Revitalizing Logical Conventionalism

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Abstract

Logical conventionalism was the most popular philosophical theory of logic amongst scientifically-minded mid-twentieth century philosophers, but today the theory is thought to face insuperable difficulties and is almost universally rejected. This paper aims to revitalize logical conventionalism. I start by clarifying the nature of the conventionalist thesis (section 1), then I develop a novel version of logical inferentialism in detail (section 2) and show that this, unrestricted, version of inferentialism entails logical conventionalism (section 3). I follow by defending the theory arrived at from the two most influential counterarguments—the problem of tonk and what I call the "proposition making" argument against truth by convention (section 4). I close with a brief conclusion (section 5). By presenting, arguing for, and defending a conventionalist theory of logic, I hope to make it plausible that, *pace* widespread opinion, logical conventionalism remains a viable theory in contemporary philosophy.

Keywords: Conventionalism, Inferentialism, Philosophy of Logic, Logical Pluralism

Conventionalism was the philosophical theory of logic favored by the logical positivists and other scientifically minded mid-twentieth century philosophers.[1] Statements of the conventionalist doctrine took a variety of forms: "logical truths are *true by convention*", "logical truths are *true in virtue of meaning*", "logic is *analytic*", "logic is *true by definition*", "logical claims are *instructions* for the use of language", "logical axioms are *linguistic rules*", etc. But these formulations aren't obviously equivalent or even compatible with each other—how can logical

[1] Defenses of logical conventionalism include Ayer (1946), Carnap (1934), Hahn (1933), Hempel (1945), Malcolm (1940), Nagel (1944), Reichenbach (1951), and (arguably) Wittgenstein (1974).

claims be true while also being rules or instructions? The common thread among conventionalist accounts was that logic can be explained by appeal to linguistic meaning and linguistic meaning itself can be explained in terms of human decisions and behavioral regularities. The goal was a theory of logic that didn't appeal to spooky mental abilities or mysterious metaphysical facts.

Today logical conventionalism is almost universally rejected.[2] It is rejected because: (*i*) the general account of necessity and the *a priori* of which it was part is thought to have collapsed; (*ii*) Quine and others influentially criticized the view on its own terms; and (*iii*) developments of conventionalism rarely went beyond the slogan phase.[3] Against this consensus, I think that conventionalism *about logic* can be salvaged and that the folkloric objections commonly cited against it can be answered. After clearly formulating the key conventionalist thesis, I'll argue for conventionalism by presenting and endorsing a novel form of logical inferentialism—unrestricted logical inferentialism—and arguing that logical conventionalism follows directly from this theory. In addition, I'll discuss and rebut two very widely accepted arguments against conventionalism.

1 What is Logical Conventionalism?

As already noted, slogan formulations of logical conventionalism come in a variety of forms. What is common to conventionalist or linguistic theories of logic is that human language use somehow accounts for logical truth and entailment. Before explaining how conventionalism *should* be understood (and will be understood here), two implausible versions of the view—sometimes endorsed by conventionalists themselves—must be set aside.

(*i*) The first implausible version of the view holds that logical claims somehow express facts *about* our use of logical words like "not", "and", and "if". In A.J. Ayer's *Language, Truth, & Logic* he gives a slogan statement of conventionalism that might suggest this reading when he says of logical truths:

> They simply record our determination to use words in a certain fashion.[4]

[2] Post-positivist defenses of logical conventionalism are offered in Giannoni (1971) and Syverson (2003).

[3] See Kripke (1980) and Kaplan (1989) for criticisms of the general linguistic theory of necessity and the *a priori*; see Quine (1936), (1951), and (1960a) for some of his criticisms of logical conventionalism in particular and analyticity in general.

[4] Ayer (1946), page 84. Ayer's conventionalism is applied to all necessary and *a priori* truths, not just those of logic.

One reading of this sees Ayer as claiming that logical truths are equivalent to descriptive truths about how we use certain words. So that the logical truth "either it will rain or it will not rain" is equivalent to something like "we use the words "or" and "not" so that the sentence "either it will rain or it will not rain" is always true". But can't be right, since the former sentence expresses an *a priori* necessary truth, while the latter expresses an *a posteriori* contingent truth; and a necessary truth can be equivalent to a contingent truth only in the extremely weak sense of *sharing a truth value*. There is no way that these two sentences can be equivalent in any deep sense, much less share the same meaning.[5]

Ayer himself disavows this reading in the introduction to the second edition of his book:

> It has, indeed, been suggested that my treatment of *a priori* propositions makes them into a sub-class of empirical propositions. For I sometimes seem to imply that they describe the way in which certain symbols are used, and it is undoubtedly an empirical fact that people use symbols in the ways that they do. This is not, however, the position that I wish to hold...[6]

The relationship between logical claims and language use is not one of *description*—no credible version of conventionalism can take logical truths to describe linguistic rules or regularities.

(*ii*) The second implausible conventionalist theory simply identifies logical claims with linguistic rules. Once again, Ayer provides a nice statement—this time in his contribution to a 1936 *Analysis* symposium:

> I think that our view must be that what are called a priori propositions do not describe how words are actually used but merely prescribe how words are to be used. They make no statement whose truth can be accepted or denied. They merely lay down a rule which can be followed or disobeyed.[7]

According to this view, logical claims simply *are* linguistic rules. One odd thing about this view—something Ayer notes—is that rules aren't the kinds of things that can be true or false, while logical claims and, in particular, logical *truths* most certainly are. In other words, this version of logical conventionalism faces

[5] Malcolm (1940) contains a useful discussion of the relationship between logical claims and descriptive linguistic claims.

[6] Ayer (1946), page 16.

[7] Ayer (1936), page 20.

the famous Frege-Geach problem of harmonizing a non-assertoric account of a branch of discourse with the apparent truth-aptness of said branch.[8]

A conventionalist could bite the bullet and simply deny that logical claims are truth-apt, appearances be damned. Ayer isn't the only person to have found this appealing, Yemina Ben-Menahem's recent book on conventionalism argues—by drawing on logical conventionalism's roots in the geometric conventionalism of Henri Poincare and David Hilbert—that historical conventionalists shouldn't be seen as embracing the idea of *truth* by convention.[9] An alternative to this approach allows for logical claims to be true or false in some minimal sense, while adding that, none-the-less, they are used to *express* commitments to linguistic rules; this follows so-called *quasi-realist* theories in meta-ethics.[10] In fact, Simon Blackburn, the originator of quasi-realism in meta-ethics, has applied quasi-realism to discourse about necessity.[11] Some version of this quasi-realist view might be defensible, but it won't be the type of conventionalism I'll be arguing for here, and I don't think it was the kind favored by historical conventionalists.

(*iii*) Every version of logical conventionalism posits a tight relationship between logical claims and linguistic rules, but I think the correct relationship is *explanatory*: the linguistic rules of our language explain the truth and necessity of logical claims in our language. The historical literature on conventionalism has struggled to formulate this clearly—some of the quotes above illustrate this struggle in action—but from our present vantage point it's apparent that this is what was meant by the talk of truth "by convention" or "in virtue of meaning".[12]But whatever its historical merits, the explanatory reading of conventionalism is the philosophically interesting thesis and it's the one that I'll be arguing for here:

> **Logical Conventionalism** : Logical truths and logical validities in any language are fully explained by the linguistic rules of that lan-

[8]See Geach (1965) for the problem and the attribution to Frege.

[9]See Ben-Menahem (2006); see also Coffa (1986) and (1991).

[10]See Blackburn (1984) and Gibbard (1990).

[11]In Blackburn (1987).

[12]For example, it is apparent in Giannoni (1971)'s discussion, though he uses epistemic terminology rather than explanatory terminology while decrying the epistemic terminology's inadequacy. See also Ayer's full discussion in the introduction to his (1946) where he rejects both of his earlier formulations in favor of something like the explanatory reading. Ebbs (2011) argues that Carnap never endorsed an explanatory conventionalist thesis; I can't address Ebbs's arguments in detail here, but while I largely agree with him about Carnap's main goals and interests, I think explanatory conventionalism is implicitly assumed by Carnap. For a reading of Carnap related to Ebbs's, see Ricketts (1994).

guage[13]

This sense of the standard conventionalist slogans that logical truths are true *by convention* or *in virtue of meaning.* I say that they are "fully" explained by linguistic rules because everyone must admit that the truth of any sentence is at least "partially" explained by the linguistic rules of the language in which it is stated. For instance, a paradigmatic empirical sentence like "snow is white"'s truth is explained both by the fact that snow is the color white *and* that according to our linguistic conventions the sentence "snow is white" expresses that fact, but its truth is *fully* explained only by both of these points together.

What is interesting and distinctive about the conventionalist thesis is that the validity of logical rules like *modus ponens* and the truth of logical truths in any given language, are taken to be wholly and fully explained by the linguistic rules of that language. The conventionalist thinks that, unlike the case of "snow is white", there is no explanatory contribution from the world or the facts when considering logical claims.

Nothing tendentious or tricky about explanation needs to be assumed by the conventionalist.[14] We want answers to questions like: "why is the rule of *modus ponens* valid in our language, while the rule of affirming the consequent is not?" and "why is every sentence of the form $\ulcorner \phi \vee \neg\phi \urcorner$ true in our language and every sentence of the form $\ulcorner \phi \wedge \neg\phi \urcorner$ false?" The conventionalist aims to provide an answer to these questions—and others like them—that makes substantive appeal only to the rules of the particular languages under discussion. As we will see, the conventionalist will also need to appeal to basic meta-semantic principles, but I will argue below in 3.2 that this type of explanation is still acceptably *conventionalist*, even if the meta-semantic principles themselves aren't assumed true by convention.[15]

[13]The extra clause for logical truths is not needed, since ϕ is a logical truth just in case the argument from no premises to ϕ is valid, i.e., $\models \phi$. Some logics, like First-Degree Entailment (FDE), have no logical truths, but this too will be explained by the fact that according to the rules of FDE for no sentence ϕ is it the case that $\models \phi$.

