

Pluralisms about Truth and Logic

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Abstract: In this dissertation I analyze two theories, truth pluralism and logical pluralism, as well as the theoretical connections between them, including whether they can be combined into a single, coherent framework. I begin by arguing that truth pluralism is a combination of realist and anti-realist intuitions, and that we should recognize these motivations when categorizing and formulating truth pluralist views. I then introduce *logical functionalism*, which analyzes logical consequence as a functional concept. I show how one can both build theories from the ground up and analyze existing views within the functionalist framework. One upshot of logical functionalism is a unified account of logical monism, pluralism and nihilism. I conclude with two negative arguments. First, I argue that the most prominent form of logical pluralism faces a serious dilemma: it either must give up on one of the core principles of logical consequence, and thus fail to be a theory of logic at all, or it must give up on pluralism itself. I call this “The Normative Problem for Logical Pluralism”, and argue that it is unsolvable for the most prominent form of logical pluralism. Second, I examine an argument given by multiple truth pluralists that purports to show that truth pluralists must also be logical pluralists. I show how this argument fails, and in fact, the truth pluralist is committed to logical monism. I then show how this type of logical monism can account for the logical behavior that the truth pluralist was hoping for, by engaging in a classical recapture program.

Pluralisms about Truth and Logic

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APPROVAL PAGE

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Chapter 1

Introduction: (Anti-)Realism, Truth and Logic

This dissertation concerns two theories: truth pluralism and logical pluralism. Truth pluralism, roughly put, is the view that there is more than one property of truth. Logical pluralism, equally simply put, is the view that there is more than one logical consequence relation. This dissertation investigates each of these theories in turn, and then the relations between the two views, and in particular whether they can be combined into a single, coherent framework. I argue that, while there may be some initial motivations to couple a pluralist theory of truth with a pluralist theory of logic, these motivations can be undercut and that truth pluralism is better paired with a logical monism. This is in fact good news for the truth pluralist, as I also argue that logical pluralism faces a serious coherency problem of its own which threatens to collapse the theory into either monism or conceptual incoherence.

Before we can begin with discussion of either truth or logic we must return to an older debate, that over realism and anti-realism. This debate concerns itself with whether our concepts of truth and logic are epistemically unconstrained, or whether they are in some way limited by the capacities of rational agency. I will argue that this debate is the key motivation underwriting pluralist views of truth, and that in fact pluralism about truth is the successor to the realist/anti-realist debates of yore.

1.1 Realism and Anti-Realism

Like many philosophical terms of art, the terms “realism” and “anti-realism” have become ambiguous many times over. As Crispin Wright succinctly puts it:

Of course, if there ever was a consensus of understanding about “realism”, as a philosophical term of art, it has undoubtedly been fragmented by the pressures exerted by various debates – so much so that a philosopher who asserts that she is a realist about theoretical science, for example, or ethics, has probably, for most philosophical audiences, accomplished little more than to clear her throat. [Wright 1992, p. 1]

This dissertation concerns only one of at least three possible realist/anti-realist paradigms; we will bring that paradigm into focus now.¹ Michael Dummett introduced the term “anti-realism” into the philosophical lexicon in order to distinguish views according to their commitments in the theory of meaning.² Dummett pointed

¹See [Wright 1992] for his distinction between three realist/anti-realist paradigms, esp. Chapter 1.

²Dummett introduced the term “anti-realism” in his paper [Dummett 1978c], presented in 1963 but not published until its inclusion in [Dummett 1978d].

to a number of views commonly called realist, and identified their commonality as a commitment to a conception of truth which is independent of our epistemic capacities to verify or falsify. As an example, consider the following proposition:

E: The number of stars in the universe at this point in time is even.

Due to our finite nature and the size of the universe we will never be able to determine whether E is true or false; any experience we can have of the universe which would verify or falsify it would be limited to a very small part of the universe. Nonetheless, Dummett's realist claims that either E is true or false - the truth of the matter is independent of our epistemic capacities. The Dummettian realist's theory of meaning determines that the proposition must be true or false. Dummett's anti-realism rejects this theory of meaning, proposing instead one which ties meaning to our capacities as rational agents, thus embodying the Wittgensteinian thesis that "meaning is use". For the Dummettian anti-realist, truth is tied to our epistemic capability to understand, verify or falsify. In this way the Dummettian realism/anti-realism paradigm is one about the theory of meaning or the semantics of our language. Call these views *semantic realism and anti-realism*.³

Dummett's original characterization between semantic realism and anti-realism concerned the theory of meaning. According to Dummett, the primary disagreement

³While it is the semantic realism - anti-realism debate which informs the rest of the dissertation, it will be helpful to briefly distinguish this debate from the other two paradigms Wright identifies. The second paradigm captures the debate between realists and error theorists. Error theorists are happy to accept the semantic realist's theory of meaning, but are anti-realists insofar as they reject that there are any truths about the subject which they are anti-realists about. For example, [Mackie 1977] rejects that there are any ethical truths because there are no ethical properties which could make ethical propositions true. The final paradigm concerns the debate between realists and expressivists. Expressivists such as [Ayer 1936] and [Hare 1952] claim that ethical discourse is not genuinely representational, and thus ethical statements are not actually truth-evaluable.

between semantic realists and anti-realist lies in what theory of meaning they accept. The realist almost universally accepts a truth-conditional theory of meaning, which appeals to conditions which we may not be able to recognize. In contrast, the anti-realist's theory of meaning is a verificationist or justificationist theory, concerned with the conditions under which we could verify or justify the assertion of a given proposition.

Talk of theories of meaning in the Dummettian sense has widely fallen out of favor, having accumulated too much baggage from decades of debates and iterations of Dummett's global arguments for an anti-realist theory of meaning, language and logic. [Wright 1992] is a watershed moment in the Dummettian tradition, shifting discussion from theories of meaning to theories of truth, stripping away much of the unneeded parts of the literature in the process to focus on perhaps the most central concept in philosophy: truth.

Following [Scharp 2013] we can identify three types of theories of truth: theories of the nature of truth, philosophical approaches to the alethic paradoxes, and formal theories of truth.⁴ This dissertation is concerned almost wholly with the first type of theory. A theory of the nature of truth is concerned with the metaphysics of truth. In particular, such theories are concerned with what the property of being true, or what it means for a proposition to be true. Theories of the nature of truth (henceforth "theories of truth") are concerned with explaining what it takes for a proposition to have this property.

Consider for example what may be the two most historically popular theories:

⁴[Scharp 2013, p. 12].

the correspondence theory of truth and the coherence theory of truth.⁵ The correspondence theory of truth holds that truth consists in correspondence to facts, or more generally, with the world.⁶ As these are facts about the world they may potentially outstrip any of our epistemic capacities – there may be things which are true in virtue of correspondence which we can simply never come to know, even in principle. The coherence theory eschews these references to the external world, and holds that truth consists in coherence with a set of propositions.⁷ As coherence is a matter of our language or our beliefs, the coherence theory’s account of truth can never be out of our reach; if a proposition is true, then it must be knowable (at least in principle).

1.2 Realism/Anti-Realism and Truth Pluralism

In their traditional forms these theories are taken to apply globally, to all parts of language at once. Truth pluralism challenges this assumption, arguing that we can instead approach language one “domain” at a time. Intuitively a domain of discourse (henceforth, domain) is an area or subject matter. We all know and recognize an intuitive difference between, for example, morality and mathematics. Consider the

⁵According to the 2009 PhilPapers survey of academic philosophers from leading departments of philosophy in the English-speaking world, a majority of contemporary philosophers either accept or lean towards the correspondence theory of truth. Epistemic theories of truth, of which the coherence theory is one type, have waned in popularity in the last twenty years, only garnering about 7% support. See [Bourget and Chalmers 2014] for a detailed discussion of the general survey results, and <https://philpapers.org/surveys/results.pl> for the actual survey data.

⁶See [David 2016] for a general overview of the correspondence theory of truth, or [Russell 1912], [Austin 1950] and [David 1994] for some notable primary sources.

⁷See [Young 2018] for a historical overview of coherence theories of truth, or [Bradley 1914] and [Blanshard 1938] for some notable primary sources.

following proposition:

M: Mikhail is blue-grey.

M is a proposition about something in the empirical world, namely a cat who is blue-grey. Let us call such propositions “empirical propositions”, because it is about something empirical. We intuitively recognize many such domains and can divide up our language and ways of speaking into a number of different domains, including at the least: the empirical, aesthetic, moral and mathematical domains.

Following [Edwards 2018] we say that a domain has two components.⁸ The semantic component of a domain is its singular terms or predicates, while the metaphysical component is its objects and properties. What domain a proposition belongs to is determined by the proposition’s predicate. In the example above, both the predicate and the object are in the empirical domain, and thus the proposition belongs to the empirical domain. This can be contrasted with the following proposition:

MB: Mikhail is beautiful.

MB concerns the same object belonging to the empirical domain, but the proposition’s predicate is an aesthetic one, and thus we say that MB belongs to the aesthetic domain, rather than the empirical.

We will consider fairly wide domains, for example talking about the mathematical domain rather than the arithmetical domain and the geometrical domain and so on.⁹ Further, we will usually only be concerned with propositions which fall into a single

⁸[Edwards 2018, p. 77].

⁹While the standard usage of “domain” in this literature is fairly wide, some philosophers use it in a more narrow sense, see e.g. [Kouri Kissel and Shapiro 2017].

domain; for more on whether propositions can fall into multiple domains see [Sher 2004], [Lynch 2009], [Lynch 2013], [Pedersen and Wright 2018], [Wyatt 2013].

The traditional, monistic theories of truth hold the same theory of truth across all domains: what makes a moral proposition (if anything) true is just the same as what makes a mathematical proposition true (if anything). In this way each theory is a true rival to the other – they cannot both be correct, as what each says is incompatible with the other. Truth cannot consist both in correspondence and coherence.

Truth pluralism challenges the monist assumption, arguing instead that we can restrict a theory of truth to a particular domain, such that what makes an empirical proposition true is different than what makes a moral proposition true. In this way there are multiple ways of being true. We will thus call theories which posit more than one way of being true *pluralist* theories of truth. Pluralism about truth finds its origins in the work of Crispin Wright, in particular his [Wright 1992], and is given its fullest explication and defense in the work of Michael P. Lynch, most notably his [Lynch 2009].

What is the relation between semantic realism/anti-realism, theories of meaning and theories of truth? According to Dummett, semantic realism amounted to an acceptance of the truth-conditional theory of meaning, and this, in turn, led to a correspondence theory of a truth. Following [Wright 1992], we can eschew most talk of theories of meaning, including the truth-conditional theory of meaning, focusing instead on the correspondence theory of truth as our paradigmatic realist theory of truth. This is because the correspondence theory puts forth a picture where either the

truth of propositions or the facts which make them true are in principle epistemically inaccessible to us. An anti-realist theory of truth then is a theory of truth which does not violate this epistemic constraint, like the Dummettian theory alluded to above, or the traditional coherence theories of Bradley and Blanshard.

In CHAPTER 2 I immediately draw on the semantic realism/anti-realism debate. I argue that the connection between this debate the pluralist theories of truth has been woefully undersold by contemporary truth pluralists, despite its earliest proponent arguing from it to pluralism about truth. I argue that pluralist theories of truth are essentially a combination of accepting both realist and anti-realist intuitions, and that we should take this lesson to heart.

