

# **A Wittgensteinian Critique of the Orthodox Truthmaker Theory**

**By**

**Zhiwei Gu**

Submitted to

Central European University

Department of Philosophy

In partial fulfilment of the requirements for the degree of Master of Arts

Supervisor: Professor Hanoch Ben-Yami

Budapest, Hungary

2016

# Abstract

In this thesis I criticise the orthodox truthmaker theory in a Wittgensteinian way. According to the orthodox truthmaker theory, every truth is made true by at least one truthmaker and every truthmaker necessitates the truth-value of its truthbearer. First, I argue against truthmaker maximalism that its motivations are unmotivated, since it has the same problem with Augustine's picture of language which is not immune from Wittgenstein's argument. So there is a parallel argument against truthmaker maximalism. Second, I show that Wittgenstein's family resemblance concept of proposition implies a pluralistic view on explanation, which means that besides truthmakers, we have other explanans. Third, within the framework of the pluralistic view I address the problem of negative truths for truthmaker maximalism. Finally, I argue against Armstrong's argument for truthmaker necessitarianism.

## **Acknowledgements**

Warm thanks to Thomas Rooney for his patient proofreading, correcting my poor English expressions and valuable suggestions on the structure of my thesis. I am grateful to Errol Ball for inspiring discussions. My greatest debts are to my supervisor Hanoch Ben-Yami, whose extremely detailed comments and suggestions on philosophy and writing were most helpful. I really appreciate his patience.

# Contents

<b>Abstract</b>	<b>1</b>
<b>Acknowledgements</b>	<b>2</b>
<b>Introduction</b>	<b>1</b>
<b>1. The Motivations of Truthmaker Theory</b>	<b>4</b>
1.1. Against Phenomenalism and Rylean Behaviourism	4
1.2. The Motivation of Truthmaker Maximalism and Explanations	6
1.3 The Motivation of Truthmaker Maximalism and Augustine's Picture of Language	8
<b>2. Family Resemblance and pluralistic explanations</b>	<b>15</b>
<b>3. Pluralistic explanations and negative truths</b>	<b>19</b>
3.1. How the Pluralistic View Solves the Problem of Negative Truths	19
3.2. Grammatical Features and Ontological Commitments	21
3.3. A Variety of Explanans	25
3.4. The Solution from Tractatus and the Pluralistic Explanations	27
<b>4. Necessitation and explanation</b>	<b>30</b>
4.1. Grammatical Feature of "in virtue of" and Ontological Implications	30
4.2. Truthmaking Necessitarianism and Its Criticism	32
4.3. The Problem of Necessary Truth and Its Solutions	37
<b>Conclusion</b>	<b>42</b>
<b>References</b>	<b>44</b>



# A Wittgensteinian Critique of the Orthodox Truthmaker Theory

## *Introduction*

The idea of truthmaker is not totally an innovation by contemporary philosophers. Like many philosophical thoughts, its origins can be traced back to Aristotle:

[I]f there is a man, the statement whereby we say that there is a man is true, and reciprocally—since if the statement whereby we say that there is a man is true, there is a man. And whereas the true statement is in no way the cause of the actual thing's existence, the actual thing does seem in some way the cause of the statement's being true: it is because the actual thing exists or does not that the statement is called true or false.<sup>1</sup>

In this passage, Aristotle is concerned only with contingent existentials such as <there is a man>.<sup>2</sup> It is not clear whether Aristotle would agree with truthmaker maximalism: every truth is true in virtue of at least one truthmaker. Truthmakers are entities that serve as the “ontological ground” of truths.<sup>3</sup> Contemporary debates around truthmaker ideas, however, focus on the question whether truthmaker maximalism can be motivated.<sup>4</sup>

The opponents of truthmaker maximalism do not completely discard truthmaker theory. Instead, they tend to accept a restricted version, according to which only some particular subclasses of truths do not have truthmakers, but they are grounded in reality. I will call them weak truthmaker theorists.<sup>5</sup> In this thesis, I shall argue against truthmaker maximalism and accept a very restricted version of weak truthmaker theory, which claims that only synthetic

---

<sup>1</sup> See Aristotle, *Categories* 14b15–22, 1984, 22.

<sup>2</sup> I shall follow the conventional use of “<>” to stand for “the proposition that”.

<sup>3</sup> See Armstrong 1991, p 190. Truthmaker theorists tacitly admit that truthmakers are entities that exist in reality. Later, if I do not particularly emphasise, then I just follow what they mean by the term “truthmakers”.

<sup>4</sup> The camp of truthmaker maximalism includes Armstrong (1997, 2004), Cameron (2005, 2008), Heil (2003) and others.

<sup>5</sup> The camp of weak truthmaker theory includes Lewis (1992), Mellor (2003) and Simons (2005) and others. But for these philosophers, what kind of truths which are immune from truthmakers are different.

truths are true in virtue of some features of reality and that these features of reality do not need to be entities. This view is implied by my pluralistic view on the explanation of truth.

Aristotle clearly emphasised the asymmetry between truthbearers (e.g., propositions) and truthmakers; that is, it is the truthmaker that makes the truthbearer true rather than that the truthbearer brings about the existence of the truthmaker. This thought is inherited by contemporary truthmaker theorists. Notice that Aristotle used the term “cause” in a different sense than we usually use it.<sup>6</sup> We use the terms “makes” and “brings about” also in a non-causal sense. As Armstrong writes, “The best formulation of what this making is seems to be given by the phrase ‘in virtue of’. It is in virtue of that independent reality that the proposition is true. What makes the proposition a truth is how it stands to this reality.”<sup>7</sup> Because of this, truthmaker theory is regarded as a guide to ontology: truthmakers are what the truthbearers are committed to ontologically.

Another question that Aristotle did not raise is what exactly the relationship between the truthmaker and the truthbearer is. In other words, how can we cash out “in virtue of”? Armstrong proposed the cross-categorical truthmaking necessitarianism, according to which the truth of a truthbearer is necessitated by its truthmaker. Let us assume that truths are true propositions.<sup>8</sup> Truthmaking necessitarians claim that for any true proposition *p* and any entity *x*, if *x* is *p*’s truthmaker, then necessarily the mere existence of *x* is sufficient for *p*’s being true. The combination of truthmaker maximalism and truthmaking necessitarianism constitutes the orthodox truthmaker theory (OTT). Besides necessitation, Lowe added an explanatory dimension to the truthmaking relation. He wrote, “When we say that a true proposition needs

---

<sup>6</sup> Aristotle’s four causes do not seem to cover this usage. Maybe it belongs to the formal cause. But according to Aristotle, the formal cause is the form which is the account of what-it-is-to-be. It is far-fetched to say that truthmakers are the account of what truthbearers are.

<sup>7</sup> Armstrong, 2004, p 5.

<sup>8</sup> Choosing propositions as truthbearers is just for convenience. My arguments in this thesis do not depend on this choice. Naturalists may prefer other truthbearers to propositions. But we can still have a naturalistic view on propositions. See Armstrong 2004, p12. He treated propositions as the intentional objects of beliefs and thoughts, or the intentional objects of statements. They are abstract not because of belonging to any other worlds like Platonist numbers, but because they are contents and meanings as types.

to be ‘made’ true, we mean that it has to be true ‘in virtue of’ something, where ‘in virtue of’ expresses what I would call a relationship of metaphysical explanation. In other words, a true proposition must have truth conferred upon it in some way which explains how it gets to be true.”<sup>9</sup> This explanatory dimension of truthmaking is what I shall emphasise throughout the thesis.

In this thesis, I provide a Wittgensteinian critique of OTT in both respects. I shall present the motivations of the OTT in Chapter 1 and criticise them by a comparison with Wittgenstein’s criticism of Augustin’s idea of language. In Chapter 2, I shall use Wittgenstein’s family resemblance concept of proposition to argue for a pluralistic view on “truthmakers”<sup>10</sup>. Chapter 3 is devoted to developing this pluralistic view and addressing the problem of negative truths within the pluralistic framework. Chapter 4 focuses on the truthmaking relation—*in virtue of*. I shall argue that grammatical feature of it does not imply any ontological commitment. Meanwhile, Armstrong’s argument for truthmaking necessitarianism will be criticised.

---

<sup>9</sup> Lowe, 2006, p 193.

<sup>10</sup> I shall argue below that what we really need are explanations for truths. Truthmakers are only one type of explanans. But as the discussion is always around truthmaker theory, so sometimes I use “truthmaker” to mean explanans.



# **1. *The Motivations of Truthmaker Theory***

## **1.1. Against Phenomenalism and Rylean Behaviourism**

When we encounter a philosophical theory, it is natural to enquire into the motivation behind it. What are the motivations for truthmaker theory in general? Armstrong thought that truthmaker theory is conducive to arguing against Millian phenomenalism and Rylean behaviourism. John Bigelow also believed that it is necessary to insist on truthmaker theory to avoid pernicious idealism.<sup>11</sup> Phenomenalism, according to Armstrong, is the doctrine which claims that “physical objects are constituted out of sense-data or sense-impressions.” The phenomenalism’s problem is how to explain the true propositions about “physical objects and events at times that they are not being perceived.”<sup>12</sup> An orthodox approach is to analyse such truths in terms of counterfactuals. For example, I put my gun in the desk drawer. When I lock the drawer, no one sees it. The proposition <there is a gun in the desk drawer after the drawer was locked> according to the phenomenologists should be analysed into <if someone were to unlock the drawer, she would see the gun>. Is the problem solved? It depends. Armstrong thought the answer is “No”. The problem remains because according to phenomenalism no physical objects exist in virtue of which these counterfactuals can be true. Then “[w]hat are the truthmakers for these truths? Must there not be some way that the world is in virtue of which these truths are true?”<sup>13</sup> Realism about the physical world certainly will not have a difficulty to explain the truth of the proposition that <there is a gun in the desk drawer after the drawer is locked>, since according to realism about the physical world, even though no one keeps looking at the gun, the gun will always be there unless someone relocates it.

