

# Do we need a new theory of truthmaking? Some comments on Disjunction Thesis, Conjunction Thesis, Entailment Principle and explanation

Mieszko Tałasiewicz · Joanna Odrowąż-Sypniewska ·  
Wojciech Wciórka · Piotr Wilkin

Published online: 9 June 2012

© The Author(s) 2012. This article is published with open access at Springerlink.com

**Abstract** In the paper we discuss criticisms against David Armstrong’s general theory of truthmaking by Gonzalo Rodriguez-Pereyra, Peter Schulte and Benjamin Schnieder, and conclude that Armstrong’s theory survives these criticisms. Special attention is given to the problems concerning Entailment Principle, Conjunction Thesis, Disjunction Thesis and to the notion of explanation.

**Keywords** Truthmakers · Truthmaking · Entailment principle · Disjunction thesis · Conjunction thesis

## 1 Disjunction Thesis and tautologies

Let us have the following definitions:

*Standard truthmaking theory (STT)*: we grant this title to David Armstrong’s general theory of truthmaking as presented in chapter 2 of his (2004). We do not discuss his specific theory of truthmakers for particular classes of truths although we may, for the sake of illustration, refer to some details of this specific theory as presented in full in Armstrong’s (1997) and (2004).

*Entailment principle (EP)*: ‘Suppose that T is a truthmaker for proposition  $p$ . Suppose further that  $p$  entails proposition  $q$ , with the exact force of ‘entails’ subject to discussion.

---

M. Tałasiewicz · J. Odrowąż-Sypniewska · W. Wciórka · P. Wilkin (✉)  
University of Warsaw, Warsaw, Poland  
e-mail: pwl@mimuw.edu.pl

M. Tałasiewicz  
e-mail: m.talasiewicz@uw.edu.pl

J. Odrowąż-Sypniewska  
e-mail: j.odrowaz@uw.edu.pl

W. Wciórka  
e-mail: wwcior@gmail.com

Then T will be truthmaker for  $q$ ' (Armstrong 2004, p. 10). EP is believed to be an important part of STT.

*Conjunction thesis (CT)*: any truthmaker for a conjunction is a truthmaker for its conjuncts. CT follows from EP, which means that the rejection of CT would yield the rejection of EP (and hence of STT, unless some major amendments are made to it).

*Disjunction thesis (DT)*: any truthmaker for a disjunction is a truthmaker for its true disjunct. DT is held as intuitively plausible by Gonzalo Rodriguez-Pereyra.

In (2006) Rodriguez-Pereyra formulates an argument—let's call it A1—according to which DT together with EP leads to Truthmaker Triviality, i.e. the thesis that every entity is a truthmaker for every truth. A1 might be summarised thus: Any object is a truthmaker for every necessary truth (what follows from EP), hence any object is a truthmaker for the proposition  $\langle P$  or not  $P \rangle$ , for any  $P$ . Since  $\langle P$  or not  $P \rangle$  is a disjunction, according to DT any object which is a truthmaker for this disjunction—so, any object whatsoever—is a truthmaker for its true disjunct (let's say  $\langle P \rangle$ ). In this way truthmaking is trivialized. In order to prevent trivialisation, either EP or DT should be rejected. According to Rodriguez-Pereyra it is EP that is to be rejected, not DT, for EP is a common troublemaker in all problematic derivations (Global Supervenience of Necessity, Truthmaker Triviality, Truthmaker Monism), while DT features only in some (and is more intuitive by itself).

First, we are going to argue that A1 is inconclusive against EP, for—in our opinion—DT holds only in a limited range of cases.

Objections against DT have already been raised, e.g. by Dan Lopez de Sa (2009), to the effect that sometimes a disjunction can be true even though none of the disjuncts is—which may be the case e.g. with open future and borderline statements. In such cases truthmakers for disjunctions clearly cannot be truthmakers for true disjuncts (because there are none). In his reply Rodriguez-Pereyra claims that Lopez de Sa's objections are not valid against DT, since 'the disjunction in (DT) is truth-functional disjunction'. He points out further that 'the disjunction in question is that which is true if and only if one of its disjuncts is true' (Rodriguez-Pereyra 2009, p. 430). By this he means to exclude *a limine* the possibilities mentioned by Lopez de Sa in which disjunction is true even though neither of its disjuncts is.

We consider Rodriguez-Pereyra's rejoinder quite conclusive. It should be noted however that the way in which Rodriguez-Pereyra expresses his view on this point is unfortunate. Namely, the fact that a given disjunction is truth-functional *does not* mean that it is true only if at least one of its disjuncts is. There are systems—for example Borkowski's four-valued logic (1991)—in which disjunction *is* truth-functional and yet it is true (value 1) not only when one if its disjuncts is true but also when one disjunct has the value 2 and the other the value 3.<sup>1</sup> Thus Rodriguez-Pereyra's claim in (2006, p. 968) that disjunction is truth-functional is not enough to fend off Lopez de Sa's objection. 2009 clarification sounds better, although it still leaves some room for misunderstanding.

<sup>1</sup> In Borkowski's extensional system there are four truth-values: 1 (true), 2, 3, 4 (false). An analogous system of modal logic was proposed by Arthur Prior (1957).

