Truthmakers and dependence

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This paper discusses the significance of non-causal dependence for truthmaker theory. After introducing truthmaker theory (section 1), I discuss a challenge to it levelled by Benjamin Schnieder. I argue that Schnieder's challenge can be met once we acknowledge the existence of non-causal dependence and of explanations which rely on it (sections 2 to 5). I then mount my own argument against truthmaker theory, based on the notion of non-causal dependence (sections 6 and 7).

1 Some truthmaker theory

It's true that Mulligan exists; that is, <Mulligan exists> (the proposition *Mulligan exists*) is true. Is there anything in virtue of which it is true? It is very natural to think that the proposition is true in virtue of Mulligan. Let us define the term *truthmaker* as follows: *o* is a *truthmaker* for *P* just in case *P* is true in virtue of *o*. Then Mulligan is a truthmaker for <Mulligan exists>; the proposition is *made true* by Mulligan. 'In virtue of' is an explanatory locution: we can explain why the proposition is true by pointing to the existence of Mulligan. Indeed, quite generally, if *o* is a *truthmaker* for *P* then *P* is true because *o* exists (MacBride 2005: 133, Horwich 2006).

Many philosophers will agree that true existential propositions, such as this one, have a truthmaker. But truthmaker theorists go further. Some of them (e.g. Armstrong 2004: 5) claim that every true proposition has a truthmaker;[1] more cautious truthmaker theorists specify a class of true propositions, going beyond the existential truths, and claim that each of these truths has a truthmaker. For instance, Rodriguez-Pereyra (2006*a*: 979) maintains that each synthetic truth has a truthmaker: for each synthetic truth, there is some entity in virtue of which it is true.

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[1] Or, more strictly, is made true by some things collectively. For instance, Restall (1996: 332) suggests that three performances collectively make <Pärt's *Magnificat* has had three performances> true, though none of the performances is a truthmaker for the proposition. In common with most writers on truthmaker theory, I will ignore this complication.

What entity could serve as truthmaker for <The wall is turquoise>? Perhaps it is plausible to think that this proposition is made true by the wall. However, truthmaker theorists generally accept the following claim (see e.g. Armstrong 1997: 115–6):

Necessitarianism: If o a truthmaker for a truth P, then the proposition that o exists entails that P is true.

And it follows from this that the wall does not make <The wall is turquoise> true; since the wall would have failed to be turquoise if it had been painted a different colour, <The wall exists> does not entail that <The wall is turquoise> is true. If this proposition has a truthmaker, as many truthmaker theorists will claim, then it must be something whose existence entails that the proposition is true. And the same goes for other inessential predications. Different truthmaker theorists offer different candidates to play the role of truthmaker for such truths: competitors include tropes (Mulligan, Simons, and Smith 1984) and facts (or 'states of affairs') (Armstrong 1997).

As is well known, Necessitarianism cannot be extended to the biconditional:

o is a truthmaker for a truth P *if and only if* the proposition that o exists entails that P is true.

Let me give two reasons why. First of all, this principle implies that every entity is a truthmaker for every necessary truth: thus Restall's refrigerator makes the Goldbach conjecture (or its negation) true (Restall 1996: 334). But it is obvious that if the conjecture is true, it is not true in virtue of any consumer durable. The second reason is similar. Consider again the true proposition <The wall is turquoise>. The existence of any of the following entities will entail that the proposition is true: the event of my discovering that the wall is turquoise, the singleton of this event, my knowing that the wall is turquoise, the singleton of this process... and so on. The principle under discussion therefore implies that each of these is a truthmaker for the proposition; but it is clear that it is not true in virtue of any of these entities (Smith 1999: section 5).

Not every theory which has been called a truthmaker theory accepts all the above doctrines. For instance, the version of truthmaker theory defended in Rodriguez-Pereyra 2002 does not incorporate Necessitarianism (see Rodriguez-Pereyra 2003). In this paper, I'll consider theories

which claim that some non-existential truths have truthmakers and accept Necessitarianism. It is these theories which Schnieder (2006: 21–22) sets out to challenge.[2]

2 Schnieder on explanation

Schnieder's challenge to truthmaker theory is based on some doctrines concerning explanation. According to Schnieder, there are two basic types of explanation: *causal* and *conceptual*. The term 'causal explanation' is a familiar one, and it applies to explanations such as:

(1) The tree fell because de Selby hit it with an axe.