---

<sup>11</sup> See Armstrong, 2004, p 1; Bigelow, 1988, p123; Also cf. David Liggins, 2005.

<sup>12</sup> Armstrong, 2004, p 1.

<sup>13</sup> Ibid.

Likewise, truthmaker theorists think that Rylean behaviourism, which views mental states (e.g. beliefs) as dispositions, has the similar problems. The reason is that the dispositional truth which is expressed in a counterfactual form has no “categorical state”<sup>14</sup> in virtue of which it is true.

Arguing against phenomenalism and Rylean behaviourism is the initial motivation of truthmaker theory. However, it may only be attractive to realists. Suppose one sympathises with phenomenalism. One will certainly not be motivated to accept truthmaker theory. For this person, the counterfactual proposition <if someone were to unlock the drawer, she would see the gun> is enough to answer the question why the proposition <there is a gun in the desk drawer after the drawer was locked> is true. This person will think that the question, what are the truthmakers for counterfactuals, is a pseudo-question since according to phenomenalism in the counterfactual situation the person would perceive the gun. Isn’t that enough to claim that the proposition is true?

Moreover, I do not think that Armstrong treated phenomenalism in a fair way. In the gun case, even when we do not look into the drawer, the desk continues to weigh more than it did earlier, and also the compass needle turns because of the metallic gun.<sup>15</sup> It seems that phenomenalists always have some ways to justify a true proposition about physical objects, even though they cannot directly perceive the physical objects in question. Therefore, phenomenalists even do not need to adopt the phenomenalists’ orthodox solution. For those propositions about unknown or really remote objects, realism is no better than phenomenalism, since realists also cannot perceive them.

If we treat Mill’s phenomenalism more seriously than Armstrong did, it is not such striking for Mill to assert that a physical object is “permanent possibility of sensation”. We should note that Mill did not equate permanent possibilities with pure possibilities such as unicorns or

<sup>14</sup> Categorical states, according to Armstrong, are the states involving non-dispositional properties.

<sup>15</sup> Thanks Hanoeh Ben-Yami for pointing out this.

golden mountains. He believed that permanent possibilities constitute ordinary objects and that they are warranted by our constant sensations rather than imagination. This thought seems not so far away from common sense. The striking part of his thought is that he thought positing physical objects as causes of sensations is illegitimate, which is different from common sense. He wrote, “I assume only the tendency, but not the legitimacy of the tendency, to expand all the laws of our own experience to a sphere beyond our experience.”<sup>16</sup>

Mill knew the realist tendency very well. Nevertheless, he did not believe this tendency can be justified. In this sense, he might have thought it is no more justified to be a realist than only to suppose it is permanent possibilities that justify the claim that there is a gun in the desk drawer after the drawer is locked.

I am not a sympathiser with phenomenalism. However, I think that attacking phenomenalism in order to motivate truthmaker theory is unconvincing, especially as the attack amounts to no more than claiming that realism about the physical world is true, and thereby phenomenalism is false. Armstrong would not ask the question what the truthmakers for counterfactual propositions are if he did not presuppose a realist position. He obviously looks for a realist answer, and in this way truthmaker theory is motivated. But it is motivated not because realists have an independent argument besides their realist position supporting truthmaker theory. Rather, their realist position goes together with truthmaker theory. Perhaps this is acceptable for realists. At least, according to their stance, they have an appealing idea to explain why sentences about physical objects are true. And this idea also seems more intuitive than phenomenalism.

## 1.2. The Motivation of Truthmaker Maximalism and Explanations

---

<sup>16</sup> Mill, “Examination of Sir William Hamilton’s Philosophy”, Ch. XI.

Even if truthmaker theory, which is not necessarily truthmaker maximalism, is sufficiently motivated by the need to show the falsity of phenomenalism, this is still not enough to motivate truthmaker maximalism. There are many other counterfactuals which seem to have a truth-value, while they are not logically equivalent to normal assertions. For example, <If Deng did not carry out China's economic reform, China would be as poor as North Korea>. How can we assign truth-value to such propositions? There are other controversial propositions such as negative propositions, general propositions, mathematical propositions, and so on. They also constitute a problem for realism about the physical world which is only motivated by the aim to reject phenomenalism, since these propositions are not (obviously) about physical objects. So besides the aim to reject phenomenalism and Rylean behaviourism, truthmaker maximalists must need other motivations which are pointing at the mentioned problem. They might respond, "We have the ambition to deal with all those truth-apt propositions. No matter what kind of proposition they are." Truthmaker maximalism is then motivated in this way: All truths are made true by some entities, no matter what these entities are. They all enter in a realist ontological inventory.

A deeper motivation behind this ambition is the theoretical pursuit of elegance and unification. Truthmaker maximalists want a clear-cut but still explanatorily powerful theory. The danger of this motivation is that the idea is simple but the resource for explanation is huge, because the so-called elegant idea requires far more ontological commitments than we really need. For me the theoretical prospect is like a pitfall because behind the elegant idea there is an ontological monster. However, when you go through the truthmaker literature, you will find a too optimistic phenomenon: few philosophers discuss the motivation for truthmaker theory. It seems to be taken for granted. As for the motivation for truthmaker maximalism, there are seemingly no arguments even for it. Its primary motivation is a brute intuition and its ambition. As Armstrong writes,

I do not have any direct argument [for maximalism]. My hope is that philosophers of realist inclinations will be immediately attracted to the idea that a truth, any truth, should depend for its truth for something ‘outside’ it, in virtue of which it is true.<sup>17</sup>

Armstrong did try to provide truthmakers for different categories of truths. But I think his admirable effort went astray. Why? Let us step a bit backwards and ask why we need truthmakers. The answer cannot be that we are realists. The question is actually enquiring the function or the fundamental motivation for truthmakers. The answer should be that we human beings desire to know why some propositions are true and others are false. We need explanations for truth and falsehood to rationalise our beliefs and judgements. As Aristotle put it, “We do not have knowledge of a thing until we have grasped its why, that is to say, its explanation.”<sup>18</sup> Hence, both realists and anti-realists should provide us with explanations.

Some truthmaker theorists also realise this explanatory issue. For example, McFetridge wrote, “For every sentence which is true there must be some explanation of why it is true.”<sup>19</sup> Bigelow also wrote, “[Truthmakers] are entities whose entire *raison d’être* is to explain what makes a linguistic item true.”<sup>20</sup> The realist answer—truthmakers—certainly has some explanatory power. Also the answer is very direct and commonsensical. It may be the case that realist explanations for true propositions about physical objects is better than phenomenalist explanations. But this does not mean that a realist explanation is always better than other explanations concerning other true propositions. I shall illustrate why truthmaker maximalism goes astray in the next section.

### 1.3 The Motivation of Truthmaker Maximalism and Augustine’s Picture of Language

---

<sup>17</sup> Armstrong, 2004, p 7.

<sup>18</sup> Aristotal, “Physics”, 194 b 17–20.

<sup>19</sup> McFetridge, 1990, p 42; quoted from Liggins, 2005, 112.

<sup>20</sup> Bigelow, 1988, p 121.

I claim that the intuition of truthmaker maximalism has a similar difficulty to the one that Augustine's picture of language has: it takes what is "appropriate" for a certain "narrowly circumscribed region" to apply to "the whole of what you were claiming to describe".<sup>21</sup> Truthmaker theory may be appropriate for contingently affirmative propositions such as <Mount Everest exists> or <the table is yellow>. However, once this innocent intuition is extended to every proposition, a detrimental dogma is formed. To clearly see this issue, it would be helpful to review how Augustine's picture of language works and how Wittgenstein criticises it.

Wittgenstein opens his discussion in the *Philosophical Investigations* with an assessment of Augustine's description of how he learnt language:

These words, it seems to me, give us a particular picture of the essence of human language. It is this: the words in language name objects—sentences are combinations of such names. — In this picture of language we find the roots of the following idea: Every word has a meaning. This meaning is correlated with the word. It is the object for which the word stands.<sup>22</sup>

In this Augustine's picture of language, the essential function of words is naming objects. It looks as if all words are names. As Wittgenstein also mentions in the next paragraph of (§1), "Augustine does not mention any difference between kinds of word." Isn't it obvious that there are different kinds of word in ordinary language? Don't these words function in different ways? How does this common sense submerge itself in a philosophical thinking? Wittgenstein said, "Someone who describes the learning of language in this way is, I believe, thinking primarily of nouns like 'table', 'chair', 'bread' and of people's names..."<sup>23</sup> These names seem to become the paradigm of words in language. Other words are assumed to function in the same way as these paradigmatic words function.

---

<sup>21</sup> Wittgenstein, *Philosophical Investigations*, §3.

<sup>22</sup> Ibid, (§1).

<sup>23</sup> Ibid.

Truthmaker maximalists follow Augustine's picture: primarily we are acquainted with contingently affirmative propositions such as <Mount Everest exists>, <the table is yellow> and so on. These propositions are true in virtue of the object or fact they describe. Or in truthmaker slogan, they are made true by some entities.<sup>24</sup> These propositions become the paradigmatic propositions. Truthmaker theorists then claim that other propositions such as negative propositions, counterfactuals, modal propositions, etc. are also made true by some entities.

As for Augustine's picture of language, we may ask, "Is the essential function of words naming?" Similarly, we can ask truthmaker maximalists, "Do propositions have to describe any entities?" Both answers are negative.

It is true that we can conceive some language games which fit with Augustine's picture, as Wittgenstein did in §2: a builder A and an assistant B use a language which only consists of the words "block", "pillar", "slab" and "beam". These words are used to stand for blocks, pillars, slabs and beams. A call a word when he needs the building-block it stands for, then B brings it according to A's call, as he has learnt. This language seems to satisfy perfectly Augustine's picture, as Wittgenstein also admitted. But he added, "Yes, it will, but only for this narrowly circumscribed area, not for the whole of what you were purporting to describe." He continues, "It is as if someone were to say, 'Playing a game consists in moving objects about on a surface according to certain rules...' — and we replied: You seem to be thinking of board-games, but they are not all the games there are."<sup>25</sup> What Wittgenstein implied is that naming is only a tip of the iceberg of using language. There are "countless different kinds of use of all the things we

---

<sup>24</sup> Many truthmaker theorists believe that facts or states of affairs as entities constitutes what there is. In chapter 3, I shall argue against this view. I argue that even though some facts can explain why a truth is true, they does not belong to the inventory of what there is.