[14]I won't push this point here, but I think that conventionalists could even avail themselves of the standard deductive-nomological approach or covering law approach to explanations, using meta-semantic principles in place of scientific laws; see See Hempel & Oppenheim (1948) for the advent of this approach and Salmon (1989) for a historical overview of its rising and falling fortunes. Some might worry that this approach to explanation is barred from use by conventionalists because of the role that logical deduction plays in it, but, though I won't pursue this, I think logical conventionalists could successfully argue that the circularity here isn't vicious.

[15]It's worth briefly addressing a terminological issue that could be of concern to some readers: philosophical treatments of "convention", starting with the influential Lewis (1969) address how conventions are implemented in a diverse population using notions like signaling

2 Unrestricted Logical Inferentialism

I'm going to show that logical conventionalism, understood as above, follows from a novel and plausible theory of the meta-semantics of the logical constants that I call *unrestricted logical inferentialism*. This section is devoted to explaining and developing my inferentialist theory; the next to moving from inferentialism to conventionalism. For the sake of simplicity, I'm going to assume throughout most of this section that classical logic is an accurate model of the logic of English and other natural languages. Section 2.5 pulls back from this assumption and discusses alternative logics quite generally.

2.1 Logical Inferentialism

Without worrying at present about what makes them "logical" (that will be addressed in 2.3), consider the canonical logical constants—expressions like "and", "or", not", there exist", "all", etc. In the logic classroom we all learned the meanings of each of these expressions—for example the meaning of "and" is a binary truth function that gives the output *true* when fed the input $< true, true >$, but gives the output $false$ otherwise. This is just to say that the *semantics* of the basic logical notions is fairly straightforward and widely agreed upon.

How do these logical constants get their meanings? This question is *meta-semantic* rather than *semantic*. Taking the semantic questions as answered, we still face the question of how these expressions get their meanings and the closely related questions of how we understand logical expressions and in what our understanding consists. With the logical expressions there isn't a straightforward causal or ostensive answer to these questions—a truth function isn't something out in the world that we can interact with and thereby pick out and refer to, so how does "and" manage to mean a particular truth function? Perhaps the most widely accepted answer to this questions is summed up in the following principle:

> **Logical Inferentialism** : the meaning of any logical expression is fully determined by the inference rules according to which the expression is used

The assumption made is that logical expressions in natural language, at least, are

and coordination; here I'm only concerned with conventions in the form of implicit linguistic rules of inference (see the next section for discussion) and so won't be addressing further any issues concerning coordination in a population.

used according to certain rules of inference similar to the formal rules of inference in a natural deduction system. For example, the word "and", in English, is arguably used according to the following rules of inference:

$$(\&I)\quad \frac{\phi \quad \psi}{\phi\ and\ \psi} \qquad (\&E)\quad \frac{\phi\ and\ \psi}{\phi} \quad \frac{\phi\ and\ \psi}{\psi}$$

Where "ϕ" and "ψ" are schematic letters for which any English sentences may be substituted. The introduction rule, $(\&I)$, tells us when we can introduce a sentence whose main connective is "and", while the elimination rules, $(\&E)$, tell us what we can do with these sentences once we have them.

The notion of rule-following in general and linguistic rule-following in particular is controversial in philosophy and has been at least since Saul Kripke's influential discussion, but it is widely believed by naturalists that following rules like $(\&I)$ and $(\&E)$ is a matter of having certain linguistic dispositions, e.g., accepting the conclusion of the rule in every standard situation in which each premises is accepted, barring corrigible failings of memory, attention, etc.[16] Here I will simply assume, along with most naturalists, that some version of this implicit account of rule-following is correct. In addition to being independently plausible, this is something that I believe conventionalists need to assume and that most historical conventionalists did assume, at least tacitly.[17]

Before saying something about how linguistic rules can be used to determine meanings for logical expressions, I want to pause to ward off a potential misunderstanding. The above principle should under no circumstances be confused with its converse:

> $*$**Logical Inferentialism (converse)**$*$:for any logical expression, the inference rules according to which the expression is used are fully determined by the meaning of the expression

The problem with this is that it entails that the inference rules used supervene upon meaning, so that *any* change in the inference rules used, however small and minute, would result in a difference in meaning. Yet some changes in the rules used won't lead to any changes in which sentences can be proved from other sentences in the language, and this makes it implausible that *every* change of this kind alters meanings, at least according to our ordinary, garden variety

[16] See Kripke (1982) for arguments against dispositionalism about rule-following and Forbes (1984), Forster (2004), Horwich (1998), McGinn (1984), and Shogenji (1993) for responses on behalf of dispositionalist naturalists.

[17] See Carnap (1955) for something more than a tacit endorsement.

concept of meaning. In any case, whatever this principle's status, I won't be assuming it here and it is not entailed by **Logical Inferentialism**.

Logical Inferentialism does commit us to using rules of inference for logical expressions to determine their meanings, but thus far we don't have enough information to understand how this is accomplished. For that we need another meta-semantic inferentialist principle:

> **Meaning Validity Connection** (**MVC**) : if the meaning of logical expression is determined by the inference rules $R_1, R_2, ..., R_n$ then the rules $R_1, R_2, ..., R_n$ are *thereby* valid (necessarily truth preserving)

Let's say that the meaning determining rules for an expression *implicitly define* that expression and are *meaning constituting*. The import of the **MVC** is that meaning constituting rules are *automatically* valid. This means that the meanings of the logical expressions like "and" and "not" are whatever they need to be for their meaning constituting rules to be valid. This is a radical idea, so it's worth pausing over: the traditional order of meta-semantic explanation takes the meanings of expressions to be given first, and then—with these meanings in hand—explains which rules are valid. The inferentialist reverses this standard order of explanation by taking meanings to be determined by rules rather than vice-versa. The basic inferentialist thought was first endorsed by the Wittgenstein of *Philosophical Grammar* and the Carnap of *The Logical Syntax of Language*. Here's Wittgenstein on negation:

> There cannot be a question of whether these or other rules are the correct ones for the use of "not" (that is, whether they accord with its meaning). For without these rules the word has as yet no meaning; and if we change the rules, it now has another meaning (or none), and in that case we may just as well change the word too.[18]

And here is Carnap on the general reversal being pulled off:

> Up to now, in constructing a language, the procedure has usually been, first to assign a meaning to the fundamental mathematico-logico symbols, and then to consider what sentences and inferences are seen to be logically correct in accordance with this meaning. ...the connection will only become clear when approached from the

[18]Wittgenstein (1974), X-133.

> opposite direction: let any postulates and any rules of inference be chosen arbitrarily; then this choice, whatever it may be, will determine what meaning is to be assigned to the fundamental logical symbols.[19]

Many philosophers have been attracted to some form of this type of meta-semantic inferentialist account of logic, e.g., Paul Boghossian, Michael Dummett, Ian Hacking, and Christopher Peacocke.[20]

Call anyone who endorses **Logical Inferentialism**, understood according to the **MVC** a *logical inferentialist.* Some logical inferentialists have flirted with or even endorsed the idea that a radically new semantics is needed for the standard logical constants, perhaps one that eliminates all reference to semantic properties like truth and truth functions. I think this is too radical—as noted above it seems relatively uncontroversial that the meaning of "and" is a certain, familiar binary truth function. Accordingly, many logical inferentialists have tried to show how—using the **MVC**—the familiar truth functional meaning for "and" is determined by "and"'s rules of inference (($\&I$) and ($\&E$)). In this case the argument is straightforward: by **Logical Inferentialism** and assumption, the meaning of "and" is determined by the rules ($\&I$) and ($\&E$); and by the **MVC**, these rules are valid, so by ($\&I$), when ϕ and ψ are both true, then so is $\ulcorner \phi and \psi \urcorner$, and by ($\&E$), if either ϕ or ψ or both are false, then so too is $\ulcorner \phi and \psi \urcorner$ —else the ($\&E$) rules wouldn't be valid. So we've shown that the **MVC** and the standard rules of inference for "and" force "and" to have its standard truth functional meaning. The inferentialist story for the other connectives is more complicated and will be discussed in 2.4. Before doing that, we need to further flesh out the inferentialist approach to logic.

2.2 Unrestricted vs Restricted Inferentialism

Logical inferentialists endorse both **Logical Inferentialism** and **MVC**, but logical inferentialism comes in many forms, and only one form can be used to found logical conventionalism. The main differences between inferentialists concern the issue of which collections of rules can successfully be used to determine a meaning for an expression. We have already (perhaps) seen a difference on this point between Wittgenstein and Carnap illustrated in the quotes in 2.1; Wittgenstein suggests that some rules for "not" might fail to determine a

[19] Carnap (1934), page xv.

[20] See Boghossian (1996), Dummett (1991), Hacking (1979), and Peacocke (1987).

meaning, while Carnap suggests that meaning determining rules can be "chosen arbitrarily". The unrestricted, Carnapian thought, can be summed up as follows:

> **Meanings Are Cheap** (**MAC**) : Any collection of inference rules used for an expression determines a meaning for that expression

This principle needs to be clarified in a number of ways, but at its heart, it sums up the very natural idea that meanings (or concepts) come cheaply. Dreaming up meanings and concepts is purely a matter of invention and isn't constrained by any external matters (the concept of a unicorn comes on the cheap, but there actually being unicorns is another matter entirely).