Conceptual explanations include:

(2) Thorsten is Benjamin's brother-in-law, because he is married to Benjamin's sister.

and

(3) Xanthippe became a widow, because Socrates died.

(All the examples in this section are from Schnieder 2006 – though, to avoid imposture, I have changed 'my' to 'Benjamin's'. I retain Schnieder's numbering.) Schnieder (2006: 32) says that conceptual explanations 'are based on certain conceptual relations'. For instance, the concept *brother-in-law* can be analyzed as follows: x is y's brother-in-law iff x is a man who is married to a sibling of y or a brother of y's spouse: (2) trades on this analysis. Similarly, (3) trades on the obvious analysis of *widow* as *woman whose husband has died*. But not all conceptual explanations are quite like this, Schnieder (2006: 33) tells us:

(4) This vase is coloured because it is red

is a conceptual explanation, but the concept *being coloured* cannot be analyzed in terms of individual colours. Nevertheless, (4) trades on a conceptual connection: that everything red is coloured.

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[2] Rodriguez-Pereyra 2006*b* provides a more detailed overview of truthmaker theory.

In (2), (3), and (4), the concepts invoked in the explanandum are more complex than those invoked in the explanans. Schnieder hold that this is generally the case with conceptual explanations:

The direction of conceptual explanations seems to be owed to factors of conceptual complexity and primitiveness; in general, statements involving complex or elaborated concepts are explained in recourse to more primitive concepts (which may or may not enter into an analysis of the complex concepts). (Schnieder 2006: 33)

According to Schnieder, some explanations combine conceptual and causal elements. For instance,

(6) Xanthippe became a widow, because Socrates drank the cup of hemlock.

factors into a conceptual explanation:

Xanthippe became a widow, because Socrates died.

and a causal one:

Socrates died because Socrates drank the cup of hemlock.

Call such explanations *hybrid*. Although he never makes the claim explicitly, Schnieder's discussion presupposes that every explanation which is neither causal nor conceptual is hybrid.

It seems that we can explain why some propositions are true: for instance

(9) It is true that Thorsten is Benjamin's brother-in-law because he is Benjamin's brother-in-law.

(10) It is true that Thorsten is Benjamin's brother-in-law because he is married to Benjamin's sister.

According to Schnieder (2006: 35), these are conceptual explanations.[3]

Schnieder introduces the notion of *the most direct explanation* of a phenomenon: <p> is the most direct explanation of why *r* iff there is no proposition <q> such that both (i) *r* because *q* and (ii) *q* because *p*. Informally, '*r* because *p*' is the most direct explanation of why *r* iff it is not a telescoped version of some longer chain of explanations, such as '*r* because *q*; *q* because *p*', or '*r* because *q*; *q* because *t*; *t* because *p*'. For instance, (6) does not give the most direct explanation of why Xanthippe because a widow, since it can be expanded into the chain of explanations 'Xanthippe became a widow, because Socrates died; Socrates died because Socrates drank the cup of hemlock'. It is plausible that the most direct explanation of why Xanthippe became a widow is that Socrates died, since it is hard to think of a sentence which could fill both blanks in the following to yield a pair of correct explanations:

Xanthippe became a widow because _____; _____ because Socrates died.[4]

Schnieder (2006: 38) argues that (9) gives the most direct explanation of why it is true that Thorsten is his brother-in-law:

Statement (9) hooks on the operator which governs the whole statement – the sentential operator 'It is true that'. Any other explanation with this *explanandum* will relate to something *inside* the scope of this operator; this will make such an explanation less direct than (9) (this is equally true for causal explanations as for conceptual ones).

Similarly, he argues that any instance of

(*T*) It is true that *p* because *p*.

gives the most direct explanation of its explanandum.

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[3] See Künne (2003: 154–5) and Dodd (2007: 399–400) for similar claims.