If we view pluralist theories of truth in this way they wear their theoretical motivations on their sleeves. I argue that not only is this helpful for understanding the theories, but that we can categorize various pluralist theories according to how realist or anti-realist they are. I show how this is possible by introducing two methodological attitudes: *methodological fundamentality* and *theoretical fundamentality*.

Consider a pluralist theory of truth as a combination of two notions or aspects: a realist notion, and an anti-realist notion. We say that a theory of truth treats its realist notion as methodologically fundamental if it privileges this notion over the other notion(s) of the theory. For example: a truth pluralist may hold that the correspondence theory of truth is the default theory of truth for a given domain of discourse, and we only need to be pluralists and accept a non-correspondence account of truth where correspondence fails to make sense. That theory is, at its heart, realist – anti-realism is only on the table when realism fails to work. In my terms: that

theory holds realism as methodologically fundamental. The same considerations can apply to anti-realist theories.

Treating a truth notion as methodologically fundamental is not the only way for a pluralist theory to privilege one of its notion. To show this, I introduce another, subsidiary notion, *theoretical fundamentality*, which is when a theory not only methodologically privileges a given truth notion, but actually defines its secondary truth notion(s) out of the first. In these cases there is no understanding the secondary notion without having grasped the primary notion.

I use these two ways of understanding a truth theory's theoretical commitments to interpret various truth pluralisms, and argue that my way of understanding the field cuts across another distinction in the truth pluralist literature – the strong-moderate pluralism distinction – and better distinguishes views from one another.

I end the chapter by introducing a new version of truth pluralism, which holds no truth notion as methodologically or theoretically fundamental. I call this view *methodological pluralism about truth*. I argue that methodological pluralism about truth stays methodologically neutral between its realism and anti-realism, and thus better accounts for both of its starting motivations.

1.3 Theories of Logic

The other half of this dissertation is concerned with the concept of logical consequence. Theories of logical consequence generally take the form of formal systems. It is these formal systems which tell us which arguments are deductively valid or in-

valid. There are many such formal theories, but none are as championed as “classical logic”, the two-valued logic taught almost universally in introductory logic courses. Other alternative logical theories include intuitionistic logic, a logic which does not adhere to either the Principle of Bivalence or the Law of Excluded Middle, and various relevance logics, which deny the Principle of Explosion.¹⁰

As was the case with truth, traditionally theories of logic were taken to apply globally, to all domains. Unlike in the case of truth, logical theories have a potential way to avoid conflict. One can interpret each logic as being about a different subject matter, namely the particular validity relation of the logic. In this way, classical logic and intuitionistic logic are not in conflict - classical logic only describes the classical account of validity, and intuitionistic logic only describes the intuitionistic account of validity. In this way one might claim that a change in logic is a change of subject.¹¹

There are thus multiple potential ways to formulate a logical pluralism: by restricting the logics to particular domains, as in the case of truth pluralism, or by claiming they are describing different subject matters altogether. The former accounts, *domain-dependent logical pluralisms* are defended e.g. by [Lynch 2009] and [Kouri Kissel and Shapiro 2017].¹² The latter accounts include [Carnap 1937]. Or

¹⁰Classical logic is generally taken to be the “default” logic and is not always given a philosophical defense. Those that do defend classical logic explicitly include [Quine 1986] and [Rumfitt 2015]. Intuitionistic logic was first introduced by [Heyting 1930a-c] and is given its fullest defense by [Dummett 1991]. For a defense of relevance logic, see [Anderson and Belnap 1975] and [Routley et al. 1982].

¹¹For a fuller discussion of “change in logic, change in subject” see [Shapiro 2014], who identifies what he calls the “Dummett-Quine-Carnap” thesis. Shapiro approaches this issue from considering the logical connectives of various theories, rather than the logical consequence relations themselves.

¹²[Kouri Kissel and Shapiro 2017] identify their view as a domain-dependent logical pluralism, but

a logical pluralist may claim that their pluralism is completely general, relativizing to neither language nor domain; such pluralists include [Beall and Restall 2006] and [Cook 2010].

In CHAPTER 3 I show how we can analyze various logical theories, including logical pluralism, in a way which allows us to see where their disagreements truly lie. I do so by analyzing the concept of logical consequence through functionalism, a common form of conceptual analysis that has been used to fruitfully analyze various philosophically central concepts, including mental state concepts, moral concepts and the concept of truth.

I begin the analysis by examining a set of potential core theoretical principles of the concept of logical consequence, and use them as a basis of the theory I call *logical functionalism*. I argue that one of the most important upshots of logical functionalism is its ability to provide a foundation for logical pluralism: the view that there are many correct logics. It does this by interpreting the concept of logical consequence as a multiply-realizable concept, with many formal systems realizing the functional role and thus counting equally as logic.

I then show how logical functionalism can interpret some traditional views in the philosophy of logic. In analyzing the views via logical functionalism I provide an epistemology of logical disagreement. By understanding logical theories in functionalist terms, we can identify two ways for logical theories to disagree: by disagreeing about the core theoretical principles defining the functional role of the concept, or by

their view is a bit more fine-grained than the picture of domains I give above, being restricted to particular mathematical theories. [Shapiro 2014] would also count as a domain-dependent logical pluralist if we individuate domains this finely.

disagreeing about what realizes that role. I apply this lesson to several disagreements in the philosophy of logic to show how logical functionalism can make headway where previously there was confusion and talking past one another.

In CHAPTER 4 I argue that the most prominent form of logical pluralism faces a serious dilemma: it either must give up on one of the core principles of logical consequence, and thus fail to be a theory of logic at all, or it must give up on pluralism itself. I call this “The Normative Problem for Logical Pluralism”.

The Normative Problem for Logical Pluralism arises for forms of logical pluralism which hold that, if a logic is correct at all, it is correct everywhere. Take for example, one logic which holds that $\neg\neg A \vdash A$ and another which holds that $\neg\neg A \not\vdash A$. What should the logical pluralist who accepts this logic believe if she believes $\neg\neg A$? Logic is normative, and thus she should believe the conclusions of valid arguments whose premises she believes. But one of her logics demurs from this, creating a conflict.

I argue that this conflict is unsolvable. It is insufficient to believe only that which all logics say are valid, as that trivializes the weakest logic. Likewise, it is unacceptable to believe only that which the weakest logic says is valid, as that makes the strongest useless.

I show that this problem is not merely a problem about which theory is most useful. According to the analysis given in CHAPTER 3, to be a logic is to fulfill its functions, including its normative functions. Thus if a logic is not normative, it is not a logic at all, and the Normative Problem for Logical Pluralism threatens to collapse pluralism. Likewise, if the pluralist gives up on the normativity of logic, they give up on logic itself, as logic is, at its conceptual core, pluralist. There is no

escape, and thus logical pluralism of this sort is doomed to fail.

1.4 From Truth Pluralism to Logical Pluralism?

In CHAPTER 5 I explore the connection between theories of truth and theories of logic from a Dummettian perspective. [Dummett 1991] argues that we should approach metaphysical questions “bottom up”, by first determining our theory of meaning. Our choice of theory of meaning will, he argues, determine our theory of logic as well. To see why, consider again the realist’s theory of meaning. The realist’s commitment to the truth-conditional theory of meaning guarantees that every proposition is either true or false. This ensures that the realist accepts the Principle of Bivalence, and likely its object-language counterpart, the Law of Excluded Middle. In contrast, the anti-realist rejects the Principle of Bivalence, making room for the potential that some propositions can never be verified as true or false. Given this, a non-classical logic is needed, and Dummett argues that intuitionistic logic best matches the commitments of the anti-realist theory of meaning.

In CHAPTER 5 I examine an argument given by multiple truth pluralists that purports to show that truth pluralists must also be logical pluralists. The argument draws upon the Dummettian principle above: one’s theory of truth determines one’s logic. Thus, if truth is many, as the truth pluralist argues, then logic must be many as well.

I show how this argument fails, and in fact, the truth pluralist is committed to logical monism. Truth pluralism is not quite as pluralist as it makes itself out

to be – in its most common forms, it has a generic truth predicate which is weak and universal. I argue that it is the logic of this weak generic truth predicate that lies at the center of truth pluralism, and this logic is in fact a non-classical logic: intuitionistic logic.

I then show how this type of logical monism can account for the logical behavior that the truth pluralist was hoping for, by engaging in a classical recapture program. I draw a distinction between logical and metaphysical principles, and argue that the metaphysical principles the truth pluralist wants can be added as premises to any intuitionistic argument easily, thus giving the truth pluralist what they want, without the added theoretical apparatus. The upside of this view is that this distinction between logic and metaphysics was always available to the truth pluralist due to the Dummettian aspects of their theory.

1.5 Conclusion

If the chapters of this dissertation are successful, they combine to form an analysis of two of philosophy's most central concepts: truth and logical consequence. Taken together, the dissertation provides argues for the following theses.

First, there are intimate and underappreciated connections between truth, logic and the realism/anti-realism debate which once dominated much of philosophy. While moving on from Dummett's construal of these issues in terms of meaning was generally a success, it unfortunately obscured the relation between theories of truth and the realism/anti-realism debate – a relationship which should not be forgotten.

Second, the type of conceptual analysis which has been so successful in the literature on theories of truth can be fruitfully applied to the concept of logical consequence. Logical functionalism allows us to not only make headway on how we think about and build theories of logical consequence, it allows us to analyze and diagnose disagreements between rival theories of logic as well.

Third, logical pluralism, at least in its most popular form, faces a serious issue of coherence. It seems that two of its most central tenets: normativity and formality, are at odds with one another, in a way that is nearly impossible to settle. Abandoning one or the other forces the philosopher of logic into potentially adopting an altogether new concept of logical consequence.

Fourth, the connection between truth pluralism and logical pluralism is not as simple as it may first appear. While truth pluralists have argued that their view at least plausibly leads to a form of logical pluralism, they do so in part by failing to properly capture the core of their theory. This core motivates a non-classical logic, and the non-classical logic can do all the explanatory work that logical pluralism did for the truth pluralist, without the added theoretical baggage.

The third and fourth theses combine into a fifth, final thesis: truth pluralism and logical pluralism are not easily combined into a single, coherent framework. However this is a welcome view from the Dummettian perspective. CHAPTER 2 argues that truth pluralism is essentially the neo-Dummettianism that was promised. It should come as no surprise then, that a Dummettian, monistic theory of logic like that offered by CHAPTER 5 would be reasonably paired with such an account.

Chapter 2

Methodological Pluralism about Truth

2.1 Introduction

Truth pluralism is the view that there are many ways of being true. Further, these ways of being true vary with the domain of discourse. While propositions about the physical world, e.g.:

SE There are an even number of the stars in the universe.

may be true in virtue of some correspondence with the world, this does not seem plausible for other domains of discourse. Consider a proposition about morality, e.g.:

SC Sacrificing a younger child so an older child may live is morally permissible.

If SC is true, then it seems true not in virtue of corresponding with some fact in the physical universe, but in virtue of something else, perhaps coherence with a set of other moral propositions.¹ Let us call this feature *domain-variability*:

DOMAIN-VARIABILITY: Ways of being true vary with domains.²

Nearly every truth pluralist account in the literature accepts DOMAIN-VARIABILITY and treats it as essential to their pluralism.³ But why believe that ways of being true vary with domains? While we cannot rehearse here every truth pluralist's motivation for accepting DOMAIN-VARIABILITY, I want to suggest that nearly all pluralists share a common motivation for accepting it. Consider what Crispin Wright notes as one of his key motivations for truth pluralism:

A pluralistic conception of truth is also philosophically attractive insofar as an account which allows us to think of truth as constituted differently in different areas of thought might contribute to a sharp explanation of the differential appeal of realist and anti-realist intuitions. [Wright 1998, p. 58]

Or consider more recently, [Pedersen and Lynch 2018]:

A principal reason for adopting truth pluralism is that the view provides a framework for understanding the intuitive appeal of respectively realism

¹Barring the truth of some fully-reductive moral naturalism, that is.

