

## **The Notion of Logical Truth**

### ABSTRACT

There are (at least) two competing interpretations of the notion of logical truth: a linguistic and a metaphysical. In this paper I will propose a metaphysical interpretation of the notion and examine what kind of implications this interpretation has for logical pluralism, the normativity of logic, and the study of logic more generally.

## 1. Two senses of logical truth

On the face of it, logical truth may seem like a relatively unproblematic notion: it characterises sentences such as ‘If Socrates is a man and all men are mortal, then Socrates is mortal’. This sentence is logically true, or true in virtue of the laws of logic, more specifically in virtue of transitivity. In some sense or another sentences that are logically true are also *necessary*, and we can represent them in a formal manner. But this is where consensus ends. The modality involved with logical truths is one apparent and difficult problem, which we will briefly discuss in what follows, but there is another, perhaps even more serious concern. This is the problem concerning the apparent difference between what we might call *absolute truth* and *truth in a model*, following Davidson (1973). The notion of absolute truth is the one familiar from Tarski’s T-schema: ‘Snow is white’ is true if and only if snow is white. Truth in a model, or *relative truth*, instead of being a property of sentences as absolute truth would appear to be, is evaluated in terms of the relation between sentences and models.<sup>1</sup>

Davidson suggested that philosophy of language should be interested in absolute truth exactly because relative truth does not yield T-schemas, but I am not interested in evaluating Davidson’s proposal here. Rather, I wish to inquire what sort of implications the apparent dual nature of logical truth has for the notion of logical truth and logic more generally. Ultimately I wish to propose an understanding of logical truth which connects it with metaphysics, or more precisely, I wish to suggest that there is a notion of logical truth which is interesting for metaphysicians, and also more fundamental than other senses of logical truth – more fundamental in the sense that other senses of logical truth are derived from the one that is interesting for metaphysicians. This strongly contrasts with the positivist idea that logical truths are always analytic: true strictly in

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1 ‘Models’ are to be interpreted in a wide sense here, they may be for instance interpretations, possible worlds or valuations.

virtue of the meaning of logical concepts; this is something that is familiar from Carnap. It also contrasts with Quine's (1986) understanding of logical truth, which, although Quine (*ibid.*, 95-102) claims to differ from Carnap, can be seen merely as another version of the linguistic theory of logical truth. The difference between Carnap and Quine is that Quine does not think that logic concerns linguistic conventions – and in fact insists that it depends on the nature of the world – yet he defines logical truth in terms of grammar (*ibid.*, 58-60). However, we will not directly engage with either Carnap or Quine in what follows.

When considering the distinction between absolute and relative truth, an initial point of interest is that absolute truth, due to it being characterised by the T-schema, has an air of realism about it. Tarski (1944) did not intend to put forward a metaphysically interesting conception of truth himself, as he thought that truth understood as a semantic concept is independent of any considerations regarding what sentences actually describe, that is, independent of issues concerning correspondence with the world. But although it may be too quick to conclude that instances of the T-schema play a crucial role in correspondence theories of truth, it does at least appear that there is some sort of a correspondence relation in effect here which is generally assumed to hold between sentences and the world. Indeed, this is something that we do get from Tarski, as his initial considerations on the meaning of the term 'true' explicitly take into account an Aristotelian conception of truth, namely when we use the notion, some sort of a correspondence with reality is what we mean. This will immediately be of interest to metaphysicians, for obvious reasons.

It may be worth noting here that Davidson does seem to have some sympathy towards the idea that an absolute theory of truth might be in some sense a 'correspondence theory' of truth, although he insists that the entities that would act as

truthmakers here are ‘nothing like facts or states of affairs’, but rather sequences (Davidson 1973: 70). To put it simply, the problem at hand concerns the apparent and important difference between truth as we usually understand it, namely as some sort of correspondence between sentences and the world, and truth as it is often treated in logic, namely as a relation between sentences and models, which may have no bearing whatsoever on the world. Tarski and the model-theoretic approach that he introduced might have made it possible to talk about logical truth seemingly independently of metaphysical considerations, but important questions about the metaphysical status of logical truth and models themselves remain. One thing that makes this problem topical is the recent interest in logical pluralism, or pluralism about logical truth (e.g. Beall & Restall 2004). In what follows I will attempt to re-evaluate some of these problems and assess the metaphysical status of the notion of logical truth.

