

Disjunctions, Conjunctions, and their Truthmakers

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(Conditionally accepted in *Mind*)

A *truthmaker* for a given truth is something in virtue of which the truth is true, see *inter alia* (Armstrong 2004). One plausible thesis about truthmaking is that it is closed under entailment, in the sense of obeying the so-called *entailment principle*:

If something makes a certain truth true, then it also makes true all of this truth's consequences.¹

Though plausible, the principle seems to have some undesirable consequences: the *explosion of truthmakers for necessities*—every thing is a truthmaker for every necessary truth—, and indeed the *truthmaker triviality*—every thing is a truthmaker for every truth whatsoever—.

Gonzalo Rodriguez-Pereyra (2006) argues against attempts to preserve (perhaps, a restriction of) the entailment principle while avoiding these results. In so doing, Rodriguez-Pereyra crucially both defends the *disjunction thesis*—if something makes true a disjunctive truth, then it makes true one of its disjuncts—, and rejects the *conjunction thesis*—if something makes true a conjunctive truth, then it makes true each of its conjuncts—.²

In what follows I first provide plausible counterexamples to the disjunction thesis, and contend that Rodriguez-Pereyra's general defence of it fails. Then I defend the conjunction thesis from Rodriguez-Pereyra's case against it. I finally conclude that the envisaged attempts have not been proved, by Rodriguez-Pereyra's considerations, to be at fault.

1. Against the Disjunction Thesis

Suppose that the disjunction thesis were true, i.e., that each instance of the following schema hold (see Rodriguez-Pereyra's (6) (2006, p. 936)):

- (\vee) If T is a truthmaker for the truth that p or q , then either T is a truthmaker for the truth that p or T is a truthmaker for the truth that q .

Then, assuming that every entity makes something true, truthmaker triviality would follow: every entity is a truthmaker for every truth whatsoever.³

¹ I here remain neutral on the nature of the truthbearers. Entailment is to be understood here classically. Finally, a thing is a consequence of some things iff it is entailed by them.

² Sometimes these labels name the corresponding biconditional claims, here I focus just on the relevant more controversial directions.

³ Proof: Let T be an arbitrary entity and q be an arbitrary truth. By assumption, T is a truthmaker of a truth p . By the entailment principle, T is a truthmaker for the truth that q or not q , given that the truth that q or not q is entailed by the truth that p . By the disjunction thesis, T is a truthmaker for the truth that q or T is a truthmaker for the truth that not q . But then, given the factivity of being made true, T is a truthmaker for the truth that q , QED. This is in essence Rodriguez-Pereyra's (2006, p. 963), but without invoking the principle that if a disjunction is true then one of its disjuncts is true, which will be important in the discussion below. See also (Restall 1996, p. 334) and (Read 2000, p. 71–2).

The question arises as to whether there are arguments against the disjunction thesis—which dialectically should be independent of the entailment principle. Rodriguez-Pereyra says:

Are there any such arguments? If so, I am not aware of them. (Rodriguez-Pereyra 2006, p. 967)

Fortunately for the defender of (perhaps, a restriction of) the entailment principle, there *are* indeed such arguments—at least, provided certain plausible additional views. For, according to these views, which things there are and the way they are may make a certain disjunction true, without making true anyone of its disjuncts.

Take vagueness. Suppose you are confronted with a colour patch, (say) #35, in the borderline region of a sorites series going from clear cases of red patches to clear cases of orange patches. Which things there are and the way they are presumably make true the disjunctive truth that patch #35 is red or orange. But, on plausible views about the nature of vagueness, patch #35 being borderline makes it the case that it is not true that it is red and it is not true that it is orange. Hence, whatever makes the disjunctive truth true fails to make neither of its disjuncts true, for neither *is* true.

