The Metaphysical Status of Logic

TUOMAS E. TAHKO (www.ttahko.net)

ABSTRACT

The purpose of this paper is to examine the status of logic from a metaphysical point of view – what is logic grounded in and what is its relationship with metaphysics. There are three general lines that we can take. 1) Logic and metaphysics are not continuous, neither discipline has no bearing on the other one. This seems to be a rather popular approach, at least implicitly, as philosophers often skip the question altogether and go about their business, be it logic or metaphysics. However, it is not a particularly plausible view and it is very hard to maintain consistently, as we will see. 2) Logic is prior to metaphysics and has metaphysical implications. The extreme example of this kind of approach is the Dummettian one, according to which metaphysical questions are reducible to the question of which logic to adopt. 3) Metaphysics is prior to logic, and your logic should be compatible with your metaphysics. This approach suggests an answer to the question of what logic is grounded in, namely, metaphysics. Here I will defend the third option.

1. Introduction

My purpose here is to examine what logic is grounded in, what is its metaphysical status. In other words, in virtue of what are logical truths true? The relevant candidates for the grounds of logic include language, grammar and reality. I will defend the view that logic is, ultimately, grounded in reality. In what follows I will repeatedly refer to the relationship between logic and metaphysics, which is one of my central concerns. In fact, what I attempt to establish is that logical principles, such as and especially the law of non-contradiction, are metaphysical principles rather than logical principles. What this means, exactly, will be clarified in due course. I will proceed as follows. The first part of the paper is concerned with finding some kind of a consensus about what a discussion about the status of logic should involve. It will be suggested that if we can agree on certain fundamental logical principles, we can settle the debate by examining what these fundamental principles are grounded in. The law of non-contradiction seems to be the best candidate for such a principle, but to establish this, it is necessary to address the challenge from dialetheism, due to Graham Priest and others. The second part of the paper focuses on the metaphysical status of the law of non-contradiction, which, as will be shown in the first part, is the best candidate for the most fundamental principle of our reasoning. The upshot of the second part is that the principle of non-contradiction, and thus logic, is grounded in reality.

2. The relationship between logic and metaphysics

The relationship between logic and metaphysics must be one of the following. Firstly, we can hold that logic and metaphysics are wholly separate. In this case there would be no direct exchange between them, although presumably we could still argue about which one is a more fundamental discipline. Secondly, we can hold that logic has implications for metaphysics, or even that metaphysical questions are reducible to questions of which logic to adopt (cf. Dummett, 1991). And thirdly, we can hold that logic has some kind of a metaphysical basis which implies that your logic does, or should, reflect your metaphysics. My sympathies lie with the third option, but we should briefly consider where the other routes might take us. Even if there indeed is a connection between logic and metaphysics, it seems that there is no straight-forward way to determine the exact nature of this connection. It is very likely that we have a number of different compatible metaphysical and logical systems rather than a simple one-one relation. The upshot of this is that for the very least, we should settle the question of how much common ground there is between the different possible approaches. For instance, can we agree upon some fundamental laws of logic or logical principles which are common for all the different approaches? If we could, then settling the nature of this particular principle should serve as a reliable guide towards the metaphysical status of logic.

A strong candidate for a principle like this is the law of non-contradiction, but mainly because of the work of Graham Priest (1998, 2006), even this has become controversial. In the light of these problems, the first option becomes increasingly attractive: maybe there is no connection between logic and metaphysics: perhaps the debate over different kinds of logics has no bearing whatsoever to metaphysics and metaphysics has nothing to do with logic. Indeed, given the lack of interest that many logicians and metaphysicians show in examining the connection between the disciplines further motivates this move. But we should be alarmed by this, for in what, if not metaphysics, is logic based on? Language and grammar are the usual candidates, but then the further question about the nature of language and grammar needs to be addressed. It seems then that we are faced with some very fundamental problems before the discussion can even get started.

I will try to make my way through these issues.

There is plenty of literature about the status of logic in terms of the a priori/a posteriori distinction, the revisability of logic and related issues (e.g. Field, 1996, 2000, 2005; Boghossian, 2000; Shapiro, 2000; Bueno and Colyvan, 2004; Resnik, 2004). This discussion is of less relevance to us than it might initially seem, partly because even the notion of 'a priori' is often seriously misconceived, as I will illustrate shortly. Additionally, it is not the epistemic status of logic that is our main interest here. What we need to examine is the metaphysical status of logical principles, albeit naturally the question of their apriority and revisability is of some importance as well.