[4] 'Xanthippe's husband died' is perhaps a suitable substitution (see Ruben 1990: 218–220 on 'identity explanations'). If so, then 'Xanthippe's husband died' will be the most direct explanation of why Xanthippe became a widow.

3 Schnieder's challenge to truthmaker theory

Schnieder offers the following argument. Consider first truthmaker theorists who claim that tropes make true inessential predications true. These philosophers claim (for instance) that the trope *Socrates' paleness* is a truthmaker for <Socrates is pale>. On such views:

(?S) It is true that Socrates is pale because Socrates' paleness exists.

Now consider the claim:

(S-T) It is true that Socrates is pale because Socrates is pale.

This is an instance of (*T*). Schnieder has already argued that each instance of (*T*) gives the most direct explanation of its explanandum: if that is right, then (S-T) gives the most direct explanation of why it is true that Socrates is pale. It follows that (?S) does *not* give the most direct explanation, and so the explanans in (?S) should also explain (S-T)'s explanans – that is:

(S-1) Socrates is pale because Socrates' paleness exists.

Schnieder argues that (S-1) is false: rather,

(S-2) Socrates' paleness exists because Socrates is pale.

To establish (S-2) and argue against (S-1), Schnieder (2006: 41) notes that '[I]t is part of our understanding of "Socrates' paleness" that it denotes an entity that exists if *Socrates is pale*'. There is a conceptual connection between the concept of the trope 'Socrates' paleness' and other concepts such as *Socrates* and *paleness*. Whichever of (S-1) and (S-2) is correct will trade on this connection. But which of them *is* correct? Schnieder argues that we can settle this question by considering relative conceptual complexity: the concept of the trope 'Socrates' paleness' is more complex than *Socrates*, *paleness*, and whatever further concepts are required to understand the sentence 'Socrates is pale'. In conceptual explanations, the explanadum employs more complex concepts than the explanans. Hence, Schnieder claims, we should reject (S-1) and accept (S-2).

Nothing hangs on the particular choice of example here: we may go through the same argument whenever a trope is claimed to be the truthmaker of the proposition expressed by a true subject-predicate sentence. Moreover, we can also apply a parallel argument to theories which posit facts, rather than tropes, as truthmakers. If the fact that Socrates is pale makes <Socrates is pale> true, then that proposition is true because the fact exists. But that cannot be the most direct explanation of why the proposition is true, since (S-T) is the most direct explanation. The question then arises: is Socrates pale because the fact exists – or does the fact exist because Socrates is pale? The concept of the fact that Socrates is pale seems to be more complex than the concepts required to understand 'Socrates is pale', so (Schnieder argues) it is the second of these explanations that is correct. That is bad news for theorists of facts-as-truthmakers, since their theory implies the correctness of the first, and presumably they can't both be correct.

In short: expressions picking out tropes and facts

are understood on the basis of our understanding the components of the atomic statements. But because of that, they cannot be invoked for a conceptual explanation which would have to hold for them to be truth-makers. (Schnieder 2006: 41)

At one point, Schnieder (2006: 39) claims to have established that truthmaker theories stem from a 'capital philosophical mistake'. But right at the end of his article, he concedes that his argument can be seen as a twofold challenge to truthmaker theory:

Given that my analysis of truth-making is correct, [truthmaker] theorists can be required to tell us *firstly* what explanatory relation could justify the truth of the explanations they need for their theory to work, explanations such as (S-1). And *secondly* they should either undermine the conceptual explanation I tried to establish with respect to (S-2), or explain how it can be that in this special case, we have an explanation running in both directions. (Schnieder 2006: 42)

One way to respond to these challenges would be to dispute their legitimacy. For instance, one might argue that the first challenge is illegitimate on the ground that one can be confident that something is an explanation without being able to classify it. (One can recognise a tree

without being able to tell what sort of tree it is.) But I take it such a response would be unsatisfying.