Or take open futures. Suppose you toss a coin, (say) *c*, and the world is such that it is genuinely open whether it will land head or it will land tail. Which things there are and the way they are presumably make true the disjunctive truth that coin *c* will land head or tail. But, on plausible views about the nature of the openness of the future, the fate of *c* being genuinely open makes it the case that it is not true that it will land head and it is not true that it will land tail. Hence, whatever makes the disjunctive truth true fails to make neither of its disjuncts true, for again neither *is* true.⁴

Certainly, these additional views—about the nature of vagueness, the openness of the future, and the like—here alluded to are, though plausible, also controversial. But I take it that one would expect an argument allegedly trivializing truthmaking (given the entailment principle) not to depend on which view turns out to be the right one on these issues.

Thus there are plausible arguments against the disjunction thesis. Rodriguez-Pereyra, however, offers the following argument in its favour:

⁴ This case is indeed similar to Read's (2000) original counterexample to the disjunction thesis, on one understanding of it according to which there being a horse race, the local conditions and so on are such as to favour Valentine or Epitaph over the others, making true that Valentine or Epitaph will win, but leaving genuinely open which of the two will in fact win. This might not be Read's intended understanding, however, given that so understood the example also goes against the view that each instance of the following schema holds:

If something is a truthmaker for the truth that *p* or *q*, then either something is a truthmaker for the truth that *p* or something is a truthmaker for the truth that *q*;

which Read apparently endorses, see (Read 2000, p. 73, Theorem 4.3). Notice also that the sense in which which things there are and the way they are determine that coin *c* will land head or tail need not be *causal*, so that Rodriguez-Pereyra's criticism of Read's in (Rodriguez-Pereyra 2006, pp. 966–7) is clearly ineffective. (If one had doubts about this, just consider a variation of the example involving the disjunctive truth that coin *c* will land head *or not*—notice that it is in effect with respect to excluded middle that the disjunction thesis is instantiated in the trivializing argument of footnote 3.)

Since disjunction is a truth-functional connective, disjunctions have their truth-value fixed by those of their disjuncts. So if $\langle P \rangle$ is true,⁵ the truth of $\langle P \vee Q \rangle$ is thereby fixed. But the idea behind truthmaker theory is that, in general, alethic facts (i.e. facts about proposition being true) obtain in virtue of non-alethic facts. So if the truth of $\langle P \vee Q \rangle$ is fixed by the fact that $\langle P \rangle$ is true, and alethic facts obtain in virtue of non-alethic facts, what $\langle P \vee Q \rangle$ is true in virtue of is what $\langle P \rangle$ is true in virtue of. So [the disjunction thesis—DLdS] is true: whatever makes a disjunction true makes some disjunct true. (Rodriguez-Pereyra 2006, p. 968)

There are several grounds for dissatisfaction with this argument. First of all, the argument seems to depend on disjunction being a truth-functional connective. What does this exactly amount to? One natural candidate is that each instance of the following schema holds:

(T_{\vee}) It is true that p or q iff it is true that p or it is true that q .

The left-to-right direction of (T_{\vee}) is, however, problematic: as we have just seen, there are plausible views that contend that, for a number of cases, a disjunction can be true without any of its disjunct being true—and thus would reject (T_{\vee}) in its full generality.⁶

This notwithstanding, the considered views need not quarrel with the right-to-left direction of (T_{\vee})—which, despite appearances, turns out to be the only one relevant for Rodriguez-Pereyra's argument. Assume then that if it is true that p or it is true that q then it is true that p or q . He seems to think that, in that case, if something is a truthmaker for the truth that p or is a truthmaker for the truth that q , then it is a truthmaker for the truth that p or q . Let it be so.⁷ Then whatever makes some disjunct true also makes the disjunction true. But it is clearly a *non sequitur* to move from here to the converse claim that whatever makes a disjunction true makes some disjunct true, as Rodriguez-Pereyra does in the last line of the passage quoted.

Rodriguez-Pereyra's is thus not an effective argument in favour of the disjunction thesis. Are there any such arguments? If so, I am not aware of them.⁸

⁵ Rodriguez-Pereyra uses angled brackets to form names of propositions, which he takes to be the primary truthbearers.

⁶ (T_{\vee}) might still be an important principle, even according to such views, functioning as a constraint that each admissible way of removing the relevant indeterminacies should respect.

