] See Mulligan et al (1984) and Fox (1987).

in one world x makes p true by being to the left of y, and in another world x makes p true by eating ice cream, and so on. Indeed, in every world in which x exists, x has all its essential properties; so for all Supervenience-Truthmaking says, it is x's existence and x's having of its essential properties that makes p true. So, Supervenience-Truthmaking might be a true biconditional, but the righthand side is not a good analysis of truthmaking.

David Armstrong (2004: 6-7) endorses Supervenience-Truthmaking, and gives the following argument for its truth. Suppose x exists and makes p true, but does not necessitate p's truth. So p is false in a world W in which x exists. But then there must be something else required to make p true—either another proposition q, or another thing y. But then x doesn't make p true — x and y, or x and q, do. So x must not be making p true even in worlds in which x exists. It doesn't take long to see that this argument won't stand, because it begs the question. It says that because x doesn't make p true in some world or other in which x exists and p is true, x doesn't actually make p true; as Ross Cameron (2008) and others have pointed out, this assumes Supervenience-Truthmaking.

There is another problem with Supervenience-Truthmaking. Necessarily, if my nose exists, then it is true that there are more than five prime numbers; after all, it is necessarily true that there are more than five prime numbers. And so if Supervenience-Truthmaking is true, then as Greg Restall (1996) first pointed out, it turns out that every thing is a truthmaker for every necessary truth. And since impossible things vacuously satisfy the antecedent of "if x exists, then p is true", according to Supervenience-Truthmaking they are truthmakers for everything. Both of these theses – that every thing is a truthmaker for every necessary truth, and that every impossible thing is a truthmaker for every truth – are widely rejected.

In light of these difficulties and other problems, philosophers departed from Supervenience-Truthmaking and began investigating other options. Here are some of them, with the new notions italicized.

- Truthmaking is truth-*grounding*: the truthmaking relation is the relation of grounding between substance and truth (Schaffer 2010: 310; Rettler 2017: section 5.2).
- Necessarily, if p is true, then there is some entity *in virtue of which* it is true (Rodriguez-Pereyra 2005: 18).

- For every sentence which is true there must be some *explanation* of why it is true (McFetridge 1990: 42; Liggins 2005: 12).
- A proposition is made true by some things, the *X*s, if and only if it is the *brutely true pure existence claim* that the *X*s exist or it is true *in virtue of* the brutely true pure existence claim that the *X*s exist (Cameron 2018: 338).
- p (a proposition) is true if and only if there exists a T (some entity in the world) such that T necessitates that p and p is true *in virtue* of T (Armstrong 2004: 17).
- x makes p true iff x is *intrinsically such that p* (Parsons 2005: 166).

None of these are equivalent to Supervenience-Truthmaking.

There obviously is no widespread agreement as to the correct statement of truthmaking, so there's nothing with which we can, without reservations, replace Supervenience-Truthmaking. What we can do, however (and what many have in fact done), is make the definiens of Supervenience-Truthmaking into a necessary condition on truthmaking, rather than a definition or a necessary and sufficient condition. This is what's known as 'Truthmaker Necessitarianism'.

Truthmaker Necessitarianism: x makes p true only if, necessarily, if x exists, then p is true.

Truthmaker Necessitarianism is weaker than Supervenience-Truthmaking, because it doesn't say that truthmaking *just is* necessitation or that necessitation is sufficient for Truthmaking; it says that in order to do truthmaking, a thing must necessitate the truth.

Many think necessitation is partly constitutive of truthmaking – that is, part of the essence of what it is to make something true is for it to necessitate the truth of it.[2] This has led to Truthmaker Necessitarianism becoming orthodoxy among truthmaker theorists.[3] Proponents of Truthmaker Necessitarianism, such as Cameron (2005) and Armstrong (2004), admit that they have no argument for it, but they claim that it seems intuitive to those who think truthmaking has something going for it.

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[2] This stronger claim is endorsed in (Fox 1987; Armstrong 2004; Asay and Baron 2012).
[3] For example, Truthmaker Necessitarianism is endorsed in (Mulligan et al 1984; Armstrong 2003; and Rodriguez-Pereyra 2005: 18).