<sup>25</sup> Ibid, §3.

call ‘signs’, ‘words’, ‘sentences’”.<sup>26</sup> It is one-sided to see naming as the essential function of language.

In §8, Wittgenstein invited us to think about an expanded language game where numerals and demonstratives are introduced into the language game of §2. §9 describes how children learn the use of these words through ostensive teaching. But ostensive teaching of different words is different. For example, people may point to slabs and count: “a, b, slabs” to teach children numerals. In this way, it is similar to ostensive teaching of “slab”, “pillar”, etc. But people can also ostensively teach numerals in another way, for example, given a group of same kind of objects, people say, “f” or “g”. Ostensive teaching of demonstratives differs again. “One will point at places and things, but in this case pointing occurs in the use of the words too and not merely in learning the use.”<sup>27</sup>

Now we see the different uses of words even in such a simple language. What if we still insist on Augustine’s picture of language and ask, “what do numerals and demonstratives signify?” “One may say that the signs ‘a’, ‘b’, etc. signify numbers...But making the descriptions of the uses of these words similar in this way cannot make the uses themselves any more like one another! For, as we see, they are absolutely unlike.”<sup>28</sup> We have seen from §9 that the question “what do numerals and demonstratives signify?” should be answered by describing their uses rather than invoking some entities which they name. As the question implies, it seems that our answer should have the form of “This word signifies that”.<sup>29</sup> But the form is superfluous, and assimilating the descriptions of different uses of words does not make words more similar to each other. Therefore, the uniformity of function is illusory; the difference is deeper.

---

<sup>26</sup> Ibid, §23

<sup>27</sup> Ibid.

<sup>28</sup> Ibid, §10.

<sup>29</sup> Ibid.



Likewise, contingently affirmative propositions are just like the language game of §2. They are only a small part of propositions. There are other propositions and what they are about is completely different. One may reply, “Aren’t all propositions about some fact or state of affairs? E.g. a mathematical proposition describes a mathematical fact”. But then a similar response would go: making the propositions similar in this way cannot make the propositions any more like one another! For, as we see, they are absolutely unlike. The difference essentially consists in their content. Even though our ordinary languages have terms like “mathematical facts”, “ethical facts” and so forth, except the similarity of grammatical structure, their contents are quite different.<sup>30</sup> Because of this difference, the explanations of how their being true or false are extremely different. We give different explanations just like we describe different uses of different words. To explain why a contingently affirmative proposition <my desk is square> is true, we may only need to point to the desk and say that it is a fact that the desk is square; it is made so. In contrast, to explain why a mathematical proposition is true, we may need to give a proof. If it is only a simple arithmetic proposition such as <2+2=4>, you may only need to show two fingers with another two fingers to the interlocutor as an explanation. To explain the truth of a counterfactual such as <If Deng did not carry out China’s economic reform, China would be as poor as North Korea>, perhaps you have to tell a long story involving complex historical, political and economic hypotheses and inferences. Therefore, the uniformity of propositions with regard to aboutness is illusory; the difference is deeper.

I argued that one problem of truthmaker maximalism is its inappropriate extension from some paradigmatic propositions to other propositions. This similarity with Augustine’s picture of language is not contingent. It is inevitable because truthmaker maximalism is the consequence of insisting on Augustine’s picture of language. The only difference is that

---

<sup>30</sup> In chapter 3, I shall disenchant this grammatical entice in detail.

Augustine's picture of language focuses on words, while truthmaker maximalism focuses on sentences (or propositions).<sup>31</sup> If Augustine's picture were true, then naturally sentences as the combinations of names should also stand for the combinations of objects which the constituted names stand for. Therefore, it seems true that every truth has at least one truthmaker which is the combinations of objects that the components of the proposition stand for. This picture also fits with Armstrong's advocacy, "The world is a world of states of affairs."<sup>32</sup> States of affairs are the combinations of objects. They essentially involve the objects for which the names of sentences stands.

I have already rejected the view that the essential function of words are naming, so we certainly should give up the idea that sentences essentially stand for facts or states of affairs. Then what do we have instead? We have argued that the meaning of a word is its use, thereby the meaning of a sentence is not beyond words' use. Then the question why a sentence (proposition) is true is equivalent to the question why a sentence is properly used in a certain context. Certainly there are numerous contexts. Different contexts indeed relate to different rules which govern the use of words and sentences. So it seems to me that reality itself cannot independently determine the truth-value of a sentence, the truth-value of a sentence at least depends on the context of using the sentence, together with reality. It is obvious that different categories of sentences depend for their truth-value on reality differently. For example, the truth of a positive existential such as "there is a mountain called Everest" may completely depend on reality. In contrast, the truth of a mathematical sentence may have nothing to do with reality according to some views about mathematics. The dependence on contexts of use also varies among different categories of sentences. Mathematical truths may totally depend on the use of symbols. Hence, truthmaker maximalism goes to the extreme; namely, it over looks concrete contexts of truths and only finds reality as the ground of truth.

---

<sup>31</sup> For the sake of argument, I only mean assertions.

<sup>32</sup> See Armstrong, 1993, p 429-440. This idea was also held by Wittgenstein in *Tractatus*.

In sum, the motivations of truthmaker theory are not convincing. If it is only aiming at arguing against phenomenalism and Rylean behaviourism, then it is no more than choosing a realist stance. Also, truthmaker theorists do not treat phenomenalism in justice. Millian phenomenalism is in fact not as unbelievable as truthmaker theorists think. Moreover, the aspiration for unification is what truthmaker maximalism and Augustine's picture of language have in common. Wittgenstein's criticism of the latter can also apply to truthmaker maximalism. Then you will find that truthmaker maximalism is indeed not as attractive as many metaphysicians believe.

## 2. Family Resemblance and pluralistic explanations

In the previous chapter, I have argued that what we really need are explanations to rationalise our beliefs or judgments. I also gave examples to show that different kinds of propositions need different types of explanations. I do not deny that truthmakers are one kind of explanations. What I try to show is that explanations can be pluralistic. This plurality is implicit in the fact that the concept of proposition is a family resemblance concept. Various kinds of proposition form a family. They do not share a common feature. Instead, they resemble one another in different ways. Wittgenstein described their similarity as follows, “the various resemblances between members of a family...overlap and criss-cross in the same way.”<sup>33</sup>

How does the family resemblance concept relate to pluralistic explanations? The idea is like this. If the concept of proposition is indeed such a concept, namely, if there is no essential characteristics of all propositions, then to hold a uniform explanans of their truth seems problematic; as truths are heterogeneous, shouldn't we look for heterogeneous explanans for these truths? When we look closely at various kinds of truths we have, it makes perfect sense that different kinds of truth are true in virtue of different types of reason. Consider mathematical truths, ethical truths, counterfactuals, negative truths and so on. Do we really need to postulate odd entities to make these truths true if there are other explanations available? Given the explanations that I roughly outlined in the previous chapter, it is clear that pluralistic explanations are possible.

One may insist that the seemingly heterogeneous explanations for truths are only skin-deep; that what ultimately make propositions true are their truthmakers, which are the facts or states of affairs the propositions stand for. However, when one says that, one is ascribing some essence to the concept of a proposition; that is, that propositions have a general form and they

---

<sup>33</sup> Wittgenstein, *Philosophical Investigations*, § 67.

stand for facts or states of affairs. Because of this, propositions are ultimately made true by unified truthmakers. If this claim were justified, then the idea that pluralistic explanations are possible might be undermined. So we'd better to block this "deep thought". Let us consider three possible objections to the claim that propositions form a family.

One objection to the claim that propositions form a family can be made by identifying the general form of propositions. One candidate of the general form is "This is how things are". However, as Wittgenstein argued, this candidate itself is a proposition, a well-formed English sentence, so it has a distinctive use in everyday language. It may be used as a propositional schema, but it only repeats what was asserted before. Other sentences like "such and such is the case", "this is the situation", etc. are also used a propositional schema. Even the letter "p" is supposed to be a propositional schema. But no one would claim that "p" is the general form of propositions. Moreover, the *Tractatus* took the essence of propositions to consist in the representation of reality. However, the proposition <this is how things are> neither agrees nor disagrees with reality, since it says nothing at all except repeating something that has already been said by other propositions.<sup>34</sup> For instance, one says, "Manchester United beat Liverpool on Sunday." Another replies, "This is how things are." The latter only repeats what the former says. It works like anaphora.

The second objection also tries to characterise propositions by something common to all: "A proposition is whatever can be true or false." So being true and being false are used as the criteria of being a proposition. Wittgenstein also rejected this proposal because it seems to presuppose that we are able to independently grasp the concept of truth and falsehood without the concept of a proposition. He clarified this mistake in terms of an analogy. The king in chess is the piece that one can check, but it does not mean that we can use the concept of check to determine which piece is the king. For if we understand what it is to check a piece, then we

---

<sup>34</sup> Ibid, §134.

already know what a king is, and vice versa. Likewise, if we understand what truth and falsehood is, then we already know what a proposition is, and vice versa. Therefore, Wittgenstein concluded that “...the use of the words ‘true’ and ‘false’ may be among the constituent parts of this game; and if so it belongs to our concept ‘proposition’ but does not fit it.”<sup>35</sup>

Furthermore, truths (falsities) also form a family. This is obvious for those who believe that propositions form a family, since truths (falsities) are just true (false) propositions. The objector surely will reject this. But as I roughly showed in the previous chapter, different categories of truths are extremely different. What it takes for the claim that the table is square to be true; what it takes for the claim that  $2+2=4$  to be true; what it takes for the claim that torturing children is morally wrong to be true. The reasons for their being true are totally different. There is no common to all of them. Thus, truths (falsities) also form a family.