⁷ This will certainly hold in the presence of the entailment principle.

⁸ What about substantially weakening of the disjunction thesis? The following for instance seems capable of sustaining the relevant step in the trivializing argument considered in footnote 3:

($\vee-$) If T is a truthmaker for the truth that p or q , then—*provided it is true that p or it is true that q* —either T is a truthmaker for the truth that p or T is a truthmaker for the truth that q .

However, ($\vee-$) inherits the concerns one may have with respect to (\vee): if something can be a truthmaker for a disjunctive truth and still fail to make true any of its disjuncts, then this can be so even if something *else* makes some of its disjuncts true. For illustration, suppose that the coin lands head. Then something makes it now true that the land will land head—which was previously valueless. This new truthmaker will presumably also be a truthmaker for the disjunction—*certainly* so, in the presence of the entailment principle. But it does not follow, nor it is in any way plausible, that the old truthmaker the disjunction already had when it was still open what the coin would do, now makes it true that it will land head. (How to spell out the details of the point in this footnote will, of course, depend on the particular view one holds concerning the nature of the primary truthbearers, as well as on one's position concerning eternalism vs temporalism—issues on which I want to remain neutral here.)

2. In Favour of the Conjunction Thesis

It seems plausible to hold that if something makes a certain truth true, then it also makes true all of this truth's consequences. It has been argued that this entailment principle trivializes truthmaking, by making every thing a truthmaker for every truth whatsoever. But the argument presupposes the disjunction thesis, which we seem to have plausible reasons to reject.

As is well known, the entailment principle also faces versions of the so-called 'paradoxes' of classical implication. For every truth whatsoever entails every necessary truth. Hence, assuming again that every entity makes something true, the explosion of truthmakers for necessities follows: every entity is a truthmaker for every necessary truth.⁹

This result may be welcomed by some, after all.¹⁰ At any rate, it seems to be far less devastating than the (alleged) trivialization of truthmaking. But suppose one *does* aim to block the explosion. Several strategies for so doing seem available.

One is to reject the entailment principle altogether, and to endorse instead a different, though related, *entailment** principle—not being the case that every truth entails* every necessary truth—: if something makes a certain truth true, then that also makes true all of this truth's consequences*. Pace Rodriguez-Pereyra (2006, p. 969), this seems to be the one recently favoured by David Armstrong:

The star symbol indicates that if this principle is to be applied in full generality, then the entailment here cannot be classical entailment. ... The exact limitations to be placed on entailment in the suggested [entailment* principle—DLdS] is a technical matter, one that I am not equipped to discuss. Suggestions have made by Restall (1996) and Read (2000), and I will simply assume that something is available. I am not arguing that classical entailment should be abandoned, but I am urging that a connective that does not allow the distressing explosion of truthmakers for necessary truths should be used in this particular context. Horses for courses. (Armstrong 2004, p. 11)¹¹

Another strategy, however, suggested by Frank Jackson (and also mentioned by Armstrong), is to narrow the scope of the entailment principle. The most obvious option is to restrict it to *contingent* truths. Unfortunately, such a restriction does not suffice by itself to block something like the explosion of truthmakers for necessary truths—at least assuming without restriction that the conjunction thesis is true, i.e., that each instance of the following schema holds (see Rodriguez-Pereyra's (8) (2006, p. 970)):

(&) If T is a truthmaker for the truth that *p* and *q*, then T is a truthmaker both for the truth that *p* and for the truth that *q*.

⁹ Proof: Let T be an arbitrary entity and *q* be an arbitrary necessary truth. By assumption, T is a truthmaker of a truth *p*. By the entailment principle, T is a truthmaker for the truth that *q*, given that the truth that *q* is entailed by the truth that *p*, QED. See *inter alia* (Restall 1996, p. 333), (Read 2000, p. 69), (Rodriguez-Pereyra 2006, pp. 962–63).