²This is similar to what [Beall 2013, p. 324] calls "language-relative truth pluralism".

³The only exception I am aware of is [Beall 2013], if one accepts that his deflated truth pluralism is a pluralism about truth as opposed to a pluralism about *truth-predicates* which may be unrelated to the actual philosophically robust concept of truth. Note also that Beall's pluralism does not accept DOMAIN-VARIABILITY, which again sets it far apart from other views in the literature.

and antirealism with respect to different domains. The intuitive appeal stems in part from the observation that both traditional realist accounts of truth, such as the correspondence theory, and traditional antirealist accounts, such as the coherence theory, face a similar pattern of failure. Theories that seem plausible in some domains fail to seem as plausible in others. [Pedersen and Lynch 2018, p. 1]

Nearly every truth pluralist account in the literature explicitly includes at least one realist and one anti-realist domain.⁴ My claim is that DOMAIN-VARIABILITY is itself entailed by a more basic principle:

(ANTI-)REALISM-VARIABILITY: The metaphysical account of domains varies; at least one domain is realist while at least one other is anti-realist.

These two features are at the core of nearly every extant account of truth pluralism. Truth pluralism, properly understood, is a combination of realism and anti-realism into a single, coherent framework. It is this motivation which underwrites the more obvious aspect of truth pluralism – that there are many ways of being true which vary by domain. It is in this way that truth pluralism is the spiritual successor to the realism/anti-realism debates which dominated analytic philosophy for decades

⁴This includes the most developed accounts of truth pluralism in [Wright 1992] and [Lynch 2009], as well as e.g. [Cotnoir and Edwards 2015], [Edwards 2011], [Pedersen 2006]. [Cotnoir 2013], does not explicitly call for dividing domains by realism/anti-realism but provides a semantic framework for truth pluralisms which have certain domains which maintain classical logic and others which have paracomplete logics, a conclusion commonly held to follow from adopting realism and anti-realism respectively. Another potential outlier is [Gamester 2017], who does divide up his truth pluralism into realist and anti-realist parts, but the anti-realist parts are motivated by expressivism rather than the traditional metaphysical/semantic debates which the other pluralists are concerned with.

after Michael Dummett first introduced his semantic anti-realism in [Dummett 1959]. Truth pluralists are those who recognize that both camps got something right – that there were intuitions from both realism and anti-realism that should be captured by our theory of truth.

In what follows, I will take this understanding of truth pluralism as a combination of realism and anti-realism and expand upon it by considering the extent to which various truth pluralisms are realist or anti-realist, in virtue of their methodological commitments. After drawing two distinctions which will allow us to categorize various pluralist views as realist or anti-realist I will introduce another form of truth pluralism, *methodological truth pluralism*, which does not privilege either its realist or anti-realist aspects.

2.2 Truth Pluralism as (Anti-)Realist?

I have argued that truth pluralism is best understood as an attempt to combine realist and anti-realist intuitions into a single framework. But this leads naturally to a further question: should the truth pluralist theory itself be categorized as a form of realism, anti-realism, or neither? That is: how should we characterize truth pluralism?

Some surveys of the truth literature have lumped pluralist views in with anti-realist ones.⁵ There are a number of reasons one might do this. Realism has been the dominant position throughout history and thus there tends to be a strong presumption in its favour such that any deviation from it is characterised as a type of

⁵See for example [Burgess and Burgess 2014] and [Künne 2005].

anti-realism (and of course pluralism is a deviation from global realism).

On the other hand, there is some reason to consider truth pluralism as a form of realism. Recalling the discussion of anti-realism in the previous chapter, anti-realism is characterized in terms of its epistemic constraint: if a domain is anti-realist then all of its truths are knowable in principle. But if a truth pluralism contains at least one realist domain, then there will be some unknowable truths, violating the anti-realist constraint, making it a form of realism.

While each of these positions have merit, I want to suggest a more disciplined way of determining how a given truth pluralist theory should be characterized. To do so, we must examine the methodological accounts of the theories in question. As I've already noted, truth pluralists are pluralists precisely because they wish to account for competing realist and anti-realist intuitions. But some truth pluralists privilege one set of intuitions over the other, thus giving realist or anti-realist a privileged position in their theory. Consider for example Crispin Wright's minimalism:

A basic anti-realism – minimalism – about a discourse contends that nothing further is true of the local truth predicate which can serve somehow to fill out and substantiate an intuitively realist view of its subject matter...Because of its unassuming character, this minimalism, I suggested should always be viewed as the “default” stance, from which we have to be shown that we ought to move. [Wright 1992, p. 174]

Wright accepts a core Dummettian view that realism is a substantive doctrine, one oft-assumed but little argued for, which requires further justification over and

above anti-realism. Nowhere is this clearer than in Wright’s discussion of his anti-realist account of truth, which he calls superassertibility, and its relation to other accounts of truth:

If nothing bars the interpretation of a discourse’s truth predicate as superassertibility, then it is open to us to think of the truth of its statements as consisting merely in their durably meeting its standards of warranted assertion – a property for which all minimally assertoric sentences are eligible. But if truth and superassertibility can be prised apart – if it can be shown that superassertibility is a bad interpretation of the truth predicate in question – then the thought is at least strongly suggested that what confers truth on a statement is not a matter of its meeting standards internal to the language game, as it were, but its fit with an external reality. [Wright 1992, p. 142]

Here Wright repeatedly emphasizes that superassertibility – his pluralism’s anti-realist aspect – has methodological priority over alternative accounts. For example, each sentence is couched in conditionals (“But if truth and superassertibility can be prised apart...”). For Wright, if a domain of discourse is eligible for truth, then it is first granted superassertibility as its truth predicate. If later it is shown that this will not do – that superassertibility fails as an interpretation of the truth predicate for the discourse – then we move to another, more realist account of truth. As Wright claims, “it is realism which must try to make good its case” by showing that anti-realism is unacceptable.⁶

⁶[Wright 1992, p. 174].

While Wright’s pluralism is amenable to having realist aspects, its core is firmly anti-realist.⁷ Wright gives clear methodological priority to his anti-realism; anti-realism is the default from which we must move. This of course does not rule out his adopting realism in a particular domain, but it does make it more difficult to do so. It is in this way that Wright’s pluralism is best understood as a form of anti-realism.

Not all truth pluralists follow Wright in privileging anti-realism. It is perfectly coherent to formulate a truth pluralism which not only does not privilege anti-realism but instead privileges realism; consider for example [Edwards 2011]:

...although the notion of truth as correspondence to the facts might fit our domain of discourse about the material world, a different notion of truth – perhaps one with less metaphysical baggage, constructed out of coherence, or justification or warrant – may fit the domains in which the correspondence notion looks problematic. [Edwards 2011, pp. 31-2]

The principle here is the same as in the case of Wright and anti-realism. The realist account of truth (correspondence) is the default, and one from which we move if it cannot be made to work in some discourse, e.g. in the moral domain. Edwards’ truth pluralism is, at its core, a realist account.

When a pluralist account of truth sets either realism or anti-realism as the default for theory it is treating that aspect of the theory as being more *methodologically*

⁷It is not even clear that [Wright 1992] is truly a pluralist account, insofar as he never explicitly calls for more than one truth predicate. He notes ways in which we may work our way up from a superassertibility as the truth predicate of a given domain to a more realist truth predicate, e.g. some form of correspondence, but never explicitly adopts a second truth predicate. Wright is a pluralist because he believes the concept of truth does not rule out the possibility of plurality of predicates; as he notes: “Minimalism is thus at least in principle open to the possibility of a *pluralist* view of truth” [Wright 1992, p. 25, *emph. original*].

fundamental. Wright holds anti-realism to be methodologically fundamental and realism to be secondary and vice versa for Edwards. This is a methodological (or epistemic) attitude that the pluralist has towards one aspect of their view: they believe that we more entitled to it, or that it's prima facie more plausible, or simply that it is the default view. We can thus say that a view holds that (anti-)realism is *methodologically fundamental* if (anti-)realism is the default account of truth for a given domain.

It may be helpful to introduce an analogy here. Imagine the truth pluralist constructing her theory as an assembly line worker. Down the line come various boxes, our domains, in a random order. The truth pluralist knows that each domain box will need to be stamped with a label: this one here is a realist box, that one is an anti-realist box, and so on. Like most pluralists, she has two stamps: one for her realist boxes and the one for her anti-realist boxes. The productive assembly line worker will put the stamp most likely to be used in her dominant hand so as to speed up the process. So which stamp goes in her dominant hand? It depends on whether she thinks the default status of the boxes is realist or anti-realist. The stamp she privileges will be the one which is what I am calling methodologically fundamental in her practice.

We set out with the purpose of being able to determine whether truth pluralism was itself a realist or anti-realist view. With the notion of methodological fundamentality in hand we are able to distinguish pluralist views into two camps: those which hold realism to be methodologically fundamental and those which hold anti-realism to be methodologically fundamental. We can call the former views 'realist' and the

latter ‘anti-realist’ for shorthand. This allows us to formulate an answer to the question of whether a given truth pluralist account is realist or anti-realist, depending on its methodological commitments.

Now I wish to introduce a further distinction, built upon methodological fundamentality, which will allow us to sort truth pluralist views. Consider [Lynch 2009]’s manifestation functionalist pluralism. Lynch introduces a representationalist correspondence theory as his first account of being true. As he notes, this way of being true seems incompatible with the possibility of moral propositions being true, leading him to consider a coherence theory of truth for moral propositions. He proposes the property of *supercoherence*:

SUPERCOHERENCE: A moral proposition P *supercoheres* with a moral framework F iff P coheres with F at some stage of inquiry i_n and continues to do so at any epistemically improved stage i_{n+1} . [Lynch 2009, pp. 171-2]

While it is easy to make sense of how supercoherence may be a way of being true, Lynch finds the account lacking, as it is “too permissive”, and leaves the possibility that even “craziest moral views” built on false empirical judgments may turn out to be supercoherent, and thus true.⁸ This leads him to conclude that:

...it is not enough for the fabric of our moral thought to be woven tightly – to be durably coherent – it must also be nailed down, or grounded on a firmer floor. [Lynch 2009, p. 173]

⁸[Lynch 2009], p. 173.

Lynch thus introduces his final, anti-realist account of truth, *concordance*:

CONCORDANCE: A moral proposition P is *concordant* iff P supercoheres with a moral framework F and F 's morally relevant non-moral judgments are true. [Lynch 2009, p. 176]

Note that “true” appears in the definition of concordance, which means that it can only be (non-circularly) understood when combined with another theory of truth, like his representational correspondence theory. Lynch defines concordance out of his representational correspondence theory, and thus the correspondence theory plays a crucial and ineliminable role in his second account of truth. Lynch’s concordance is thus essentially made up of two parts: an anti-realist theory (supercoherence) and a realist theory (representational correspondence).