## **2. Reconciling the two senses of logical truth**

The question is: can we reconcile the two senses of truth familiar from Davidson, the absolute and the relative? As John Etchemendy (1990: 13) notes, the obvious way to attempt this would be in terms of generalisation; if absolute truth is a monadic predicate of the form ‘x is true’, then it may be helpful to analyse it in terms of a relational predicate of the form ‘x is true in y’, for instance ‘x is a brother’ could be analysed by first analysing ‘x is a brother of y’, thus using the generalised concept of brotherhood. However, this does not apply to truth: ‘[C]learly the monadic concept of truth, the concept we ordinarily employ, is no generalization of any of the various relational concepts. A sentence can be true in some model, yet not be true; a sentence can be true, yet not be true in all models’ (ibid., 14). Accordingly, generalisation will not help in reconciling the two senses of truth. Another alternative is to interpret absolute truth as a

specification of truth in a model, namely, absolute truth could be considered as being equivalent to truth in the *right* model, i.e. the model that happens to correspond with the world. This would maintain the correspondence between sentences and the world which absolute truth was supposed to do. This alternative does indeed seem more satisfactory, it would also seem to corroborate my thesis, namely that the notion of logical truth that is of interest to metaphysicians is more fundamental than other senses of logical truth: the idea of a model corresponding with the world seems to be crucial for the concept of a model in the first place, as an ideal or correct model is an accurate representation of the world; it would seem to make little sense to talk about models if they were not models *of* something. The solution begs an obvious question though: how are we supposed to decide which model *is* the right one?

Etchemendy offers an unsurprising solution:

Once we have specified the class of models, our definition of truth in a model is guided by straightforward semantic intuitions, intuitions about the influence of the world on truth values of sentences in our language. Our criterion here is simple: a sentence is to be *true in* a model if and only if it *would have been true* had the model been accurate—that is, had the world actually been as depicted by that model. (Etchemendy 1990: 24.)

This is an apparent solution, but it is plausible only if we have some reliable means to determine whether a given model indeed is accurate, i.e. corresponds with the world. But not only that, for there is an implicit requirement in the passage above, namely, it must be the case that the model *could have been true*, that is, it must be the case that the world could have turned out to be like the model depicts. This further supports the case for a metaphysical interpretation of logical truth, for it introduces as a requirement for the concept of a model that it is a *possible* representation of the world. However, the

introduction of these modalities complicates the picture somewhat. It seems indeed that *once* we have specified the class of models, we can define truth according to Etchemendy's suggestion, but now the problem concerns the delimitation of the class of models. And a delimitation we need, because otherwise we are in serious trouble with, for instance, necessary truths. A logical necessity would of course have to be true in all models, but this will only be the case if our class of models represents genuine possibilities. If there is a model in which a supposed logical necessity does not come out as true, then that model ought to be in our class of models to begin with; either that or we will mistakenly hold that the proposition in question is logically necessary. So a problem remains: how do we decide which models are genuinely possible?

I believe that this is a core issue for the foundations of logic, and Davidson's original puzzle is certainly related to this problem. Perhaps rather surprisingly, the problem seems to reduce to a delimitation of the class of possible models. Etchemendy talks about *genuinely* possible configurations of the world (ibid., 25), but he does not say much about the nature of the modality involved. One thing is clear: we do not seem to be dealing with *strict logical modality*, i.e. possibility strictly in virtue of the laws of logic. Strict logical modality could not help us to decide what the possible configurations of the world are, as it is itself restricted by the class of models, that is, we need something external to be able to decide whether a logical possibility, something that is possible in virtue of the laws of logic, is *genuinely* possible. After all, we might be mistaken about the laws of logic. This renders the idea that logical truths could be defined strictly in terms of the meanings of logical concepts insufficient, because logical concepts have no built-in modal content which would determine whether they are *genuinely* possible. For instance, if the law of non-contradiction is genuinely necessary, then a paraconsistent model will not be genuinely possible. Accordingly, we need an

independent account of genuine modality, whatever it is, to be able to fully define *truth in a model*. We will return to this later. A related problem, one that Etchemendy does not even consider, is that in fact we have several mutually exclusive models which are based on different sets of laws of logic.

### **3. Pluralism about logical truth**

This is where the recent discussion about logical pluralism comes in. If we have models in which the logical consequence relation is different, and irreconcilably so, what sort of implications does this have for the notion of logical truth? Here is what Beall and Restall have to say about pluralism concerning logical truth:

Given the logical consequence relation defined on the class of cases<sub>x</sub>, the logical<sub>x</sub> truths are those that are true in all cases<sub>x</sub>. If you like, they are the sentences that are x-consequences of the empty set of premises. The logical<sub>x</sub> truths are those whose truth is yielded by the class of cases<sub>x</sub> alone. Since we are pluralists about classes of cases, we are pluralists about logical truth. (Beall & Restall 2006: 100.)