We would like however to point to a different problem. Namely, we want to argue that DT is not applicable to tautologies.

Rodriguez-Pereyra's justification for DT consists of two main claims:

- (1) '[I]n general, alethic facts obtain in virtue of non-alethic facts or entities'.
- (2) 'When a true proposition  $\langle X \rangle$  is a truth-function whose truth is fixed individually by the truth-value of other propositions of which  $\langle X \rangle$  is a truth-function, what the truth of  $\langle X \rangle$  obtains in virtue of are the non-alethic facts or entities in virtue of which the truth value of those other propositions obtain' (2009, p. 432).

In (2009, p. 432, n. 5) Rodriguez-Pereyra himself weakens this justification in (1) by noticing that:

'Sometimes alethic facts might not obtain in virtue of non-alethic facts (or entities). This might be the case of propositions like  $\langle$ This proposition is true $\rangle$  when it is true'.

We are not going to question (1) however, but we will focus on (2) instead and try to show that it should be rejected (or at least considerably weakened). We claim that tautologies are counterexamples to (2). In what follows we will concentrate on the law of excluded middle.

Is the simple proposition  $\langle P \rangle$  true in the same way as a tautology? There are reasons to say 'no'. Intuitively, the former is true in virtue of its correspondence to reality and consequently it requires a 'wordly' truthmaker. The latter is true in virtue of its syntactic structure and certain meaning postulates (such as truth-tables). We can change logical truths by changing truth-tables and such a change would leave the world untouched. Truthmakers for tautologies should be 'institutional' facts of a sort, such as truth-tables.<sup>2</sup> *Nota bene*, this does not concern a priori all necessary truths. For instance, mathematical truths understood platonically have 'hard' truthmakers in the ideal world, not in linguistic conventions. Our remarks apply only to logical truths (and perhaps can be extended to all analytic truths<sup>3</sup>).

The apparent implausibility of our claim may be explained away by the distinction between a truthmaker for a given sentence and that what the sentence is about. The distinction is formulated by Armstrong in (2004, pp. 109–110). According to him the sentence "A bachelor is an unmarried man" is about bachelors and not about meanings but it is the meaning of relevant words that is the

<sup>2</sup> One could even question whether tautologies (or any analytic propositions) have any truthmakers at all. So does e.g. Schulte (2010, p. 16). However, STT includes Truthmaker Maximalism (every true proposition has a truthmaker), so for the present purpose of defending STT we would not go to such extremes. We'd rather content ourselves with the thesis that if one wants truthmakers for tautological disjunctions, he can have them—while not necessarily agreeing that they are truthmakers for a true disjunct.

<sup>3</sup> Platonists would rather have mathematics as *synthetic* a priori.

truthmaker for the whole proposition, which makes it an example of analytic truth.<sup>4</sup> Analogously, it might be argued that  $\langle$ Either the cat is on the mat or the cat is not on the mat $\rangle$  is about the cat and the mat, but the truthmaker for this proposition is the fact that we have agreed on a certain truth-table (or just the truth-table) for negation and disjunction (and this fact cannot serve as a truthmaker for any of the true disjuncts). Thus, the truth of this disjunction is due to the fact that certain linguistic conventions hold and not to the fact that the cat is or is not on the mat.

Since Rordiguez-Pereyra's argument relies on DT just being true for excluded middle (which makes him safe from Lopez de Sa's counterarguments about vague disjunctions), he might defend himself by saying that, contrary to what we just established, instances of excluded middle are true due not (only) to meaning postulates, but (also) to the truth of their respective disjuncts, thus making excluded middle a *metaphysical* law. However, that would be a very strong assumption, both due to the fact that there are logics that reject excluded middle (such as intuitionistic logic) and the fact that this would open up the possibility of at least some logical laws being metaphysical in nature, leading to a very strong posited connection between logic and metaphysics. Such a treatment of excluded middle might also make instances of it exempt from the "entailment" relation required for EP, thus making Rodriguez-Pereyra's argument void. We thus believe that it would be very difficult to find a plausible interpretation of Rodriguez-Pereyra's argument which saves his version of DT.

## 2 Non-minimal relevant truthmakers for $\langle P \vee Q \rangle$

Our next goal is to strengthen Mark Jago's argument according to which 'the doctrine which accepts (DT) but rejects (CT) is hard to maintain' (Jago 2009, p. 412).

Rodriguez-Pereyra admits that 'What is incompatible with my rejection of (CT) and my acceptance of (DT) is the claim that what makes  $\langle P \& Q \rangle$  true makes  $\langle P \vee Q \rangle$  true' (2009, p. 440). 'But this is false'—he adds—'For  $\langle P \& Q \rangle$  is *collectively* made true by the facts *that P* and *that Q*, while  $\langle P \vee Q \rangle$  is *separately* made true by the facts *that P* and *that Q*'.

We are going to show that the claim that what makes  $\langle P \& Q \rangle$  true makes  $\langle P \vee Q \rangle$  true is not false, because although  $\langle P \vee Q \rangle$  is separately made true by the facts *that P* and *that Q*, indeed, it is *also* collectively made true by the facts *that P* and *that Q*.