Truthmaker principles have been used to argue for the existence of many different kinds of things, including properties. In the remainder of this chapter, I'll consider how truthmaking, so understood, is used to argue for the existence of properties.

2 A truthmaking argument for properties

Armstrong (2004: 39-41) considers an argument from Truthmaker Necessitarianism to the existence of properties. The argument assumes that all true propositions have a truthmaker, a position that's now called 'Truthmaker Maximalism'. If Truthmaker Necessitarianism is true, then truthmakers for propositions necessitate the truth of those propositions. If Truthmaker Maximalism is true, then propositions of the form $\ulcorner x$ is $F \urcorner$ have a truthmaker. What could such a truthmaker be? A natural thought is that the object a is the truthmaker for the proposition that a is F. But that can't be, says Armstrong, because a could exist and not be F, and so the proposition that a is F wouldn't be true. So a doesn't necessitate the truth of the proposition that a is F. So, positing a as the truthmaker for the proposition that a is F violates Truthmaker Necessitarianism, and thus a isn't a truthmaker for the proposition that a is F. But the proposition that a is F still needs a truthmaker. There are other candidates, of course. One such candidate is F. And if F were the best candidate, that would make for a very strong argument for properties, since what could F be other than a property?

But F suffers from the same problem qua truthmaker for the proposition that a is F as a does – namely, F could have existed and a not been F. So Truthmaker Necessitarianism is violated yet again. So, if truthmakers necessitate their truths and propositions of the form $\ulcorner x$ is $F \urcorner$ have a truthmaker, then neither x nor F is a truthmaker for the proposition that x is F. Thus, for any x and any F, neither x nor F is a truthmaker for the proposition that x is F.

One way to respond is to posit properties that are essentially had by the things that have them. Then any property P can serve as a truthmaker for predications of P to things without violating Truthmaker Necessitarianism. This would only provide truthmakers for essential predications however, and the truthmakers for accidental predications would be something altogether different.

3 What kinds of properties?

Armstrong (2004: 42) says that "truthmaking considerations…seem to favour a *realism* about properties". But truthmaking considerations don't settle the question of the nature of properties. That's not to say, though, that any view of properties is on the table. Armstrong thinks that truthmaking considerations rule out some views, for instance, nominalism when understood as the view that there are no properties (see Part 4 of this volume). But Armstrong's argument doesn't seem to rule out nominalism when understood as the view that there are no abstract objects, since it's not clear abstract objects are needed to do the truthmaking. It rules out Class Nominalism, says Armstrong, because the property (which is a class) is much too big to be a truthmaker. At least, it's much too big to be a minimal truthmaker for many sentences, and Armstrong thinks that every proposition has a minimal truthmaker (2004: section 3.7). For example, the red planet Mars is not necessary for making true *this pen is red*, but if the truthmaker is the class of red things, that includes Mars as well as the pen (Armstrong 2004: 40). It rules out Predicate Nominalism, because *this pen is red* would be true regardless of whether the phrase "is red" existed or not (Armstrong 2004: 40).

Armstrong thinks that resemblance nominalism (see Chapter 16 of this volume) fares slightly better than Class Nominalism or Predicate Nominalism, because resemblance is grounded in the natures of things. But Armstrong thinks the truthmaker argument rules out resemblance nominalism for different reasons. Namely, it posits things as truthmakers – unlike Class Nominalism, which says that classes are truthmakers, or Predicate Nominalism, which says that the predicate is involved in truthmaking. This is because resemblance is a matter of internal relations (unlike class membership or predicate application), and Armstrong says that internal relations are nothing over and above the things themselves (2004: 117). That is, the truthmakers of internal relations are just the terms of the relations themselves. But the terms of the relations include all their properties, even though all their properties aren't necessary for making true propositions about the thing having one of those properties (Armstrong 2004: 41). This line of thinking from Armstrong is surprising. One might have thought that objects weren't *sufficient* for making true propositions ascribing properties to them, but on Armstrong's line of thinking they're not *necessary*. They're not necessary because they're too big! They have too many extraneous properties, which they would apparently bring to the truthmaking relation.