If this is indeed what pluralism about logical truth amounts to, then it appears that anyone who allows multiple classes of cases is a pluralist about logical truth. But what does ‘being true in a case’ mean? Well, on the face of it, one might think that it means exactly the same as ‘being true in a model’, that is, we are talking about the sort of relative truth which is familiar from Davidson. This would imply that anyone who allows multiple classes of models will also be a pluralist about logical truth. Indeed, it seems that pluralism about logical truth would then just mean that there are multiple models and we can talk about truth in each one of these models. However, as Hartry Field has recently pointed out, this cannot be what Beall & Restall have in mind, he

points out two reasons why model-theoretic accounts are irrelevant to logical pluralism:

One of these reasons is that by varying the definition of ‘model’, this approach defines a large family of notions, ‘classically valid’, ‘intuitionistically valid’, and so on; one needn’t accept the logic to accept the notion of validity. A classical logician and an intuitionist can agree on the model-theoretic definitions of classical validity and of intuitionist validity; what they disagree on is the question of which one coincides with genuine validity. For this question to be intelligible, they must have a handle on the idea of genuine validity independent of the model-theoretic definition. Of course, a pluralist will contest the idea of a single notion of genuine validity, and perhaps contend that the classical logician and the intuitionist shouldn’t be arguing. But logical pluralism is certainly not an entirely trivial thesis, whereas it would be trivial to point out that by varying the definition of model one can get classical validity, intuitionist validity, and a whole variety of other such notions. (Field 2009a: 348.)

And the second reason:

*[I]f we were to understand ‘cases’ as models, then there would be no case corresponding to the actual world. There is no obvious reason why a sentence couldn’t be true in all models and yet not true in the real world.*

This connects up with the previous point: the intuitionist regards instances of excluded middle as *true in all classical models*, while doubting that they are *true in the real world*. (ibid., italics original.)

Field goes on to suggest that Beall & Restall must have meant that there is an implicit requirement for interpreting ‘truth in a case’, namely, that *truth in all cases* implies *truth*. The details are unimportant for my purposes, but Field then argues that this will not produce an interesting sort of logical pluralism as the pluralist notion of

logical consequence suggested by Beall & Restall does not capture the ‘normal’ meaning of ‘logical consequence’. Whether or not Field’s critique is correct, we need to look into the points he raises in the quoted passages. In the first quoted passage Field refers to the trivial sort of logical pluralism, if it can even be called that, that emerges due to the fact that there are mutually exclusive models such as the model of classical logic and the model of intuitionistic logic. As Field suggests, we can all agree that the notion of logical validity can be applied to each of these models without making any commitment to the actual logic. But when it comes to *genuine* validity, things get interesting. According to Field, the classical logician and the intuitionist must have a previous grasp of the idea of genuine validity independently of the model-theoretic definition to be able to have a disagreement in the first place: they can agree on the idea of genuine validity, but disagree on which type of validity, the classical or the intuitionist, coincides with genuine validity. Field also points out that a logical pluralist might think that there should *not* be a disagreement here and indeed that there is no genuine validity. So, the key question here is what genuine validity is and whether there indeed is such a thing. It seems that Field has in mind something like the following: genuine validity concerns the *norms* of our reasoning, how we *ought* to reason (ibid., 349). Field cashes the idea out in terms of degrees of belief, that is, degrees of belief concerning whether something is a logical truth or not. He adds that what is at issue here is *epistemic* normativity.

If Field is right, it seems that in characterising logical pluralism we can forget the metaphysical interpretation of the notion of logical truth. Also, if he is right, the pluralism that Beall & Restall endorse fails to accommodate the normative component of logical validity. Field goes on to examine whether there could be an interesting sort of logical pluralism that could be extracted from the idea of *normative* pluralism, but

evaluating his suggestion is beyond the scope of this paper. What I wish to do now is to examine whether there is any connection between the normative component of logical validity and the metaphysical understanding of the notion of logical truth which I have proposed.