A third possible objection is that a proposition is at least composed by a subject and a verb.<sup>36</sup> But you will find other sentences such as interrogative sentences and exclamatory sentences are also composed by a subject and a verb, as well as some performative acts: I name this baby Donald Trump.<sup>37</sup> Are they propositions? Certainly they are not. They are neither true nor false and they also do not state how things are. Then the objector may try to confine themselves to assertions; that is, only assertions composed by at least a subject and a verb are propositions. The chess analogy then comes into the response again. Haven’t we already understood the concept of a proposition, when we understand the concept of an assertion, and vice versa?

There seems no better argument against the family resemblance of proposition, so it appears to be impossible to find out the essence of propositions because propositions do not

---

<sup>35</sup> Ibid, §136.

<sup>36</sup> Thanks to Errol Aschwanden for raising this objection.

<sup>37</sup> Thanks to Hanoah Ben-Yami for reminding me of the counterexample. He also mentioned that in some language (e.g. Hebrew), a subject term followed by an adjective can be a proposition: <John tall> so to say.

share something in common. If this is true, it is implausible to claim that every true proposition is made true by some entity, since their similarity is just too weak to support a general thesis. Therefore, the family resemblance concept of proposition leads us to a non-uniform answer to the question why some propositions are true.

### **3. Pluralistic explanations and negative truths**

In the previous chapter, on the basis of Wittgenstein's family resemblance concept of proposition, I advocated a pluralistic view on explaining a variety of truths. In this chapter, I shall develop this view in detail. In addition, I shall show that the problem caused by negative truths can be satisfactorily addressed by the pluralistic view.

#### **3.1. How the Pluralistic View Solves the Problem of Negative Truths**

Compared with truthmaker maximalism, in which every truth is made true by at least one truthmaker, I believe the pluralistic view on explaining truths is more intuitive and reasonable. I claim that different truths are true in virtue of different reasons. This general claim has two components: First, truths of different categories are true in different ways, which means that their explanans can be quite different from a truthmaker (which is an entity). Second, regarding contingent truths about the world, a positive existential whose quantifier quantifies over physical objects is true in virtue of the existence of the object the proposition is about;<sup>38</sup> a negative existential is true in virtue of the failure of the existence of a particular object or a particular kind, which depends on what the negative existential is about; or in other words, it is true in virtue of a particular way (relative to the subject the negative existential is about) the world is not; predicative truths are made true by the way the world is, is not, was, will be, possibly be, could have been, etc.<sup>39</sup> For instance, <Socrate was a philosopher> is true in virtue of his being a philosopher. <it is possibly raining tomorrow> is true in virtue of the possibility

---

<sup>38</sup> This limitation is made to exclude contingent existentials which are not about physical objects. I emphasise these specific truths because dealing with difficulties for truthmaker theory within the framework of the pluralistic view is one of its important missions.

<sup>39</sup> David Lewis and Julian Dodd pointed out that truthmaker theory only needs to admit that truths are grounded in reality. Besides what there is, reality also contains the way the world is. Predictions are made true by how the world is rather than entities. See David Lewis (1992, 2001a); Julian Dodd, 2001.



that it will rain tomorrow. These states of affairs represent the way the world is, is not, was, will be, possibly be and so on.

Notice that the second component of the pluralistic view is only an implication of the first component. It is used to deal with some specific problems. The second component should not be interpreted as truths being made true by *entities*. Instead, negative existentials and predicative truths are explained by how the way the world is not, is, was, will be and so on. Metaphysicians may prefer to call these ways “facts”, “states of affairs”, or even “tropes” and suppose these terms refer to different types of entity. But they do not refer to extra entities over individual objects. But not being entities does not mean that facts are unable to explain why some truths are true. I allow individuals, facts to be explanans for different truths, in this sense we will also have a pluralistic view.

Let me first sketch the problem of negative truths. Truthmaker maximalists have always struggled to provide satisfactory truthmakers for negative truths.<sup>40</sup> The problem is generated due to their view that the world is everything there is and every truth is true in virtue of what exists. However, a negative truth such as <there are no unicorns> is true not because there is something, but because there are not some things, namely, there are no unicorns. Providing truthmakers for negative truths becomes the most urgent task for maximalists. Russell<sup>41</sup> thought that negative facts are in the inventory of ontology. But it seems that we do not have to interpret the phrase “it is not a fact that” as denoting to a negative fact. Instead, negation can be interpreted as a truth-functional connective like conjunction or disjunction. It is just an operator that functions on a sentence.<sup>42</sup> C. B. Martin<sup>43</sup> thought that the absence of unicorns can serve as the truthmaker. But it is only a disguised way to abandon maximalism. Armstrong advocated a

---

<sup>40</sup> Negative propositions include negative predications and negative existentials.

<sup>41</sup> See Russell, 2010, p 42-7.

<sup>42</sup> This objection will be discussed a bit later. Cf. Wittgenstein, *Tractatus*, 5.44, 5.441.

<sup>43</sup> See C. B. Martin (1996).

totality fact to solve the problem. A totality fact is a higher-order state of affairs in which there are all and only the first-order states of affairs. It seems better than the absence, at least it insists on the maximalist idea. But doesn't it look like a dubious entity? Later on, I shall deal with the problem of negative truths within the pluralistic view framework. I also plan to explain the early Wittgenstein's view on correspondence which I think is also a solution to the problem. But this solution can be absorbed into the pluralistic view.

In the first chapter, I argued that the intuition of truthmaker maximalism is the result of an inappropriate extension and the aspiration for unification. If we refrain from these impulses and look at truths and how we normally explain their being true, we will find that the pluralistic view is more intuitive and reasonable. According to the pluralistic view, negative existentials can be easily explained. Essentially, negative existentials describe how the world is not. When we say that there is no *x*, we just mean that the world (or a certain region) exists in a way that it contains no *x*.<sup>44</sup> Hence, negative existentials are true in virtue of the way the world is not. For example, <there are no unicorns> is true in virtue of the fact that the world exists in a way that there are no unicorns. This fact is not an entity that exists in reality. If you wish, you can also say that <there are no unicorns> is true in virtue of there being no unicorns, without using the term "fact". This is the solution to the problem of negative truths. There are no mysterious entities involved. The right side of *in virtue of*—there being no unicorns—is ontologically neutral.

### 3.2. Grammatical Features and Ontological Commitments

---

<sup>44</sup> I only deal with contingently negative truths which claim the non-existence of physical objects or kinds. So the method may not be suitable to negative truths which are relevant to mathematics or the similar.

The opponents of my view might claim that if facts or states of affairs constitute the way the world is, then my view has already presupposed that we can identify facts, count them, and quantify over them. If we can do all that, then these ways exist. Therefore, negative truths and predicative truths<sup>45</sup> are still true in virtue of some entities (different ways).<sup>46</sup>

My response is as follows. This objection has undesirable consequences. There will be many odd entities which we definitely do not want in our ontology, but which we have no problem in distinguishing, counting and quantifying over. For instance, we certainly can distinguish different fictional objects such as fairies; we can also count them and quantify over them. But I guess that many philosophers are not willing to accept these fictional objects as real entities. Therefore, identification, countability and quantification do not seem to be good criteria for determining entities.

Moreover, from a grammatical perspective, all nouns and noun phrases create the illusion that they refer to something which philosophers like to view as entities. So the phrase “the fact that...” seems to provide an ontological clue. However, if you look closer at various facts, you will see their tremendous differences and realise how meaningless it is to ignore these differences and title them with a unified name—“entities”. Consider the difference between the fact that this table is yellow and the fact that  $2+2=4$ .<sup>47</sup> The former seems to be a concrete entity if it is an entity, since it essentially involves a concrete individual and a particular way that individual is.<sup>48</sup> In contrast, the latter is unlikely to be a concrete entity even if it were an entity.<sup>49</sup> Formalists, for instance, believe that numbers are only symbols or signs which have no

---

<sup>45</sup> Contingently predications are standard propositions which describe the way the world is. Some philosophers think that the corresponding facts are not entities which exist in reality. Instead they are the way reality is.

<sup>46</sup> This objection can be seen in Rodriguez-Pereyra, “Why Truthmakers”, p 23-4.

<sup>47</sup> Perhaps it is not common to say that  $2+2=4$  is a fact. But sometimes, when answering a question of why an arithmetical proposition is true, we do say that it is a fact in order to emphasise its triviality.

<sup>48</sup> If we think that a fact is something more than its constituents, then there seems to be a gap in the inference from the concreteness of its constituents to the concreteness of the fact itself.

<sup>49</sup> Platonists even like Gödel who believes that mathematical objects are parallel to physical objects would also think that  $2+2=4$  is abstract. Cf. Parsons, “Platonism and Mathematical Intuition in Kurt Gödel’s Thought”.

ontological commitments. According to them, the fact that  $2+2=4$  is only a part of a linguistic game. Fictionalists are even more extreme. For them, mathematics, like a fiction which talks about fictional objects, which are not even abstract entities.

In addition to concreteness and abstractness, as I argued in the previous section, we do not use arithmetical facts to explain the corresponding truths. To answer why an arithmetical proposition is true, we prove it or demonstrate it with physical objects. By contrast, we do explain why <the table is yellow> is true by appealing to the corresponding fact. In short, even though the same phrase “the fact that...” is used, the contents are quite different. Because of this, it does not seem justifiable to view all facts as entities regardless of their differences.

Weak truthmaker theorists, who believe truthmaker theory can only apply to contingent truths, may contend that at least contingent facts are similar enough to deserve the name of “entity”. Yet even this is not true. Consider the following contingent facts:

- (a) The fact that Everest exists.
- (b) The fact that there are no unicorns.
- (c) The fact that the table is yellow.