We shall begin with a general worry we have concerning Rodriguez-Pereyra's distinction of a truthmaker for a proposition and of what makes that proposition true (Rodriguez-Pereyra 2009, p. 439): 'Truthmakers are entities in virtue of which

<sup>4</sup> Schulte points out that, in one sense, meaning cannot be a truthmaker for a proposition because 'propositions do not *have* meanings—they *are* meanings [of sentences]' (2010, p. 16). However, further on he admits that meaning in some other sense would do, for instance the so called (e.g. by David Lewis) 'compositional meaning': some propositions can be true 'in virtue of the components they contain and the way these components are put together' (obviously many different structures of this sort may yield one and the same proposition); another option would be something like Strawson's 'linguistic meaning' or sort of a social convention concerning the use of words.

propositions are true. What makes propositions true has to do with how the truthmakers are grouped to enter the truthmaking relation’.

This distinction perhaps has some *rationale* behind it, but definitely is far from being fully fleshed out. Usually the notion of truthmakers defined as the entities that make propositions true takes the central position in a truthmaking theory. If one insists on distinguishing truthmakers from ‘what makes propositions true’ then it seems that ‘what makes a proposition true’ is much more important. What shall one do in such a situation? Should one dispense with the notion of truthmaker altogether? Or perhaps should one enrich it, for instance in the following manner: there are some entities and some ways of how these entities make propositions true and one can only speak of the truthmaking relation if one takes both the former and the latter into account. Truthmakers are then entities and ways grouped together. Rodriguez-Pereyra doesn’t seem to pick between either of these options.

A third option is to explain why the ‘ways a truthmaker might be’ aren’t components of truthmakers themselves—but Rodriguez-Pereyra does not attempt to do it either. After introducing the distinction he writes: ‘The truthmakers for  $\langle P \vee Q \rangle$  are the facts *that P* and *that Q*. The truthmakers for  $\langle P \& Q \rangle$  are the facts *that P* and *that Q*. Thus  $\langle P \& Q \rangle$  and  $\langle P \vee Q \rangle$  have the same truthmakers’ (2009, p. 439). However, if we define truthmaking—after Rodriguez-Pereyra—in terms of ‘true in virtue of’ relation, then neither the fact *that P*, nor the fact *that Q* is a truthmaker for  $\langle P \& Q \rangle$ .  $\langle P \& Q \rangle$  is not true in virtue of the fact *that P*, nor is it true in virtue of the fact *that Q*. Rodriguez-Pereyra writes further: ‘The truthmakers for  $\langle P \& Q \rangle$  and  $\langle P \vee Q \rangle$  are the same’, but: ‘ $\langle P \& Q \rangle$  does not bear the *true in virtue of* relation to either fact [i.e. P, Q] separately’. This is very odd. By his own postulates a truthmaker for a proposition is an entity in virtue of which that proposition is true. If  $\langle P \& Q \rangle$  does not bear *true in virtue of* relation to *that P*, then *that P* is not a truthmaker for it, contrary to what Rodriguez-Pereyra claims.

Be it as it may, for the sake of argument we accept Rodriguez-Pereyra’s distinction in what follows; our argument goes through anyway.

The argument is this. Rodriguez-Pereyra argues that there might be non-minimal—more embracing—truthmakers, provided that they are relevant. For instance, a minimal truthmaker for the proposition  $\langle \text{There are more than two muses} \rangle$  is any group of three muses. However, this proposition has also non-minimal truthmakers, such as groups of four muses. Such truthmakers are relevant, for each muse from the group can have some contribution to the truth of the claim that there are more than two muses. ‘Indeed, both the group of three muses and the group of four are truthmakers for the proposition  $\langle \text{There are more than two muses} \rangle$ ’ (Rodriguez-Pereyra 2009, p. 434). Let’s now go back to the propositions  $\langle P \& Q \rangle$  and  $\langle P \vee Q \rangle$ . By the same token we have a non-minimal truthmaker for  $\langle P \vee Q \rangle$ . Rodriguez-Pereyra says that facts *that P* and *that Q* make  $\langle P \& Q \rangle$  true collectively and  $\langle P \vee Q \rangle$  separately. It is true only for minimal truthmakers. Facts *that P* and *that Q* collectively make  $\langle P \vee Q \rangle$  true as well, only in a non-minimal way. The group of the two facts—*that P* and *that Q*—is not a minimal truthmaker of  $\langle P \vee Q \rangle$ , but it is relevant, because both *that P* and *that Q* (but not *that R* for instance) can have some contribution to the truth of the proposition  $\langle P \vee Q \rangle$ —just as four muses are relevant to the truth of the proposition that there are more than two muses. It would be hard

to find a reading of “relevant” under which the collective fact of there being four muses is a relevant truthmaker for  $\langle$ There are more than two muses $\rangle$ , but the collective fact of both P and Q holding is not a relevant truthmaker for  $\langle$ P $\vee$ Q $\rangle$ , seeing as they involve the same structural argument (using mereological notions, there is a proper part of the fact *that P and that Q*, namely *that P*, which is a minimal truthmaker for  $\langle$ P $\vee$ Q $\rangle$ , in the same manner as there is a proper part of the fact of *there being four muses*, namely *there being three muses*, which is a minimal truthmaker for  $\langle$ There are more than two muses $\rangle$ ). Thus, what makes true  $\langle$ P $\&$ Q $\rangle$  also makes true (in a non-minimal way)  $\langle$ P $\vee$ Q $\rangle$ , which is—according to Rodriguez-Pereyra’s own claim—incompatible with his rejection of (CT) and acceptance of (DT).