Another style of response would be to dispute the reasoning which leads up to the challenges. For instance, one might choose to attack Schnieder's claim that understanding 'Socrates' paleness exists' involves more complex concepts than understanding 'Socrates is pale'. But issues of analysis are delicate ones; I am not sure how to go about settling them. So I will grant Schnieder all his claims about relative conceptual complexity. Another option would be to argue that Schnieder's term 'the most direct explanation' is not well-defined: perhaps we can have 'p because q' and 'p because r' where neither of these explanations is a telescoped version of a longer chain. I will not attempt to establish that here. A further possibility would be to attack the claim that instances of 'It is true that p iff p' are conceptual truths, on the grounds that they are not conservative over logic.[5] In sections 4 and 5, I offer truthmaker theorists a way to meet Schnieder's challenges head on.

4 How truthmaker theorists can reply to the first challenge

For definiteness, let's build conceptual priority into the notion of a conceptual explanation: in order for an explanation to count as conceptual, an explanation must employ less complex concepts in the explanans than in the explanandum. This is purely a matter of notation; it would be possible to say everything I am going to say while using the expression 'conceptual explanation' in a wider sense, but it would take longer.

With that stipulation made, it is plausible that there are correct explanations that are neither causal nor conceptual nor hybrid. Here are some examples.

(a) This act is morally wrong because it produces pain just for fun.
(b) These things constitute a table because they are arranged tablewise (in the sense of van Inwagen 1990: 109).
(c) The tea is poisonous because it contains arsenic.

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[5] 'Either p or not p. If p, then <p> is true. If not p, then <not p> is true. Either way, something is true. Thus something exists.' Philosophers suspicious of a conceptual proof that something exists will think that the more likely candidates for conceptual truth are the conditionals 'If <p> exists, then: <p> is true iff p'. Compare Field 1984.

These are clearly non-causal. Neither are they conceptual (*pace* Thomasson 2006): for instance, it is not analytic that if there are things arranged tablewise, they constitute a table (see Sider 2009: section 4). And it is hard to see them as hybrid: what could the intermediate explanations be? Thus there seem to be at least three explanations which escape Schnieder's taxonomy.

It should come as no surprise that there are such explanations: their existence is implied by some plausible theses which I will now set out.

Kim (1994: 68) put forward the idea that explanations often track instances of dependence (see also Ruben 1990: chapter VII). For instance, when a causal explanation of the form 'E occurred because F occurred' is correct, that is because F stands in the causal relation to E. The causal explanation is underpinned by an instance of causal dependence.

It is plausible that there is also *non-causal dependence*. For instance, it is commonly supposed that many of the properties of wholes depend on the properties of their parts, that the values of things depend on their non-evaluative features, and that the possession of higher-level properties depends on the possession of lower-level properties which realize them.

Regarding (a), Mackie (1977: 41) asked: '[J]ust what *in the world* is signified by this "because"?' This question led to a rich debate concerning supervenience. But Mackie's question was about dependence – which is not the same thing as supervenience. To see this, note that necessities supervene upon everything, but they do not depend on everything. The existence of Socrates supervenes on the existence of his singleton set, but does not depend on it: plausibly, the dependence runs the other way (see Fine 1995: 271). Philosophers have discussed supervenience extensively in the last forty years or so, whereas non-causal forms of dependence are just beginning to receive thorough investigation.

The non-causal dependence connected with realization, constitution, and value underwrites explanations such as (a), (b), and (c). These explanations are clearly non-causal; it is no surprise that non-causal dependence does not underwrite causal explanation. But are they conceptual, in the sense of that term I introduced above? It is not plausible to think so. If these explanations were conceptual, then what depends on what would be mirrored in the complexity of the concepts we use to think about these things; sentences reporting dependent phenomena would involve more complex concepts than those reporting the things on which they depend. But there is no obvious reason to expect this. Indeed, there seem to be cases where this mirroring does not obtain: the concept *arranged tablewise* can be analyzed into *table* and other concepts (see van Inwagen 1990: 109).

There are, therefore, explanations which are not causal, not conceptual, and not hybrid; moreover, if explanation often tracks dependence, then we have a theoretical reason to expect such explanations to exist. Let us call such explanations *determinative.* Truthmaker theorists can use this category to reply to Schnieder's challenge. They can accept that (S-1) does not fall into any of the categories which he sets out; but they can claim that there are more types of explanations than Schnieder's philosophy allows for: (S-1) is determinative. And so are the other explanations whose nature Schnieder asks the truthmaker theorist to specify.