The **MAC** talks about inference rules "used for an expression" and this requires some clarification. Let's say that some rule R is a rule *for* an expression Δ just in case Δ occurs in instances of R and that some collection of rules C is for an expression Δ if each rule in C is for the expression. Note that a rule can be for an expression in two ways: (i) if the rule *explicitly* contains the expression, so that every instance of the rule contains it as was the case for ($\&I$) and ($\&E$) with "and"; (ii) the rule *implicitly* contains the expression, meaning if the rule is schematic, that the expression occurs in some but not all instances of the rule by occurring in some but not all substitution instances for the schematic letters. So the rules ($\&I$) and ($\&E$) are also for "not" if "not" is in our language, since some conjunctions contain "not", like "I went to the movies and Rudolf did not". Because it requires only that some instances of a rule contain an expression, the notion of a rule being for an expression is quite weak. The main import of this right now is to keep inferentialists from having to allow the possibility that the castling rule for chess can be used to determine a meaning for "cat".

The **MAC** talks about rules being *used* for expressions because we are only concerned with collections of rules that could possibly be used by language users of some sort. And, as will become important below, the **MAC** is meant to have modal import: if some possible language used by some possible beings includes the rule R for linguistic expression Δ, we can conclude that R is meaning constituting for Δ and go on to apply the **MVC** to it. It seems that this idea is relatively straightforward, but there is an important ambiguity concerning which rules in a language count as "the inference rules according to which expression Δ is used". The ambiguity is best illustrated with an example. In 2.1 we saw the rules ($\&I$) and ($\&E$) for the English connective "and" and noted that these are, quite plausibly, rules according to which "and" is used in English. But these aren't the only valid rules for "and" in English, consider the following rule:

$$(\&\&) \quad \frac{\phi \textit{ and } \psi}{\psi \textit{ and } \phi}$$

This rule—expressing the order symmetry of the "and" connective—is clearly valid, but is it also one of the rules according to which "and" is used in English? Different answers to this question lead to an important division amongst inferentialists.

On one hand, *holist* inferentialists will see any valid rule for a connective, including (&&) for "and", as a rule according to which the connective is used and hence a meaning constituting rule for the connective (by the **MAC**). According to the holist, the meaning constituting rules for "and" include all valid rules for "and", including, in addition to (&I) and (&E), the rule (&&) and countless other rules as well. By contrast, *non-holist* inferentialists think that some but not all valid rules for a connective will be the rules according to which the connective is used and hence, according to the terminology I've adopted, the meaning constituting rules for the connective. Non-holist inferentialists will likely think that (&I) and (&E) are meaning constituting for "and" but that (&&) is not. Many philosophers have found the kind of holism endorsed by holist inferentialists to be problematic, but the non-holist inferentialist faces the challenge of distinguishing the meaning constituting rules from the non-meaning constituting rules in a non-*ad hoc* manner.[21]

Non-holists can naturally distinguish between those inferential transitions that speakers of a language accept *directly* and those they accept only indirectly, in virtue of acceptance of the direct rules.[22] Let's call the directly accepted inferences *direct rules* and the indirectly accepted inferences *indirect rules*. The direct rules are those that speakers accept simply *because they do*, while the indirect rules are those that they accept because they have seen them to be derivable from other rules that they accept. Quite plausibly, rules like (&I) and (&E) are accepted by all speakers who use the word "and" without their having found any derivation of these rules from other rules or principles, while, by contrast, a rule like (&&) is accepted only because speakers are aware that it can be derived from the basic rules, for example as follows:

[21]Fodor & Lepore (1992) is a book length assault on semantic holism.
[22]Cf. Peacocke (1992) on primitively compelling inferences.

$$\frac{\dfrac{\phi \textit{ and } \psi}{\psi} \qquad \dfrac{\phi \textit{ and } \psi}{\phi}}{\psi \textit{ and } \phi}$$

This proof uses two instance of (&E) followed by an instance of (&I) to establish (&&) as a derived rule. The details of the particular example aren't important—perhaps (&&) is a direct rule in English?—what matters is that there is a useful and non-*ad hoc* distinction between direct rules and indirect rules for an expression.

And it is natural to use this distinction to found a non-holist brand of inferentialism according to which the rules of use for an expression in a language are the direct rules in the language involving the expression.[23]The direct rules manage to fix all of the indirect rules, so if an indirect rule is given up, so must one or more of the direct rules. In this way, there is less of a gap between holist inferentialists and non-holist inferentialists than may have been thought. Still, I think it's important to note that holism isn't forced by inferentialism, and I will be understanding the various inferentialist principles like the **MVC** and the **MAC** so that only the various direct rules for an expression are taken to be meaning constituting for the expression. I'll also be assuming that all valid rules for an expression in the language are those fixed by the direct rules for the expression.

Let's say that anyone who endorses **Logical Inferentialism**, the **MVC**, and the **MAC** is an *unrestricted logical inferentialist*. "Unrestricted" because this version of inferentialism puts no substantive constraints on the meaning determining rules of a language. In effect, the rules of a language are entirely self-justifying. This view is incredibly simply at first glance and was, I think, endorsed by Carnap, Ayer, and many other early logical conventionalists. Despite this, as far as I know, I am the only current defender of unrestricted logical inferentialism. I think that this state of affairs is owed almost entirely to the apparent force of a putative counterexample to unrestricted inferentialism: A.N. Prior's infamous tonk connective.[24] Tonk is stipulated to be a binary sentential connective with the following introduction and elimination rules:

[23]Some readers may have noticed that, given how easily a rule can be "for" an expression, my formulation makes direct rules like (&I) and (&E) meaning constituting for expressions they only implicitly involve, like "not". This is intentional and will be discussed below in 4.1; for now it can be ignored.

[24]Tonk was introduced in Prior (1960).

$$(tI) \quad \frac{\phi}{\phi \; tonk \; \psi} \qquad (tE) \quad \frac{\phi \; tonk \; \psi}{\psi}$$

Adding the tonk rules to English (call this language "Tonklish") would enable us to prove *any* English sentence from *any other* English sentence, in Tonklish. This, to say the least, is a disaster for the unrestricted inferentialist. In Tonklish, by the **MAC**, the meaning of "tonk" is given by (tI) and (tE); and so by the **MVC** both (tI) and (tE) are valid in Tonklish. This seems absurd. If unrestricted inferentialism were correct, then we could simply move to Tonklish and put our hands on a runabout inference ticket that would allow us to establish *anything*. Want to prove the Riemann hypothesis or that $P = NP$? Easy: just add the tonk rules and get to your very short work and wait for the glory to roll in.

Because of the terrors of tonk, every extant version of logical inferentialism is a version of *restricted* logical inferentialism. Restricted versions of inferentialism don't endorse the **MAC** in all its naked glory but instead endorse some restricted version of it allowing rules of use to be meaning constituting only if they meet certain conditions. Conditions that have been proposed include consistency, conservativeness, harmony, etc.[25] *Pace* all of these philosophers, I don't think that tonk or other cases like it require a move to restricted inferentialism. I'll argue for this in detail in section 4.1; and in section 3 I'll show that unrestricted inferentialism but not restricted versions of inferentialism, no matter how liberal, entail logical conventionalism. In order for this to be done, the remaining subsections in this section finish building an unrestricted inferentialist theory of logic.

2.3 Which Expressions are "Logical"?

Thus far I've characterized the logical constants only by appealing to a standard list: "and", "either. . . or", "if. . . then", "not", "all",. . . , while saying nothing about what unifies the expressions on the list and makes them worth theorizing about.

One feature shared by all of the logical expressions is that they are *non-empirical* in a way that inferentialists can make precise. Presumably, learning an expression like "dog" isn't only a matter of learning some inferences involving the expression, it also requires an ability to reliably recognize dogs of various kinds

[25]See Belnap (1962) for the first version of restricted inferentialism and Dummett (1991) for the canonical discussion.

as objects in the world.[26] By contrast some expressions, including all of the logical expressions, require for their mastery only the use of certain rules linking the acceptance of sentences with the acceptance of other sentences.[27] Let's call these expressions *non-empirical*—while all of the intuitively logical expressions are non-empirical, are all non-empirical expressions intuitively logical?

No. Unfortunately this approach seems to cast the net too widely, since it is natural to think that many other words, including familiar terms like "bachelor", are implicitly defined by direct rules in a manner indistinguishable from how logical expressions like "and" are implicitly defined:

$$(bI)\quad \frac{\alpha\ is\ unmarried \quad \alpha\ is\ male}{\alpha\ is\ a\ bachelor} \qquad (bE)\quad \frac{\alpha\ is\ a\ bachelor}{\alpha\ is\ unmarried} \quad \frac{\alpha\ is\ a\ bachelor}{\alpha\ is\ male}$$

So the word "bachelor" would, by the criterion of being non-empirical, count as a logical expression. But this seems silly; whatever we want to say about the word "bachelor", we surely don't want to say that it's a logical constant. If we use the non-empirical criterion, we will wind up having to say that every abbreviation and every predicate term conjoining a number of other predicates are logical constants, and this violates standard usage.[28]

To get a necessary and sufficient condition, I think we need to add another constraint that had a distinguished history in discussions of logical constants: *topic neutrality*. The logical constants are topic neutral—they can be used whether the topic is stoicism, sex, or stamp collecting. In the literature it is popular to try to spell out the notion of topic neutrality using sophisticated model theoretic criteria such as permutation invariance or a related feature, but I won't be attempting this here.[29] In fact, I don't think any absolute criterion of this kind is likely to perfectly distinguish the logical from the non-logical, since topic neutrality seems to come in degrees.