Thus, it seems that one cannot accept DT and reject CT at the same time. We already know what Rodriguez-Pereyra will chose. In (2009, p. 435), he said that if he had to decide he would reject DT and keep not-CT. The reason for such a choice is his attachment to the intuition of relevance which is hidden behind his usage of “true in virtue of”. We will now turn to that issue.

### 3 Conjunction Thesis and true-in-virtue-of relation

Rodriguez-Pereyra argues against CT as follows (let us refer to the argument by ‘A2’)<sup>5</sup>:

- a. A2a. A truthmaker for a proposition  $\langle$ P $\rangle$  is an entity in virtue of which  $\langle$ P $\rangle$  is true.
- b. A2b. The truthmaker for the proposition  $\langle$ Peter is a man and Saturn is a planet $\rangle$  is either the conjunctive fact *Peter is a man and Saturn is a planet* or facts that *Peter is a man* and that *Saturn is a planet* **taken together**.
- c. A2c. Neither the conjunctive fact nor the two facts taken together is an entity in virtue of which the conjunct “Peter is a man” is true. The reason for this is that fact that *Saturn is a planet* is irrelevant for the truth of  $\langle$ Peter is a man $\rangle$ .

Hence:

- d. A2d. The truthmaker for the conjunction is not a truthmaker for any of its conjuncts. (not-CT).

In our opinion A2 is far from being conclusive. It rests on the assumption A2c, which is rejected by many participants in the truthmaker debate (most notably, by Armstrong in STT). Thus although Rodriguez-Pereyra formally tries to prove the negation of CT, in the proof he does not back it up with genuine arguments, but instead he just appeals to his own linguistic intuition.

A2c is in fact a meaning postulate suggesting the correct understanding of the expression ‘true in virtue of’, to the effect that the second argument of the ‘true in virtue of’ relation cannot have any irrelevant parts. Such an understanding goes against intuitions of other participants in the debate—such as Armstrong—who

<sup>5</sup> (Rodriguez-Pereyra 2009, pp. 433–434; 2006, pp. 972–973).

allow for irrelevant parts of truthmakers. Thus, what we really have here is a battle of opposing intuitions, not a conclusive proof. Point counter point.

Such a structure of an argument (or the lack of a substantial argument, to say the truth) would be natural if intuitions of this sort were beyond rational discussion altogether. But they are not. One may for instance appeal to the actual usage of the term in question—in this case the term ‘true in virtue of’. If we do this, we will see that such considerations are troublesome for Rodriguez-Pereyra. The lexical meaning of ‘true in virtue of’ does not determine explicitly that truthmakers cannot have irrelevant parts. We can use this term in such a way that it encompasses irrelevant facts. For instance, ‘⟨Elephants cannot fly⟩ is true in virtue of the laws of physics’, ‘⟨Peter is a successful man⟩ is true in virtue of Peter’s achievements’. Obviously, not all the laws of physics are relevant for the proposition *that elephants cannot fly*. Analogously not all Peter’s achievements are relevant for his success (some of his achievements might, for instance, be of a private character).

The above considerations are too weak to force Rodriguez-Pereyra to abandon his intuitions. He may easily say that the examples given are elliptical. The proposition ‘⟨Elephants cannot fly⟩ is true in virtue of the laws of physics’ is just a short for ‘There is a subset of the laws of physics such that ⟨Elephants cannot fly⟩ is true in virtue of all the laws from this subset’ and the proposition ‘⟨Peter is a successful man⟩ is true in virtue of Peter’s achievements’ is short for ‘There is a subset of Peter’s achievements such that ⟨Peter is a successful man⟩ is true in virtue of all achievements from this subset’. However, paraphrases are admissible when there is a need for them. Such a paraphrase must be triggered by something, but Rodriguez-Pereyra cannot argue that the trigger is the intuition that ‘true in virtue of’ must refer to something relevant, since this would beg the question against people who do not share his intuition.<sup>6</sup> He can hold his view but is in no position to force it upon anybody (especially against STT).

To sum up, we think that Rodriguez-Pereyra should offer a nontrivial justification for his rejection of CT. The argument (A2) which he provides is question begging, since the main difficulty lies in the assumption A2c. Non-question-begging justification would require giving reasons for his understanding of “true in virtue of” relation—including a discussion of the examples like the ones mentioned above.

#### 4 Unwelcome and missing truthmakers

The inconclusiveness of the argument about the proper meaning of the phrase ‘in virtue of’ may be taken to suggest that we should turn to some different and less obscure notion to backup the relation of truthmaking. This is the line taken by e.g. Benjamin Schnieder (2006a, b) and Peter Schulte (2010) who replace the phrase ‘in virtue of’ by ‘because’ and consequently consider truthmaking in terms of *explanation*. There is no place here for a detailed critique of these attempts; what we

<sup>6</sup> It should be noticed that his line of thought might lead one to doubt whether the truthmaker for the proposition “the cat is on the mat” is the fact that the cat is on the mat. For even this particular fact may contain certain aspects which are irrelevant from the point of view of the truth of that proposition. There is no place to pursue this issue further since it would lead us too far away from our topics.

are going to do is to show that arguments contained in these papers are not decisive against STT.