5 How truthmaker theorists can reply to the second challenge

I have shown that truthmaker theorists are free to endorse (S-1), but as yet I have done nothing to counter Schnieder's argument for (S-2). I take it that the truthmaker theorist does not want to end up endorsing both (S-1) and (S-2) though, so they must explain where Schnieder's argument for (S-2) has gone wrong. In other words, they must meet the second challenge.

To do so, truthmaker theorists should first point out that, although Schnieder's (2) and (3) appear to be true, they do not feel very explanatory. When you ask why someone is a widow, it is less than satisfying to be told that her husband is dead, true though this may be. These phenomena could be explained if in (2) and (3) 'because' does not signal the presence of an explanation but has some other function. What could this function be? Well, we know that 'because' sometimes functions as an inference-marker: for instance, one might say 'Somebody has taken the diamonds, because they're not where I left them'. In these instances, 'because' works like 'therefore' or 'so'. Perhaps the same is occurring in (2) and (3): in these sentences, 'because' could be signalling the presence of an inference rather than an explanation. For instance, we might see (2) and (3) as summaries of the following arguments respectively, or of similar arguments with extra premises:

Thorsten is married to Benjamin's sister.
For all x and y, if x is a man who is married to y's sister, x is y's brother-in-law.
Therefore, Thorsten is Benjamin's brother-in-law.

Xanthippe was married to Socrates.
Socrates died.

Every woman whose husband has died is a widow.

Therefore, Xanthippe became a widow.

We can explain why one might be tempted to mis-classify (2) and (3) as explanations by acknowledging that 'because' does often signal the presence of an explanation. And we can go further. Consider the following pair of arguments:

Thorsten is married to Benjamin's sister.

For all x and y, if x is a man who is married to y's sister, then 'is the brother-in-law of' applies to x and y (in that order).

Therefore, 'is the brother-in-law of' applies to Thorsten and Benjamin (in that order).

Xanthippe was married to Socrates.

Socrates died.

'Is a widow' applies to a woman just in case her husband has died.

Therefore, 'is a widow' applies to Xanthippe.

I take it that the premises of these arguments explain their conclusions. Quite generally, we can explain why certain things satisfy a predicate by citing its application conditions; these two arguments are examples. They can be summarized as follows:

(2') 'Is the brother-in-law of' applies to Thorsten and Benjamin (in that order) because Thorsten is married to Benjamin's sister.

(3') 'Is a widow' applies to Xanthippe because Socrates died.

We can explain why one might be tempted to class (2) and (3) as explanations by mentioning the danger of confusing them with genuine explanations which are closely similar, namely (2') and (3').

So far in this section, I have concentrated on two of Schnieder's examples of conceptual explanations. I counsel truthmaker theorists to say corresponding things about (S-2): it seems

true, but does not feel very explanatory, and that is because it is an elliptical version of the following argument:

> Socrates is pale.
>
> If Socrates is pale, then Socrates' paleness exists.
>
> Therefore, Socrates' paleness exists.

If (S-2) is really a deduction, rather than an explanation, then no explanatory circularity follows from endorsing (S-1) and (S-2) together. Moreover, there is a ready explanation of why we might feel sympathetic to the mistaken idea that (S-2) is an explanation: we confuse (S-2) with a genuine explanation to which it is intimately related, namely:

> 'Exists' applies to Socrates' paleness because Socrates is pale.

which is a compressed version of the following:

> 'Exists' applies to Socrates' paleness just in case Socrates is pale.
>
> Socrates is pale.
>
> Therefore, 'exists' applies to Socrates' paleness.

In this way, truthmaker theorists can meet Schnieder's second challenge.

6 A related argument against truthmaker theory

We have seen that the notion of non-causal dependence enables truthmaker theorists to overcome Schnieder's challenges. In the rest of the paper, I will show that non-causal dependence also poses a problem for truthmaker theory, by using that notion in an attack on truthmaker theory. In a nutshell, my charge is that truthmaker theory cannot be integrated into an attractive general account of non-causal dependence.