#### **4. The normativity of logic**

The manner in which Field (2009b) describes the normative component of logical validity certainly seems to undermine any connection with the metaphysical understanding of logical truth, as he suggests that the core of this normative component is that one employs logic in terms of the norms that one follows. Moreover, these norms do not connect with the ‘actually correct logic’, but rather with what we take to be good logic (ibid., 263). I do not intend to evaluate Field’s expressivist account about the normativity of logic, rather, I wish to contrast it with a realist<sup>2</sup> account.

Analogously to the case of interpreting ‘truth in a model’ as something that would have been true had the model been accurate, we can interpret the normative component of logic as the normative value that we associate with the actually correct logic, where ‘actually correct logic’ is understood as referring to the logic which best describes the actual world. But why should we do this, short of the fact that it would support a metaphysical interpretation of logical truth? Specifically, is there any support for the idea that the manner in which we ought to reason has something to do with the structure of reality? Even if such a case can be made, it will have to be restricted: in different contexts it may be better to employ different norms of reasoning, simply because they may produce better results. For instance, it may be the case that an intuitionist logic is

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2 I will examine normative realism strictly in the case of the normativity of logic rather than normativity more generally.

more useful than classical logic in certain circumstances. Indeed, one might even think that there are elements of logical pluralism here, but this would certainly be a rather trivial sort of logical pluralism. In any case, this does not undermine the idea that the normativity of logic could be connected with the actually correct logic. Why is this?

Well, if we consider the case of intuitionist logic, it is clear that in certain contexts it can be used without challenging one's commitment to the actually correct logic (if one thinks that e.g. classical logic is the actually correct logic). One such context is constructive mathematics. Field (2009a: 344) also notes that a classical logician could easily adopt an intuitionist logic in certain contexts, such as under special readings of certain logical connectives, or in the case of a more restricted interpretation of logical consequence. Accordingly, all of these special cases could be accommodated in the actually correct logic simply by introducing appropriate restrictions for certain contexts. It could even turn out that the actually correct logic is better than either classical or intuitionist (or any other) logic – that is, better in all contexts – but that it has not been formulated yet.

Let us also briefly consider the notion of genuine validity that was introduced above. As we observed, Field thinks that both the classical logician and the intuitionist must have some shared notion of genuine validity, which he takes to concern the norms of reasoning. Indeed, for instance Per Martin-Löf (1987), the developer of intuitionist type theory, takes validity to be 'nothing but the notion of truth or reality applied to the particular acts and objects with which we are concerned in logic' (p. 419). So the notion of validity is fundamental, but not necessarily in the sense that Field suggests. In fact, Martin-Löf suggests that this fundamental notion of validity connects directly with what he calls *the metaphysical notion of truth*, as opposed to the truth of a proposition. So here we have an explicit case for distinguishing the metaphysical interpretation of

logical truth from a semantic one, but what is crucial is that the previous conception of genuine or fundamental validity that the classical logician and the intuitionist share connects, at least according to Martin-Löf, to the metaphysical notion of truth. This once again suggests that the metaphysical notion of truth is more fundamental, as it precedes our conception of genuine validity.

It is now fairly straightforward to construct a case for the normativity of logic which connects to the metaphysical interpretation of logical truth. We may ask: how could it not be *better* in a normative sense to reason according to the constraints of reality? After all, we use logic in philosophical arguments which we *apply* to the nature of reality. For instance, Timothy Williamson (2002) has proved his (and others') necessary existence, but unless his reasoning has some connection to reality, what good is the argument? Moreover, unless one views philosophy strictly as a play on words, one's arguments better be such that they have a bearing on (mind-independent) reality. The fact that we can prove the existence of God in S5 is not a very important result if we do not have good reasons to believe that S5 is the correct way to formalise the modal constraints in the world. The same is even more obviously true of the formal methods that are used in science. Of course, in certain applications of logic the constraints of the (physical) world can be ignored, but the range of these applications is very limited; mathematics is the obvious example, but apart from that there are not many cases where logic can be used without any reference to reality.