The sentential connectives are topic neutral in the sense that their rules

[26] I think that this can be accounted for on inferentialist grounds in the manner of the language-entry rules of Sellars (1953) and Brandom (1994), but I won't insist on this here.

[27] This will be slightly and harmlessly amended in 2.4.

[28] Just focusing on the non-empirical expressions in this way and the true statements that contain only such expressions essentially leads to the class not of *logical truths* but of *analytic truths* or *conceptual truths*. I think that this class of truths is theoretically interesting and shares many important features of logical truths (necessity, *a priority*), but I won't be focusing on it in this paper.

[29] This approach was initiated by Tarski (1986); McGee (1996) is an important modern contribution to this literature; Woods (forthcoming) emends this type of procedure to allow indefinites to count as logical.

have instances in every topic involving declarative, truth-apt sentences. The quantifiers require a topic in which objects of some kind are discussed, and this perhaps narrows things somewhat, but they still seem to be pretty damned topic neutral. By contrast, words like "bachelor" have a very particular topic, viz., a certain status conferred by social customs involving adult humans. It is nonsense to ask whether the number 3 is a bachelor, or if the Earth's center of gravity is married. There are likely to be further borderline cases. Should deontic operators like *ought* count as logical? What about operators expressing alethic modalities? I don't think we should expect there to be a clear cut answer in every case.

For an inferentialist, the natural approach to topic neutrality is to look to the meaning constituting rules for an expression. If those rules can and are used in discourse of nearly all kinds, then they count as topic neutral. The wider the compass of its implicitly defining rules, the more topic neutrality an expression possesses. Non-empirical expressions whose rules have a sufficiently high degree of topic neutrality deserve the honorific "logical", while other do not. I don't think the indeterminacy of the notion of topic neutrality should seriously trouble us, nor should the context-sensitivity of "sufficiently high degree". The familiar terms "and", "either. . . or", "if. . . then", "not", "all",. . . , etc. all count as logical notions because they are implicitly defined by non-empirical rules that are highly topic neutral.[30] And this is enough to make them an important and theoretically interesting class of expressions to focus upon for the philosopher, whether or not they form a natural kind carved into nature by the gods.

2.4 The Meanings of Logical Expressions

Now that we have explored the unrestricted inferentialist's meta-semantic principles and an account of logical constants, we can discuss how to account for the meanings of the logical constants on inferentialist grounds. The philosophical importance of this move is one of the key reasons for inferentialism's general popularity, for if we can account for the semantics of the logical constants in terms of syntactic rules of proof, we will have provided a naturalistically acceptable theory of the logical constants.

Since we are concerned with logical constants in natural languages, the very

[30]It's possible that topic neutrality can do all of the work of the non-empirical condition, since any rules that are empirical arguably aren't topic neutral, but to avoid having to discuss this issue and potential borderline cases I'll continue to use both conditions to characterize the logical notions.

problem here is a bit imprecise. Typically inferentialists work with formal models that are meant to accurately reflect certain aspects of natural languages. The formal models I will work with here are what I call *full languages.* A full language is a standard formal language together with a natural deduction proof system for the language.[31] Our procedure will then be to work with a full language that is assumed to accurately represent a significant fragment of English and show that the **MVC** forces each logical constant to have its standard classical meaning. In effect, I already did this for "and"/"$\wedge$" in 2.1 above, using natural language versions of "$\wedge$"'s natural deduction rules.

The standard natural deduction rules are acceptance to acceptance rules: they license the acceptance of the conclusion of the rule when each premise of the rule is accepted. A problem first discovered by Rudolf Carnap that isn't as well known as it should be in philosophy is *that single-conclusion natural deduction rules of this kind fail to fix the standard meanings of the sentential logical constants.*[32] This means that inferentialists who wish to recover classical logic will need to go beyond standard natural deduction systems in some manner.

Before discussing how the inferentialist can do this, let me explain Carnap's problem: assume we're working in the language of sentential logic. A valuation v is a an assignment of truth-values (T or F) to all sentences in the language; call a valuation *Boolean* if it respects that standard truth-functions assigned to the sentential connectives ($\neg, \wedge, \vee, \rightarrow, \leftrightarrow$). Consider a standard collection of single-conclusion natural deduction rules R for the sentential connectives together with the standard structural rules of deducibility S (transitivity, reflexivity, weakening) and say that a valuation v is *inadmissible* if it makes one of the rules in $R \cup S$ non-truth-preserving, i.e., if there is some instance of one of these rules where v assigns every premise T but the conclusion F and call v *admissible* otherwise. We want our collection of inference rules $R \cup S$ to ensure that all valuations are Boolean by ruling non-Boolean valuations inadmissible. Meta-semantically, this involves seeing if the **MVC** forces classical single-conclusion rules to determine the standard classical meanings for the sentential connectives. Carnap showed that this can't be done.

Theorem. *(Carnap 1943) For any standard collection of standard single-conclusion natural deduction rules R and structural rules S, there is at least one non-Boolean valuation that is admissible relative to $R \cup S$*

[31] Natural deduction proof systems were introduced in Gentzen (1934) and Jaśkowski (1934). The tree-format that I have used here follows Gentzen.

[32] See Carnap (1943), McCawley (1981), and Raatikainen (2008).

Proof. Consider a valuation v^* that assigns T to every sentence in the language of sentential logic, clearly v^* will make all of our rules truth-preserving, since there is no possibility of all premises of a rule being assigned T while the conclusion of the rule gets assigned F, since v^* does not assign F to any sentence in the language; so v^* is admissible relative to $R \cup S$. However, v^* is not Boolean, since for any sentence ϕ, $v^*(\phi) = v^*(\neg\phi) = T$, so negation will not receive its standard truth-function. □

So the classical standard natural deduction rules together with the **MVC** don't suffice to force the standard truth-functional meaning for negation (in fact, they do so only for conjunction among the standard connectives, hence my choice of example in 2.1). There are several ways to amend natural deduction systems to solve Carnap's problem; I'm going to present an approach to solving the problem that I think fits nicely with inferentialist commitments but is perhaps less well-known than it should be.[33]

The approach I have in mind amends standard natural deduction systems so that, in addition to including rules for acceptance, they also include rules for rejection. This option was overlooked historically because rejecting a sentence was typically equated with accepting its negation, but recent work on a variety of fronts has called this analysis into question.[34] Systems of this kind are called *bilateralist* natural deduction systems.[35] We can formalize the rules of these systems using *force indicators* "+" and "−" the plus is an acceptance indicator, while the minus is a rejection indicator.[36] *N.B.* these are not logical operators or connectives and as such they do not embed. Instead of formulating natural deduction rules using only sentences, we'll be using *signed sentences*, which are our familiar sentences of sentential logic's language together with one of our force indicators. Our formal system will have all of the old structural rules, together with one new rule:

[33] Another approach is to move to a multiple conclusion system, where the proof relation holds between sets of sentences (or formulas) in our language; see Shoesmith & Smiley (1978) and Restall (2005).

[34] Ripley (2011) is a general survey of negation, denial, rejection and their interrelations.

[35] See Smiley (1996), Rumfit (2000) for bilateralist systems.

[36] My formalization is based on one given in Incurvati & Smith (2010), which is based on the work of Rumfit and, especially, Smiley.

$$(S - reductio) \quad \frac{\Gamma \qquad \begin{matrix}[\alpha] \\ \vdots \\ \beta\end{matrix} \qquad \begin{matrix}[\alpha] \\ \vdots \\ \beta^*\end{matrix}}{\alpha^*}$$

Where α and β are variables for sign/sentence pairs and α^* is just like α except with the opposite sign. This rule is so-named because it is something like a structural version of the familiar *reductio* rule for negation, but it is important to keep in mind that this is a structural rule, not a negation rule. In this framework a simple formalism for sentential logic can be given—here is one for a language with only the connectives $\neg$, $\wedge$, and $\vee$:

$$(\wedge I) \quad \frac{+\phi \quad +\psi}{+(\phi \wedge \psi)} \qquad (\wedge E) \quad \frac{+(\phi \wedge \psi)}{+\phi} \quad \frac{+(\phi \wedge \psi)}{+\psi}$$

$$(\vee I) \quad \frac{-\phi \quad -\psi}{-(\phi \vee \psi)} \qquad (\vee E) \quad \frac{-(\phi \vee \psi)}{-\phi} \quad \frac{-(\phi \vee \psi)}{-\psi}$$

$$(\neg I) \quad \frac{-\phi}{+\neg\phi} \qquad (\neg E) \quad \frac{+\neg\phi}{-\phi}$$

There are a number of interesting points about this system that I won't pursue here.[37]

A signed inference is *valid* if and only if every Boolean valuation which makes all plus signed premises true and all minus signed inferences false also makes the conclusion true if it is plus signed but false otherwise. The above rules are sound and complete for this notion of validity and in this system we can derive all of the positive signed classical rules for sentential logic.

What is particularly relevant for our purposes is that these rules provide a nice solution to Carnap's problem, for note that the deviant valuation v^* that we used above, which assigned T to every sentence in the language, will fail to make the rule of $(\neg E)$ valid in the new sense, since that valuation will assign truth to the rule's positive, negated premise but will also assign T to the rule's negatively signed conclusion. In symbols: $v^*(\neg\phi) = T$ and also $v^*(\phi) = T$ and so the rule is not valid. All other non-Boolean valuations will be similarly ruled out by these rules, which means, meta-semantically, that if the above

[37] In particular in bilateralist systems the proof theory has many of the features that restricted inferentialists often require that are lacked by classical logic when formulated in standard natural deduction systems.

system represents natural language logical rules, then each connective will be assigned its standard meaning provided that the MVC is understood with our more expansive notion of validity.