My view is that logic is indeed an a priori discipline, but it is important to see that the apriority of logic does not rule out the possibility of it being revisable. Others (Field, 1996; Boghossian, 2000; Shapiro, 2000; Resnik, 2004) have argued against the revisability of logic on the grounds that we would always need to have at least some core principles which are indefeasible, on pain of infinite regress. The idea is perhaps appealing, and may work well against the Quinean idea of the web of belief of which logic is one revisable part (cf. Shapiro, 2000). Apriority, nevertheless, is compatible with revisability. The classic example of this is Euclidean geometry, which appears to have lost its a priori status. A common way to deal with cases like this is to weaken the notion of apriority, but many would say that empirical indefeasibility is a necessary feature of apriority and thus Euclidean geometry was never a priori (cf. Field, 2000, 2005) However, we can still salvage some of the original strength of the a priori, if we acknowledge that the a priori deals with possibilities, i.e. a logically valid a priori claims hold in at least one possible world. As you can see, the issue then turns to the logical validity of Euclidean geometry and it would, at least arguably, still qualify as a priori, though not true in the actual world. But a detailed discussion of these issues is not necessary here, I merely wish to point out that the debate over the apriority of logic in terms of its revisability is clouded with conceptual issues.[1]

Of course, there *is* a genuine problem about whether logic is empirically revisable. Field (2000), among others have argued for the empirical indefeasibility of a priori knowledge, including logic, but there are opposite views in the air (cf. Bueno and Colyvan, 2004). For one thing, quantum mechanics has been suggested to provide empirical information that questions some of our most basic logical principles, even the law of non-contradiction (ibid., see also Putnam, 1978).

I do not see why it could not be *possible* for empirical information that is inconsistent with some of our logical principles to emerge. Quantum mechanics hardly constitutes a sufficient case against the law of non-contradiction though. Admittedly, some results in quantum mechanics are very strange and there are interpretations of them which suggest that revisions might be needed, but until we have a better understanding of what exactly goes on at the quantum level, all interpretations are just sophisticated guesses. The conception of logic that will be characterised in this paper does not undermine the possibility of revising even such fundamental principles as the law of non-contradiction, because it is committed to thorough fallibilism. But it is difficult to even start to consider what kind of information would be sufficient for a revision like that. Surely, even if it

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1   See Bueno and Colyvan (2004) for an account against apriorism in logic – the debate is exactly over

    revisability. See also my (2008) for further discussion.

did turn out that the most plausible way to deal with quantum mechanics is to abandon the law of non-contradiction, this would not mean that we would abandon it altogether. Rather, the situation would be quite like the one with Euclidean geometry: we use Euclidean geometry in all but the situations where it is not sufficient and similarly we would continue to use classical logic in all other contexts except quantum mechanics. In both cases, then, we can have different frameworks, models if you like, which are internally consistent, although, strictly speaking, not entirely true. Note that this is fully compatible with the understanding of apriority that I suggested above.

So far it appears that the case against the law of non-contradiction and consistency in general has not even been adequately characterised. We need to keep in mind the three ways of understanding the relationship between metaphysics and logic that I listed in the beginning. The challenge from quantum mechanics is especially interesting for those who adopt the third option – that logic has a metaphysical basis – which I endorse. It is crucial that this relationship is examined, as a lot of what follows depends on it. Fortunately, the best known advocate of contradictions has recently clarified his position in regard to this particular issue (cf. Priest, 2006).

3. Priest's challenge
When someone entertains a radical claim like Priest did in his *In Contradiction*, the first thing that we must ask is what is his position in regard to the status of logic. It seems that it was Edwin Mares' recent paper (2004) that made Priest acknowledge the question. Mares distinguishes between semantic and metaphysical dialetheism, which grasps my distinction between the different ways of understanding logic from another direction. Priest characterises the distinction as follows:

> To be a metaphysical dialetheist, one must suppose that it makes sense to talk about reality itself, as opposed to what is said about it. That is, one must suppose that
> **1.** There is an extra-linguistic reality
> Next, this reality must comprise things that are propositional in some sense, or the talk of its being consistent or inconsistent would make no sense. [...] So we must have that
> **2.** Reality is constituted by facts
> or by fact-like entities such as objects-cum-properties. Even given **2**, there is still nothing consistent or inconsistent simply in a bunch of facts. There must therefore be more to the matter than this; there must be something within the structure of facts that corresponds to negation in language. It must be the case that
> **3.** There are polarities within facts
> That is, if f is a possible fact, say one that would make α true, there must be a corresponding one, $\bar{f}$, that would make ¬α true. (Priest 2006, p. 300.)