If we take realism about logic aboard, what happens to logical pluralism? We might turn to Graham Priest's (2005: ch. 12) recent discussion of logical pluralism here. In a manner similar to how we may distinguish between pure and applied geometry, Priest suggests, we can also distinguish between pure and applied logic. Just as Euclidean geometry, although strictly speaking false, is nevertheless a well-defined mathematical

structure and hence perfectly acceptable as a pure mathematical theory, there may be alternative logics which are sound and complete, but which do not accurately depict the world and are false in this sense. Riemannian and Euclidean geometry, when interpreted as pure mathematical theories, are not in any tension, nor are classical and paraconsistent logics. In this sense logical pluralism is undeniable. The real question is of course whether pluralism is true on the level of applied logic. It certainly does not appear to be in the case of applied geometry: the actual spacetime can surely be depicted by only one geometry, at least insofar as the alternative geometries are mutually exclusive. Priest (ibid.) himself puts forward a fairly convincing case for monism regarding logic, which I am sympathetic to. A crucial premise for many of Priest's arguments is exactly realism about logic (ibid., 207), and one can see that the analogy concerning geometry seems to assume realism as well. Accordingly, it would seem that if we adopt a metaphysical interpretation of logical truth, and are hence realists about logic, there is no room for interesting logical pluralism.

## **5. A case-study: the law of non-contradiction**

So much for logical pluralism and the normativity of logic, but are we any closer to solving the original puzzle? The puzzle can now be expressed in the following form: what sort of criteria can we possibly have to evaluate different models and to determine whether a given model indeed *is* accurate, i.e. corresponds with reality? More generally, have we got any means to decide which set of laws of logic most accurately depicts the world? Perhaps a case study would be helpful. Let us take arguably one of the most fundamental laws of logic, the law of non-contradiction (LNC). When we say that the law of non-contradiction is true, we can mean this in two senses:

(1) LNC is *true in a model*, namely there is a proof for it in some language  $L$ .

(2) LNC is true in the sense of *absolute truth*, i.e. it is true of the world.

We might say that (1) is an example of a classical logical truth and (2) is an example of a more substantial, metaphysical conception of logical truth, if only to differentiate between the cases. Our puzzle concerns (2): how do we know whether LNC is true in this sense? I have previously argued (Tahko 2009) that we do have a good case for the truth of LNC in this sense – the primary opponent here is Priest (e.g. 2005, 2006). I will not repeat my arguments for the (absolute) truth of LNC here, but it may be noted that this is not strictly a question for logic. The status of LNC in the sense of (1) is obviously a question for logic, but it would only seem to be possible to settle its status in the sense of (2) with the help of both empirical and philosophical considerations. For instance, Priest's most celebrated arguments in favour of true contradictions concern the nature of change and specifically motion, the paradoxical nature of which is supposedly demonstrated by Zeno's well known paradoxes. Although these paradoxes can quite easily be tackled by mathematical means, the relevant question is whether change, or motion, indeed is paradoxical. The answer to this question requires both metaphysical inquiry as well as empirical data. But for our current purposes we do not need to engage with this topic – we can already draw some conclusions concerning the notion of logical truth.

Recall the discussion concerning the delimitation of *genuinely possible models*. It was noted that the need for such delimitation seems to be at the heart of Davidson's puzzle. When we combine this idea with Etchemendy's definition of truth in a model, namely that a sentence is true in a model if and only if it would be true if the model were accurate, we can look at the status of LNC in a new light. Specifically, for LNC to

be false, there would have to be a genuinely possible configuration of the world where LNC fails. That is, it is not enough that we have a model where LNC is not true, such as a paraconsistent logic, but we would also need to have some good reasons to think that the world could have been arranged as depicted by that model. As it happens, I do think that there *could* be such reasons and hence I take the debate about LNC seriously, although I do not think that the paraconsistent model *is* in fact an accurate model of the world. However, if a model in which LNC is not true were genuinely possible, then LNC would obviously not be necessary. This should be relatively uncontroversial, but it needs to be clarified what the modality involved here amounts to.

As I already noted in the second section, although we are here dealing with logical truths, it does not seem that the relevant modality could be strict logical modality, that is, something that is possible strictly in virtue of the laws of logic. This is because logical modality presumably concerns modality associated with *logical consequence*, but the case at hand, namely the modal status of the law of non-contradiction, does not seem to be exhausted by an analysis of logical consequence. Having said that, if the previous discussion about the normative element of logical consequence is correct, then the notion of strict logical modality would appear to reduce to a broader modality, as it was suggested that the normative element should be interpreted in a realist fashion. Be that as it may, we are interested in whether a model where LNC fails is *genuinely* possible. The notion of ‘genuine possibility’ comes from Etchemendy (1990: 25) and he does not clarify it, but it seems to me that ‘genuine’ possibility must be *metaphysical* possibility, as only metaphysical modality could establish the needed correspondence with the world. However, a source of confusion here is that we could still say that LNC is logically necessary if we take logical modality to be restricted by the logical laws of the relevant model – in this sense the logical necessity of LNC applies only to those

models in which it is true. More generally, we could say that logical necessity concerns the necessary connection between the premises and a conclusion of a valid argument, namely if the premises are true, then the conclusion must also be true. But if validity is taken to be restricted by the model at hand, that is, we have classical validity, intuitionist validity and so on, then the scope of logical modality is highly restricted. Alternatively we could understand validity in the sense of *genuine* validity here, in which case the restriction is removed, but in that case logical modality would seem to reduce to metaphysical modality, as suggested above. Either way, we need metaphysical modality to delimit the class of genuinely possible models.