To provide a motivation for their theories, truthmaker theorists look to truth's dependence on reality. As Rodriguez-Pereyra writes:

[T]he root of the idea of truthmakers is the very plausible and compelling idea that the truth of a proposition is a function of, or is determined by, reality. … In other words, truth is not primitive. If a certain proposition is true, then it owes its truth to something else: its truth is not a primitive, brute, ultimate fact. (2005: 21)[6]

In order to capture this dependence, truthmaker theorists invoke the relation of *grounding*, a dependence relation which truthmakers bear to propositions (Armstrong 1997: 128–131; Rodriguez-Pereyra 2005: 26–27). This relation is non-causal (Armstrong 2004: 5). It is cross-categorial, in that it relates propositions to non-propositions. (It may *sometimes* relate a proposition to a proposition: for example, perhaps every proposition is a ground of <There is a proposition>.) According to Necessitarian versions of truthmaker theory, grounding is related to entailment as follows: if *o* grounds <*p*>, then <*o* exists> entails that <*p*> is true.

We saw in section 1 the following principle fails:

o is a truthmaker for a truth *P* if and only if the proposition that *o* exists entails that *P* is true.

Since truthmaking concerns the non-causal dependence of truth on reality, the failure of this principle should come as no surprise: it is just a special case of the thesis that non-causal dependence cannot be captured in modal terms (see Fine 1995: 270–2, Leuenberger 2008: 755–8).

According to truthmaker theorists who regard tropes as truthmakers,

(?S) It is true that Socrates is pale because Socrates' paleness exists.

Corresponding to this, these truthmaker theorists claim that the trope *Socrates' paleness* grounds <Socrates is pale>. The explanation is underpinned by this instance of non-causal dependence. Likewise, truthmaker theorists who posit facts will claim:

<Socrates is pale> is true because the fact that Socrates is pale exists.

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[6] Horwich (2008: 262) suggests that truthmaker theory is not about truth: truthmaker theorists use the truth-predicate merely to articulate generalizations which are not about truth. In the light of their motivation, the suggestion is implausible.

and they will explain why they regard this explanation as correct by asserting that the fact grounds the proposition.

I am highly sympathetic to the idea that that the truth-values of propositions are typically determined by extra-propositional reality. But I am not yet convinced that this dependence involves a relation which propositions bear to other things (and sometimes to propositions). Other options deserve consideration. I will now sketch a couple of general accounts of non-causal dependence, and show how they can accommodate the dependence of truth on reality without invoking the truthmaker theorists' grounding relation.

First, consider the *fact–fact theory*. On this view, the non-causal dependence relation always relates facts to facts. This relation is invoked when we use the following locutions:

p in virtue of its being the case that q.

The fact that q makes it the case that p.

The fact that p obtains in virtue of the fact that q.

The fact that p is grounded in the fact that q.

The fact that p is constituted by the fact that q.

Let us write 'Nom(q)' for the nominalization of the sentence 'q': for instance, Nom(The rose is scarlet) is 'The rose's being scarlet'. The operator turns declarative sentences into noun phrases. Then further expressions can be added to the list:

p in virtue of Nom(q).

Nom(q) grounds Nom(p).

The fact–fact theory says that each of these explanations has the same underlying metaphysics: the non-causal dependence relation relates the fact that p to the fact that q.

At first sight, the theory might seem implausible, since it appears that non-facts are often involved in ontological dependence. For instance, the dependence of {Socrates} on Socrates appears to involve a set and a philosopher, neither of which is a fact. But these cases can be accommodated by the fact–fact theory, which regards them as misleadingly reported dependences between facts. According to the theory, the claim expressed by the sentence '{Socrates} depends on Socrates' is more perspicuously expressed by '{Socrates} exists in virtue of

its being the case that Socrates exists' and 'The fact that Socrates exists makes it the case that {Socrates} exists.' And these sentences, the theory maintains, require only fact–fact dependence. Apparent counter-examples to the theory are thus paraphrased away. The theory resembles accounts of causal dependence which claim that causal relata always belong to some particular category (such as the category *event*) and that sentences which apparently report causation of or by things outside that category are misleading and do not genuinely do so.