If (a) is an entity, then it is not an independent one, since it depends on the existence of Mount Everest—an individual. So it appears to be redundant to posit a fact as an extra entity. By contrast, if (b) is an entity, it depends on the non-existence of a kind. If (c) is an entity, it is constituted by an individual and a property, but the fact seems more than its constituents in the sense that there exists the possibility that both constituents exist, while the fact fails to exist. For instance, it is possible that both the table and the colour exist, but the table is not yellow. Thus, the fact seems more than its constituents.<sup>50</sup>

---

<sup>50</sup> This claim at least is true for those who believe that properties are universals.

In the sense of constitution, (a) and (b) are different from (c), as they are not more than their constituents. But if we take constitution seriously, then we may have to be a Meinongians, since how can we have an entity (b) while its only constituent is not an entity? So we must assume that the non-existent is an entity. But such a Meinongian view has never been found attractive. I do not intend to argue for or against Meinongism here, I only want to show that even these simple contingent facts are so different.<sup>51</sup> To call all of them ‘entities’ seems artificial. The only purpose of it is to satisfy truthmaker theorists’ theoretical fantasy. They are eager to explain why a proposition is true and realise that for an appropriate explanation of *contingent truths* it would be better to find a category other than propositions themselves as explanans. This is fine. The wrong move is to think that all explanans (or truthmakers) are entities. What is worse, that they are all entities of the same kind (e.g., facts). They thought this is the only way to cash out the cross-categories explanatory relation. But as I indicated above, the use of the phrase “the fact that...” or the phrase “a fact that...” in front of, e.g., “the table is yellow”, can only mean that the table is yellow, which is ontologically neutral.

The term “fact” is only a linguistic device which does not add anything substantive to its content. ‘The fact that  $2+2=4$ ’ does not make ‘ $2+2=4$ ’ more like an entity. Even a fictionalist can claim that  $2+2=4$  is a fact, which does not make him a Platonist. So the term “fact” does not help to augment our ontological inventory. I can also avoid to use the term “fact” in expressing my view. There is no significant difference between that <the table is yellow> is true because it is yellow and that <the table is yellow> is true because it is a *fact* that it is yellow. It does not matter whether or not we use the term “fact”. The point is that the way we think of the facts are quite different and it is not reasonable to overlook their differences and classify them under the title of “entity”.

---

<sup>51</sup> We also have many more complex contingent facts such as the fact that I know Wittgenstein did not like Plato. This fact may depend on some theory of knowledge and a sub-fact that Wittgenstein did not like Plato which also depends on its constituents if we take constitution seriously.

What then is the function of the phrase “the fact that...”? I think its function is slightly different within different contexts. When we use it in front of a mathematical expression, we may indicate or emphasise that the mathematical expression is true. So saying that it is a fact that  $2+2=4$  is just saying that it is true that  $2+2=4$ . Perhaps, this is the very reason that mathematical facts cannot explain mathematical truths, since “true” and “fact” in this context refer to the same category, while truthmaking as an explanatory relation is supposed to be cross-categorical.

By contrast, when we use the phrase in front of contingent facts such as that the table is yellow or that there are no unicorns, we mean nothing more than that the table is yellow or that there are no unicorns. But the phrase also indicates its content is worldly related. Because of this, we can say that <the table is yellow> is true in virtue of the table’s being yellow; and <there are no unicorns> is true in virtue of that there being no unicorns. The latter explains the former, since they belong to different categories: Being true points to truthbearers, while “the fact that...” points to the world.

Regarding these contingent truths, my position is not so different from that of truthmaker theorists. I agree with them that contingent truths are grounded in reality. What I disagree with are (1) that all truths are grounded in reality and (2) “grounded in reality” means being made true by some entity. When I concede that there are no unicorns, I do not concede that this fact is an entity. I only concede that it is a particular way (relative to unicorns) the world is not. So “grounded in reality” only means that the truth is explained by some aspect of reality. Hence (2) overstates some correct intuition. As for (1), I have argued that many truths have nothing to do with reality.

### 3.3. A Variety of Explanans

In fact, we even do not necessarily need facts as explanans or truthmakers, whatever they are, to appear on the right side of ‘in virtue of’. Our explanans can belong to other categories as well, depending on what kinds of truth we are dealing with. The most direct objection to the doctrine that all truthmakers are facts (hereafter factualism) is that positive existentials are true in virtue of the existence of some particular individuals rather than facts.<sup>52</sup> For instance, <there are mountains> is true in virtue of the existence of many mountains such as Mount Everest, Mont Blanc and so on. So individuals are enough to explain why positive existentials are true.

Factualists may insist that the truthmakers for <there are mountains> are the facts that there is Mount Everest, that there is Mont Blanc and so on.<sup>53</sup> Of course, we can legitimately say “the fact that Mount Everest exists”. But it does not mean that this fact is more than the existence of the object. Instead, the fact that Mount Everest exists cannot exist independently of the existence of Mount Everest. So the only reason to posit the fact as a truthmaker for factualists is for the sake of unification. It is indeed redundant. For this category of truths, individuals are obviously more suitable as truthmakers for truthmaker theorists, which supports my pluralistic view on explanation.

Factualism might be attractive at first sight. For many truthmaker theorists, the truthmaker for <the table is yellow> cannot be the table, nor the property of yellowness or the order (the table, the property of yellowness), because none of these candidates could sufficiently make the proposition true. You can always imagine the possibilities that these candidates exist, while the proposition fails to be true. For example, the table could have been red if it were painted differently. Therefore, an extra entity—a fact—is needed to necessitate the corresponding proposition. This is the reason realists prefer facts to other options.

---

<sup>52</sup> Cf. Lowe 2006, p.186.

<sup>53</sup> Positive existentials are actually another category of examples to show that in our language the term “fact” can be very flexibly used, and what it means can be quite different, since the existential fact is not an ontological independent category. In contrast, predicative facts are conceived as something more than its constituents, so they are ontologically independent.

Two assumptions are involved in this reasoning. First, truthmakers necessitate their truthbearers. Second, properties are universals. I shall discuss necessitation in the next chapter. Here I shall discuss only the second assumption. Because properties are always tacitly conceived as Platonistic universals, the following case then becomes possible. That is, the table exists and the yellowness also independently exists, whilst the fact fails to exist. However, we do not have to be Platonists about properties. We can hold that a property is a particular way something is. For instance, the table's property of being yellow is its particular way of being painted. This property is similar to other objects' yellowness. But they are not the same. Properties thus characterised cannot independently exist as universals do. Instead, they exist depending on their possessors. So the previously conceivable situation—the table exists and the yellowness also independently exists, whilst the fact fails to exist—is impossible. You can only conceive the table painted by a different colour and another yellow object, then the preferred fact surely fails to exist. This is clearly not the case that factualists want. Meanwhile, you do not have plausible ways to conceive possible situations that the table exists and the yellowness also independently exists, whilst the preferred fact fails to exist. Therefore, due to the lack of convincing reasons for the second assumption of factualism, factualism is not so attractive as it looks.

According to my characterisation of properties, a fact, as an individual possesses a property or instantiates a relation, is ontologically not over and above particular individuals involved. Nevertheless, it is still natural and harmless to admit that there are facts; but they are not entities. Such a view supports my pluralistic view on explanans, since we have both individuals and facts as explanans for different kinds of truths.

### **3.4. The Solution from Tractatus and the Pluralistic Explanations**



It is interesting to note that there are philosophers who tackle the problem of negative truths in a similar way but independently of the pluralistic view. They claim that negative truths do not need truthmakers in virtue of which they can be true. The idea is indicated in *Tractatus*. Wittgenstein wrote, “If an elementary proposition is true, the state of affairs exists; if an elementary proposition is false, the state of affairs does not exist.”<sup>54</sup> We can convert his claim, namely, if the state of affairs exists, the corresponding proposition is true; if the state of affairs does not exist, the corresponding proposition is false. Apply this idea to our example. If unicorns exist, then <there are unicorns> is true; individual unicorns are the truthmakers for the proposition. Therefore, if unicorns do not exist, then <there are unicorns> is false and then <there are no unicorns> is trivially true. Hence we do not need a truthmaker for negative existentials.

In the beginning of the chapter, I mentioned that Wittgenstein denied the existence of negative facts, which means that he did not need negative facts to make negative truths true. He thought negation is just like other truth-functions which are not material functions, which means negation does not denote anything. He argued:

*And if there were an object called ‘~’, it would follow that ‘~~p’ said something different from what ‘p’ said, just because the one proposition would then be about ~ and the other world not.*<sup>55</sup>

The argument assumes that  $\sim\sim p$  is equivalent to  $p$ . In ordinary language, they may be somewhat different. For instance, double negation may be used to emphasise  $p$ . Nonetheless, their contents are the same. Under this assumption, negation cannot denote anything. Otherwise  $\sim\sim p$  and  $p$  would have different contents.

---

<sup>54</sup> Wittgenstein, *Tractatus*, 4.25. Also see Simons (2005, p 255-6).

<sup>55</sup> Wittgenstein, *Tractatus*, 5.441.

In ordinary language, negation can appear in front of predicates. For example, Socrates is not alive. However, it is not a problem to paraphrase this sentence into ‘it is not the case that Socrates is alive. At least for those sentences whose arguments are singular terms, the original sentence and the paraphrased sentence are equivalent. If the original sentence  $p$  contains a universal (existential) quantifier, then the corresponding paraphrased sentence ‘ $\sim q$ ’ will contain an existential (universal) quantifier. This paraphrase is merely another way of saying the same thing, which makes it more obvious that negation is only a sentence operator, which does not denote an object.<sup>56</sup> Then how can a negative truth be made true? For early Wittgenstein, the solution is just what we discussed above: we do not need a truthmaker for a negative truth.

Now consider my solution to the problem. I claim that <there are no unicorns> is true in virtue of that there being no unicorns. I also claim that that there are no unicorns describes the way the world is not. But the fact is not an entity and the term “fact” only means being real here. In fact, it just says that it is not real that there are unicorns. If we state this in the language of the *Tractatus*, that it is not real that there are unicorns means the state of affairs—there are unicorns—does not exist. So there is no big difference between these two solutions if our only concern is about the problem of negative truths. Yet I wish to point out one difference: the *Tractatus* treats states of affairs as entities, while, as I argued above, facts or states of affairs are not entities.