Obviously this requires that Lynch treat his realist aspect as methodologically fundamental, but interestingly it also goes much further. For Lynch, realism is what I will call *theoretically fundamental*, insofar as another part of his theory is defined (partially) in virtue of the realist aspect of his pluralism. This is to be differentiated from those hold that realism is methodologically fundamental, e.g. [Edwards 2011]. Edwards does not suggest adopting an anti-realist account built out of some sort of correspondence, but rather one built out of entirely separate, epistemic resources like coherence or warrant.⁹ Likewise, Wright’s pluralism, while methodologically anti-realist, does not attempt to build up a notion of correspondence from superassertibility.

⁹Edwards does not suggest any particular theory of truth to be contrasted with correspondence, although he mentions some candidates which have previously been advocated as monistic views of truth ([Edwards 2011, p. 32]).

Let us take stock now. I have introduced two distinctions to help us determine whether a given pluralist account is realist or anti-realist. What I called methodological (anti-)realists treat (anti-)realism as the default, methodologically privileged account of truth. Theoretical (anti-)realists not only treat (anti-)realism as methodologically privileged, but they build their secondary account of truth out of the default one. Separating these into exclusive categories, we can sum the discussion up with the following table:

	METHODOLOGICALLY FUNDAMENTAL	THEORETICALLY FUNDAMENTAL
REALIST	[Edwards 2011]	[Lynch 2009]
ANTI-REALIST	[Wright 1992]	???

As of now, there is no truth pluralism in the literature which treats anti-realism as theoretically fundamental. It's not clear how such an account would go or what would motivate it over a run-of-the-mill realist theory like a form of correspondence. One potential avenue to forming such an account would be to formulate a realist analogue of concordance, *r-concordance*. Lynch tied concordance down to a realist account of truth via the clause about the framework's morally relevant non-moral judgments, but there does not seem to be an analogue ready to build r-concordance. This is because while concordance draws upon a set of propositions that any one proposition must cohere with, realist accounts of truth make reference to things in the world, not things which can themselves be true. Consider for example the representational account from [David 1994, p. 31]:

CORRESPONDENCE: The proposition that P *corresponds* iff there is a state of affairs S such that P represents S and S obtains.

What makes the proposition true is the representational relation between the proposition and the state of affairs. But the state of affairs is not a truthbearer, and thus cannot be true via an anti-realist account of truth. R-concordance, at least in its most straightforward form, is a non-starter. But while we cannot formulate a strictly analogous account of truth, there may be some hope left for an account of truth which treats anti-realism as theoretically fundamental. Recall that anti-realist theories have a requirement of epistemic constraint: if P is true, then P must be knowable. We can place this constraint on r-concordance like so:

R-CONCORDANCE: A proposition P is *r-concordant* iff P corresponds and P is knowable.

Formulated this way, a proposition is only r-concordant if it both represents a state of affairs which obtains and that state of affairs is epistemically accessible. But this does not mean that r-concordance treats anti-realism as theoretically fundamental. While the epistemic constraint characteristic of anti-realism is part of r-concordance, no other account of truth is used to define it, and thus it cannot be an example of theoretical fundamentality. R-concordance counts as an anti-realist theory of truth, but not as an example of a theory of truth defined in terms of an anti-realist account of truth. Whether such a theory can be formulated remains an open question.

It is worth stopping here to consider how this divvying up of the conceptual landscape compares with the other, major way of categorizing truth pluralist views.

All truth pluralists agree that there are multiple ways of being true, i.e. that there are multiple truth properties. *Strong truth pluralists*, like [Kim and Pedersen 2018] claim that there is no truth property had by all the true propositions, while *moderate truth pluralists*, like [Lynch 2009] believe that there is a generic truth property which all the true propositions have, in virtue of having one of the other, varying truth properties. While much of the literature up until this point has been dominated by moderate truth pluralisms, strong truth pluralism has recent defenders, including [Kim and Pedersen 2018], [Cotnoir 2013] and [Ferrari, Morrucci, Pedersen, ms.]. We can also create a table for this distinction:¹⁰

STRONG TRUTH PLURALISM	MODERATE TRUTH PLURALISM
[Wright 1992] [Cotnoir 2013]	[Lynch 2009] [Wright 2013]
[Kim and Pedersen 2018] [Ferrari, Morrucci, Pedersen, ms.]	[Edwards 2011]

Notice that this way of dividing truth pluralist views cuts across the fundamentality distinctions I introduced. The strong/moderate distinction does not track the realism/anti-realism distinction whatsoever. While [Lynch 2009] and [Wright 1992] differ according to the strong/moderate distinction, it is not because they fall on opposite sides of the realist/anti-realist debate, but rather because one advocates for a generic truth property and one does not.¹¹ If we are concerned with distinguishing

¹⁰[Cotnoir 2013] reads [Wright 1992] as a strong truth pluralist. It is not clear that this is the only reading of the text, and Wright’s later work is explicitly a form of moderate pluralism. However the reading is supported enough to worth including here.

¹¹As I note in the previous footnote, the placement of [Wright 1992] is contentious. I prefer to read Wright as a moderate pluralist, who would thus end up in the same camp as [Lynch 2009]. This is despite their views being quite different when it comes down to methodology and motivations; nearly complete opposites in fact. On either way of interpreting Wright I do not believe that the strong/moderate distinction best captures the disagreement between these views.

types of truth pluralism based on their core commitments, I suggest that we do so in virtue of my fundamentality criteria.

2.3 Methodological Pluralism about Truth

I have introduced two ways in which a truth pluralist can be (anti-)realist: by holding (anti-)realism as methodologically or theoretically fundamental. While these distinctions allow us to answer the question of whether a given truth pluralist theory is realist or anti-realist, and they allow us to distinguish various truth pluralist views in a new way according to their core, methodological commitments, the picture I have provided is not yet sufficient to capture the full breadth of truth pluralist views. So far when discussing realism and anti-realism I have only talked about pluralist views which privilege either one or the other theory. But must every truth pluralist pick a side?

It may very well be that our language is so diverse that there is no reason to hold a privileged attitude towards realism or anti-realism with respect to arbitrary domains. Perhaps realism and anti-realism, contra [Wright 1992], [Edwards 2011] and [Lynch 2009] are on a par. Neither realism nor anti-realism are the default, and neither require more evidence to establish themselves as the metaphysics of a domain than the other; instead, what they require is simply *different* evidence.

Consider again the assembly line metaphor. Absent some knowledge of the general features of the boxes such that they are more likely to be say, realist than anti-realist, it makes little sense for the worker to assume that the next box coming

down the line is realist. This of course does not mean that she ought to assume that it is anti-realist instead. What she ought to do is examine each box as it comes down the line and determine how to categorize it, based on its own particular features.

So too for the truth pluralist, one might argue. Both realists and anti-realists have claimed methodological superiority for their views. Realists often note that realism better comports with commonsense intuition, while anti-realists claim that anti-realism is more metaphysically and epistemically respectable. Perhaps what the pluralist ought to do is to step back from each of these claims and instead take a methodologically neutral stance, and examine each theory's case with respect to each individual domain of discourse. Call such an approach to truth pluralism *methodological pluralism about truth*.

Methodological pluralism about truth may have many virtues. It does not claim – nor need to provide support for such a claim – that our language and conceptual frameworks are structured in such a way that either realism or anti-realism are more likely to hold in a particular domain. The methodological pluralist about truth remains neutral (or silent) on that issue. Given the difficulty of establishing such conclusions, and the longstanding debates over their success, this should count as a point in favour of the methodological pluralist.

Further, the methodological pluralist about truth is, in a sense, even more pluralist than its rival views. Pluralism was developed because monists failed to see that their theories of truth are implausible globally but plausible locally. The truth pluralist who treats realism or anti-realism as fundamental may commit the same sin as the monist, although on a smaller scale, in failing to recognize the true diversity

of our language. They impose a type of monism – defeasible monism, but monism nonetheless – on our language; the methodological pluralist demurs from such a claim. This does not require that the methodological pluralist about truth cleanly divide up the language. It may simply turn out to be a fact of our language that most domains ought to be construed as realist. This does not undermine methodological pluralism.

My methodological pluralism about truth is similar to [Field 1994]’s *methodological deflationism*. It is a working hypothesis: do not assume that either realism or anti-realism will win out for a given domain absent any evidence one way or another. In this way, methodological pluralism about truth is actually compatible not only with pluralist accounts which, accept realism in all domains but one or vice versa, but in fact with monistic accounts of truth. While monistic accounts legislate that the same theory of truth holds globally, over all domains, the methodological pluralist does not, but nor does she assume that truth will in fact vary with domain.¹² Methodological pluralism about truth, unlike methodological deflationism, does not bring with it a commitment to a particular theory being the default for our working hypothesis, however.

2.4 Conclusion

I have suggested that truth pluralism is best understood as the spiritual successor to the realism and anti-realism debate, insofar as it attempts to combine the best

¹²This is analogous to the way in which [Field 1994]’s methodological deflationism is compatible with inflationism about meaning or content.

aspects of each theory. This raises a natural question: how ought we understand this new, mixed view? To answer this, I suggested that we again look at the core of truth pluralism: its realist and anti-realist motivations, and how it treats these views in theory-construction. I suggested that some truth pluralists hold one of the two to be *methodologically fundamental*, i.e. as the default stance from which we move. Others go further, in not only giving a privileged methodological status to one theory but to build the secondary account out of the first, thereby making the primary aspect *theoretically fundamental*. I then showed how these two distinctions can be used to categorize various types of truth pluralism in a way that cuts across the standard way of understanding the literature.

I closed by considering one final view: *methodological pluralism about truth*, which does not privilege either its realist or anti-realist forebears. This methodological pluralism about truth may not be a completely new form of truth pluralism; many truth pluralists do not take a stand on whether realism or anti-realism comes first. They simply note that no account of truth works everywhere, and thus pluralism must be adopted. Perhaps if each pluralist spent more time reflecting on their methodology they would determine that they privilege one account over the other, or perhaps they would opt to remain methodologically neutral. What I have done here is made a plea to pay attention to the methodological commitments and motivations of various truth pluralisms, and to give a position – currently occupied or not – a name, and some arguments in its favour.¹³

¹³An earlier version of this chapter was published as [Kellen 2018a]. Thanks to Palgrave Macmillan to reprint here.

Chapter 3

Logical Consequence as a Functional Concept

3.1 Introduction

The term “logic”, as it is commonly used, is ambiguous – we use “logic” to refer to a generic idea of good reasoning, to more formal accounts of those reasoning patterns, to a number of different formal systems, and more. This chapter concerns theories of *logical consequence*, that is, deductive consequence.¹ Logic is the study of what follows from what: given a set of premises, what can be said to logically follow from those premises.²

¹I will set aside completely questions of non-deductive logic, which according to the account given in this chapter may not count as “logic” proper. I leave as an open question whether there is a more general analysis of “logic” in its myriad meanings and uses to be given which allows for a unification of logical consequence and other, potentially related phenomena, e.g. inductive logic.

²Although I will talk of arguments as a sequence of premises ending in a conclusion, nothing here hinges on this or precludes multi-conclusion systems from being logics.

As with the case of truth, there are a number of different ways that one can give a theory of logical consequence. The most straightforward is to give an actual formal system with defined rules, operators, and so on, which would allow us to determine what follows from what. We might also be interested in how best to give these formal systems - e.g. whether there is some philosophical reason to prefer model-theoretic accounts of logical consequence to proof-theoretic accounts to axiomatic accounts and so on. While these both of these types of theories are important, in what follows I want to investigate the *nature* of logical consequence, as we investigated the nature of truth in the previous chapter. We want to know what the concept of logical consequence consists in and how we should interpret it, and what it means for a theory of logical consequence to be good or correct.