Since the rules for "and"/"$\wedge$" are the same as the standard rules, the argument above suffices to show that the above introduction and elimination rules for "$\wedge$" and the MVC force the familiar truth-function for "and". For "or"/"$\vee$": the rule of ($\vee I$) and the MVC force $\ulcorner \phi \vee \psi \urcorner$ to be false when both ϕ and ψ is false; and if either of ϕ or ψ is true, and $\ulcorner \phi \vee \psi \urcorner$ false, then one of the ($\vee E$) rules will fail. Together these two points force the standard truth-functional meaning upon "$\vee$". For negation, the rule of ($\neg I$) forces $\ulcorner \neg \phi \urcorner$ to be true when ϕ is false; and if ϕ was true and $\ulcorner \neg \phi \urcorner$ true, then ($\neg E$) would be invalid, so $\ulcorner \neg \phi \urcorner$ must be false when ϕ is true. Together these force the standard truth-functional meaning upon "$\neg$". So, since this set of connectives is expressively complete, we can see by the above that the bilateralist rules force the standard truth-functional meanings for all of the sentential connectives.[38]

With this we have seen how an unrestricted inferentialist can account for the meanings of the logical constants on purely inferentialist grounds. In fact, some but not all *restricted* inferentialists will be able to mimic this treatment of classical logic. The final part of this section, 2.5, discusses an important feature of unrestricted inferentialism that isn't shared by versions of restricted inferentialism; and then section 3 will show how unrestricted logical inferentialism but not restricted logical inferentialism leads to logical conventionalism.

2.5 Logical Pluralism

Unrestricted logical inferentialism leads to a radical form of logical pluralism. The meta-semantic principles adopted by the unrestricted inferentialist (the **MVC** and the **MAC**) apply not just to our language, but to any language we might encounter. We can easily describe possible linguistic communities that use alternative rules of inference for their logical expressions, and according to the **MAC** these non-standard rules will be meaning constituting for this imagined

[38] Murzi & Hjortland (2009) argue that the bilateralist approach fails to fully solve Carnap's problem, since we can consider extended valuations that generate Carnap's problem again at a higher level. They do this by treating the force indicator "$-$" as, in essence, an unembeddable negation sign, drawing on an equivalence result about such negation proved in Bendall (1979). But, as Incurvati & Smith (2010) argue in response, these extended valuations aren't semantic valuations in a standard sense, since they don't just assign truth-values to sentences, but also take into account force indicators and to fail to treat these signs as force indicators is simply to reject the bilateralist framework altogether.

community's logical expressions and according to the **MVC** these alternative rules will be valid in the language spoken by the imagined community.[39]

This means that the unrestricted logical inferentialist is fine with the possibility that there are language communities whose language uses only intuitionistic logic, or language communities whose language uses only some paraconsistent logic, etc. In each of these languages, the rules of language will determine which inferences are valid in the language and thus what the various logical expressions in the language mean. There can be no sense in us, in our language, arguing that those in the intuitionistic language or those in the paraconsistent language are making a mistake. Similarly, there is no sense in them arguing that we are making a mistake. All parties in such a dispute will be talking past each other completely.

Restricted inferentialists will not be so permissive. Recall that the restricted inferentialist imposes some restriction on which rules of use can be meaning constituting, in effect, they reject the **MAC** in favor of some more restrictive principle. While it is true that some versions of restricted inferentialism will, like unrestricted inferentialism, lead to logical pluralism, the unrestricted logical inferentialist's pluralism is completely wide-ranging and unrestricted. The restricted inferentialist who imposes condition $\mathcal{C}$ on admissible meaning constituting rules will apply the **MVC** to the language of a linguistic community just in case the rules of that community's language conform to $\mathcal{C}$. For this reason, even liberal restricted inferentialists don't allow that the rules of language are completely and totally self-justifying, only the unrestricted inferentialist accepts this.

The kind of logical pluralism endorsed by the unrestricted inferentialist is a pluralism concerning the logical constants. Classical negation and intuitionistic negation, by having different meaning constituting rules, mean different things. This is different than the kind of logical pluralism that has been endorsed by J.C. Beall and Greg Restall in contemporary philosophy.[40] For Beall & Restall, logics are given by consequence relations that hold between some set of sentences Γ and sentence ϕ just in case there is no *situation* in which every member of Γ holds but ϕ does not. This much is a fairly uncontroversial informal statement of the model theoretic notion of logical consequence, but Beall & Restall add that

[39] Recall that we are understanding the **MAC** so that all indirect rules in the language are fixed by the direct rules; this ensures that there won't be non-derivable but valid rules in a language.

[40] See Beall & Restall (2006).

our language allows distinct ways of precisifying "situations" and that different precisifications lead to different logics. One understanding of "situation" leads to classical logic, another leads to intuitionistic logic, and so on. Whatever the merits of Beall & Restall's version of logical pluralism, it isn't the kind of pluralism entailed by unrestricted logical inferentialism.[41] As we just saw, the unrestricted inferentialist's version of logical pluralism concerns the different logical notions themselves rather than the consequence relation.[42]

To be a logical pluralist of this kind is not say that, logically speaking, anything goes. In any given lanuage the rules will determine canons of correct reasoning. Proposals that we alter our language to employ a different logic must be evaluated practically, based on how well the new linguistic tool compares to our own, given our interests and goals. Some logics are completely worthless for almost any practical purpose, others are quite flexible, others are good for some particular purposes but not others. The pluralist merely maintains that different logics can be equally correct in distinct languages without being committed to anything that adjudicates practical disputes between competing logics. So while the unrestricted inferentialist rejects the metaphysical presuppositions of the question, "which logic is objectively correct?", they can investigate the question "which logic *should* we use?" without apology. They can also investigate the question "which logic *do* we use?" without apology, but that question is a matter of empirical linguistics.

3 Logical Conventionalism

This section argues from unrestricted logical inferentialism to logical conventionalism. The first subsection presents this argument in detail; the second discusses the philosophical virtues of the conventionalist theory.

3.1 From Unrestricted Inferentialism to Conventionalism

Recall that we're assuming at present that classical logic is the logic of English. Just as I assumed above that the logical constants were to be given their standard semantic values, here I'm going to assume that the standard, model

[41]Beall and Restall are aware of this; see Restall (2002). We could imagine combining the two kinds of pluralism, but I won't pursue this idea here.

[42]Harris (1982) contains an important argument showing that if you combine certain logical rules in the same language the logical notions defined by these rules will be provably equivalent; this result is sometimes thought to undermine the kind of pluralism endorsed here, but this thought is based on a serious confusion, see my (forthcoming *a*) for details.

theoretic, semantics for classical logic is extensionally adequate.[43] This means that if we are looking at a formal representation of English, the sentences in this formal representation that the standard semantics says are logical truths will correspond to English logical truths; and when the standard semantics says that sentence ϕ is a logical consequence of some set of sentences Γ, this logical relationship holds between the associated English sentences.

Let's briefly review some notation: if a sentence ϕ is provable from a set of sentences Γ according to our rules, we say that ϕ is *provable* from Γ or, in symbols: $\Gamma \vdash \phi$. And if a sentence ϕ is provable from the empty set of premises we say that ϕ is a *theorem*, or, in symbols: $\vdash \phi$. When a sentence ϕ is true in every structure in which every sentence in the set Γ is true we say that ϕ is a logical consequence of the set of sentences Γ (or that ϕ *follows from* or is *entailed by* Γ) or, in symbols: $\Gamma \models \phi$. And if a sentence ϕ is true in all structures *simpliciter* we say that ϕ is a *logical truth* or, in symbols: $\models \phi$.

Now, it is a familiar but remarkable fact about the standard semantics for first-order logic that it admits of a recursive, complete proof procedure. In fact, many natural deduction systems for classical logic, including an an extension of the bilateralist system of 2.4 to include quantifier rules, is both sound and complete with respect to the standard semantics. In symbols, where Γ is a set of sentences and ϕ a sentence, $\Gamma \models \phi$ if and only if $\Gamma \vdash \phi$.[44] So, by this fact and our assumption that the standard semantics is extensionally adequate for capturing logical truth in natural languages, it follows that the meaning constituting rules for the logical expressions of our language suffice for proving every single logical truth and establishing any particular logical entailment. This means that the truth of any given logically true sentence "p" in our language can be given a simple conventionalist explanation: "p" is provable from our meaning constituting logical rules without any premises. According to the **MAC**, these

[43] Standard semantics are presented in most intermediate logic textbooks, e.g., Enderton (2001). For convenience, here's a sketch of such a semantics for a first-order language with $\vee$, $\neg$, and $\exists$ as logical primitives: a *structure* $\mathcal{A}$ consists of a non-empty set $\mathcal{D}_{\mathcal{A}}$ (the domain) and a function $\mathcal{I}_{\mathcal{A}}$ (the interpretation) assigning appropriate semantic values on the domain to the non-logical constants in the language; a variable assignment v on $\mathcal{A}$ is a function assigning each variable in the language a item from the domain. Given a clause for the satisfaction of an atomic formula by a variable assignment on a domain and writing "$\mathcal{A}, v \models \phi$" for ϕ is satisfied by variable assignment v on structure $\mathcal{A}$, we are given recursive satisfaction clauses for logically complex sentences in the language as follows: (*i*) $\mathcal{A}, v \models \neg\phi$ if and only if it is not the case that $\mathcal{A}, v \models \phi$ ($\mathcal{A}, v \not\models \phi$); (*ii*) $\mathcal{A}, v \models (\phi \vee \psi)$ if and only if either $\mathcal{A}, v \models \phi$ or $\mathcal{A}, v \models \psi$ or both; (*iii*) $\mathcal{A}, v \models \exists\xi\phi$ if and only if for some variable assignment $v*$ on $\mathcal{A}$ differing from v, if at all, in what it assigns to ξ: $\mathcal{A}, v* \models \phi$. The truth of a sentence ϕ in a structure $\mathcal{A}$ is then defined as satisfaction of ϕ by every variable assignment on $\mathcal{A}$.