Priest's characterisation is not entirely unproblematic, but it does grasp the core of the issue. Mares (2004) defends semantic dialetheism, but as Priest (2006, p. 301) correctly notes, this could mean a number of things, i.e. Mares might reject any of Priest's three claims. Priest on the other hand is, according to Mares (2004, p. 265), a proponent of metaphysical dialetheism. But as Priest (2006, p. 302) has now clarified, his *In Contradiction* is, in effect, neutral in regard to this distinction. He does not give a direct answer as to where he stands in terms of metaphysical dialetheism, but suggests that it is a consequence of dialetheism plus metaphysical realism (ibid.). This implies that the question over metaphysical dialetheism reduces to a question about the nature of reality. This is fine as far as it goes, but as I pointed out above, there is little to support the claim that there are true, metaphysical contradictions in the world. As to the semantic case, well, the question is not even particularly interesting, as the views that are compatible with

semantic dialetheism are thorough anti-realism, non-continuity of logic and metaphysics (cf. the first option that I listed) and the view that all the examples of inconsistencies, such as the Liar paradox, are just linguistic blunders. The last one of these is the only option worth considering here, but there is not an awful lot to say about it – if the Liar and other paradoxes are just linguistic blunders and the reality is consistent, then they have no bearing on the issue at hand. So, I am not very concerned about this sort of dialetheism.

What I am concerned about is metaphysical dialetheism. I want to leave some space to the revisability of logic for the sake of fallibilism, but to hold that there are true contradictions in the world seems to be very costly. No doubt the burden of proof here is upon the dialetheist, and an appeal to quantum mechanics or to Zeno's paradox concerning motion which Priest discusses (cf. Priest 2006, ch.12) is hardly sufficient.[2] The problem is of course familiar already from Aristotle's *Metaphysics* (1984), where he defends the law of non-contradiction in a manner not unlike my own. We are starting to approach the core of the matter, that is, in what sense can the law of non-contradiction and perhaps other logical principles be understood as metaphysical principles rather than logical principles. A matter that has to be settled remains though. This is apparent in Priest's claim **3** above and also in J. C. Beall (2004, p. 16).

The way that Priest characterised the distinction between semantic and metaphysical dialetheism calls for a theory of truth. To be compatible with metaphysical dialetheism, this theory of truth would have to be realist in nature. The obvious route to take is some kind of a correspondence theory and the way that both Priest and Beall (2004, p. 16) discuss the matter implies specifically a theory of truthmaking. The details of it, all but one, are unimportant at the moment. What we need to focus on is the nature of negative truths. Priest notes that to make $\neg\alpha$ true, there needs to be a corresponding negative fact to the truthmaker of α. Similarly, Beall (ibid.) is happy to adopt negative truthmakers and claims that this does not cause serious worries for us. Well, some kind of an account of negative truthmakers is clearly needed. Beall (2000) has given one, where he puts forward the kind of view that is implicit in Priest's characterisation above, i.e. truthmakers have polarities. To defend the polarity account against accusations of being *ad hoc* or mysterious, Beall points out that we have polarities in physics as well, and that they are postulated in a similar manner. Of course, this is a rather outrageous analogy to draw, as Beall appears to argue for negative truthmakers only to uphold dialetheism, whereas the polarity of different kinds of particles is an empirical observation and reduces to fundamental physical forces. Naturally there is a lot more to the scientific story, but we need not go there – Beall's story fits on five pages. So, we clearly have a classic case of *ad hoc* at hand and an appeal to ontological parsimony should be quite enough to rid us of the polarity of truthmakers. If this is the best case that the metaphysical dialetheist has to offer in terms of accommodating contradictions in our ontology, I think that we are safe.