We begin with some data. Restricting ourselves for the moment to the various different formal, deductive systems which are called logics, we find there are numerous competitor theories. Chief amongst these is so-called “classical logic”, the logic which is taught as the one and only logic in many courses and programs around the world. Explicit defenders of classical logic include [Frege 2013], [Quine 1986] and [Williamson 2007].³

Classical logic is of course not the only game in town. There are a variety of other logics, all grouped together under the colorless label “non-classical” which serve as its potential competitors. Intuitionistic logic, formalized first by [Heyting 1930a-c] as a logical theory of [Brouwer 1907]’s intuitionist philosophy of mathematics and defended most forcefully by Michael Dummett (see: [Dummett 1978b], [Dummett

³Explicit defenders of classical logic can be occasionally hard to find, given the almost canonical status classical logic has (or once had).

1991]), is one such logic. Relevance logicians like [Anderson and Belnap 1975] and [Routley et al. 1982] are another important group of non-classical logicians, motivated by a common dissatisfaction with other logics' understanding of implication and their tendency to fall prey to the "paradoxes of relevance".

There are a number of other formal systems which we could discuss (infinitely many, in fact), but as noted earlier, we are not merely interested in formal systems. Each of the theories mentioned so far have been proposed not only as formal systems within which to work and derive conclusions, but as accounts of the nature of logical consequence. Each has philosophical merits, and each has philosophers who have argued that their (and only theirs) account is the correct account of logical consequence. We are thus faced with an important question: what does it mean to give a theory of the nature of logical consequence?

In the rest of this chapter I will develop a framework to answer this question. I will argue that the concept of logical consequence can be fruitfully analyzed as a functional concept: a concept which is defined by its role in our overall theoretical inquiry. Functionalist analyses have been used to examine a host of philosophically interesting and central concepts, including mental states, moral goodness and truth, and I will argue that the results in the philosophy of logic will prove equally useful.⁴

In SECTION 2 I will briefly give an overview of functional analysis which will guide us in our attempt to apply it to the concept of logical consequence. In SECTION 3 I will show how this program can be extended to logical consequence. In SECTION

⁴In the following chapter I will introduce another form of conceptual analysis to analyze LOGICAL CONSEQUENCE with: the open-texture analysis. Functionalist analyses and open-texture analyses have many similarities but are not identical; I will highlight some differences between the two approaches in CHAPTER 4.2.

4 I will discuss the possibility of pluralism, and how a functionalist analysis can make easy work of explaining debate between monists, pluralists and nihilists about logic. I will conclude in SECTION 5 by discussing how the functionalist view can help analyze various disagreements in the philosophy of logic.

Before we begin, it will be helpful to note the scope of this project. In this chapter I will argue for the view I call *logical functionalism*, the thesis that the concept of logical consequence should be analyzed as a functional concept. Logical functionalism is not itself a particular view on the nature of logical consequence, but rather a framework or form of analysis in which we can formulate such views. As David Lewis said of his own functionalist view of mental state concepts: “I offer not analyses, but a recipe for analyses”.⁵ Just as functionalists about the concept of pain can disagree about the nature of pain while maintaining their functionalism, logical functionalists can disagree about, and offer competing theories of, the concept of logical consequence. I will not defend a particular account of the nature of logical consequence in this chapter - instead, I hope I will convince readers of the utility of functionalist analyses of logical consequence, in part by showing how to interpret existing theories of the concept through the lens of logical functionalism. Logical functionalism is first and foremost a methodology for philosophers of logic – a familiar and powerful form of conceptual analysis which can bring clarity to debates in the philosophy of logic.

⁵[Lewis 1994, p. 416].

3.2 Functionalist Analysis: A Sketch of a Program

Put most simply, functionalist analyses are analyses which analyze a concept in terms of its functional role. The functional role of a concept can be thought of as its “job description”, or the theoretical role it plays in our overall inquiry. Functionalism was first developed by Hilary Putnam as an analysis of mental states, as a successor to previous accounts of the mind like the identity theory and behaviorist accounts.⁶ Functionalist analyses have since been extended to various other concepts, including MORAL GOODNESS (e.g. [Jackson 1998]) and TRUTH (e.g. [Lynch 2009]).⁷ In running through this sketch I will mostly discuss functionalism as it relates to mental states, but the general functionalist framework is neutral across the concept being analyzed.

In its most general form, functionalist analysis follows what [Nolan 2009] calls the “Canberra two-step”, after the (in)famous Canberra Plan.⁸ We begin by selecting a concept we want a philosophical analysis of, and collecting together principles concerning the concept – what are often called “platitudes” or “truisms” of the concept. This list of principles is then used to define the function, or theoretical role, of the concept being defined. The second step is to find what fills this role, that is, what thing best fulfills the principles and fits the job description that was defined.

⁶See [Putnam 1960], [Putnam 1967] for early functionalist accounts. See [Levin 2018] for a general overview of functionalism in the philosophy of mind, including its history.

⁷As in the introduction I will use small caps, e.g. PAIN to designate a concept.

⁸[Nolan 2009, pp. 267-271]. The core of the Canberra Plan as Nolan sees it is a commitment to functionalist analyses, or what is sometimes called the Ramsey-Carnap-Lewis approach to theoretical terms; see [Nolan 2014, p. 103]. One does not need to be committed to the Canberra Plan to adopt a form of functionalism however, and I make no claims about the other aspects of the Plan here. See [Nolan 2014] for a history and overview of the Canberra Plan, as well as “The Credo of the Canberra Planners”, written by Nolan and available at: <https://sites.google.com/site/professordanielnolan/credo>.

This is merely the most basic outline of a functionalist analysis, so it will help to run through an example first before proceeding in the next section to the case of LOGICAL CONSEQUENCE. Imagine that we want to give a functionalist analysis of PAIN. In the functionalist literature in the philosophy of mind there are two primary brands of functionalism: analytic functionalism and psychofunctionalism.⁹ As the difference between these two views will be important later down the road we will spend some time here examining the differences and varying motivations.

The essential difference between analytic functionalists and psychofunctionalists rests on what they use to pin down the functional role of PAIN. I noted earlier that functionalists use a set of principles, sometimes called platitudes or truisms, to define the functional role. These two terms derive from analytic functionalism; analytic functionalists, like [Lewis 1966] and [Armstrong 1968] argue that we should draw the principles defining the concept of PAIN from our folk theory of the nature of pain, i.e. our everyday language. Thus, we look for what they call ‘platitudes’ about pain - for example, “Pain is felt”, “If someone is in pain then they are typically in distress”, and so on.

Psychofunctionalists like [Fodor 1968] argue that we ought to define PAIN in terms not of our folk theories but our scientific theories. The principles which define the functional role are thus not platitudinous but contingent, a posteriori facts about our best psychological sciences. These principles may be unrecognizable to the folk

⁹[Putnam 1960]’s original account was of a third sort: machine state functionalism. This type of functionalism fell out of favor quickly however, and has no clear analogues outside of the debate over the computational theory of mind, so we will set it aside in favor of the other two major functionalist accounts. There are of course more distinctions one can make in chopping up functionalist views – see [Shoemaker 1981] for some options – but again, these are limited to the debate over mental states so we will set them aside.

and may even contradict some of the folk theory's principles of the same concept.

To remain neutral between these two types of functionalism I will eschew talk of platitudes or truisms in favor of talk about "core theoretical principles", which may hail from a folk theory, a natural science or perhaps something in between, like the language of everyday scientists.

Once we have our set of core theoretical principles the functionalist will put them through the Ramsey-Carnap-Lewis method for defining theoretical terms as set out by [Lewis 1970]. The goal is to produce a "Ramsey sentence", a sentence which features the conjunction of all the core theoretical principles of the concept being defined but is free of any of the terms being defined (in our case here, terms like "pain". The principles are conjoined and put through this process to define the theoretical role of PAIN. For example, the Ramsey sentence for pain may be something like:

$$x \text{ is pain} \leftrightarrow_{df} \exists x \exists y (x \text{ is felt} \ \& \ x \text{ typically produces state } y \ \&) \dots$$

Once we have the theoretical role of the concept picked out we can then look to the world to determine what fills that role. It is important to note here that functionalist analyses look for the *best* satisfier of the theoretical role. There may not be anything in the world which satisfies every core theoretical principle, and there may be many things which satisfy some but not all of the principles. There may also simply be nothing which satisfies enough of the core theoretical principles to realize the theoretical role at all. In the event that something fills the role defined we say that it *realizes* that functional role, or is a *realizer*.

Functionalism often comes paired with a multiple realizability thesis, which holds that the functional role may potentially be realized by multiple things. This happens when two things equally satisfy the theoretical role. In the case of PAIN, what realizes the pain-role for a human being may differ from what realizes the pain-role for a Martian being. Nonetheless, both are realizers of the pain-role, and thus both mental states are instances of the same concept, PAIN.

To recap: a functionalist analysis proceeds by collecting core theoretical principles of a concept, unifying them into a theoretical role defining that concept, and then looks to the world to see what, if anything, realizes that role. Functionalists come in two broad camps: analytic functionalists and psychofunctionalists, the former who look to a folk theory to determine the core theoretical principles of a concept, the latter looking to our best scientific theories. Finally, functionalism does not assume that there must be a single realizer of a given concept: there may be one, or none, or many such realizers.

3.3 Logical Functionalism

With the general overview of functionalism in hand we are now ready to apply the functionalist analysis to the concept of logical consequence. I hope to show that a functionalist analysis of LOGICAL CONSEQUENCE is not only possible, but fruitful, and thus will defend the view I earlier called *logical functionalism*, which holds that LOGICAL CONSEQUENCE is best understood as a functional concept. I will begin by sketching how a functionalist account of LOGICAL CONSEQUENCE might

look. In the final section of this chapter I will analyze several rival accounts of LOGICAL CONSEQUENCE, and show that logical functionalism can be helpful not only in formulating a theory from the bottom-up, but also in analyzing extant views in the literature.

A reminder of my goals here will be helpful to keep in mind. In this chapter I aim to defend logical functionalism as both a very general view of the nature of LOGICAL CONSEQUENCE (namely, that it is a functional concept) and as a methodological tool with which philosophers of logic can build and analyze various theories. In this way I follow Lewis in merely providing a recipe for analyses, as opposed to a novel, particular analysis of LOGICAL CONSEQUENCE myself.

We begin as always by compiling a list of core theoretical principles. In order to do so we must decide from where we are drawing these principles, and potentially from which functionalist camp we will start our analysis. Our first challenge lies here, as it is unclear to what extent, if any, there is a folk theory of logical consequence. In the most general sense the study of logic goes back to at least Aristotle in the Western tradition and to the early Buddhists in the Eastern tradition.¹⁰ But the logic we study now differs extremely from the logic that the Aristotelians studied, especially after the breakthroughs in formal logic by Boole and Frege, amongst others. It can be difficult even for philosophers of logic to see to what extent early logicians were studying the same phenomena as contemporary logicians.