[44] Soundness is relatively straightforward; completeness was first proved by Gödel (1929).

rules of ours will be meaning constituting, and so according to the **MVC** they will be valid, so, since "p" is provable from the empty set using these rules, then trivially "p" will be a necessary truth.

According to the completeness theorem and our assumption that the standard semantics is extensionally adequate, this conventionalist explanation can be carried over to each and every logical truth of our language without any slipping through the cracks. So we have an answer to the questions we started with and thus an explanation of logical truth and logical validity in our language. Why is every sentence of the form $\ulcorner \phi \vee \neg\phi \urcorner$ true? Because every sentence of that form follows from the rules of our language alone. Why is each sentence of that form *logically* true? Because the proof of each sentence of that form uses only the logical rules of our language (in the sense of 2.3). Why is every sentence of the form $\ulcorner \phi \wedge \neg\phi \urcorner$ false? Because its negation is provable from the rules of our language and thus true and falsity is, as is standard, truth of negation. Why is each sentence of that form *logically* false? Because the proof of the negation of each sentence of that form uses only the logical rules of our language. Why is an inference rule like *modus ponens* ($\phi, \phi \rightarrow \psi \vdash \psi$) valid in our language? Because *modus ponens* is a direct rule of our language and so is trivially valid. Why is a more complicated rule like *modus tollens* ($\neg\psi, \phi \rightarrow \psi \vdash \neg\phi$) valid in our language? Because its validity can be derived using the direct rules of our language. Why is a rule like *affirming the consequent* ($\psi, \phi \rightarrow \psi \vdash \phi$) not valid in our language? Because it is neither a direct or an indirect rule of our language and, using the other rules, counterexamples can be described. All questions like these can be given similar answers simply by appealing to the rules of our language. Thus, unrestricted logical inferentialism leads to logical conventionalism.

It might initially seem questionable whether we truly have a conventionalist explanation in the spirit of **Logical Conventionalism**, since all of my explanations in the preceding paragraph made tacit appeal to both the **MAC** and the **MVC** and these, being fundamental meta-semantic principles, surely go beyond the rules of language. But I don't think this undercuts the conventionalist status of the explanation. The situation here is similar to other ordinary types of explanations. If my Mother asks me how my neighbor's window broke and I respond by telling her that I threw a statue of Wittgenstein at it, I have fully explained the event of the breaking in terms of this act. Yet, of course, in the abstract, this particular event only caused the breaking of the window against the backdrop of various laws of physics and mundane facts about the surrounding conditions. The inferentialist meta-semantic principles here play a role analogous to the background conditions in such ordinary explanations. What makes this explanation a *conventionalist* explanation is that it does not need to appeal to things like logical facts or external conditions on our rules. All that matters for the logical validities and the logical truths in our language is that we have adopted certain rules of inference. Given the background meta-semantic facts, this fact about the rules of inference in our language works to explain the facts about the validities and logical truths in our language; in no sense has the use of background meta-semantic facts trivialized conventionalism.

This conventionalist explanation only works if we are unrestricted logical inferentialists rather than restricted logical inferentialists, however liberal our restrictions.[45] The reason for this is simple: since the restricted inferentialist requires that the rules of a language must meet condition $\mathcal{C}$ in order for the **MVC** to apply, their explanation of the truth of a logically true sentence "*p*" in our language must appeal not only to the provability of "*p*" according to our rules from the empty set and meta-semantics principles such as the **MVC** and their modified, $\mathcal{C}$-invoking version of the **MAC** *but also to the particular fact that our rules happen to meet external condition* $\mathcal{C}$. And this last is a particular matter of fact that is crucial to the explanation and essentially goes beyond the rules of our language. The unrestricted inferentialist's ability to endorse the self-justifying nature of rules of language is what allows for a conventionalist theory of logic to be mounted; restricted inferentialists of whatever stripe cannot emulate this.

This conventionalist account of logical truth and logical validity has the same naturalistic appeal of unrestricted inferentialist's account of the meanings of logical constants. The following subsection will talk up the virtues of the conventionalist theory I've offered, but before doing so I'm going to close this section by warding off some misunderstandings and noting some limitations of the theory.

The story here relied on the completeness theorem holding for classical first-order logic, but for some systems that have been called "logical", the canonical semantics for the system is incomplete: for every recursive proof theory, there are some arguments for which $\Gamma \models \phi$ but $\Gamma \nvdash \phi$ (note the order of the quantifiers:

[45]Non-liberal versions of restricted inferentialism are the most popular kind; they often involve serious restrictions that force the inferentialist to adopt an intuitionistic logic; see for example: Dummett (1991) and Prawitz (1971). By contrast, liberal versions of restricted inferentialism use restrictions that allow for classical logic to be developed on inferentialist grounds; see for example: Weir (1986) and Garson (2013) in addition to the bilateralist approaches discussed in 2.4.

there need be no single argument that escapes all recursive proof theories). For a famous example of this, second-order logic with its standard semantics is semantically incomplete.[46] A conventionalist story for these "logics" on the model I've provided here will require a proof theory that is non-recursive, but it is usually agreed that such a proof theory would be unlearnable by humans. The conventionalist could simply deny this, but I think it is more plausible for the conventionalist to reject a conventionalist treatment of these systems. In the case of second-order logic, this is especially appealing, since second-order consequence is mathematically quite rich.[47] Yet it might not be so appealing for non-classical logics that are semantically incomplete when the meta-theory used is non-classical in the same respect.

A related issue is that Gödel famously showed that any recursive system (theory + proof system) containing a rudimentary amount of arithmetic will be negation incomplete, i.e., there will be sentences G in the language of the theory T for which $T \nvdash G$ and also $T \nvdash \neg G$; but by bivalence either "G" is true or "$\neg G$" is true so in any recursive system of arithmetic there will be true claims unprovable in that system.[48] So, since most reasonably strong mathematical theories contain enough arithmetic for Gödel's incompleteness theorems to apply, there is no hope of using a conventionalist account like the above to account for all mathematical truths expressible in our current language. This presents a serious problem for conventionalism about mathematics, but here I am only advocating *logical* conventionalism.[49]

3.2 The Virtues of Logical Conventionalism

Before discussing objections to logical conventionalism, I want to pause briefly to say something about why conventionalism is, at least at first glance, an extremely appealing theory of logic. I'll limit myself to three points: (*i*) it's intuitively plausible; (*ii*) it's epistemologically tractable; (*iii*) it's metaphysically non-mysterious.

(*i*) In our post-Quine, post-Kripke world, it is sometimes hard to remember that conventionalism is a very natural theory of logic, pre-philosophically. If we

[46] See Enderton (2001) and Shapiro (1991).
[47] See again, Shapiro (1991) for details on this.
[48] See Gödel (1931) for the incompleteness theorems.
[49] I happen to think that a conventionalist-friendly account can be extended to semantically incomplete logics and negation incomplete mathematical systems, but doing so is non-trivial so here I limit myself to a straightforward brand of conventionalism that covers virtually everything that we'd care to deem "logical".

asked the proverbial person on the street about the nature of logical truth, I suspect that most responses would claim that logic is true *by definition* or *according to language*. One of the most intuitively appealing views about the nature of logic is that is is, in some difficult to verbalize sense, a kind of byproduct of our use of language. Logical conventionalism does justice to these intuitive glimmerings and makes precise the inchoate idea behind them. As such, I think it's fair to say that conventionalism is an intuitively plausible theory. Of course, being intuitively plausible isn't everything. It's also intuitively plausible that the Earth remains still while the Sun orbits around it. Still, conforming to a natural and intuitively plausible vision of a subject matter isn't nothing; knee-jerk plausibility is a goodmaking feature of any philosophical theory, though its force can be overturned by other, more sophisticated considerations.

(*ii*) Our knowledge of logical truths and logical validity has often seemed mysterious. Many philosophers have felt compelled to posit an intellectual faculty of intuition or pure reason in order to explain our knowledge of logic.[50] This rationalist approach to the philosophy of logic remains active in contemporary philosophy, but many have found the idea mysterious and unscientific. On basic methodological grounds, positing a mysterious faculty of rational insight should only be done as an absolute last resort.

One of the most attractive features of logical conventionalism is that it straightforwardly leads to a non-rationalist, scientifically plausible epistemology of logic—the logical facts in any given language are determined by the rules of inference of the language, and determining which rules of inference are part of a given language requires no special faculty of rational intuition. In addition, a number of philosophers—most notably Paul Boghossian—have argued that inferentialism naturally coheres with a rule-circular approach to speaker's knowledge of the validity of logical laws in their language.[51] There are subtleties of detail to be worked out that I won't discuss here, but it suffices to say that logical conventionalism removes the temptation posed by rationalist theories of logical epistemology by making plausible a naturalistically acceptable alternative.[52]

(*iii*) What *metaphysical* picture of logic does conventionalism leave us with? Some of the rhetoric of historical conventionalists suggests that logical con-

[50]See, e.g., Bonjour (1998).

[51]See, e.g., Boghossian (1996) and (2000).