---

<sup>56</sup> If we use the Quantified Argument Calculus rather than Frege’s Predicate Calculus to formalise natural language, then negation can be seen as a predicate operator if it appears in front of a predicate. Its function is also not referring. See Hanoch Ben-Yami, 2014, pp. 123-125.

## **4. Necessitation and explanation**

In the previous chapter, I argued that the grammatical feature of the phrase “the fact that...” does not support any ontological conclusion. In the discussion of truthmakers, the phrase “in virtue of” is also conceived as some clue to an ontological commitment. The first section of this chapter examines the grammatical feature of “in virtue of”. I shall argue that no matter whether “in virtue of” is understood as a relation or as an operator, it does not carry any ontological commitment. The second section is devoted to a critique of truthmaking necessitarianism. In the third section I shall discuss the problem of truthmaking necessitarianism caused by necessary truths and provide an acceptable solution.

### **4.1. Grammatical Feature of “in virtue of” and Ontological Implications**

One of the distortions is treating “in virtue of” as a relation between entities. This is another ontological illusion due to grammatical structure. Assume that “in virtue of” is a relation; it still does not follow that its relata are entities.

Rodriguez-Pereyra would surely disagree. He sketches his argument for truthmaker theory as follows:

- (1) Truth is grounded.
- (2) Grounding is a relation.
- (3) Relations link entities.
- (4) Therefore, truth is grounded in entities.<sup>57</sup>

---

<sup>57</sup> Rodriguez-Pereyra, “2005”, p 25. He confined his argument to the scope of non-essential synthetical propositions. He understood “in virtue of” as a primitive notion (p 8), but also thought it is grounding. So the only reasonable explanation is that grounding is a primitive notion. What I care about is that “in virtue of” or grounding is a relation for him.

He argued premise (3) is undeniable. If a relation is instantiated, then what the relation links must be entities.<sup>58</sup> This thought is as ubiquitous in philosophy as the thought that the essential function of a noun or a noun phrase is naming. The reason that we have the false idea may be due to some paradigmatic relations or the abstract form of relations.

Prima facie, we think of a relation as something that connects individuals. For example, Tom is fatter than Jerry; Mount Everest is higher than Mont Blanc. In these cases, there is no problem to admit that the relations involved link entities (individuals). We then extend this paradigm and have a formal expression  $aRb$ ,<sup>59</sup> and then falsely believe that  $a$  and  $b$  must stand for entities if  $R$  is instantiated.

But relata can be of many different kinds.<sup>60</sup> For example, being itchy is more tolerable than being in pain; or January precedes June. If premise (3) is acceptable, then being itchy and being in pain are entities, so are January and June. If this were right, it would be right only because we hold a revisionary view on using the term “entity”. Being itchy and being in pain are states; and January and June are a period of time. So I do not think it is wise to take them as entities. Hence, relata do not have to be entities. So even though *in virtue of* is a relation, its relata need not be entities. If we accept that, then facts, which are widely accepted as the relatum of *in virtue of*, need not to be treated as entities.

Premise (2) is also suspicious, even though in my discussion I tacitly treat “in virtue of” or grounding as a relation. In fact, we have an alternative, namely, operator view. “In virtue of” can be a non-truth functional operator. This view is not implausible. In the discourse of truthmaking, “in virtue of” and “because” have the same meaning. “Because” is usually seen as a non-truth functional operator, so it is plausible to treat “in virtue of” as a non-truth

---

<sup>58</sup> Ibid.

<sup>59</sup> I use binary relation as an example.

<sup>60</sup> I use the term “stuff” rather than “thing” or whatever to avoid inappropriate ontological implications.

functional operator too. If so, even from a grammatical perspective we do not need to have any ontological commitment, because operators carry none.<sup>61</sup>

Accordingly, no matter whether “in virtue of” is understood as a relation or as a sentential operator, Rodriguez-Pereyra’s argument is not sound. Hence, we have again seen that the explanans of a truth does not need to be a truthmaker.

#### 4.2. Truthmaking Necessitarianism and Its Criticism

Armstrong believed that the truthmaking relation is absolute necessitation. But the relation cannot be entailment, since the truthmaking relation connects a proposition with reality, while both sides of an entailment relation should be propositions. So what is necessitation if it is not entailment? The definition is implicitly expressed in Armstrong’s *reductio ad absurdum*. He wrote, “Suppose that a suggested truthmaker T for a certain truth p fails to necessitate that truth. There will then be at least the possibility that T should exist and yet the proposition p not be true.”<sup>62</sup> According to this passage, a truthmaker T necessitates a truth p only if it is not possible that T exists and yet p is not true.

With the definition of truthmaking necessitarianism in mind, let us examine Armstrong’s argument for truthmaking necessitarianism:

1. Suppose that T is the truthmaker for a truth p but fails to necessitate p. (Assumption for reductio)
2. It follows that it is possible that T exists and yet the proposition p is not true. (From 1)
3. This possibility strongly suggests that there should be some further condition that must be satisfied in order for p to be true.
4. This condition must either be some further entity U, or a further truth q.
5. If it is the first, then T+U would be the truthmaker that necessitates p.
6. If it is the second, either q has a truthmaker V which is distinct from T, or it does not.
7. If V is the truthmaker for q, then T and V jointly necessitate p, or given that V is the truthmaker for q but fails to necessitate q, the same question arises.

---

<sup>61</sup> Cf. Melia, 2005, p 78-81.

<sup>62</sup> Armstrong, 2004, p 6-7.

8. If q does not have a truthmaker, then it contradicts truthmaker maximalism.
9. Therefore, given that truthmaker maximalism is plausible, q does have a truthmaker.
10. Hence, given that truthmaker maximalism is true, it is impossible that T exists and yet the proposition p is not true. That is, given that truthmaker maximalism, truthmaker necessitarianism is true.<sup>63</sup>

Armstrong's argument does not seem that convincing. First, premise 3 appears to be quite problematic. If a philosopher does not favour truthmaker necessitarianism, she will surely doubt this premise, since it directly contradicts her view. Armstrong also did not provide an argument for this controversial premise. As Merricks wrote, "This assumption is a poor premise in an argument for necessitarianism, since only someone already committed to necessitarianism would find that assumption attractive."<sup>64</sup>

If premise 3 is accepted, it means that we concede that in some possible circumstances, a further condition should be satisfied so that p could be true. But this has nothing to do with the actual circumstances, because in the actual world, according to the supposition, T has already been the truthmaker for p; we do not need anything else. So even though the necessitation condition can be found, it does not mean that premise 1 is false, unless truthmaking is presupposed to be necessitation. Otherwise, we can unproblematically claim that T+U necessitates p and T is actually the truthmaker for p. There is no contradiction.

Armstrong's argument did not even persuade the proponents of truthmaking necessitarianism. Rose Cameron questioned why we should hold that T together with V necessitate p (premise 7). Cameron claimed that the only reason is that not-q is a complete specification of all possible circumstances that T exists and p is false. So if q is made true, namely V obtains, then not-q-circumstances do not obtain. Thus, if q is made true by V, then we are in the circumstances where T suffices for the truth of p. But it only follows that V cannot obtain in circumstances in which T exists and p is false if we assume that truthmaker for q

---

<sup>63</sup> Ibid.

<sup>64</sup> Merricks, 2007, p 9.

cannot exist in circumstances in which  $q$  is false. Obviously, we cannot assume this because it would beg the question: Our only reason for thinking that the truthmaker for  $q$  could not exist in circumstances in which  $\neg q$  is true is that truthmakers necessitate the corresponding truths, and that is exactly what the argument is trying to establish.<sup>65</sup> Cameron does not deny truthmaking necessitarianism *per se*. He only points out that Armstrong could not provide an independent reason to believe truthmaking necessitarianism. I think Cameron is right.

I shall now demonstrate that if we take a truthmaker as a state of affairs for which the corresponding proposition stands, then the truthmaker necessitates the proposition; but this is not what truthmaking necessitarians have in mind. However, if we follow the Armstrongian necessitarians, we will lose necessitation.

Consider contingent truths about physical objects.<sup>66</sup> If all truths stand for the corresponding states of affairs, can truthmaking necessitarianism fail? Under such an assumption, we will have the schema that  $\langle p \rangle$  is true in virtue of  $p$ . So it seems impossible that truthmaking necessitarianism fails.

Suppose that  $p$  stands for the singular proposition that the table is yellow and  $T$  is the state of affairs that the table is yellow.  $T$  then is the truthmaker for  $p$ . The failure of truthmaking necessitarianism means that there is a possibility that  $T$  exists while  $p$  is false. No one will deny that  $p$  could be false, since it is a contingent truth. It is certainly possible that the table can be a different colour than yellow. But it seems impossible for  $p$  to be false given that  $T$  exists.

How is it possible that the table is yellow, whereas  $\langle \text{the table is yellow} \rangle$  is false? The only seemingly possibility is that the truthbearer does not exist when the table is yellow. This possibility presupposes that truthbearers, whatever they are, are creature-dependent. For only in this way can we imagine possible circumstances where because no creatures exist,  $\langle \text{the table}$

---

<sup>65</sup> See Cameron, 2008, p 111.

<sup>66</sup> When not otherwise noted, the discussion below is confined to contingent truths.

is yellow> is false in the sense that the proposition does not exist, even though the table is yellow.

This assumption may be true for Armstrong and other naturalists, since according to Armstrong, “[Propositions] are the intentional objects of beliefs and certain thoughts. That is on the mental side. On the linguistic side they are the intentional objects of statements.”<sup>67</sup> Thus, according to the naturalist view on propositions, propositions are creature-dependent. Sentences, judgements and beliefs are certainly creature-dependent. Therefore, it seems possible that the table is yellow, whereas <the table is yellow> is false.