The problem is compounded when we leave academic study behind and move to the folk more generally. While people have an idea of good reasoning generally and

¹⁰See [Kneale and Kneale 1962] for a historical account of logic from the ancient Greeks to contemporary times.

often use the term “logic” to refer to the idea of good reasons, whether they have sustained intuitions about deductive logic is far more difficult to determine. Certainly anyone who has taught introductory logic has run up against many students’ perplexion when learning the basics of logical validity, particularly the distinction between validity and soundness, as well as the fact that valid arguments can have contradictory premises, or no premises at all.

Despite these challenges we do have something with which to start. Philosophers of logic have managed to study logic for millennia, seemingly without talking past one another. Further, many maintain that their theories are based in part on something like a folk theory; take for example [Tarski 1983] in introducing his account of logical consequence:

The concept of logical consequence is one of those whose introduction into the field of strict formal investigation was not a matter of arbitrary decision on the part of this or that investigator; in defining this concept, efforts were made to adhere to the common usage of the language of everyday life. [Tarski 1983, p. 409]

What then are some potential candidates for core theoretical principles? In their [Beall and Restall 2006] Jc Beall and Greg Restall cite three core features of what they call “the settled core” of logical consequence which are “central to the tradition, and any account of logic must take account of them”.¹¹ Those features are as follows:¹²

¹¹[Beall and Restall 2006, p. 14].

¹²[Beall and Restall 2006, pp. 14-23].

1. **Necessity** - the truth of the premises of an argument necessitate its conclusion
2. **Normativity** - if you believe the premises of a valid argument and disbelieve its conclusion, *ceteris paribus*, you've done something wrong
3. **Formality** - arguments are about forms of the premises/conclusion, rather than the content

Setting aside for the moment the glosses [Beall and Restall 2006] give of these three features (which they admit will need to be filled out), they seem to be excellent starting candidate core theoretical principles. They capture the familiar gloss of validity as “necessary truth preservation in virtue of logical form” and do seem to be shared by many accounts of logic. They are not universally satisfied by things called “logic” - non-monotonic logics will fail to fulfill **Necessity**, informal logics will fail **Formality** and some accounts of logic hold that deductive logic is not normative at all.¹³ Nonetheless, they seem like plausible starting points in our search for core theoretical principles.

What further potential core theoretical principles might there be? Recall that the point of compiling a set of core theoretical principles is to use them to define a theoretical role, or job description, of LOGICAL CONSEQUENCE. Thus we must reflect on what role logic has traditionally played in our overall theoretical inquiry. The three features above (which we will re-formulate more explicitly as core theoretical principles later), succeed in capturing the role of logic as necessary truth preservation

¹³See CHAPTER 4 for significantly more discussion of this point.

in virtue of logical form. It is possible that other aspects of the role of logical consequence may follow directly from these principles, even if that is unclear from first glance. Consider for example what [Beall 2015] calls the “constraint role” of logic:

The traditional link between rational theory change and logic is a familiar one: it’s a condition on rational acceptance-rejection behavior. ... Logic constraints the space of rationally available options... [Beall 2015, pp. 413-4]

This role can be filled by some form of **Normativity**, which, suitably filled out, will spell out the role that logical consequence plays in theory choice and what we ought to accept (or not) generally.¹⁴

Another such role may be the “closure role of logic”, which holds that logic’s role in our inquiry is to take a body of propositions and determine what follows from them.¹⁵ Closure is accomplished by virtue of **Necessity** and **Formality**; logical validity is necessary truth preservation in virtue of logical form.

The status of other candidate principles may be more difficult to determine, and may rest on exactly how we formulate the principles. One such case arises from the contention that logic should be “topic neutral”, that is, logic should be applicable to any area of discourse whatsoever. It is possible this follows directly from **Formality**, which rules out, as stated, attention to the content of propositions in favor of focusing

¹⁴[Beall 2015] follows Gilbert Harman ([Harman 1984], [Harman 1986]) in rejecting the normativity of logic, and thus requires a separate understanding to fulfill what he sees as one of (at least) two traditional roles that logic plays. For the moment we will keep **Normativity** as one of the core theoretical principles of LOGICAL CONSEQUENCE, and thus we can set aside this complication.

¹⁵See e.g. [Beall 2015] and [Williamson 2018].

on their structure. But this is not the only possible way to explicate **Formality** - [Dutilh Novaes 2011] identifies at least 8 different conceptions of formality, and while topic neutrality follows from some of these it does not follow from them all.

In addition to principles which have widespread, explicit support, we must consider also principles which have been suggested as conceptually central to LOGICAL CONSEQUENCE but have not (yet) been adopted amongst the majority of philosophers of logic. Take for example the motivations behind relevance logics - that logic should avoid the so-called “paradoxes of relevance”, that the premises of valid arguments must be relevant to the conclusion, and so on.¹⁶ Similarly, consider the early intuitionistic logicians like [Heyting 1956], who maintained that logic must be concerned with proof (understood in the terms of the intuitionist philosophy of mathematics).

There are other potential principles whose status is more difficult to determine because they may be widespread but generally implicitly assumed rather than explicitly argued for or asserted. For example, many philosophers working in philosophical logic have built their views upon the assumption that logic must be “paradox solvent”, i.e. it should not fall prey to any of the logical paradoxes, including the Liar Paradox and its relatives.¹⁷ Likewise, many philosophers and mathematicians have assumed that logic must be capable of playing a role in the investigation of various mathematical theories, even those who do not call for logic to play an explicitly

¹⁶Relevance logics are a family of logics with a number of varying motivations, but most relevant logicians maintain something like the above. There are however a number of different ways to elucidate this general idea, and not all of them obviously fall under the umbrella of “relevance” as [Routley et al. 1982] notes.

¹⁷I borrow the term paradox solvent from [Nolan 2018], who attributes this view and explicit argument in favor of to Richard Routley (see [Routley 1980].)

foundational role for mathematics.¹⁸

A number of potential principles have been suggested - now we will proceed with the next step of our analysis: defining the theoretical role of LOGICAL CONSEQUENCE. We began with three principles which have what is likely the most widespread support: **Necessity**, **Formality** and **Normativity**. If we restrict ourselves for the moment to these three core theoretical principles, we can formulate a potential account of the functional role. We will focus on logical consequence as a relation between propositions (premises and a conclusion). We'll say that **R** is a relation featuring arbitrary arguments \mathcal{A} with premises Δ and a conclusion ϕ , such that:

R is logical consequence \leftrightarrow_{df} for all \mathcal{A} , Δ and ϕ , if Δ is true, then necessarily ϕ is true as well ; judgments about \mathcal{A} are invariant over Δ and ϕ ; facts about **R** play a role in what we ought to believe or disbelieve
...

Some conceptions of LOGICAL CONSEQUENCE will feature more principles, like the ones above. For example, if we wanted to make logic's role in mathematics a core theoretical principle, we might introduce a principle like "**R** is capable of faithfully interpreting mathematical theories".¹⁹ And so on, for the various putative core theoretical principles. In defining a theoretical role we may pick and choose which core theoretical principles we believe accurately capture the functions of logic.

Once a functional role has been defined we thus look to the world to see which

¹⁸See for example [Shapiro 2014] and [Williamson 2018].

¹⁹We will return to this in SECTION 5.

things realize it. In the case of LOGICAL CONSEQUENCE, we look at our candidate consequence relations, i.e. the various logical systems with which we began, including classical logic, intuitionistic logic and various relevance logics. We must then determine whether these relations satisfy these principles, and thus whether they realize the logical consequence role. In SECTIONS 4-5 I will interpret some specific accounts of LOGICAL CONSEQUENCE, but for now let us simply consider the conception of LOGICAL CONSEQUENCE which has the role as stipulated above and nothing more. It seems likely that the role as defined is filled by the classical logic consequence relation - classical logic certainly necessarily preserves truth, it is suitably formal, and it can play a role in our belief formation processes in the way first outlined by [Beall and Restall 2006]. Thus, classical logic would realize the logical consequence role and be logical consequence.

We have now provided an outline of the logical functionalist position. Logical functionalism holds that LOGICAL CONSEQUENCE can, and should, be analyzed as a functional concept. A number of potential core theoretical principles were examined, including three particularly prominent principles shared by many accounts. We then demonstrated how these principles could be conjoined to define the functional role of LOGICAL CONSEQUENCE, or the description of what logic does for our overall theoretical inquiry. Finally, we saw one particular conception and a realizer of its functional role. Now we must move on to logical functionalism's multiple realizability thesis.

3.4 Monism, Pluralism and Nihilism about Logic

Logical functionalism - like all functionalist theories - is not restricted to thinking there can be only one realizer of any given functional role. Just as Lewis thought PAIN was multiply realizable - by one state in humans and another in Martians - LOGICAL CONSEQUENCE may be realizable as well. In fact, I think that logical functionalism's multiple realizability thesis is one of its greatest theoretical advantages, as it can be used to explain the differences between a variety of monist, pluralist and nihilist views about logic which have recently become prominent in the literature.

No debate has loomed greater over philosophy of logic in the last twenty years than that over logical pluralism. Logical pluralism, in its most basic form, is the view that there are many, equally good logical theories. Starting with Frege's ushering in of a new era of formal logic, a number of different, rival theories of logic have been proposed, including the classical, intuitionistic and relevance theories mentioned earlier. While rivals to the classical theory did not take long to develop these rival positions were almost always proposed by philosophers or mathematicians as rivals to classical logic, rather than a new logic to be adopted alongside it. From the beginning non-classical logicians have argued for the adoption of their various non-classical theories over that of classical logic. These positions all had an implicit monistic assumption: there could only be one correct logic.

Logical pluralism challenges this orthodoxy by asserting that there can be multiple, equally correct logics. Logical pluralism rose to prominence with the work of Jc Beall and Greg Restall in their [Beall and Restall 2000] as well as book-length

treatment in [Beall and Restall 2006].²⁰ One attraction of the pluralist position is that it can acknowledge that various, rival accounts each get something right about LOGICAL CONSEQUENCE. However logical pluralists also face a challenge: they must be able to explain in what sense multiple, distinct and disagreeing theories can all be equally correct.

Logical functionalism has the resources to easily meet this challenge, in virtue of its multiple realizability thesis. The logical functionalist can point to this thesis as an explanation of the conceptual possibility of logical pluralism: there simply could be many consequence relations which satisfy all the core theoretical principles of LOGICAL CONSEQUENCE and thus realize the logical consequence role. To demonstrate how this might work, I will interpret the most prominent form of logical pluralism, the Beall-Restall Pluralism of [Beall and Restall 2006], in functionalist terms.

Beall and Restall define logical pluralism as the view that “there is more than one genuine deductive consequence relation”.²¹ They begin their investigation with a quote by Tarski:

The concept of logical consequence is one of those whose introduction into the field of strict formal investigation was not a matter of arbitrary decision on the part of this or that investigator; in defining this concept, efforts were made to adhere to the common usage of the language of everyday life. ... With respect to the clarity of its content the common concept of consequence is in no way superior to other concepts of

²⁰Depending on how one defines logical pluralism there may be earlier forms of logical pluralism, e.g. [Carnap 1937], [Carnap 1950]. For difficulties in interpreting Carnap as a logical pluralist see [Cook 2010] and [Russell 2019].