Armstrong also thinks that Platonism runs afoul of the truthmaker principle. This is because "the original insight" behind the truthmaker principle is that a should serve as a truthmaker for "a is F" and that properties should play a role in truthmaking. For Platonists these two things come apart, says Armstrong, because Platonic universals are outside of their particulars, and so things outside a are making true sentences about a. Armstrong concludes that those who accept the truthmaker principle must believe that universals are immanent in the objects that instantiate them (2004: 42).

He also thinks truthmaking makes trouble for tropes. Consider two exactly similar tropes a and b. Here are two propositions: (i) a and b are distinct, and (ii) a and b are exactly similar. If tropes are truthmakers, then it's hard to see what else other than a and b could be the truthmakers for those two propositions. And clearly (i) and (ii) aren't the same proposition, since (ii) is consistent with the denial of (i) – identical tropes are exactly similar. But then the very same truthmakers are making true distinct propositions. Armstrong concedes that this is not a decisive argument against tropes, but he finds it "suspicious", wondering whether tropes could really be simple if they behave in this way (2004: 43-44).

But it's not so clear what the problem is, for as much as we've said about truthmaking. This scenario doesn't violate either of the principles governing truthmakers that Armstrong has laid out so far – that truthmakers necessitate their truths, and that truthmakers essentially make true the propositions for which they're truthmakers. In order to derive a contradiction, we have to add another principle. Armstrong considers Hochberg's (2004:178) principle, "logically independent basic statements require different truthmakers". That doesn't seem to follow from the original truthmaker intuition, because we ordinarily think that the ball makes true all kinds of true propositions about it.[4] This principle, which Hochberg calls "a fundamental principle of ontological analysis", needs more argument.

Mulligan et al (1984) do not think truthmaker arguments rule out tropes, and indeed they give a truthmaking argument for tropes – following Husserl (2001[1900-1901]), they call tropes "moments". After giving an ontological assay of tropes for several pages, in §3 of their article they turn to the question of whether tropes are truthmakers. The first bit of evidence Mulligan et al. cite is linguistic. Verbs can be nominalized – "fly" to "flight", "born" to "birth", "shoot" to

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[4] See also Maurin (2018: section 2.2).

"shooting", and so on. So, for every sentence of the form ⌜ $X \phi s$ ⌝, there corresponds a phrase of the form ⌜ X's ϕing ⌝. They give the following argument: "If all atomic sentences contain a main verb, and all nominalisations denote moments, then it would follow, in fact, that all truth-makers are moments" (1984: 297). But the fact that we can do this with language doesn't answer the metaphysical question: do nominalizations denote anything at all? And if so, do they denote tropes? Additionally, they don't explicate the argument. The first two premises – (i) all atomic sentences contain a main verb and (ii) all nominalizations denote moments – don't even mention truthmaking, so it's hard to see how anything about truthmaking or truthmakers could follow. There is a premise missing. Constructing the argument for that premise – the one linking (i) and (ii) to truthmaking – is left entirely to the reader.

Mulligan et al. identify three problems with the theory that all truth-makers are moments. One is that saying that the referents of the nominalizations of the verbs of the sentences are the truth-makers doesn't say much about the nature of those truth-makers, so the theory isn't very illuminating. The other is that there are some sentences that seem to be atomic sentences but have truthmakers other than moments. The first kind of sentences that seem to be atomic sentences but that seem to have truthmakers other than moments are substantial predications, like "John is a man"; maybe the things, like John, make these true. But they dismiss this idea, because John would then also be the truthmaker for "John is an animal", and Tibbles would make true "Tibbles is an animal", but how do we account for the fact that the truthmaker for "John is an animal" is a man and yet the truthmaker for "Tibbles is an animal" is not a man? The flatfooted response is that one of them is also a truthmaker for "John is a man" but the other is not a truthmaker for "Tibbles is a man". But why not? Mulligan et al. suggest that the best way of answering this question is by positing humanity, which is instantiated by John but not by Tibbles. But notice that humanity is not a trope, since John instantiates it and so does Jan. I suspect that Mulligan et al. think that John and humanity aren't enough to make it true that "John is a man" because Tibbles and humanity aren't enough to make it true that "Tibbles is a man". There must be some trope of John's humanity that makes it true that John is a man, and since there isn't such a thing as Tibbles' humanity, there's nothing to make it true that Tibbles is a man.