However, even though truthbearers are creature-dependent, under such an assumption, it is not the case that the truthmaker exists, whilst the truthbearer is false. Rather, we should say that the possibility shows that a truthmaker can exist, but its corresponding truthbearer does not exist; that because the truthbearer does not exist, it is neither true, nor false. Nevertheless, this possibility is still a counterexample to truthmaking necessitarianism, since a truthmaker is not sufficient for its truthbearer.

To make truthmaker necessitarianism more plausible, I assume that the above case is ruled out. What I am interested in is whether it is possible that both the fact that the table is yellow and <the table is yellow> exist, but the latter is still false. This is impossible. Hence, it seems to me that Armstrong did not assume that truthmakers are necessarily the facts or the states of affairs that the propositions stand for. Instead, truthmakers in his mind are more fundamental entities. These entities ground the states of affairs the proposition stands for. Their connections in his mind should also be necessary. Otherwise it is not possible that these fundamental entities are still necessitating the propositions. This is why in the argument he considered the further entity U or further truth q together with T necessitate p, when T alone is unable to necessitate p. He seemed to think that T is possibly not sufficient for p due to the lack of some conditions

---

<sup>67</sup> See Armstrong, 2004, p 13 and Merricks, 2007, p 8.



in possible circumstances. U is just these possibly absent conditions. Similarly, q describes the background conditions for p's being necessitated by T. Therefore, the truthmaker that Armstrong is looking for is not the state of affairs the proposition stands for. Instead, it is the fundamentally ontological elements that are sufficient for that state of affairs. Otherwise, it does not make sense why he needed to argue for necessitarianism in that way.

However, if we follow truthmaking necessitarianism as shown in Armstrong's argument, we will not have necessitation. Let me resume the objection against premise 3, where I argued that only truthmaking necessitarians will accept this premise. I also argued that even if we accept the premise 3, we will still not reach a conclusion which contradicts premise 1, unless we have already assumed that truthmaking is necessitation. In fact, if we focus on explaining why a truth is true, necessitation is completely irrelevant. Armstrong supposes that T is the truthmaker for p without necessitating p. Nonetheless, it still follows that p is actually made true by T. From the perspective of explanation, this means that T indeed has already explained why p is actually true. Do we really care about how a contingent truth is true under another possible circumstance? Maybe sometimes we do. In that situation, we are considering a counterfactual situation. The actual connection between T and p is disconnected. Obviously T is not the state of affairs that p stands for, and it is also not the case that the state of affairs that p stands for metaphysically depends upon T; otherwise T would not fail to make p true. In principle, we may not have any clue about how T plus anything else re-connect to the state of affairs that p stands for. Armstrong adds a further entity U or a further proposition q. But the truth is that U and q are both too abstract to contribute any useful information to understanding the truth in the question. So, why do we need them? They do not help in explaining why the truth is true even in a counterfactual situation. Hence, if explanation of truth is the central work, necessitation is unimportant.

Truthmaking necessitarians may ask: if T does not necessitate p, how can T explain p? One answer is that we have causal explanation which can be contingent. Certainly, if the explanation is causal, it is not T causes p, but T causes what p stands for. But causal explanation is obviously not involved in the truthmaking discussion. Second, according to my pluralistic view, contingent truths are either true in virtue of what there is (e.g., positive existentials), or true in virtue of the way the world is, is not, was, will be and so on. Roughly we can have the schema:

p is true in virtue of [p].<sup>68</sup>

On the one hand, this schema implies necessitation. On the other hand, it reveals an aboutness relation. I mean that p is always about [p]. This aboutness relation explains why [p] or T explains p. But the aboutness relation conceptually has nothing to do with necessitation. They are only correlative. The direction of necessitation is from reality to truth, while the direction of aboutness is from truth to reality. Explanation requires the aboutness relation rather than necessitation. In the next section, I shall use this idea to explain a problem generated by truthmaker necessitarianism.

#### 4.3. The Problem of Necessary Truth and Its Solutions

Leaving aside the soundness of Armstrong's positive argument for truthmaking necessitarianism, truthmaking necessitarianism has other problems. Recall what truthmaker necessitarianism states: a truthmaker T necessitates a truth p only if it is not possible that T exists and yet p is not true. This implies that every entity is the truthmaker for a necessary truth such as  $\langle 5+7=12 \rangle$ , no matter whether it is relevant. This consequence is surely unacceptable.

---

<sup>68</sup> p is a proposition. "[ ]" refers to the right side of "in virtue of". As I said in the previous chapter, the truthmaker for a positive existential should be the individual that the proposition is about. So its form should not be [p]. But it will not affect the later argument.

But what is missing when we claim that my existence cannot necessitate  $\langle 5+7=12 \rangle$ ? Schaffer observed that the necessitation relation as such expressed is not a dependency. A dependency is a hyper-intensional relation.<sup>69</sup> My existence and  $\langle 5+7=12 \rangle$  do not establish such a dependency.

How can necessitarians fix this problem? Or how can other philosophers address this irrelevancy? Merricks thought that necessitarians have to adopt a *de re* modality to characterise the necessitation relation. That is, if  $x$  is a truthmaker for  $p$ , then  $x$  is essentially such that  $p$  is true.<sup>70</sup> In other words,  $p$ 's being true essentially requires the existence of  $x$ . It follows that my existence certainly is not essential such that  $\langle 5+7=12 \rangle$  is true. Because of this my existence cannot explain why it is true that  $\langle 5+7=7 \rangle$ . A currently popular concept—metaphysical grounding—is also a potential candidate to solve this problem. Both Merricks' suggestion and the grounding approach rely on the essence of the truthbearer. As Kit Fine said, “The particular explanatory connection between the fact  $C$  and its grounds may itself be explained in terms of the nature of  $C$ .”<sup>71</sup> This idea is echoed by Rosen, Dasgupta and other grounding theorists.<sup>72</sup>

A concrete example may be helpful to illustrate this idea. The existence of the singleton {Socrates} is grounded in the existence of the philosopher Socrates.<sup>73</sup> In this case, the nature of the singleton—being constituted by Socrates—explains why it is grounded in the existence of Socrates. So once the idea of grounding is applied to truthmaker theory, the grounding (truthmaking) relation should be explained in terms of the nature of the truthbearer. I advocate the following schema which connects truthmaking to grounding:

<sup>69</sup> Schaffer, 2008, p 12. Hyperintensional relation means that relata are intensionally not extensionally related.

<sup>70</sup> Merricks, 2007, p11.

<sup>71</sup> Kit Fine, 2012, p76.

<sup>72</sup> Cf. Rosen, 2010; Dasgupta, 2014.

<sup>73</sup> After Kit Fine using this example, it becomes popular. See Kit Fine 1994, p4. It is also argued that singleton {Socrates} and Socrates are just two different ways of talking about the same thing. I thank Hanoeh Ben-Yami and Marius Jakstas for reminding me of this.

(TG)  $p$  is true in virtue of  $T$  iff  $T$  grounds  $p$ .<sup>74</sup>

Grounding, if understood as a relation, is an irreflexive, asymmetrical, transitive relation. But truthmaking is not. Truthmaking is not irreflexive. For example,  $\langle \text{truths exist} \rangle$  is true in virtue of  $\langle \text{truths exist} \rangle$ . Because there are reflexive cases of truthmaking, truthmaking is not asymmetrical. Truthmaking is certainly not transitive. I as a person makes  $\langle \text{there are human beings} \rangle$  true,  $\langle \text{there are human beings} \rangle$  makes  $\langle \text{truths exist} \rangle$  true, but I do not make  $\langle \text{truths exist} \rangle$  true. Therefore, from the formal perspective, truthmaking cannot be characterised by grounding.<sup>75</sup>

Besides the formal problems which prevent reduction, grounding has its own problems. I agree with Jessica Wilson<sup>76</sup> that a theory of grounding does not do any specific work. The concept in general is too “coarse-graining”. If other specific metaphysical relations such as functional realisation, part-whole dependence, reduction, and the set-membership relation can answer metaphysical questions, then we do not need a more coarse-grained concept; if they cannot answer metaphysical questions, then grounding is also inefficacious. If truthmaking itself makes sense, then it does not need grounding to characterise it; if it does not, then grounding is also useless to make it more sensible. So generally speaking, we do not need grounding to help us understand the notion of truthmaking.

---

<sup>74</sup> Detailed discussion can be seen in Griffith 2014. He preferred an arbitrary categories view as a target of his discussion; namely,  $T$  can be various categories such as a fact, a trope, or an individual. I agree with him in this respect. Our difference consists in that he thought the right side of the bi-conditional should be “ $x$  grounds [ $p$  is true]” because he thought, “it is the truth of  $p$  and not the existence of  $p$  that is being grounded”. But for me, there is no difference: when we say that  $p$  is true, we are just asserting  $p$ .

<sup>75</sup> Griffin thought that the formal discrepancy can be dissolved if facts flank the grounding relation. For example,  $\langle \text{truths exist} \rangle$  is true in virtue of  $\langle \text{truths exist} \rangle$  is analysed as [ $\langle \text{truths exist} \rangle$  is true] is grounded in [ $\langle \text{truths exist} \rangle$  exists]. Then he thought that these two facts are different, so it is not a violation of irreflexivity. Similarly, asymmetry and transitivity can be maintained. See Griffin 2014, 205-6. But as I see his solution, it is only a grammatical disguise. Since to say that a proposition is true is no more than asserting it. Hence, even facts flank the grounding relation, [ $\langle \text{truths exist} \rangle$  is true] and [ $\langle \text{truths exist} \rangle$  exists] are the same.

<sup>76</sup> Jessica Wilson, 2014.