²¹[Beall and Restall 2006, p. 3].

everyday language. Its extension is not sharply bounded and its usage fluctuates. Any attempt to bring into harmony all possible vague, sometimes contradictory, tendencies which are connected with the use of this concept, is certainly doomed to failure. [Tarski 1983, p. 409]

Beall and Restall take Tarski to be claiming that the concept of logical consequence is what they call “unsettled”.²² Settled concepts are ones in which it is determinate whether they apply in certain circumstances, or their extensions and anti-extensions are fully fixed. Unsettled concepts are ones which, in certain instances, it is not determined by our language whether they apply or not. That is not to say that unsettled concepts are useless; rather, they can be *precisified* or made clear in certain ways. If a concept is unsettled, any precisification of it which agrees with the settled core of the concept is *admissible*. Further, according to Beall and Restall there may be more than one such admissible precisification, and this is what gives rise to pluralism.

Beall and Restall argue that LOGICAL CONSEQUENCE is one such unsettled concept, and further that it has at least two admissible precisifications. They do not claim that the whole of LOGICAL CONSEQUENCE is unsettled however. Rather, they maintain that it has a settled core, made up of the three features with which we began the last section: **Necessity**, **Normativity** and **Formality**. According to Beall and Restall, these three features comprise the settled core of LOGICAL CONSEQUENCE, as they are “central to the tradition [of logic], and any account of logic must take account of them.”²³ Beall and Restall go on to argue that at least three different

²²[Beall and Restall 2006, p. 27].

²³[Beall and Restall 2006, p. 14].

logics serve as admissible precisifications of this concept: classical logic, intuitionistic logic and a relevance logic.

While Beall and Restall do not put their theory in functionalist terms, I believe it can be fruitfully analyzed through the lens of logical functionalism. We can interpret their settled core as being the functional role of the concept of logical consequence, and the principles pinning down that role as the ones which they claim are central to the tradition of logic. These principles, conjoined in the way described above, define a theoretical role for LOGICAL CONSEQUENCE. Their admissible precisifications are best interpreted as realizers of that role, and thus we have three consequence relations which realize the role of logical consequence, and a form of logical pluralism via logical functionalism.²⁴

Logical functionalists are of course no more beholden to logical pluralism than they are to the particular theoretical role we defined, following Beall and Restall, earlier. However the ease with which the functionalist can accommodate pluralist views is a theoretical virtue in favor of logical functionalism. Logical functionalism provides not only an account of what makes a particular theory of logical consequence correct, but of how multiple, conflicting theories may all be correct.

Beall-Restall Pluralism is not the only form of logical pluralism amenable to a functionalist analysis. [Cook 2010] proposes a “logic-as-modelling” view, which takes as the role of logic the analysis of a natural language consequence relation. According to Cook, a logic is correct insofar as it correctly models the natural language consequence relation, and because there are many logics which may do this equally

²⁴Provided of course that their arguments in [Beall and Restall 2006] hold.

well, logical pluralism arises.²⁵ The logical functionalist can take modelling the natural language consequence relation as one of the core theoretical principles, and thus adequately capture Cook’s logic-as-modelling pluralism in functionalist terms.²⁶

The logical functionalist can also explain the rise of what has come to be called *logical nihilism*.²⁷ Logical nihilists hold that there are no correct accounts of logical consequence. [Cotnoir 2018] adopts an approach similar to [Cook 2010]’s, arguing that logic’s purpose is representing natural language inference, but that no such relation correctly represents (or could represent) that target.²⁸ The logical functionalist can again include this as a core theoretical principle of LOGICAL CONSEQUENCE which defines a logical consequence role. Logical nihilism will then be the position that nothing satisfies enough of the core theoretical principles to realize the logical consequence role, and thus nothing counts as an instance of LOGICAL CONSEQUENCE.

To recap: logical functionalism can account for monistic, pluralistic and nihilistic theories of logic via its notion of realizability. According to logical functionalism, any theory of LOGICAL CONSEQUENCE will first define a set of core theoretical principles and then use these to define a theoretical role (the logical consequence role). The logical monist will claim that only one relation realizes that role, and that it is the sole correct account of logic – the One True Logic. The logical pluralist will argue that

²⁵[Cook 2010, pp. 495-6 ; 500-2].

²⁶The exact set of core theoretical principles that a functionalist version of Cook’s account will use is unclear. His account also explicitly requires necessity and formality as core theoretical principles (see [Cook 2010, p. 495], but Cook does not explicitly give a principle recognizing the normativity of logic. However this may follow directly from the nature of the natural language consequence relation itself, if the purpose of that relation is tracking arguments that natural language users make in order to determine what follows from what, and thus what to believe, assert, etc.

²⁷See [Russell 2018] and [Cotnoir 2018] for defenses of logical nihilism.

²⁸[Cotnoir 2018, p. 303].

there are many realizers of the logical consequence role, and thus each are equally instances of logical consequence. Finally, the logical nihilist will define a theoretical role for logical consequence but argue that nothing in the world realizes that role, and thus nothing can be logical consequence. The benefit of the logical functionalist approach is a unified account underlying all three theories.

3.5 Adjudicating Disagreement about Logic through Logical Functionalism

In the previous two sections I argued that LOGICAL CONSEQUENCE can be successfully analyzed as a functional concept. In doing so, I provided both a bottom-up recipe for how one might go about using logical functionalism to build a theory of logic, and I analyzed several contemporary views in the philosophy of logic using logical functionalism. In this final section I will argue that not only can logical functionalism be used to build and analyze various theories of LOGICAL CONSEQUENCE, but that it should be used to do so. I will demonstrate this by showing how logical functionalism can help adjudicate various disagreements about logic.

In order to see the utility of logical functionalism we will first begin with a puzzle. Disagreement is as common in the philosophy of logic as it is in every other field of philosophy or human life. Nonetheless, disagreement in logic seems to pose a special problem. Unlike in other areas of philosophy where there is an open question as to what counts as evidence, or how we should weigh said evidence, in logic there are seemingly obvious answers as to whether an argument is good or not: namely the

facts about whether the argument is deductively valid in the formal system being considered.

So why then is there disagreement in logic? Let's restrict our attention to a simple case: disagreement between classical logicians and intuitionistic logicians. The intuitionist disagrees with the classist over the Law of Excluded Middle; the intuitionist does not recognize the general validity of the Law of Excluded Middle, while the classist does. But of course both logicians can come to see the simple formal facts: the Law of Excluded Middle is in fact generally valid in classical logic, but not in intuitionistic logic.

Both parties can clearly recognize these facts and yet continue to disagree because the disagreement does not lie on the level of formal facts, but on how we should interpret the concept of logical consequence. The intuitionist recognizes that the Law of Excluded Middle is valid in classical logic, but asserts that this is a mistaken conception of logic which must be abandoned. The classist likewise recognizes the invalidity of their law in intuitionistic logic, but sees no reason to accept the non-classical conception of logic over their own.

How should we understand this disagreement? Are both parties merely talking past one another? While this is possible, it seems unlikely in most cases. Many brilliant philosophers have spent their careers arguing for one logic or another; if these were merely verbal disputes then presumably they would generally recognize them as so and continue on with another project. The fact that they do not, and that they instead take themselves to be offering theories which are direct rivals to one another, suggests that these debates are (at least not generally) merely verbal

disputes which can be handwaved away as trifles rather than deep disagreements.

Logical functionalism has the resources to explain these disagreements without reducing them to instances of merely talking past one another. The functionalist can interpret the debate between the classist and the intuitionist as a debate over the nature of the concept of logical consequence, or more specifically, over what the core theoretical principles of LOGICAL CONSEQUENCE are. The intuitionist may be including amongst their principles an understanding that logic is concerned with constructive proof, something which will be missing from the classists' construal of the theoretical role.

Another example may be illustrative. The relevance logician and the classical logician also disagree, but for different reasons than the intuitionist cites. The relevance logician may have no issue with the Law of Excluded Middle, but does take issue to the Principle of Explosion, which allows one to infer anything from a contradiction. They claim that this principle is invalid, on grounds of irrelevance. The classical logician can of course recognize and agree that the premises are irrelevant to the conclusion in the sense the relevance logician outlines – they just see no reason that logic should be relevant in that way. The relevance logician has taken relevance as one of their core theoretical principles of LOGICAL CONSEQUENCE while the classical logician has not.

Logical functionalism can locate the debate between these four logicians as a disagreement about which principles are truly core theoretical principles of LOGICAL CONSEQUENCE. The disagreement has been located, but one might claim that it has not yet been adequately analyzed. What does it mean to disagree about which prin-

principles are actually core theoretical principles? Further, is this not merely another way of talking past one another? The classical logician has defined their theoretical role, the intuitionist theirs and the relevance logician theirs, and by using the functionalist framework they can all recognize and realize this. Does this not thus dissolve the disagreement, as each theorist is simply talking about different phenomena?

Much like in the case of recognizing disparate facts about formal systems, recognizing differences in how a theoretical role is defined does not undermine the disagreement. The disagreement lies in how we ought to conceive of LOGICAL CONSEQUENCE, and the way in which we disagree about this is through disagreement about its theoretical role.

To better understand this we should be clear about what we mean by the concept of logical consequence. The functionalist route to conceptual analysis defines a concept in virtue of its theoretical role, as detailed in the previous sections. Does this mean that, if two theorists disagree on that theoretical role they have altogether different concepts? That is, if the classical and relevance logician define different theoretical roles, do they thereby define two different concepts, LOGICAL CONSEQUENCE_C and LOGICAL CONSEQUENCE_R?

To avoid this unwelcome consequence I suggest we follow [Rawls 1999] in distinguishing between a concept and a conception.²⁹ To borrow Rawls' example, the concept of justice is the appropriate division of social advantages, while his particular theory of justice, the justice as fairness account, is a particular conception of justice. A concept is fairly broad, collecting a cluster of various ideas that theorists may

²⁹[Rawls 1999, p. 9].

be getting at with different accounts. A conception on the other hand is a specific interpretation of a concept.

In the case of logical functionalism, we can treat LOGICAL CONSEQUENCE as the concept which various theorists are attempting to interpret. They may offer various particular conceptions of LOGICAL CONSEQUENCE which disagree about central aspects and are incompatible, but are nonetheless all aiming at the interpretation and understanding of the same concept.

Thus our disagreements between logicians is not an instance of merely verbal disputes. But just what is it then? I believe that disagreement about conceptions of a concept is best understood as *metaconceptual negotiation*, following along the lines of metalinguistic negotiation.³⁰ According to [Plunkett and Sundell 2013], metalinguistic negotiations are “disagreements about the proper deployment of linguistic representations”.³¹ Take for example two coworkers arguing about whether their office is cold, where one of them understands “cold” as being below 70F and the other as below 65F.³² Their disagreement about whether the word “cold” applies to their current situation is not a mere verbal dispute, as it may continue even if they explicitly define how they are using the term. Their disagreement lies not in confusion about the meaning of “cold”, but about which meaning to use at all.

The logical functionalist should understand debates about which conception to adopt as a form of metaconceptual negotiation: negotiation about which concept we should be using. Recall that, according to the functionalist analysis, the nature

³⁰In what follows I am influenced by [Kouri Kissel forthcoming]. My account differs from hers in holding that the disagreement lies at the conceptual rather than the linguistic level.

³¹[Plunkett and Sundell 2013, p. 3].

³²[Kouri Kissel forthcoming, p. 7].

of a concept depends on the theoretical role it plays. Thus disagreement about which concept to adopt is disagreement about what we want our concept to do for us; disagreement about which conception of LOGICAL CONSEQUENCE to use is disagreement about what we see as the role of logic in our general intellectual frameworks. Little could be more substantive than such a debate.