For our purposes it is not necessary to settle this debate, but I am inclined to think that logical modality does indeed seem to reduce to metaphysical modality, or, more accurately, logical modality is a subset of metaphysical modality. As has been suggested already, this would imply that at least some laws of logic, and perhaps even the law of non-contradiction, are not metaphysically necessary, provided that there are genuinely (i.e. metaphysically) possible models where they do not hold. However, it is certainly an open question *which* laws of logic, if any, are metaphysically necessary. Any such laws would have to be shared by all possible models, that is, across different logics. I do think that the law of non-contradiction is a good candidate for such a law, the question is whether paraconsistent models are metaphysically possible.

Do we have any hope to settle questions such as this? Well, the question would appear to concern modal epistemology, and I do think that we can settle these questions, albeit it will not be easy. It should first be noted that my preferred understanding of metaphysical modality is in the lines of Fine (1994), namely that metaphysical modality is a special case of essence. I do not intend to defend this view or to give anything like a full story about modal epistemology<sup>3</sup>, but it might be useful to extend the case study of

3 See Tahko (2008) for some discussion on this topic.

the law of non-contradiction here. Specifically, how could we establish the truth of LNC in the metaphysical sense? But perhaps this is not the right way to formulate the question, because historically and even today, LNC is commonly considered to be true in this sense. There are those who challenge its metaphysical truth, but the burden of proof is arguably on those who do so, i.e. on the friend of paraconsistent models. A more general formula emerges if this line is taken: logical principles – which are presumably reached by *a priori* means – are *prima facie* metaphysically necessary principles, that is, true in the metaphysical sense, or genuinely valid, if we wish to use that term. They may be challenged and sometimes falsified even by empirical means, but merely the fact that we can formulate models in which they do not hold is not enough to challenge their truth; it will also have to be demonstrated that these models are metaphysically possible descriptions of reality.

What *would* be enough to challenge the truth of LNC, or other logical principles, is empirical evidence which suggests that the principle does not hold in the actual physical world – this would obviously undermine the metaphysical necessity of LNC as well. Priest (2006) has suggested that this is exactly what we have in the case of change and Zeno's paradoxes. I have argued against this (Tahko 2009), but this is obviously something where we need input from the empirical sciences as well. But if there are no empirical reasons to question the truth of LNC, there may still be good reasons to think that a violation of LNC is metaphysically possible. Not that metaphysical necessity is any kind of a requirement here: I do not think that the metaphysical interpretation of logical truth requires that logical truths are metaphysically necessary. It *does* however require that they are metaphysically possible, which is what I suggested Etchemendy's 'genuine' possibility to coincide with. Despite this, it is still an interesting and important question whether LNC is metaphysically necessary and whether we have any means to

determine this. At the very least, I take it that it is one of the best candidates for a metaphysically necessary principle.<sup>4</sup> To reiterate it once again: if LNC were metaphysically necessary, it would mean that a paraconsistent model is not metaphysically possible. But this would only mean that a paraconsistent model could not have turned out to accurately depict the world. The fact that there are paraconsistent models thus has no direct bearing on this question. I do not aim to settle the status of LNC in this regard here, but I suspect that the solution will concern the necessary constraints for the forming of a stable world, and LNC may or may not reflect one of these constraints. If it does, that would mean that a possible world where LNC does not hold would either be empty or could not emerge at all.

In conclusion, I hope to have demonstrated that there is a coherent interpretation of logical truth which is metaphysical rather than semantic, and that there are some good reasons to think that this interpretation precedes the model-theoretic account of logical truth as well. If I am right, it would seem that the metaphysical interpretation of logical truth rules out any interesting sense of logical pluralism, and is able to accommodate the normative role of logic.

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4 Indeed, much better than typical examples of metaphysical necessities, namely *a posteriori* necessities such as 'Water = H<sub>2</sub>O'.

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