Let us begin with the problem of unwelcome truthmakers. It is a fact that if truthmaking is understood only as necessitating (as in STT), it allows irrelevant or at least not very intuitive truthmakers. For the truth of the sentence ‘Anna is singing’ is necessitated not only by the fact [Anna’s singing], which is the intended, intuitive truthmaker, but also by some higher order entities like [the beauty of Anna’s singing] or [my knowledge of Anna’s singing]. Note that this is true even if we adopt a primitive notion of “being true in virtue of” in addition to necessitation, as described in the previous section, as long as we don’t adopt a question-begging version of that notion as describing only *relevant minimal* truthmakers. Some philosophers disapprove of such additional truthmakers and try to add something to the notion of necessitation in their theory of truthmaking in order to get rid of them. One of those philosophers is Barry Smith who tries to eliminate the ‘unwelcome’ truthmakers by developing the notion of projection.<sup>7</sup> His definition of truthmaking says that entity  $x$  makes proposition  $p$  true iff  $x$  is, by necessity, a part of the total projection of  $p$  (1999, p. 282).

Schnieder in (2006a) shows conclusively that Smith’s attempt to improve the standard notion of truthmaking so that it wouldn’t allow for ‘unwelcome’ truthmakers fails. It does not follow, however, that STT fails too. Smith’s project was to *improve* STT, which was not enough ambitious for him—and that project has failed. STT itself, being less ambitious than Smith’s requirements, remains untouched. Armstrong allows for non-minimal truthmakers that don’t meet our expectations about relevance, intuitiveness and so on (2004, p. 18).<sup>8</sup> He admits that having relevant, minimal truthmakers would be desirable,<sup>9</sup> but is ready to accept that some truths may lack minimal truthmakers altogether (2004, pp. 21–22). But most importantly, he never attempts to give a general rule for getting to minimal truthmakers in all cases in which there are ones. He declares ‘a piecemeal task of finding plausible truthmakers for important classes of truths’ (2004, p. 8) which amounts to saying that each time we look for a minimal, relevant truthmaker(s) for a (class of) truth(s) we are interested in, we must re-enter our ontology and re-browse it in search for (a) suitable item(s). This is roughly what Armstrong does throughout the rest of his book. Nevertheless, officially STT welcomes the ‘unwelcome’ truthmakers.

A ‘converse’ problem, as he calls it, is elaborated by Schnieder in his (2006b). He argues that any theory that takes truthmakers as necessitators—and STT definitely fits the description—faces the problem of **missing** truthmakers. Namely, for some truths there are truthmakers that are not necessitators. We can tell that  $x$  is a truthmaker for  $p$  even if it is not a necessitator of  $p$ —according to Schnieder—if we can rightly say that  $p$  is true because  $x$  exists (2006b, p. 30).

<sup>7</sup> Entity  $x$  is a projection of sentence  $p =_{df} p$  and  $\rightarrow(p \wedge \neg 'x$  exists’), cf. (Smith 1999, pp. 275–276, 279).

<sup>8</sup> According to him, the least discerning truthmaker for any truth is the world itself.

<sup>9</sup> ‘I am hoping to provide relevant truthmakers for all truths’ (Armstrong 2004, p. 11).



The argument goes as follows (2006b, pp. 25–27). *A* says to *B*: ‘you will not survive this night’ (*p*). Then *C* kills *A* which makes *p* *A*’s last words. Then *D* kills *B* which makes *A*’s last words true. Now, what is a truthmaker for:

(Q) *A*’s last words were true?

Schnieder says that it is the fact [*D* killing *B*], for *A*’s last words were true because *D* killed *B*. But this fact does not necessitate Q for it is a contingent matter that *A*’s last words were *p*. So there is a truthmaker of Q that is not a necessitator of Q, which means that STT is wrong.

In our opinion this argument is invalid. What it shows is simply the sensitivity of truthmaking to rigidity matters. If we carefully take rigidity into consideration, the argument will not go through.

If we take the description ‘*A*’s last words’ as rigid (which is a quite common, albeit annoying, manner among biography-writers) then [*D* killing *B*] is necessitating Q. If, alternatively, we take the description ‘*A*’s last words’ as non-rigid, Schnieder’s ‘because’-theory faces exactly the same problem as STT with respect to necessitation: [*D* killing *B*] alone neither necessitates nor explains Q. For the non-rigidity of the description ‘*A*’s last words’ implies that the description may be accompanied by the phrase ‘whatever they were’ without changing meaning. Now, it is not true that *A*’s last words *whatever they were* were true because *D* killed *B*. It is true that *A*’s last words *whatever they were* were true because *actually they were p* and *D* killed *B*.<sup>10</sup> Thus, the truthmaker of Q—according to Schnieder—must be the two facts together: that [*A*’s last words were *p*] and that [*D* killed *B*]. And the two facts together *are* necessitating Q, exactly along Armstrong’s lines: ‘Suppose that a suggested truthmaker *T* for a certain truth *p* fails to necessitate that truth [...] This strongly suggests that there ought to be some further condition that must be satisfied in order for *p* to be true. This condition [...] be the existence of a further entity, *U* [...]. *T* + *U* would appear to be the true and necessitating truthmaker for *p* [...]’ (Armstrong 2004, pp. 6–7).