¹⁰ 'There is something quite touching in the view that every particle in the universe (and everything else besides!) is a witness to all necessary truths' (Restall 1996, p. 333), see also (Armstrong 2004, p. 11)'s reference to a 'Tractarian' view on necessary truths.

¹¹ In footnote 1, 'entailment' is stipulated to be *classical* entailment. On some non-classical conceptions, however, some non-classical notion of entailment* would indeed be the appropriate notion of *entailment*. It is worth exploring, if only for dialectical purposes, the prospects of strategies within the classical framework. As we will see, the discussion to come will prove also relevant for the assessment of Rodriguez-Pereyra (2006, p. 976)'s critical discussion of the non-classical alternatives, see below footnote 14. I am indebted here to an anonymous referee for this journal.

For then every entity which makes something (contingent) true would still be a truthmaker for every necessary truth.¹² On the face of this, Armstrong offers on behalf of Jackson an alternative restriction, to what he calls ‘*purely* contingent truths,’ which do not contain any necessary component ‘at any level of analysis’ (Armstrong 1004, pp. 11–12). One other alternative reaction, which I am inclined to think is preferable, is to keep the simpler restriction on the entailment principle to contingent truths, and then restrict the conjunction thesis itself accordingly.¹³

Rodriguez-Pereyra contends, however, that in certain cases at least—which involve (‘purely’) contingent truths—, what makes a certain conjunction true fails to make true some of its conjuncts. If he were right here, these cases would go simultaneously against the Jackson-Armstrong strategy envisaged, and against the one I suggested of restricting the conjunction thesis to contingent truths. And, as he stresses, they would in any case go against the popular conjunction thesis itself. I don’t think he is right here, however. Here is his main argument:

Suppose that the conjunction <Peter is man and Saturn is a Planet> is jointly made true by the facts that Peter is a man and that Saturn is a planet. But it is not the case that <Peter is a man> is true jointly in virtue of the facts that Peter is a man and that Saturn is a planet. What <Peter is a man> is true in virtue of is simply the fact that Peter is a man. (Rodriguez-Pereyra 2006, p. 971, emphases removed)¹⁴

This is puzzling. Certainly, the truth that Peter is a man is true in virtue of the fact that Peter is a man—or so we may suppose, anyway. But how is it supposed to follow from this that it is not then the case that it is *also* true jointly in virtue of the facts that Peter is a man and that Saturn is a planet? In general: why would one think that, if something makes a truth true, then the rest of things, which somehow involve it—as a member, as a part, or whathaveyou—are *not* also truthmakers for the truth?

Actually, one would indeed have thought precisely *otherwise*:

Suppose p to be a truth and T to be a truthmaker for p . There may well exist, often there does exist, a T' that is contained by T , and a T'' that contains T , with T' and T'' *also* truthmakers for p . We may say that truthmakers for a particular truth may be more or less *discerning*. The more embracing the truthmaker, the less discerning it is. For every truth, the least discerning of all

¹² Proof: Let T be an arbitrary entity which is a truthmaker for a (contingent) truth p ; and let q be an arbitrary necessary truth. By the entailment principle restricted to contingent truths, T is a truthmaker for the conjunctive truth that p and q , given that the truth that p and q is contingent and entailed by the truth that p . By the unrestricted conjunction thesis, T is a truthmaker for the truth that q , QED. See (Restall 1996, pp. 334–35).

¹³ This alternative strategy would still have as a consequence that if T is a truthmaker for p then T is also a truthmaker for the conjunctive truth that p and q , where q is an arbitrary necessary truth. But this, I take it, is much more palatable than things like the explosion of truthmakers for necessities.