Without negative truthmakers, metaphysical dialetheism quickly crumbles. Negative truths are defined in terms of lacking truthmakers and if the dialetheist wishes to insist that a fact can both lack and not lack a truthmaker, then I am afraid that we have little to discuss (cf. Lowe, 2005, ch. 11.6).

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2   I cannot address Priest's examples in detail here, but it certainly does seem that all the paradoxes he mentions, such as Zeno's paradox concerning motion, can be addressed in a number of ways (cf. Arntzenius, 2000)

4. The law of non-contradiction as a metaphysical principle

I hope that I have now sufficiently addressed the worry about our core logical principles, and assume that we can agree on the validity of the law of non-contradiction. If this is so, we may settle the initial question by examining what the law of non-contradiction is grounded in. I take it that there is already agreement about one thing: logic has to be grounded in something. Logical principles such as the law of non-contradiction may seem self-evident and difficult to defend with much more than an appeal to our a priori capabilities. But there is more to the story, for even if we did manage to settle our epistemic access to logical principles, the question about their metaphysical status would remain.

Given the picture that was sketched above whilst addressing the challenge from dialetheism, we have but one place to look for the grounds of logic: the world, or reality. Perhaps I should point out here that language is of course a part of the world as well. But the move from logic to language in search for a grounding is very unsatisfactory, as language is clearly not a fundamental, much less a necessary part of the world. Logic, however, if we have got it right, reflects the structure of reality and is, in one sense, quite independent of logicians. Of course, when we formulate logical principles they are only our best approximations of the logic 'in the world', this explains why they are, at least in theory, revisable. Moreover, we can, and have created a number of logics which can be said to operate in artificial 'worlds', that is, they clearly do not even attempt to reflect the world as a whole, but are tied to a certain framework, a closed system.

What I will put forward here is, to use Michael Resnik's (1996) terms, a realist monist view of logic. As such, it is Fregean in spirit, but it is important to keep in mind that my account is tightly interwoven with fallibilism. So yes, my contention is that there is a 'One True Logic', but it might be very hard, or impossible, to ever accurately formulate it. Here I wish to take no stand as to what *is* the true logic, my point is only that it must reflect reality, there must be some metaphysics to back it up. The same naturally applies to language, in fact, it is reasonable to hold that language is largely grounded in the very same features of reality as logic is. This correspondence is by no means free of errors though, which is exactly why tracing the route back from language or grammar to logical syntax (and even to ontological considerations) is a bad idea and leads to infeasible results. The Liar and other paradoxes are a good example of this: taking them too seriously leads to rather wild theories, such as metaphysical dialetheism, while they only imply semantic dialetheism.

Let me try to explain the view at hand as clearly as possible. The idea of the law of non-contradiction as a metaphysical principle rather than a logical one can be traced back to Aristotle and the thrust of the discussion owes a lot to him. At its simplest, the idea amounts to this: the entities of the mind-independent reality are plausibly governed by some sort of principles (as otherwise there would be no order in our experience of them), that is, there are some constraints as to what kind of properties a certain kind of entity can and can not have and further, some of these properties are mutually exclusive. For instance, a particle can not have both a positive and a negative charge at the same time. Thus, it seems that the reality just *is* such that it conforms to the principle of non-contradiction. The different formulations that we can come up with (already Aristotle formulates the principle in a number of different ways) are just attempts to express this

orderliness in a simple way.

We should take a moment to consider what is going on here. Normally, when we do logic, we talk about certain propositions being logically true or false and our talk is guided by logical principles. But at the very moment when we formulate any of these principles, we are on contentious ground, as some kind of an account of the nature of propositions is needed. Of course, there is plenty of discussion about the nature of propositions and related issues, but these are beyond the scope of this paper. The problem, in any case, is that at this stage we have already lost sight of the original problem: the metaphysical status of these principles. At some point, of course, we will have to settle questions about the nature of propositions and about our epistemic access to principles such as the law of non-contradiction. But before we can start working on these issues, we must have a deeper understanding about the preconditions of our reasoning. That is, we need some firm common ground. The law of non-contradiction understood as a metaphysical principle is the most plausible candidate for this starting point. It might seem that this account assumes some kind of naïve direct realism – already Aristotle anticipated such an objection – but this is not the case. The need for shared principles of reasoning prevails. These principles have to be grounded in something and what is being suggested here is that they can only be grounded in corresponding features of reality (more or less accurately). In other words, if you wish to be involved in the discussion at all, you must engage in the collective effort to define the most fundamental principles of reasoning. Indeed, that is what logic is about.