Finally, let us consider Schnieder’s argument against specific truthmakers assumed in STT, such as states of affairs or tropes (particularized properties). So far we were talking about the meaning of the notion of truthmaker; now we are going to talk about its denotation: which entities can and which cannot count as truthmakers.

The argument (Schnieder 2006b, pp. 39–42) begins with a formulation of a simple test. Which of the following, asks Schnieder, is true (due to the asymmetry of ‘because’ only one can be true):

(S-1) Socrates is pale, because Socrates’ paleness exists, or rather

(S-2) Socrates’ paleness exists because Socrates is pale?

If such tropes as Socrates’ paleness are to be truthmakers, (S-1) should be true. If it isn’t, tropes can’t be truthmakers.<sup>11</sup>

<sup>10</sup> Theoretically, we have another option: *A*’s last words *whatever they were* were true because *A* was a pope speaking ex cathedra (or a 100 % reliable prophet). Since this option is highly improbable as intended in real discourse (and anyway imposes no threat on STT’s account of truthmaking) we will not elaborate on it here.

<sup>11</sup> Similar argumentation applies to states of affairs.

Schnieder sets out his argument already assuming his ‘because’-theory of truthmaking, which is what we are not very apt to do (having dismissed Schnieder’s arguments against necessitation). However, we might agree, at least for the sake of the discussion, that although—in our opinion—truthmaking need not be explanation (see below), it would be unnatural if the relation of truthmaking were going in the opposite direction to some plausible explanation. Let’s go through Schnieder’s test, then.

Schnieder claims that it is (S-2) that is true, because ‘Socrates’ paleness’, being a *canonical designator* of a particularized property, is a ‘semantically complex expression, whose meaning is a function of the meaning of its parts and their way of combining’ which *eo ipso* ‘expresses a *logically complex* concept, the grasp of which requires us to relate it to the concepts expressed by the phrase’s components, which will be conceptually more primitive’ (p. 40). ‘So we see that it is part of our understanding of ‘Socrates’ paleness’ that it denotes an entity that exists if Socrates is pale [...] accordingly, (S-2) is explanatory’ (p. 41).

We think that this claim is based on a serious misunderstanding. The function that features in the (denotation of the) phrase ‘the meaning of a complex expression is a *function* of the meaning of its parts and their way of combining’ may well be reversible, which amounts to saying that the meaning of some part of a complex expression can be a function of the meaning of this complex expression and its other parts (and the way of combining), which, in turn, means that semantic complexity so understood has nothing to do with logical, ontological or cognitive primitiveness. Deriving from it any sort of logical, ontological or cognitive consequences is possible only if we assume a very simplified syntactic theory which says that semantic atomicity mirrors logical, ontological or cognitive primitiveness (and thus conversely semantic complexity must be accounted for in terms of logical, ontological or cognitive complexity).

All that could be perhaps a true theory if applied to a very simple, abstract formal language, but in a natural language it is plainly false. Detailed arguments against such a theory would take too much space here, they are given in (Tałasiewicz 2010).<sup>12</sup> Just to mention one of them: learnability of the syntax of the natural language requires that at least occasionally we learn the meaning of a complex expression without analyzing its syntax, i.e. as expressing a logically (or cognitively) primitive concept (we may say, roughly, that in such a case the way of combining is a function of the meaning of the complex expression and the meanings of its parts—and that’s why we can learn it). For instance, in a sentence ‘Alice strokes Garfield’ what can be regarded as primitive (ostensively given) is Alice, Garfield and **the state of affairs that Alice strokes Garfield**. What is derived is the functor ‘strokes’ which turns out to be cognitively complex (as a uniformity across primitive states of affairs, to use Barwise’s and Perry’s words), although syntactically and semantically atomic.

Summing up: it is ontology that tells us what is primitive and what is not. The syntax of our speech has nothing to do with it. We can have atomic expressions for

<sup>12</sup> Cf. also Barwise and Perry (1983). They would have real situations as primitives and derive objects and properties as *uniformities across situations*, which are, in turn, used to build up abstract situations.

complex concepts and complex expressions for primitive concepts. If Armstrong has an ontology with tropes or states of affairs—as he does—he can use them as truthmakers that can serve some explanatory purposes.

## 5 Truthmaking as explanation

Now, let us see more generally whether the notion of truthmaking as explanation can compete with and defeat STT.

In the first place one should notice [cf. Daly (2005, p. 88)] that there are two separate questions: whether the truthmaking **principle** is an explanation of some standpoint in metaphysics, and whether a particular **entity** playing the role of a truthmaker is an explanation of the truth of some proposition.

Barry Smith and Jonathan Simon (2007) argue for explanatory power of truthmaking principle according to the first of these questions. Daly himself is rather sceptical about it. We do not take sides here—the truth or falsity of STT does not depend on it. The problem raised by the defenders of the ‘explanation theory’ of truthmaking, such as Schnieder or Schulte, who were mentioned before, definitely concerns the second question. Is truthmaking an explanation of the truth of a proposition by an entity?