¹⁴ A similar reason is offered involving conjunctive facts instead of pluralities thereof. The other examples provided are: numerically distinct contingent entities a and b are not together a truthmaker for the truth that a exists (Rodriguez-Pereyra 2006, p. 970); the truth that my hand exists is not made true by my body (Rodriguez-Pereyra 2006, p. 978); the truth that Napoleon lost at Waterloo is not made true by the sum of the facts that Napoleon lost at Waterloo and that William won at Hastings (Rodriguez-Pereyra 2006, p. 978). Indeed (Rodriguez-Pereyra 2006, p. 976)’s critical discussion of various ways of implementing the alternative strategy involving the entailment* principle depends crucially on the alleged *desideratum* that, in general, the truth that p and q should not entail* the truth that p , the motivation of which consists again in the cases considered.

truthmakers is the world itself, the totality of being. The world makes every truth true, or, failing that, every truth that has a truthmaker true. (Armstrong 2004, pp.17–18)^{15, 16}

Of course, one would normally aim at more and more discerning truthmakers for a given truth—ideally, ‘minimal’ truthmakers (Armstrong 2004, pp. 19–23). Hence clearly to *assert* that a more embracing thing is a truthmaker—when another more discerning truthmaker is available—would seem *odd*. Thus intuitions concerning the oddity of saying that the truth that Peter is a man is true in virtue of the facts that Peter is a man and that Saturn is a planet can be nicely accounted for. But, as we know, oddity is compatible with literal truth.

In response to a similar worry, Rodriguez-Pereyra says:

[M]y argument does not take the form: *since* <Peter is man> is true in virtue of the fact that Peter is a man, *then* it is true neither in virtue of the conjunctive fact that Peter is a man and Saturn is a planet nor in virtue of the joint action of the facts that Peter is a man and that Peter is a man and that Saturn is a planet. My argument is that *it is clear that* that in virtue of which <Peter is man> is true is neither the conjunctive fact that Peter is a man and Saturn is a planet nor the facts that Peter is a man and that Peter is a man and that Saturn is a planet taken together, *but simply* the fact that Peter is a man. (Rodriguez-Pereyra 2006, p. 970–71, emphases altered)

Unfortunately, he does not explain why he thinks that it is clear that the more embracing candidates in these cases fail to be truthmakers.¹⁷ I take it that what he is in effect appealing to are merely intuitions concerning the oddity of asserting that they are, in the presence of more discerning truthmakers. But this oddity is of course compatible with their *being* truthmakers, after all. Thus, it seems fair to say, his case against the conjunction thesis has not been substantiated.

Conclusion

The threat that the entailment principle trivializes truthmaking required the disjunction thesis, which we have plausible reasons to reject. The case against the conjunction thesis, which would also preclude the attempts of blocking the explosion of truthmakers for

¹⁵ See also the related principle that if something makes a certain truth true, then that thing, together with anything else, also makes it true, (Mulligan, Simons, & Smith 1984, p. 316). This feature seems to be, *pace* (Rodriguez-Pereyra 2006, p. 973), a general feature of the relation *in virtue of*: see the axiom of *subsumption* in Fine (1995)’s systematization, to the effect that if the *Fs* are among the *Gs* then what holds in virtue of the *Fs* also holds in virtue of the *Gs*.

¹⁶ Notice that Rodriguez-Pereyra’s two arguments for *truthmaker monism*—that all truths made true by anything are made true by one and the same entity (Rodriguez-Pereyra 2006, p. 964–65)—, given the entailment principle, depend on the following principle (see Rodriguez-Pereyra’s (7) (2006, p. 964)):

For any entity T, T is *the* truthmaker for the truth that T = T.

Unfortunately, no motivation for it is provided and, as just seen, one has reasons to hesitate to endorse the involved uniqueness claim.

¹⁷ He does suggest (Rodriguez-Pereyra 2006, p. 972) that the excess does not ‘contribute’ to the truthmaking of the more discerning one. But this merely amounts to a re-description of the fact that the more embracing candidates are precisely *more embracing* than other available truthmakers. And hence it does not give any reason for their not being truthmakers. (Incidentally, the contention is true for *any* non-minimal truthmaker, and he does not want to argue against them in general (Rodriguez-Pereyra 2006, p. 979). Any such non-minimal truthmaker would provide a counterexample to the principle in footnote 16.)

necessary truths envisaged, does not succeed. I thus conclude that these attempts have not been proved, by Rodriguez-Pereyra's considerations, to be at fault.¹⁸

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