[52]Most of the subtleties involved concern the supposed need to deal with bad company rules like tonk. My unrestricted inferentialist position streamlines the approach nicely be eliminating the need for this; see my (under review *a*) for full details.

ventionalism entails some form of logical *non-factualism*. The idea is that the conventionalist theory shows that there are no *logical facts*. Is the version of conventionalism developed here a version of logical non-factualism? The answer to this question depends upon what exactly is meant by "logical facts" and "non-factualism". There is a metaphysically lightweight, everyday notion of a fact according to which it is a fact that p just in case "p" is true. According to this notion, my version of conventionalism is fully factualist: all of the logical truths are true, so since "either the Red Sox are the best team in baseball or the Red Sox are not the best team in baseball" is true then it is a fact that either the Red Sox are the best team in baseball or the Red Sox are not the best team in baseball.

If the question concerns some more robust, metaphysical notion of fact, then my version of conventionalism may well count as non-factualist. Say that something is a fact in the metaphysical sense just in case it holds objectively and independently of our cognitive and social practices. According to conventionalism, logical truths are simply byproducts of our using language in the way that we do—given the way that we use conjunction and negation symbols, we find that every instance of the schema $\ulcorner\neg(\phi \wedge \neg\phi)\urcorner$ is provable and therefore true. The logical truths are, in this sense, *reflections of the rules of our language*. So the logical truths and logical validities are not completely independent of our cognitive and social practices and therefore, using the metaphysical notion just adumbrated, there are no logical facts.

According to conventionalism, logic is not part of the superstructure of the world awaiting discovery. Negation isn't the type of thing that is *out there* in the world like tables, electrons, and oreo cookies. The laws of negation aren't *describing* some ethereal realm of ghostly logical facts. If God so made the world, there was no day on which he said "Let there be negation"! So conventionalism does away with the metaphysical puzzles that arise from heavyweight logical realism of the kind I've been subjecting to caricature. Does this mean that conventionalism entails that logic is subjective or that we make or create the logical truths? No—it's misleading to say that we "make" or "create" logical truths. Logic is not simply a projection of our ephemeral cognitive whims. Not everything goes and there is a real distinction between good reasoning and bad. Some people are poor reasoners, some groups of people make foolish mistakes, and on and on. So conventionalism also avoids the metaphysical weirdness of a radically subjectivist approach to logic.

Logical conventionalism, built on a solid foundation of logical inferentialism, avoids both the Scylla of heavyweight logical realism and the Charybdis of extreme logical subjectivism, leaving us with a moderate metaphysics of logic that does justice to the insights of both extreme camps while avoiding their excesses. In addition to its intuitive plausibility and its epistemological tractability, this makes conventionalism, *prima facie*, an extremely theoretically attractive philosophical theory of logic. So attractive in fact, that it's natural to wonder: is it too good to be true? Two powerful reasons for thinking so will be examined in the next section.

4 The Twin Towers

There are many objections to both unrestricted logical inferentialism and logical conventionalism in the philosophical literature, but two stand above all others in their influence: the tonk problem for unrestricted inferentialism and what I call "the proposition making" argument against logical conventionalism.[53] Despite their widespread acceptance, I think both of these arguments are fundamentally flawed.

4.1 The Terror of Tonk[54]

The bad company objection plagues unrestricted logical inferentialism. In fact, I think bad company is the main reason the view has so few post-Carnap defenders. Against this consensus, I don't think bad company poses a serious problem when properly understood. The most troubling and influential bad company problem is posed by Prior's tonk connective, introduced in 2.2 above:

$$(tI)\quad \frac{\phi}{\phi\ tonk\ \psi} \qquad (tE)\quad \frac{\phi\ tonk\ \psi}{\psi}$$

If we have at least one theorem and a transitive deducibility relation in the full language to which tonk is added, then everything will be provable from the

[53]The only other argument approaching these in influence is Quine's (1936) regress argument against logical conventionalism. Considerations of space prevent a discussion of this argument, but I think the general flaw behind it has already been noted several times in the literature: Quine understands conventionalism to require explicit stipulations that each logical truth is true, but historical conventionalists did not accept this; see the discussion of Quine's argument in Boghossian (1996) for a sample of this response. I address Quine's argument and his follow up claim that implicit linguistic rules can't do any real explanatory work in my (under review *b*).

[54]See my (under review *c*) for a paper length defense of unrestricted inferentialism against the tonk problem.

empty set in the expanded full language.[55] So with the tonk rules added to English, we're able to prove "Rudolf Carnap is a fried egg". And by the **MAC**, the two tonk rules define a meaningful connective; and by the **MVC**, the rules are necessarily truth-preserving, and so the sentence "Rudolf Carnap is a fried egg" is true in the resulting system. But that sentence is clearly and obviously false: *reductio*.

Or it would be a *reductio* of unrestricted inferentialism if the sentence "Rudolf Carnap is a fried egg" in the expanded language (our language plus the tonk rules) meant the same thing as it does in our language. But clearly it doesn't. It simply looks like it should because a homophonic translation of the non-tonk fragment of the expanded language is available—where a *homophonic* translation maps sentences in one language to syntactically identical sentences in another language. But just because a homophonic translation is available, doesn't mean it is automatically correct. To think otherwise is simply a mistake. This mistake is so important and fundamental that we should give it a name:

> **The Translation Mistake** : the mistake of being misled by superficial features (such as availability) into thinking that a homophonic translation is appropriate when it is not

All arguments attempting to use the tonk rules to reduce unrestricted inferentialism to absurdity commit this mistake. The unrestricted inferentialist is clearly committed to rejecting the homophonic translation from the expanded language into English, but this rejection can be argued for on independent grounds. Any plausible theory of translation must obey some kind of minimal charity constraint.[56] This is just to say that if our proposed translation makes those we are translating shockingly irrational and unaccountably foolish than that proposed translation should be rejected. To translate the tonk-free fragment of our imagined tonk language homophonically into English would involve charity violations of the most egregious kind, e.g., the imagined tonk speakers would accept obviously false sentences like "Rudolf Carnap is a fried egg" without any plausible reason for doing so (it isn't like an oracle told them that

[55]The possibility of contexts where these rules are non-trivial was first noted in Belnap (1962); it is explored in detail in Cook (2005).

[56]For the original uses of charity principles see Quine (1960b) and Wilson (1959); see Lewis (1974) and the essays in Davidson (1984) for further discussion. That the relationship between principles of interpretive charity and meta-semantic theories, like inferentialism, that focus on language use is quite tight has been recognized before, witness Paul Horwich on page 72 of his (1998): "...once its precise content is elaborated, Davidson's Principle of Charity arguably boils down to the use theory of meaning."

Rudolf Carnap is a fried egg!).

Appealing to established meta-semantic principles of translation like charity suffices to block the homophonic translation of the tonk language back into English and thus blocks the quick and dirty *reductio* argument against unrestricted inferentialism. Any other easy use of tonk or bad company to attack unrestricted inferentialism will rely upon **The Translation Mistake**. This doesn't get the unrestricted inferentialist completely out of trouble though, for we still need to say something about how a tonk language can be translated into a language like English. Happily, I think this can be done quite simply: in standard tonk languages, every sentence in the language is provable from the empty set, much like logical truths in English. So, a strategy presents itself: *translate every sentence in the tonk language into a logical truth of English.* Such a translation will be admissible on grounds of charity, since it will only take true sentence to true sentences and we can tinker with this translation to end up with several other desirable features as well.[57]

So unrestricted inferentialists have a non-*ad hoc* response to tonk-based *reductio* arguments against their position—such arguments commit **The Translation Mistake** and thus should be rejected on wholly uncontroversial meta-semantics grounds. In addition, the unrestricted inferentialist can provide their own charitable, non-homophonic translation of a tonk language into English. But they still need to say something about how adding the tonk rules to the rules of English manages to change the meaning of English logical expressions like "not" and "and", and whatever they say needs to be compatible with the unrestricted inferentialist theory developed in section 2 above.

The apparent problem for the unrestricted inferentialist is that in section 2.2 the meaning constituting rules of inference for an expression like "and" were defined to be the direct rules in the language that involved "and". This was done to avoid having to admit that all valid rules that might contain "and" are meaning constituting for "and", so how can adding the tonk rules change the meaning of "and"? The tonk rules don't involve "and" (says our objector). This problem is only apparent, for recall that we were careful to characterize the notion of a rule *involving* or *being for* an expression in a very weak way, so that a rule R involves "and" just in case "and" occurs in some instances of the rule. Using this definition and assuming as we have been that the tonk rules are direct, meaning constituting rules, we can see that the tonk rules also involve

[57] See my (under review c).

"and" in the relevant sense and thus are (partly) meaning constituting for "and". This might seem counter-intuitive at first glance, but it follows directly from the unrestricted inferentialist theory of section 2.

We can put the formal oddity of a tonk language precisely: say that a full language L is *separable* if whenever Γ is a set of sentences in the language and ϕ is a sentence in the language and $\Gamma \vdash_L \phi$ then there is an L-proof of ϕ from Γ using only the structural rules and the rules for connectives appearing in sentences in Γ or in ϕ. Many restricted inferentialists reject full languages that are non-separable—in fact, this is the reason that many restricted inferentialists reject classical logic in favor of intuitionistic logic: as usually formulated in a single-conclusion natural deduction system, classical logic is non-separable.[58] The unrestricted inferentialist however, doesn't bar collections of rules that violate this constraint from being meaning constituting. As we have seen, this doesn't involve accepting a form of holism where *every* valid rule in the language must be meaning constituting, but it does involve allowing that some meaning constituting rules for an expression don't *explicitly* involve the expression.