The second kind of sentences that seem to be atomic sentences but that seem to have truthmakers other than moments are existential sentences, such as "John exists". These can be

made true by existence tropes, but Mulligan et al. are hesitant to posit such tropes "for reasons familiar from the tradition" (1984: 300). They are, I presume, alluding to Kant's reasons for thinking that existence is not a property, which is that it adds nothing to the concept of a thing to say that it is; by granting that it has any other properties, one is already assuming that it exists, and saying that it exists is saying that the thing with all its properties exists.[5]

The third kind of sentences that seem to be atomic sentences but that seem to have truthmakers other than moments are identity sentences (John is John, Hesperus is Phosphorous). These can't be made true by their objects (John, Venus), since such sentences are true even if the things don't exist. Rather than positing non-existent things to do the truthmaking work, Mulligan et al. opt for a different solution. Since these sentences are true even when they don't refer to anything, they are logical truths – and logical truths don't require a truthmaker. So, Mulligan et al. conclude that we need no truthmakers for identity sentences, objects are truthmakers for existence sentences, and tropes are truthmakers for other atomic sentences. This furnishes us with a truthmaking argument for tropes.

There are two ways a truthmaker theorist could respond to this argument and resist positing tropes. The first is to deny that predicative atomic sentences require truthmakers. But these are just the sorts of sentences people normally think require truthmakers; why is it true that the ball is red and not true that the ball is blue and not true that the ball is green and not true that the ball is purple…? There must be something that makes the first true. The other way is to find some truthmaker other than tropes for non-existential atomic sentences. And indeed, this is the direction in which Armstrong ends up going.

4 Are properties enough?

Armstrong concludes that properties as he thinks of them are not enough to be truthmakers, because, as discussed, x could have some property F and yet it's possible that x exist and not have F; so Truthmaker Necessitarianism is violated. Because of this, Armstrong argues for the existence of states of affairs. He says:

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[5] Unless, of course, John is a trope or a bundle of tropes. See (Paul 2002) for an argument that people (and all other things) are properties. See (Williams 1953) and (Simons 1994) for arguments that objects are bundles of tropes, and (Maurin 2010) for a defense of the view against a regress argument.

We have somehow got to get particulars and their properties together, or else somehow get the bundles tied up. Since the links needed are contingent (I am assuming for the moment), the entities to be linked cannot do the job by themselves. Truthmakers must necessitate… (Armstrong 2004: 48).

Again, Armstrong doesn't think this tells us what the nature of states of affairs is. We must posit things over and above the particulars and the properties, since neither of those can necessitate; but the nature of those things is up for debate. Says Armstrong, "The states of affairs may be bundlings of tropes, or attachments of tropes to particulars, or bundlings of universals ('compresence'), or instantiations of universals" (2004: 49).

There are options. States of affairs can be instantiations, attachments, brute, or bundlings – bundlings of tropes or universals. But these can't merely be shorthand ways of referring to particulars and properties; an instantiation or bundling of F by x must be something over and above x and F. There is a long tradition of using the phrase "x is nothing over and above y" or "x is nothing over and above the ys", and nearly as long of a tradition of complaining about the opaqueness of the phrase. Nearly everyone agrees that when x and y are identical, x is nothing over and above y (and vice versa). But many think that there are situations in which x is nothing over and above y despite the fact that x is not identical to y. For example, those who say that composition is identity think that an object is nothing over and above its parts, but plenty who deny that composition is identity say the same. Similarly, those who say that mental states are identical to physical states say that mental states are nothing over and above physical states, but plenty who deny that mental states are identical to physical states say the same. Some, like Kelly Trogdon and Gene Witmer (2021) suggest that where x grounds y, y is nothing over and above x. Theodore Sider (2015) surveys options for giving a precise meaning to the phrase at least as it occurs in the phrase "the whole is nothing over and above the parts", finding each of them lacking in some way. So it's not clear what saying "states of affairs must be something over and above their constituents" demands, beyond saying that states of affairs aren't identical to their constituents.