Nevertheless, grounding does provide some inspirations to better understand truthmaking. As I mentioned, the grounding relation itself is explained in terms of the nature of the grounded rather than the nature of the ground. This is what truthmaking necessitarians like Cameron<sup>77</sup> miss out. He thought that the actual world has all its properties essentially; because of this, negative truths can be made true. So it is the essence of the truthmaker rather than the essence of the truthbearer that explains the truthmaking relation. This is not appropriate, since the essences of a truthmaker do not convey truth. For example, if facts are taken as truthmakers, the essences of a particular fact may include its constituents, its relation to other facts. After all, they are worldly related. Truth clearly belongs to another area (e.g., language or thought) So it is not right to assert that the essences of a truthmaker explains the truthmaking relation. In contrast, the essence of a contingent proposition seems just about what there is or how it is. Because of this, a truthmaker can explain why the corresponding proposition is true. Focusing on the nature of a truthbearer rather than the nature of a truthmaker is what we can learn from the grounding approach.

With this lesson from grounding in mind, it is easy to see how the problem of a necessary truth was generated and how it will be solved. A truthmaker must explain its truthbearer. This is what we need always to bear in mind. How is this explanation possible? Let us combine the previous idea with the pluralistic view. That is, truthbearers are always about what there is and the way the world is, is not, was, will be and so on. In particular, singular positive existentials such as <Socrates existed> are essentially about specific particulars, Socrates in this case. So Socrates himself explained why <Socrates existed> is true. A predication <the table is yellow> is about the way the world is, in this instance about the table's being yellow. So the fact that the table is yellow explains the truth of the prediction. A complex proposition such as a conjunction or a quantified truth is also about what there is and the way the world is, the aboutness may be

---

<sup>77</sup> Cameron, 2008, p 145-147.

not as directed as the simple case. A conjunction's nature is that it is conjoined, and its conjuncts are about what there is or the way the world is. An existentially quantified proposition, for instance  $\langle \text{there are human beings} \rangle$ , is about a kind, this is why I, as an individual human being, can explain its truth. Let us now go back to the problem, why my existence cannot explain the truth of  $\langle 5+7=12 \rangle$ . Necessitation does not help here. The crucial problem is that the nature of  $\langle 5+7=12 \rangle$  is not about a contingent creature. Instead, it is about numbers and calculation. So my existence as an explanans or a truthmaker is ill-suited to  $\langle 5+7=12 \rangle$ .<sup>78</sup>

Now we arrive at a peculiar conclusion: It is not that truthmaking necessitarianism is wrong, but rather it would be wrong to accept Armstrong's argument for it. My pluralistic view implies that "truthmaking" necessitarianism is true, since the explanans necessarily explains the corresponding truth. The success of the explanation is due to the nature of truth. This feature is just like the popular concept of grounding: if grounding works, then it is the nature of the grounded rather than the nature of the ground that explains their connection. The nature of a truth is about what there is or the way the world is, is not, was, will be, possibly be and so on. Thanks to this aboutness, truth is explained by an explanans. Surely, truths that are relevant to this part of the discussion are all contingent truths.

---

<sup>78</sup> Analytic sentences may be about contingent objects, for example, that Socrates is Socrates is about Socrates. But contingent objects are not necessary to make the analyticity it is. It is worth noting that  $\langle 5+7=12 \rangle$  is not only about numbers, it is also about calculation. Likewise, we can say that Socrates is Socrates is not only about Socrates, it is also about grammar. The latter explains why it is analytically true.

## **Conclusion**

We have seen the motivations of truthmaker maximalism are unmotivated. If it is only motivated to argue against phenomenalism, then it is no more than choosing a stance—a realist stance. Phenomenalism as explained in chapter 1 is also not as unbelievable as what truthmaker theorists interpreted. On the other hand, even though a realist stance is taken, truthmaker maximalism also goes too far so that it exceeds its appropriate scope. This is the very problem that Wittgenstein argued against Augustine's picture of language. Truthmaker maximalism is just resuming Augustinian idea at the level of sentences. So it cannot avoid a Wittgensteinian critique.

Nevertheless, I do not totally deny truthmaker theory. At least, it is one way of answering the question why a truth is true. What we need to do is to confine our ontological impulse to a reasonable scope. So the question why a truth is true does not have a uniform answer. This is why a pluralistic view is favourable. As I argued in chapter 2 and 3, the view is pluralistic since the explanans for different categories of truths are different; even for contingent truths, the categories of explanans vary. This plurality is rooted in the fact that the concept of proposition is a family resemblance concept. This is why my critique of truthmaker theory is essentially Wittgensteinian.

According to the pluralistic view, it is easy and natural to explain why a negative truth is true, which is always a tough problem for truthmaker maximalists. The objection always focuses on grammatical features which seduces the objector to some ontological commitments. As argued, if we really follow grammatical features, unpleasant consequences will follow. In fact, by rephrasing, grammatical features can vanish. So it is beneficial to remember that Wittgenstein said, “don't think, but look!”<sup>79</sup> Grammatical features of language are deceptive.

---

<sup>79</sup> Wittgenstein, *Philosophical Investigations*, §66.

The last chapter focuses on truthmaking. I pointed out that ‘in virtue of’ can be interpreted in two ways: as a relation and as a sentential operator. Neither interpretation leads to ontological commitments. I also argued against Armstrong’s argument for truthmaking necessitarianism. Interestingly, if the discussion is confined to contingent truths about physical objects, my pluralistic view implies necessitarianism. Precisely, it is not truthmaking necessitarianism but explanatory necessitarianism. But the explanation of truth is not explained by the necessitation relation. Instead, what a truth is about explains why the right side of *in virtue of* explains the truth.

If what I argued are right, then pursuing the orthodox truthmaker theory is just like pursuing a chimera. The work of looking for proper truthmakers for many truths (e.g. negative truths) is fruitless. My pluralistic view on the explanation of truth can be seen as a way of dissuading people from making an effort in truthmaker theory, since no nontrivial and correct results will come out.



## References

- Aristotle, (1984). *The Complete Works of Aristotle: The Revised Oxford Translation*. Princeton University Press.
- Aristotle, (2008). *Physics*. OUP Oxford.
- Armstrong, D. M. (1991). Classes are states of affairs. *Mind* 100 (2):189-200.
- Armstrong, D. M. (1993). A World of States of Affairs. *Philosophical Perspectives* 7 (3):429-440.
- Armstrong, D. M. (1997). *A World of States of Affairs*. Cambridge University Press.
- Armstrong, D. M. (2004). *Truth and Truthmakers*. Cambridge University Press.
- Ben-Yami, Hanoch (2014). The quantified argument calculus. *Review of Symbolic Logic* 7 (1):120-146.
- Bigelow, John (1988). *The Reality of Numbers: A Physicalist's Philosophy of Mathematics*. Oxford University Press.
- Cameron, Ross P. (2005). Truthmaker necessitarianism and maximalism. *Logique Et Analyse* 48 (189-192):43-56.
- Cameron, Ross P. (2008). Comments on Merricks's *Truth and Ontology*. *Philosophical Books* 49 (4):292-301.
- Cameron, Ross P. (2008). How to Be a Truthmaker Maximalist. *Noûs* 42 (3):410 - 421.
- Dasgupta, Shamik (2014). On the Plurality of Grounds. *Philosophers' Imprint* 14 (20).
- Dodd, Julian (2001). Is truth supervenient on being? *Proceedings of the Aristotelian Society* 102 (1):69–85.
- Fine, Kit (2012). Guide to Ground. In Fabrice Correia & Benjamin Schnieder (eds.), *Metaphysical Grounding*. Cambridge University Press 37--80.
- Heil, John (2003). *From an Ontological Point of View*. Oxford University Press.
- Lewis, David (1992). Critical notice. *Australasian Journal of Philosophy* 70 (2):211 – 224.

- Lewis, David (2001). Truthmaking and difference-making. *Noûs* 35 (4):602–615.
- Liggins, David (2005). Truthmakers and explanation. In Helen Beebe & Julian Dodd (eds.), *Truthmakers: The Contemporary Debate*. Clarendon 105--115.
- Lowe, E. J. (2006). *The Four-Category Ontology: A Metaphysical Foundation for Natural Science*. Oxford University Press.
- Martin, C. B. (1996). How it is: Entities, absences and voids. *Australasian Journal of Philosophy* 74 (1):57 – 65.
- McFetridge, I. (1990). Truth, correspondence, explanation and knowledge. *his Logical Necessity and Other Essays*. London: Aristotelian Society.
- Melia, Joseph (2005). Truthmaking without truthmakers. In Helen Beebe & Julian Dodd (eds.), *Truthmakers: The Contemporary Debate*. Clarendon 67.
- Mellor, D. H. (2003). Real Metaphysics: Replies. In Hallvard Lillehammer & Gonzalo Rodriguez-Pereyra (eds.), *Real Metaphysics: Essays in honour of D. H. Mellor*. Routledge
- Merricks, Trenton (2007). *Truth and Ontology*. Oxford University Press.
- Mill, John Stuart (2009). *An Examination of Sir William Hamilton's Philosophy: Ix. An Examination of Sir William Hamilton's Philosophy*. Routledge.
- Parsons, Charles (1995). Platonism and mathematical intuition in Kurt gödel's thought. *Bulletin of Symbolic Logic* 1 (1):44-74.
- Rosen, Gideon (2010). Metaphysical Dependence: Grounding and Reduction. In Bob Hale & Aviv Hoffmann (eds.), *Modality: Metaphysics, Logic, and Epistemology*. Oxford University Press 109--36.
- Rodriguez-Pereyra, Gonzalo (2005). Why Truthmakers. In H. Beebe & J. Dodd (eds.), *Truthmakers: the contemporary debate*. Oxford University Press 17-31.
- Russell, B. (2009). *The philosophy of logical atomism*. Routledge.
- Schaffer, Jonathan (2008). Truthmaker commitments. *Philosophical Studies* 141 (1):7-19.

- Simons, Peter (2005). Negatives, numbers, and necessity some worries about Armstrong's version of truthmaking. *Australasian Journal of Philosophy* 83 (2):253 – 261.
- Wilson, Jessica M. (2014). No work for a theory of Grounding. *Inquiry* 57 (5-6):535–579.
- Wittgenstein, Ludwig (2001). *Tractatus Logico-Philosophicus*. Routledge.
- Wittgenstein, L. (2010). *Philosophical investigations*. John Wiley & Sons.