This move still might be said to embrace holism of a certain sort, but if so it's a "holism" so benign as to barely be worth the name. The basic inferentialist approach to language is a way of making precise the oft-repeated slogan that "meaning is use", but if meaning is determined by use, then it's obvious that conjunctions (syntactically individuated) can appropriately be used, in a tonk language, in situations where their use is inappropriate in our language. A tonk language represents a possible pattern of linguistic use, and so the unrestricted inferentialist claims that the language is meaningful and the tonk rules are valid in the language. But just because a language is possible, doesn't mean it should be spoken. The tonk language is a practically useless language and should be avoided at all costs; but this practical criticism is of a different kind than the metaphysically loaded criticisms made of tonk by restricted inferentialists and others.

I haven't dealt with all proposed bad company problems, but the case of tonk is representative. Properly understood, *the bad company problem is no problem at all.* Failure to understand this is based on **The Translation Mistake**. Once this mistake is avoided, we can see that there is no easy route to refuting unrestricted inferentialism using bad company. Furthermore, a close look at

[58] Instances of Pierce's law ($\ulcorner(((\phi \rightarrow \psi) \rightarrow \phi) \rightarrow \phi)\urcorner$), a classical logical truth, require non-conditional rules for their proof. Separable bilateralist formulations of classical logic are available.

how inference rules and patterns of use determine meaning shows exactly *why* and exactly *how* the unrestricted inferentialist can claim both that the tonk connective is meaningful *and* that the tonk rules are valid not in our language, *but in a language in which the tonk rules are actually followed*.

4.2 The Very Idea of Truth by Convention[59]

The currently most influential argument against logical conventionalism is one that is made briefly, often in passing. The basic thought is that while conventions can determine which proposition a given sentence expresses, they (conventions) are powerless to make propositions true or false, so the very possibility of truth by convention is foreclosed. This argument is part of philosophical folklore; versions have popped up again and again in the philosophical literature. Here is Stephen Yablo, in a review of a book by Alan Sidelle, attributing the argument to Casimir Lewy:[60]

> All that conventions can do, he [Lewy] protests, is help determine what a sentence *says*, or what proposition it expresses; whether the proposition holds true is another question, to which the rules of usage are quite irrelevant. Such a view does not rule out conventional truth entirely, since our fiat might take the form: sentence S shall express a proposition that is (among other things) *true*. Far though from showing how p, the proposition expressed, could be conventionally true, this approach will be circular unless p has its truth value *independently* of the convention.[61]

Yablo called this observation "Lewy's point." Here is Paul Boghossian making a similar point when discussing an imagined proponent of the linguistic theory of necessary truth (which is essentially conventionalism about necessary truth in general):

> ...he...will want to say...that, in some appropriate sense, our meaning p by S *makes it the case that* p. But this line is itself fraught with difficulty. For how can we make sense of the idea that something is made true by our meaning something by a sentence?[62]

[59] See my (forthcoming *b*) for a full-length discussion of this argument.
[60] Sidelle (1989) and Lewy (1976); I think that a version of the argument can also be found in Pap (1958).
[61] Yablo (1992).
[62] Boghossian (1996).

And finally, here is Theodore Sider colorfully making the same basic point:

> There are a number of ways I can cause the proposition that my computer monitor has been thrown out the window to be true. I could throw the monitor out myself, pay or incite someone else to do it, and so on. I cannot, however, cause the proposition to be true simply by pronouncing. I can pronounce until I am blue in the face, and the computer will remain on my desk; my pronouncements do not affect the truth values of statements about computer monitors. Statements about conventions are different. These we, or at least our linguistic community, *can* make true by pronouncement. A convention consists of the activities of language users; that is why we can so easily make it the case that conventions exist...Only statements *about pronouncements*, for example statements about conventions, seem to be made true by our pronouncements. Statements about monitors, or bachelors, or rain, are about a part of the world we cannot affect simply by pronouncement. That it is either raining or not raining is about rain; I cannot affect the world in the matter of rain simply by pronouncement; therefore I cannot make it the case that either it will rain or it will not rain simply by pronouncement.[63]

Examples could be multiplied, but I will stop. The argument that all of these writers are making—which I call the *proposition making argument*—can be put like this: the conventionalist claims that for any sentence S expressing a logical truth, our conventions $\mathcal{C}$ *make it the case that* S is true, but S is true just in case S expresses proposition p and p. But our conventions only have the power to determine which proposition a sentence S expresses, they have no power to make it the case that p. Hence, conventionalism is false.

This argument has considerable intuitive force. In conversation, even philosophers with conventionalist sympathies have expressed concerns to me about its power, but I think its force is chimerical. I'm going to make three criticisms of the argument. The first is that the intuitive force against accepting that our conventions make it the case that it will rain or it will not rain derives from an understanding of the "makes it the case that" relation that is distinct from the sense used by conventionalists. Proponents of the proposition making argument seem to be understanding this as a *causal* relationship, so that our conventions somehow cause the truth of certain statements. However, as

[63] From Sider (2003), section 4.1.

Logical Conventionalism made clear, the conventionalist understands this relationship as explanatory rather than causal. It is a bit unnatural to put this explanatory claim in terms of the case-making terminology, which is probably why conventionalists themselves rarely ever do so. The key point is that conventionalists are not actually committed to the bizarre causal claim that proponents of this argument are saddling them with and so the argument is directed against a strawman.

This point alone suffices to answer the argument, but it's also worth noting that even in the conventionalist's explanatory reading of "makes it the case that" it isn't obviously correct to say that our conventions *make it the case* (i.e., explain) that it will rain or it will not rain. So if the conventionalist is forced into saying this, it could be a problem for them. But conventionalists do not need to accept this, because explanatory locutions like "makes it the case that" generate hyperintensional contexts. A context is hyperintensional just in case substituting intensionally equivalent items within that context can result in a change in truth value. It is generally admitted that explanatory contexts are hyperintensional. To illustrate, a recent textbook in the philosophy of language straightforwardly says "... explanatory contexts, contexts of the form '...because...', are hyperintensional contexts".[64]

So even though, necessarily, a sentence S is true just in case there is a proposition p such that S means that p and p, just because our coventions can't make the righthand side the case doesn't mean they can't make the lefthand side the case. God decreeing "let there be light" might have made it the case that light exists, but it surely isn't the case that either $2 + 2 \neq 5$ or God decreeing "let there be light" made it the case that light exists. Given this point, the conventionalist can admit that (i) our conventions made it the case that sentence S is true; (ii) Necessarily, sentence S is true if and only if there is a proposition p such that S means that p and p; and (iii) Our conventions did not make it the case that there is a proposition p such that S means that p and p. To think otherwise is to mistakenly treat the explanatory "makes it the case that" operator, or some other equivalent phrase, as generating intensional rather than hyperintensional contexts.

Once these points are noted, either separately or together, the force of the proposition making argument evaporates entirely. But just so it doesn't seem like victory has been claimed on a technicality, let's diagnose the *general* error

[64] Quoted from Daly (2013), page 282.

that underwrites this style of anti-conventionalist argument. The picture that Yablo, Boghossian, and Sider seem to be assuming is one in which abstract objects like *propositions* play some crucial, load-bearing role in meta-semantics. I personally have no problem assuming that propositions exist; I'm even okay assuming that propositions of every single type that philosophers have ever proposed (sets of possible worlds, structured collections of objects, etc.) all exist and can occasionally be used to do useful theoretical work. My worry with the picture of language lurking behind the proposition making objection is not ontological; rather, my worry is that the work done by propositions in these quotes is utterly mysterious.

The crucial point is that this picture of meta-semantics, in which propositions play some load-bearing role, is one that conventionalists are already committed to rejecting. The conventionalism that I've endorsed here is built against an inferentialist background in which no mention has been made of propositions. So even if some alternative meta-semantics can be used to argue against conventionalism, we would no longer have, as it first appeared, a neutral argument against truth by convention. We would only have an unsurprising argument from a conventionalism-hostile meta-semantics to the falsity of conventionalism.

In sum: for all of its knee-jerk plausibility, the proposition making argument against conventionalism fails. It fails because it (*i*) confuses two distinct senses of "makes it the case that"; (*ii*) assumes hyperintensional contexts are intensional in order to create problems for the conventionalist; and modifications and variations of the argument will (*iii*) rely upon a controversial anti-conventionalist vision of the way that language works.

5 Coda: New Dogmas of Empiricism

Here I've presented and defended both unrestricted logical inferentialism and logical conventionalism and argued that each of these theories withstands the most influential objection against it found in the literature. Positive theory-building of the kind I've engaged in here is among the most difficult tasks in philosophy; no doubt various points of detail require further elaboration or alteration. Still, I hope to have made it plausible that logical conventionalism can be unapologetically endorsed in contemporary philosophy. This is not a popular view. In fact, in discussing this matter with philosophers I have, surprisingly often, encountered a reaction bordering on anger. Logical conventionalism, for whatever reason, seems to be one of those views that gets the blood boiling.

That conventionalism is a dead theory has become a new dogma, not just of empiricism, but of philosophy as a whole. Still, I hope that even the unsympathetic will admit that the theory sketched here isn't *obviously* a non-starter and thus can't be dismissed out of hand. Logical conventionalism, properly understood, does justice to our intuitive conviction that logic isn't *out there*, in the world, while also doing justice to our conviction that neither is logic *in here*, in our minds. We can't discover truths about negation as we can discover truths about electrons, but nor is logical truth isn't so soft as to depend on our wishes and whims. Logical conventionalism does justice to both of these convictions and in so doing, allows for the development of a metaphysically plausible and epistemologically satisfying philosophical theory of logic. Whether or not the exact type of conventionalist theory offered here is ultimately found wanting, it is long past time for logical conventionalism to be revitalized.

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