Armstrong wonders what happens if we discharge the assumption that the links are contingent, and assume that predication is necessary (2004: section 4.3). This would be to deny

that it could be the case that both (i) x is F and (ii) it's possible that x exist and not be F. He says in that case that states of affairs are not "ontological extras" – that is, they're nothing over and above the object and property – but we still must posit them in order to have truthmakers for predications (2004: section 4.5). This is not because in some worlds, x and F exist and the proposition that *x is F* is true, but in some other worlds x and F exist and the proposition that *x is F* is not true because x isn't F, since the link between x and F is necessary. But consider x and G, where x isn't G. There are still relations that hold between x and G, and there is a mereological sum of x and G, says Armstrong. We need some sort of distinct relation between objects and properties such that the obtaining of that relation suffices to make the proposition that *x is F* true. Armstrong (2004: 47) thinks that relation, which he gets from (Baxter 2001), is partial identity. Partial identity isn't the truthmaker for *x is F*, but when there is a partial identity relation between x and F, then the states of affairs of *x's being F* is the truthmaker for the proposition that *x is F.*

If Armstrong is right that truthmaking considerations support positing states of affairs, it's not clear they support positing properties. The truthmaking argument for properties was that properties were necessary to do the truthmaking work, because objects couldn't do it alone. The truthmaking argument for states of affairs is that they are necessary to do the truthmaking work, because objects and properties can't do it together. So, suppose states of affairs are necessary to do the truthmaking work. Are they sufficient? It seems so, or we'd have another truthmaking argument for some other entity.

5 Are properties required?

So, states of affairs are necessary and sufficient for doing the truthmaking work for predication – for propositions of the form $\ulcorner x$ is $F \urcorner$. Once we've gone that far, it raises a crucial question: do states of affairs require properties? And it's not obvious that the existence of states of affairs requires the existence of properties. One might think that the existence of states of affairs does require the existence of properties, because states of affairs have properties as parts (or properties stand in some other quasi-parthood relation to states of affairs, like constituency). If states of affairs are bundles of properties, or bundles of an object and a property, then there are no states of affairs without properties. But not every view of states of affairs has it that they have parts or constituents. According to one theory of states of affairs (found in Skyrms 1981: 199; Plantinga

1976, 1983; and Turner 2016), they are mereologically simple, lacking parts and lacking constituents. If this theory is right, then properties aren't *required* to be parts of states of affairs. And so the existence of states of affairs isn't an argument for the existence of properties. Or at least, it's not a truthmaker argument.

Similarly, Josh Parsons (1999: 325) argues that Armstrong's truthmaker argument for realism about properties isn't actually a truthmaker argument; nominalists can accept the truthmaker principle (325). To show this, he compares it to Armstrong's (2004: 2-3) truthmaker argument against behaviorism. He begins by offering Armstrong's truthmaker principle, which he glosses as, "For every true sentence, there is some thing such that the sentence cannot become false without a qualitative change, a non-Cambridge change, in that thing" (Parsons 1999: 327). Armstrong's argument against behaviorism, says Parsons, is that there is nothing out in the world that maps on to the relevant dispositions posited by behaviorists; the dispositions can change without any qualitative change in anything. So, the behaviorist can't provide truthmakers for sentences involving dispositions.

Armstrong's argument for properties is different, says Parsons. For note that there are things out in the world that map on to the relevant things for nominalists – objects. So, the nominalist can provide truthmakers – objects. The sentence "the ball is green" can't go from true to false unless there is a qualitative change in the ball. So, the ball serves as the truthmaker for the sentence "the ball is green". Parsons says that Armstrong needs to supplement the truthmaker argument with another principle that's stronger than the truthmaker principle. The truthmaker principle says that for every true sentence, there is some thing such that the sentence cannot become false without a qualitative change in that thing; the truthmaker argument against nominalism, in order to rule out objects as truthmakers, must add the principle that a truthmaker for a sentence is essentially a truthmaker for that sentence. Then the ball can't be a truthmaker for "the ball is green", since the ball could have been blue and thus the ball would not have made it true that the ball is green. Sentences like "the ball is green" require truthmakers that, necessarily, exist only if the ball is green.