The fact–fact theory seems to have no problem accommodating the dependence of truth on reality. Take an instance of (*T*):

(S-T) It is true that Socrates is pale because Socrates is pale.

The fact theory accounts for the correctness of this explanation by positing two facts: the fact that <Socrates is pale> is true, and the fact that Socrates is pale. On this account, the former obtains in virtue of the latter; no dependence relation borne by a proposition is involved. Indeed, it is very natural to spell out the dependence of truth on reality by using fact-talk: see the quotation from Rodriguez-Pereyra above.

Let me bring onto the stage another general account of non-causal dependence: the *operator theory*. This account is suggested by some remarks of Kit Fine's. In his 2001, Fine generally talks of dependence as a relation between true propositions. But he suggests (16) that we could use a sentential operator to express grounding claims. He claims that this 'shows that there is no need to suppose that a ground is some fact or entity in the world'. I doubt that Fine regards the availability of this way of expressing dependence claims as *establishing* that dependence is not a relation, or group of relations: rather, the point is that the assumption that dependence should be accounted for in relational terms stands in need of justification. The operator theory asserts that dependence claims should be understood as involving sentential operators, and denies that there is any relation of non-causal dependence. It thus resembles the account of conjunctive sentences which says that they can often be true even though 'and' does not pick out any relation.[7]

The operator theory seems to be able to accommodate the dependence of truth on reality. Those who endorse it need not deny (S-T); and they will challenge their opponents to show that (S-T) requires for its truth the obtaining of any non-causal dependence relation.

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[7] See Melia 2005 for a related account of truthmaking.

The fact–fact theory is elegant and economical. If causes and effects are always facts, it offers us a pleasingly unified theory of dependence. For all that, we do not yet know whether the fact–fact theory of non-causal dependence is true. More importantly for my argument, we do not yet have conclusive grounds to rule it out.[8] Since the fact–fact theory is incompatible with truthmaker theory, the onus is on truthmaker theorists to explain what is wrong with this account of non-causal dependence. Similar remarks apply to the operator theory: its apparent availability challenges truthmaker theorists to demonstrate that non-causal dependence is relational.

In response to this argument, truthmaker theorists might claim that truthmaker theory can be extended to form a general theory of non-causal dependence – and that this theory is just as good as the operator or the fact–fact theory. In the remainder of this section, I will bolster my argument by showing that this response is not only implausible but methodologically unsound.

First of all, we must ask what shape a theory of non-causal dependence modelled on truthmaker theory would take. The most obvious extension says that, just as there is a dependence relation (namely, grounding) which objects bear to the propositions they make true, there is another dependence relation which objects bear to the acts they make morally wrong, another dependence relation which objects bear to the things they make poisonous, and so on. Perhaps the trope *the act's producing pain just for fun* bears the relevant relation to the act and is therefore its wrongmaker. Or perhaps the tea's poisonmaker is the fact that it contains arsenic.

The dependence relations posited by this theory cannot be identical. (Identifying these relations would imply that poisonous cups of tea and morally wrong acts have truthmakers and are therefore true.) It would be more economical to see each of these dyadic relations as derived from a triadic one: instead of a dependence relation between the wrongmaker and the act, the truthmaker theorist might introduce a relation between the wrongmaker, the act, and the property of being morally wrong; and it could be the same relation which relates the poisonmaker, the cup of tea, and the property of being poisonous. Fixing the property generates the dyadic relations. The most perspicuous notation for claims of non-causal dependence would thus involve a three-place predicate such as 'x is made F by o'. On this account of dependence, making true is just a special case of making F.

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[8] Correia (2005) and Rosen (forthcoming) explore the logic of dependence. Although Rosen adopts a fact-based approach while Correia remains metaphysically neutral, both these philosophers' logical investigations can be exploited by fact–fact and operator theorists alike.

The problem with this account of non-causal dependence is that there are plenty of plausible cases it cannot accommodate. Consider

{Socrates} depends on Socrates.

There is a singleton set in virtue of the existence of Socrates.

Grass is not red, in virtue of grass being green.