We are not saying that it never is. But we do not agree with the authors who claim that it is always, by definition. We also don’t agree that evoking the concept of explanation adds anything to the contents of truthmaking. Explanation is an elusive and unspecified idea and we think that this is because explanation is not a separately identifiable relation that can be taken as primitive or specified by some analysis of its contents. It is rather that explanation is a **purpose** that different relations serve on different occasions. Perhaps truthmaking can serve this purpose on occasion, but this does not justify the idea of explaining the notion of truthmaking by calling it ‘explanation’. What relations serve this purpose on what occasions depends on the logic of particular inquiry, on questions we are asking. Sometimes we ask for causes, then specifying some causal relation is an explanation; sometimes we ask for proofs, then specifying some entailment is an explanation; sometimes we ask for purposes, then specifying some intention is an explanation; sometimes we ask for physical mechanisms, then specifying some theoretical reduction is an explanation, and so on.<sup>13</sup> Many of these relations are asymmetric, so the common belief is that explanation is asymmetric. But in general it is not. If we are asking for missing facts (as police detectives, for instance), specifying some unconnected facts, to the effect that the whole story starts to make sense, is the explanation of the remaining part of the story. And conversely the other part of the story can be an explanation of these otherwise unconnected and unreasonable facts.<sup>14</sup>

<sup>13</sup> In this sense, explanation is not subjective, and not necessarily connected with psychological understanding, of course; it is rather some objective aim of research in a given area that tells us what explanations we need.

<sup>14</sup> The only asymmetry here belongs to the pragmatic setting: it depends on what is given and what is being searched for. Explanation is specifying something hitherto unknown (or known as unconnected) as connected by some relation with something known. That’s the asymmetry. The relation in question itself may be perfectly symmetrical and reversible (admittedly often isn’t—but this is not essential).

Schnieder (2006b, p. 31) takes the notion of explanation as primitive and tries to illuminate it ‘by pointing out conceptual connections, implications etc.’ If we are right, the most he can get in this way is a heterogeneous set of ‘conceptual connections’ among different relations—and it is what he eventually gets: he takes some properties of causal relation and calls it ‘causal explanation’ and some properties of conceptual entailment and calls it ‘conceptual explanation’; and he is able to do this because causal relation sometimes serves the explanatory purpose and so does entailment. All this is putting the cart before the horse, though: truthmaking is just another relation—beside causality and entailment—that occasionally serves explanatory purposes. Schnieder could take some properties of truthmaking and use them to illuminate further his notion of explanation; that would make some sense. But the notion of explanation illuminates nothing in truthmaking. In STT truthmaking is a cross-categorical relation: entity-to-proposition. Both entailment (‘conceptual explanation’, as Schnieder would call it), which is a proposition-to-proposition relation, and causality (entity-to-entity) are mono-categorical and neither one of them nor any combined chain of them<sup>15</sup> can possibly emulate truthmaking.

Neither can ‘reductive explanation’ advocated by Schulte (2010). He introduces another relation that sometimes serves explanatory purposes—the relation of theoretical reduction in a technical sense (which, roughly, is a structured logical entailment between scientific theories concerning lower-level and higher-level phenomena)—which adds something to illuminating the notion of explanation, but nothing to truthmaking.

In fact, Schulte quite clearly shows that explanation and truthmaking are conceptually different, but somehow he manages not to notice it himself. He shows exactly our point, namely that sometimes truthmaking is explanation, as in the case:

- (1) ⟨If Lauren turned around she would have a sensory impression of a bookshelf⟩ is true in virtue of<sup>16</sup> the fact [There is a bookshelf behind Lauren] and sometimes is not, as in the case
- (2) ⟨Aristotle exists⟩ is true in virtue of the fact [Aristotle exists].

In (1) it makes sense to dub ‘in virtue of’ by ‘because’; in (2) it does not.<sup>17</sup> However, it is (2) which is a paradigmatic example of truthmaking, not (1). It is trivial in terms of explanation, but not in terms of truthmaking. All truthmaking theories start from examples like this. It is the cornerstone of truthmaking. Compare, for the sake of illustration, the tautology  $p \rightarrow p$ . As we have said, entailment

<sup>15</sup> Schnieder allows for mixed explanations, but it means nothing more than **chains** of explanations, each of which is either purely conceptual or purely causal (2006b, p. 33).

<sup>16</sup> Schulte writes ‘because’ here. We, challenging Schulte’s view, prefer to have as the functor here the neutral ‘in virtue of’ as indicating truthmaking whatever its nature might eventually be. If not ‘in virtue of’, then ‘as necessitated by’ would presumably do as well, on the ground of STT.