The nominalist can still be a truthmaker theorist, in that the nominalist can accept the truthmaker principle. For example, the nominalist can accept that the ball makes it true that the ball is green. The truthmaker principle says that if the ball makes it true that the ball is green, then "the ball is green" cannot become false without a qualitative change in the ball. This

qualitative change is a change in color, from green to something else. But the nominalist, Parsons says, cannot accept truthmaker essentialism. The ball is not essentially a truthmaker for the sentence "the ball is green", because the ball could become some other color.

Plenty of truthmaker theorists will endorse this additional truthmaker essentialism principle, and so follow Armstrong in rejecting nominalism in favor of an ontology that posits things that satisfy truthmaker essentialism – things that, necessarily, exist only if the propositions for which they're truthmakers are true. These truthmaker theorists will need to posit properties, says Armstrong. The nature of those properties, as previous canvassed, is up for debate.

6 Revisiting truthmaker necessitarianism

The intuition behind truthmaking seems to pull in favor of things – objects like balls, candles, and trees – being the truthmakers. But Truthmaker Necessitarianism rules out this intuitive view. Since objects don't necessitate accidental predications, or most propositions that aren't essential predications, people end up abandoning objects as truthmakers. These philosophers (like Russell 1985; Pendlebury 1986; Ruben 1990: 210; Armstrong 2004; Rodriguez-Pereyra 2005; Hoffman 2006; and Cameron 2008: 124) think they need a necessitater for truths to be truthmakers, so they end up admitting facts or states of affairs into their ontologies to serve as truthmakers. Others (like Martin 1980; Mulligan et al. 1984: 295-304; and Lowe 2006: 186-7, 204-5) admit tropes. One can accept that objects are truthmakers for essential predications and still retain Truthmaker Necessitarianism, but if one wants to retain Truthmaker Necessitarianism one must admit into one's ontology something else as truthmakers for accidental predications.

If one denies Truthmaker Necessitarianism, one can accept that objects are truthmakers for predications of the form $\ulcorner x$ is $F \urcorner$. Of course, x could have existed and not been F, but that's no problem, since truthmakers needn't necessitate. However, F could have existed and not been instantiated by x, as well. So perhaps we can salvage a truthmaker argument for properties despite denying truthmaker necessitarianism. Truthmaker necessitarianism ended up leading Armstrong to posit facts, after which it wasn't clear that properties were needed anymore. Denying truthmaker necessitarianism removes the need to posit truthmakers that necessitate, and so doesn't lead all the way to facts; one can stop earlier. There's a truthmaking relation, still, but that truthmaking doesn't require necessitating. Maybe making true is like making bread in the

following sense: I cause the bread to exist, but I don't necessitate the existence of the bread. Perhaps some will want objects to do the truthmaking work, and others will want properties.[6]

7 Conclusion

In this chapter, we've considered ways that truthmaking has been used to argue for properties, and what kind of properties it's been used to argue for. Predicative sentences need truthmakers, and properties are required to either be the truthmakers, or to be constituents of states of affairs that are the truthmakers. In either case, properties must exist, if predicative sentences are to have truthmakers.

References

Armstrong, D.M. (2003) Truthmakers for Modal Truths. In Lillehammer, H. and Rodriguez-Pereyra, G. (eds.) *Real Metaphysics: Essays in Honour of D.H. Mellor*. New York: Routledge: 12–25.

Armstrong, D.M. (2004) *Truth and Truthmakers*. Cambridge: Cambridge University Press.

Asay, J and Baron, S. (2012) Unstable Truthmaking. *Thought* 1(3): 230–238.

Baxter, D. (2001) Instantiation as Partial Identity. *Australasian Journal of Philosophy* 79(4): 449-464.

Bigelow, J. (1988) *The Reality of Numbers: A Physicalist's Philosophy of Mathematics*. Oxford: Clarendon Press.

Cameron, R. (2005) Truthmaker Necessitarianism and Maximalism. *Logic Et Analyse* 48(189/192): 43–56.

Cameron, R. (2008) Truthmakers, Realism and Ontology. *Royal Institute of Philosophy Supplements* 83:107–128.