Every particle that is among some particles arranged tablewise is part of a table, because every group of particles arranged tablewise constitutes a table.

Necessarily, water contains hydrogen, in virtue of the essence of water.

Kasparov and Karpov cannot both win, owing to the laws of chess.

Birds are able to fly, thanks to their having wings.

If this stone were to be dropped, it would fall, owing to the direction of the gravitational field.

It is most unlikely that all these cases can be stated using 'x is made F by o' — whereas the fact–fact theory and the operator theory have no problems in accommodating them. The moral is that there is more to non-causal dependence than *making*. Truthmaker theory is thus a poor model for accounts of non-causal dependence.

Moreover, there is a methodological error in beginning with truthmaker theory and then seeking to extrapolate an account of non-causal dependence from it. As we have seen, there are lots of plausible instances of non-causal dependence which do not involve the truth of a proposition depending on some entity. When investigating the metaphysics of non-causal dependence, we should bear all these phenomena in mind and hunt for an attractive theory which does justice to as many of them as possible. This is not to say that metaphysicians of non-causal dependence must consider *all* the putative examples (or types of examples) of the phenomenon from the outset of their inquiry. That approach threatens an unmanageable overload, so it may be preferable to start off with a case study and then proceed to a general theory of non-causal dependence. But then the case study may have to be rethought once further data is brought into consideration. Any results based on a subset of the available evidence must be regarded as provisional. (For a parallel, consider a philosopher of causation who began by arguing for a metaphysics of the causation of bodily movements and then sought to extend this account to other cases of causation. It would be reasonable to doubt that this procedure would

lead to the best over-all metaphysics of causation.) Truthmaking is only a small province of the broader republic of non-causal dependence – and we have no reason to think it a representative one. In plumping for an account of the metaphysics of truth's dependence on reality without considering other cases of non-causal dependence, truthmaker theorists have succumbed to methodological myopia.

7 Objections and replies

'Truthmaker theorists have provided successful arguments for their theories. These arguments thereby refute the fact–fact theory and the operator theory.'

Reply. As Dodd (2002: 69–70) and Merricks (2007: 2) have noted, truthmaker theorists rarely offer detailed arguments for their views. When they do offer argument, truthmaker theorists appeal to truth's dependence on reality (e.g. Armstrong 2004: 7): but we have just seen that there is a substantial gap between that idea and the grounding claims made by truthmaker theorists.[9] Rodriguez-Pereyra 2005 offers a detailed argument for truthmaker theory on the basis of truth's dependence on reality, but this argument is, in my view, inconclusive (see section V of my 2008). It raises the same questions concerning the ontology of non-causal dependence which I have been discussing here.

'If the fact–fact theory is true, then a grounding relation of the sort posited by truthmaker theorists can be defined. So the fact–fact theory is compatible with truthmaker theory.'

Reply. According to the fact–fact theory, non-causal dependence only ever relates facts to facts. So it entails the non-existence of the truthmaker theorist' grounding relation. It is true that the fact–fact theorist can define a *predicate* as follows:

o grounds* *<p>* iff the fact that *o* exists grounds the fact that *<p>* is true.

But this is a predicate whose satisfaction-conditions, given by the right-hand side of the biconditional, do not require the existence of a grounding relation which could have a proposition among its relata. The same goes for the operator theory: although the operator theorist can define a predicate 'grounds**' in similar fashion, their theory also entails the

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[9] Liggins 2008, section IV argues that it is very difficult to see how the groundedness of truth in reality supports truthmaker theory.

non-existence of the truthmaker theorist's grounding relation, and thus that this predicate will not pick out that relation.

8 Conclusion

I have argued that Schnieder's challenge to truthmaker theory can be met once we acknowledge the existence of non-causal dependence and of explanations which appeal to it. But non-causal dependence is at present only dimly understood. In particular, its metaphysics is unsettled. It remains to be seen whether truthmaker theorists' claims about grounding can be integrated into an attractive general theory of the metaphysics of non-causal dependence. In the second half of this paper, I have argued that the prospects for such an integration are dim. We should acknowledge truth's dependence on reality without claiming that any relation of dependence is borne to propositions.[10]

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