Perhaps it is reasonable to ask how, exactly, should we go on about doing logic according to the current account. Well, by doing metaphysics! This is not to say that there could not be value in pursuing specific logical problems. As I acknowledged above, we have a wide range of internally consistent, interesting logical frameworks and many of them have important applications. However, we must be wary of any *metaphysical* implications that someone might try to derive from these logical considerations. Deontic logic, say, might very well be worthwhile, but to draw implications concerning morality from it might be a serious mistake, as the many paradoxes that have been formulated suggest (see for example Chisholm, 1963). To this amount, logic and metaphysics are not continuous. Accordingly, if your desire is to use logic as a guide to metaphysics, you must start from metaphysics. On a more positive note, much work in this regard has already been done. Above I have defended the law of non-contradiction as one of our core logical principles. Its validity strikes most people as the single most certain thing in the world. We saw that even Priest, the best known proponent of contradictions, has very little to say about true, *metaphysical*, contradictions. We cannot even imagine what it would be like for there to be one. Maybe quantum mechanics gives us a way to approach the idea, but clearly we do not yet understand what is happening at the quantum level. Is it not more likely that the lack of sufficient information has resulted in yet another linguistic blunder? Be that as it may, one thing is clear: in issues metaphysical, metaphysics should always have priority over logic.

I should perhaps, very briefly, consider how my view fits in with the recent discussion about logical pluralism (cf. Beall and Restall, 2006). In a somewhat trivial sense, I have no objections to the idea that we could be pluralists about logical truth. This is the sense that I have already mentioned, i.e. we can have quite different, even incompatible logical systems, as long as they are consistent within a given framework. These may be useful because they have interesting applications, or they may be rival systems and claim to

reach a more accurate correspondence with reality. However, if what I have said is correct, only one of them can be true in a deeper sense, insofar as they are incompatible. The others can be true only in the sense that Euclidean geometry is true, that is, within a given framework. I have no quarrel with logic done within a framework like this, but the logical systems most interesting from a metaphysicians point of view are certainly the ones which claim universal application. Thus, we should be careful with the use of the notion of 'logical truth', for if it is taken to imply truth in a logical system, *any* logical system, then it has little bearing on truth in a metaphysically deep sense (cf. Beall and Restall 2006, p. 100-102).

5. Conclusion

So, if metaphysics is about mapping the fundamental structure of reality, then logic, as I have described it, is about representing the results formally. When we reason about, say, matters of possibility and necessity, we are interested in the modal constraints that the structure of reality imposes on different kinds of entities. Modal logic is valid only insofar as it reflects these constraints. 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. A very natural idea about the different systems of modal logic is that they reflect the different uses of 'necessity' and 'possibility' in our language. But this, again, leaves the question about modality *in the world* completely unanswered. Surely, we must have some kind of a theory of modality to be able to settle the status of different modal logics. Given the picture suggested above, there can be only *one* way that the matters stand in the actual world. So we cannot settle the question merely with the help of formal considerations. No matter how neat your system might be, there has to be something to back it up. Yet, the literature is exhausted with examples which lack any arguments beyond a given formal framework. I have in mind especially arguments like those in Williamson (2002), which almost systematically fail to go the full length of defining the initial presuppositions. Thus, Williamson argues for things like the necessary existence of merely possible physical objects, refuses to further discuss what kind of things merely possible physical objects are (2002, p. 19) and gives us no reasons whatsoever to accept the radical ontological implications that he draws from his logical framework. To pursue a project like this, one should first put forward an ontology that can accommodate these merely possible physical objects – not to derive them from an arbitrary logical framework.

In conclusion, there seems to be a desperate need for meta-logical considerations regarding many of the popular topics of contemporary logic. For the very least, the problems concerning the grounds of logic that were raised above have to be addressed. My suggestion is that logic is grounded in metaphysics. This appears to be the only plausible way to deal with the obscure challenges to classical logic that are growing in popularity.

Tuomas E. Tahko (tuomas.tahko@durham.ac.uk; http://www.dur.ac.uk/tuomas.tahko/)
Department of Philosophy, Durham University, 50 Old Elvet, DH1 3HN Durham, UK

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