<sup>17</sup> Indeed Schulte seems to be too charitable towards the idea that the so called ‘simple explanations’ are explanations anyway, although they hardly explain anything. We are sympathetic to his suggestion that they are at least ‘unsuccessful’—cf. (2010, p. 5); much less so to the idea that they have some explanatory power in relation to a theory of truth that we accept (pp. 7–8). Schulte pushes this issue beyond the scope of his paper and refuses to go into the details; so do we.

sometimes can serve explanatory purposes. For example *modus ponens* can be explanatory. We can explain that  $q$  by referring to the fact that if  $p$  then  $q$  and to the fact that  $p$  and showing that according to *modus ponens*  $q$  is entailed by respective premises. It is easy to see that it does not work in the case of  $p \rightarrow p$ . We cannot explain  $p$  by referring to  $p$  as a premise and appealing to  $p \rightarrow p$  as an inference rule. And yet  $p \rightarrow p$  is a perfect instance of entailment, and a very prominent one (being an axiom in many formalizations of sentential calculus, holding honorary names and so on).

Now, whereas practically all truthmaking theories interpret (2) uniformly, they usually differ in treatment of such remote issues as (1). It is because (1) rests on independently adopted ‘piecemeal’ ontology rather than on truthmaking theory in its core. And it is this ontology that gives (1) its explanatory power rather than the truthmaking principle.

To see why, we must notice that Schulte is wrong claiming (p. 7) that all truthmaking relations of the type (1) can be regarded as contracted series of relations, combining a simple truthmaking relation:

- (a) ⟨If Lauren turned around she would have a sensory impression of a bookshelf⟩ is true in virtue of the fact [If Lauren turned around she would have a sensory impression of a bookshelf] and a substantial explanation
- (b) The fact [If Lauren turned around she would have a sensory impression of a bookshelf] exists because the fact [There is a bookshelf behind Lauren] exists.

The possibility of such combination is not a priori granted. Whether it is possible or not depends on what there is in the given ontology. If we do have such bizarre facts as the fact [If Lauren turned around she would have a sensory impression of a bookshelf], we can have the combination—but precisely then truthmaking loses its explanatory power. In such a case all truthmaking is in (a) but all explanation is in (b).

However, since ontology goes first, we may not have such modal facts; we may not want them in our world. If we don’t, we cannot have Schulte’s combination. In such a case (1) is a simple truthmaking in which the fact that [There is a bookshelf behind Lauren] **directly** makes true the proposition that ⟨if Lauren turned around she would have a sensory impression of a bookshelf⟩. Then, and only then, as (1) may answer some theoretically well grounded questions about the nature of modal truths, it may be a truthmaking **and** a genuine explanation at the same time.

Summing up, exploring the explanatory powers of the relation of truthmaking definitely cannot affect STT as a possibly correct account of truthmaking.

## 6 Conclusion

First, we have shown that STT can be consistently upheld in spite of criticisms against the entailment principle. We have not shown, nor attempted to show, that Rodriguez-Pereyra’s idea of truthmaking, as competitive to STT, is unacceptable. It expresses different intuitions sometimes plausible, sometimes definitely not.

Rodriguez-Pereyra's view can be true; however, one can fully rationally disagree with him and defend STT.

Second, we have shown that explaining the notion of truthmaking by the notion of explanation (to the effect that truthmaking is not necessitation anymore, and thus STT has to be abandoned) fails. Truthmaking sometimes is explanation (when it explains something). But calling truthmaking explanation explains nothing.

**Acknowledgments** We would like to thank the anonymous referee for this journal for his comments on an earlier draft of this paper.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution License which permits any use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.

## References

- Armstrong, D. M. (1997). *A world of states of affairs*. Cambridge: Cambridge University Press.
- Armstrong, D. M. (2004). *Truth and truthmakers*. Cambridge: Cambridge University Press.
- Barwise, J., & Perry, J. (1983). *Situations and attitudes*. Cambridge: MIT Press.
- Borkowski, L. (1991). On the intuitive interpretation of Łukasiewicz's three-valued logic. In L. Borkowski & A. B. Stepień (Eds.), *Studies in logic and theory of knowledge*, 2. Lublin: TN KUL.
- Daly Ch. (2005). So where's the explanation? In H. Beebe, J. Dodd, *Truthmakers. The contemporary debate*. Oxford: Clarendon Press.
- Jago, M. (2009). The conjunction and disjunction theses. *Mind*, 118, 411–415.
- López de Sa, D. (2009). Disjunctions, conjunctions, and their truthmakers. *Mind*, 118, 417–425.
- Prior, A. N. (1957). *Time and modality*. Oxford: Oxford University Press.
- Rodriguez-Pereyra, G. (2006). Truthmaking, entailment, and the conjunction thesis. *Mind*, 115, 82–957.
- Rodriguez-Pereyra, G. (2009). The disjunction and conjunction theses. *Mind*, 118, 427–443.
- Schnieder, B. (2006a). Troubles with truth-making: necessitation and projection. *Erkenntnis*, 64, 61–74.
- Schnieder, B. (2006b). Truth-making without truth-makers. *Synthese*, 152, 21–46.
- Schulte, P. (2010). Truthmakers: a tale of two explanatory projects. *Synthese*, 181(3), 413–431.
- Smith, B. (1999). Truthmaker realism. *Australasian Journal of Philosophy*, 77, 274–291.
- Smith, B., & Simon, J. (2007). Truthmaker explanations. In J.-M. Monnoyer (Ed.), *Metaphysics and truthmakers*. Frankfurt: Ontos Verlag.
- Tałasiewicz, M. (2010). *Philosophy of syntax. Foundational topics*. Dordrecht: Springer.