Cameron, R. (2018) Truthmakers. In Glanzberg, M. (ed.) *The Oxford Handbook of Truth*. Oxford: Oxford University Press.

Fox, J.F. (1987) Truthmaker. *Australasian Journal of Philosophy* 65(2): 188-207.

Hochberg, H. (2004) Russell and Ramsey on distinguishing between universals and particulars. *Grazer Philosophische Studien* 67(1):195-207.

Hoffman, F. (2006) Truthmaking, Recombination, and Facts Ontology. *Philosophical Studies* 128(2): 409-440.

Husserl, E. (2001[1900-1901]) *Logical Investigations*. Moran, D. (ed.). Findlay, J. N. (trans.). London and New York: Routledge.

Liggins, D. (2005) Truthmakers and Explanation. In Beebee, H. and Dodd, J. (eds.) *Truthmakers: The Contemporary Debate*. Oxford: Clarendon Press: 105-115.

Lowe, E.J. (2006) *The Four-Category Ontology: a Metaphysical Foundation for Natural Science*. Oxford: Clarendon Press.

Martin, C.B. (1980) Substance Substantiated. *Australasian Journal of Philosophy* 58(1): 3-10.

Maurin, A.-S. (2010) Trope Theory and the Bradley Regress. *Synthese* 175(3): 311-326.

Maurin, A.-S. (2018) Tropes. In Zalta, E.N. (ed.) *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition). URL = <https://plato.stanford.edu/archives/sum2018/entries/tropes/>.

McFetridge, I. (1990) Truth, Correspondence, Explanation and Knowledge. In Haldane, J. and Scruton, R. (eds.) *Logical Necessity and Other Essays*. London: Aristotelian Society: 29-52.

Mulligan, K, Simons, P, and Smith, B. (1984) Truth-Makers. *Philosophy and Phenomenological Research* 44(3): 287-321.

Parsons, J. (1999) There Is No 'Truthmaker' Argument Against Nominalism. *Australasian Journal of Philosophy* 77(3): 325–334.

Parsons, J. (2005) Truthmakers, the Past, and the Future. In Beebee, H. and Dodd, J. (eds.) *Truthmakers: The Contemporary Debate*. Oxford: Clarendon Press: 161-174.

Paul, L.A. (2002) Logical Parts. *Noûs* 36(4): 578-596.

Pendlebury, M. (1986) Facts as Truthmakers. *The Monist* 69(2): 177-188.

Plantinga, A. (1976) Actualism and Possible Worlds. *Theoria* 42(1-3): 139–160.

Plantinga, A. (1983) On Existentialism. *Philosophical Studies* 44(1): 1-20.

Restall, G. (1996) Truthmakers, Entailment and Necessity. *Australasian Journal of Philosophy* 74(2): 331-340.

Rettler, B. (2017) Grounds and 'Grounds'. *Canadian Journal of Philosophy* 47(5): 631-655.

Rodriguez-Pereyra, G. (2005) Why Truthmakers. In Beebee, H. and Dodd, J. (eds.) *Truthmakers: The Contemporary Debate*. Oxford: Clarendon Press: 17-31.

Ruben, D.-H. (1990) *Explaining Explanation*. Abingdon, UK: Routledge.

Russell, B. (1918) The Philosophy of Logical Atomism. *The Monist* 28(4): 495-527.

Schaffer, J. (2010) The Least Discerning and Most Promiscuous Truthmaker. *The Philosophical Quarterly* 60(239): 307-324.

Sider, T. (2015) Nothing Over and Above. *Grazer Philosophische Studien* 91(1):191-216.

Simons, P. (1994) Particulars in Particular Clothing: Three Trope Theories of Substance. *Philosophy and Phenomenological Research* 54(3): 553-575.

Skyrms, B. (1981) Tractarian Nominalism. *Philosophical Studies* 40(2): 199-206.

Trogdon, K and Witmer, G. (2021) Full and Partial Grounding. *Journal of the American Philosophical Association* 7(2): 252-271.

Turner, J. (2016) *The Facts in Logical Space: A Tractarian Ontology*. Oxford: Oxford University Press.

Williams, D.C. (1953) The Elements of Being: I. *Review of Metaphysics* 7(1): 3-18.