A second, subsidiary type of disagreement may arise out of where the core theoretical principles are taken from. We noted that, in the case of PAIN, there are two broad camps of functionalists: the analytic functionalists who take their principles from a folk theory and the psychofunctionalists who take theirs from our best psychological theories. While there is no likely psychological theory relevant to LOGICAL CONSEQUENCE, psychofunctionalism is merely an instance of a broader camp, which we might call *theoretical functionalism*. Theoretical functionalists argue that the core theoretical principles used to define a concept should stem from our best scientific (in the broad, *Wissenschaft* sense of ‘scientific’) theories, rather than a folk theory.

While there is no role here for drawing principles from psychology, there are philosophers of logic who are best interpreted as theoretical functionalists in this broader sense. [Shapiro 2014] develops a form of logical pluralism which is focused on the role that logic plays in our mathematical investigations. Shapiro starts from a Hilbertian philosophy mathematics, according to which any consistent axiomatization of a mathematical theory characterizes a mathematical structure. This is all there is to exist as a mathematical structure and further these structures are all worthy of mathematical study.³³ Because these mathematical structures are worthy

³³[Shapiro 2014, p. 65].

of study, we need a logical approach in which we can examine them without trivialization; thus, we adopt many different logics for our many different structures. We can call this approach “Hilbertian logical pluralism”.

The difference between this type of approach and an analytic functionalism about logic can be more fully appreciated when considering Shapiro’s criticism of Beall-Restall Pluralism. Beall-Restall Pluralism holds that logics are not relative to particular contexts, domains of inquiry, etc.; this appears to follow from **Necessity** being one of the core features of the settled notion of logical consequence.³⁴ However, as Shapiro points out, this can quickly become problematic, given one’s mathematical perspective. There are some mathematical structures/theories, e.g. smooth infinitesimal analysis, which are inconsistent when classical logic is imposed, but consistent when judged by their own underlying logic, intuitionistic logic.³⁵ Because Beall-Restall Pluralism claims that classical logic is valid *everywhere*, it must be valid when analyzing structures like smooth infinitesimal analysis, and this immediately leads to inconsistency (and therefore, according to at least some of the logics they accept, triviality). In order to avoid this inconsistency, Beall-Restall Pluralism must restrict which mathematical structures they accept as legitimate. And this, according to Shapiro, is a mark against *their* position, not against the mathematical theories themselves.³⁶

This disagreement is initially puzzling, in part because Beall and Restall, in giving

³⁴Their rejection of relativism is reaffirmed explicitly later in the book: “Recall that we are not relativists about logical consequence, or about logic as such. We do not take logical consequence to be relative to languages, communities of inquiry, contexts, or anything else. We do not take logic to be relative in this way”, [Beall and Restall 2006, p. 88].

³⁵[Shapiro 2014, pp. 37-8].

³⁶[Shapiro 2014, pp.37-8].

their pluralism, never attempted to provide an account which was consistent with accepting all possible mathematical theories. In fact, they are aware of the problem that Shapiro raises, and set the worry aside, noting that while they cannot accept *all* mathematical theories, their view is compatible with accepting many of them, e.g. standard constructive mathematics.³⁷ While Shapiro takes a permissive view of mathematics as his starting point, he does not offer any argument which would motivate Beall and Restall to accept that same philosophy of mathematics. The two parties seem, at least initially, to be at a standstill.

Viewing both of these theories through the lens of logical functionalism can bring clarity to this issue, and help locate the true disagreement. I contend that Beall-Restall Pluralism is best understood as a form of analytic functionalism, drawing its core theoretical principles from something like a folk theory of logic. On the other hand, Hilbertian logical pluralism draws its principles from the best scientific theory available: mathematics. The Hilbertian logical pluralist is chiefly concerned with logic's role in investigating any non-trivially axiomatizable mathematical structure, i.e. all of the mathematical structures which exist from the Hilbertian perspective. The two views still disagree about which conception to adopt, but they disagree primarily in virtue of drawing their core theoretical principles from entirely different sources.

The logical functionalist can thus solve the puzzle of logical disagreement: disagreement about logic is possible in terms of debate about which conception to hold

³⁷[Beall and Restall 2006, pp. 117-8]. Beall and Restall do not give any indication of which mathematical theories they believe a theory ought to make room for, but presumably insofar as they explicitly address this worry in defending their theory, the list of the necessary mathematical theories which they think one must accept is a subset of the ones they in fact accept.

of LOGICAL CONSEQUENCE, and this is understood in terms of metaconceptual negotiation. But this is not the only way in which logical functionalists can understand disagreement. Even when a conception is settled upon, disagreement can arise. This disagreement is over what realizes that role. Consider for example disagreement between a classical logician and a dialetheist. Both may agree upon the same set of core theoretical principles and the same theoretical role; they may for example settle on the set we inherited from [Beall and Restall 2006], with an emphasis on logic's ability to reason across any situation, independent of the content of particular propositions. If one is a dialetheist who believes in impossibilia they may see a logic like LP or FDE as the realizer of the logical consequence role, because they will not validate the Principle of Explosion while classical logic will. This is not a disagreement about a conception of a concept, but about what realizes a settled-upon conception or theoretical role.

To recap: I have demonstrated how interpreting various theories through logical functionalism can help locate and analyze disagreements between rival positions in the philosophy of logic. Three different types of disagreements were considered: metaconceptual negotiations between rival conceptions of LOGICAL CONSEQUENCE, disagreements between analytic and theoretical functionalists and disagreements about what, if anything, realizes a settled conception of the concept of logical consequence.

3.6 Conclusion

In this chapter I outlined and defended a novel methodology in the philosophy of logic: logical functionalism. Logical functionalism is the thesis that the concept of logical consequence can, and should, be analyzed as a functional concept. Logical functionalism serves a dual role for the philosopher of logic: it not only provides a way for one to build an account of LOGICAL CONSEQUENCE, it also allows one to interpret various accounts in a single, shared framework which makes clear what their commitments are and where they disagree. These virtues are, I hope, reason to take logical functionalism as a starting point for any theory of LOGICAL CONSEQUENCE.

Chapter 4

The Normative Problem for Logical Pluralism

4.1 Introduction

It is a common thought that logic, whatever it may be, is *normative*. This thought is a fundamental part of traditional conceptions of logic that spans back centuries. Kant, for example, claimed that logic codified the “absolutely necessary rules of thought” (A52/B76). Similarly, Frege famously claimed that logic was the “laws of truth” [Frege 1997, p. 342]. It is not enough, of course, for logic to be concerned with thought for it to be truly normative; if logic were merely codifying the ways in which we happen to think, e.g. due to our psychological make-up, it would be a set of descriptive rather than prescriptive laws. This is why philosophers since at least Kant have been careful to specify that logic is the study of how we *ought* to reason.

In his *Jäsche Logic*, Kant claims:

In logic, however, the question is not about *contingent* but about *necessary* rules; not about how we do think, but how we ought to think. The rules of logic must thus be derived not from the *contingent* but from the *necessary* use of the understanding, which one finds in oneself apart from all psychology. In logic we do not want to know how the understanding is and does think and how it has previously proceeded in thought, but rather how it ought to proceed in thought. Logic is to teach us the correct use of the understanding, i.e., that in which it agrees with itself. (14:3)

Likewise, in an attempt to explain the sense in which logic is the laws of thought, Frege says:

It is commonly granted that the logical laws are guidelines which thought should follow to arrive at the truth; but it is too easily forgotten. The ambiguity of the word “law” here is fatal. In one sense it says what is, in the other it prescribes what ought to be. Only in the latter sense can the logical laws be called laws of thought, in so far as they legislate how one ought to think. Every law stating what is the case can be conceived as prescriptive, one should think in accordance with it, and in that sense it is accordingly a law of thought. ... The [laws of logic] better deserve the title “laws of thought” only if thereby it is supposed to be said that they are the most general laws, prescribing how to think whenever there is thinking at all. [Frege 2013, xv]

This conception of logic has continued through to contemporary work in the philosophy of logic, e.g. in [Priest 1979], [Field 2009b], [Steinberger 2017]. Despite this widespread historical agreement that logic must be normative, only recently has work been done to work out how exactly we should spell out the normative role of logic (e.g. in [MacFarlane ms.], [Steinberger 2019]).¹

Regardless of how these details turn out, according to this tradition any proper, correct or good theory of logic must account for the normativity of logic. In this chapter, I wish to examine this tradition and its implications for an increasingly popular view in the philosophy of logic: *logical pluralism*. Logical pluralism is at its base the thesis that there are many equally good logics. That is, the logical pluralist denies that there is just one thing we call “logic”. Instead, there are many things with equal right to being called “logic”; call this the *core pluralist thesis*. If the historical consensus is right and any true conception of logic holds that logic is normative, then this seemingly must hold doubly² so for the logical pluralist; regardless of whether logic is classical or non-classical, one or many, monist or pluralist, it must be normative.

The structure of the chapter is as follows. In SECTION 2 I will briefly introduce logical pluralism, and note some of its most general, (particular) theory-neutral aspects. In SECTION 3 I will introduce what I call the **NORMATIVE PROBLEM FOR LOGICAL PLURALISM (NPLP)**. The **NORMATIVE PROBLEM FOR LOGICAL PLURALISM** claims that the logical pluralist cannot account for the normative role of logic,

¹This is not to say that no one has denied that logic is normative, but rather that the mainstream tradition has upheld it. For an example of a heterodox view, see Gilbert Harman, e.g. [Harman 1984] and [Harman 1986].

²Or triply so for the logical pluralist who holds there are three correct logics, and so on.

and because the normativity of logic is a core part of the traditional conception of logical consequence, the logical pluralist must either give up her logical pluralism or adopt an extremely heterodox account of logic. In SECTION 4 I will consider some responses to the NPLP, and raise problems for each purported solution.

4.2 Logical Pluralism

Recall the core pluralist thesis: there are many things with equal right to being called “logic”. In order to move past a mere platitudinous reading of this thesis, we must further clarify what we mean. Following [Cook 2010] we can distinguish between a number of views which may go by the title “logical pluralism”. The most straightforward or platitudinous reading holds that there are many different formal systems which we call “logic”, which are taught in various textbooks, and so on. Call this view Mathematical Logical Pluralism (MLP), because a logic is taken to be a mere mathematical object.³ If logical pluralism is to be a controversial thesis – which it has typically been taken to be⁴ – then the logical pluralism that philosophers of logic have been interested in pursuing cannot be identified with MLP. This also follows from the claim that logic has a normative role, as there is something substantive and non-mathematical which is built into the conception of logic, namely

³We might also call this Textbook Logical Pluralism, because it is the view that “logic” refers to the things which are studied in various different logic textbooks across various disciplines, and of which there are trivially many.

⁴[Beall and Restall 2006] is a book-length defense of logical pluralism; if they had in mind something like MLP such a defense wouldn’t be necessary, let alone at that length. There are also many opponents of logical pluralism, see for example [Priest 2001], [Read 2006]; again, charity requires that we interpret these authors as attacking something more substantive than the obviously true MLP.

a constraint on what we ought to believe.

In order to avoid the charge of triviality, logical pluralism must be the view that there is more than one *correct* logic, where correctness requires something more substantive than being a mere formal system. For simplicity, let us consider the most well-known and well-defend version of logical pluralism: that of Jc Beall and Greg Restall (first given in [Beall and Restall 2000] and given its fullest defense in [Beall and Restall 2006]). Beall and Restall defend a view on which logical consequence is an unsettled concept which gives rise to multiple, equally correct precisifications. The primary constraint on what counts as a correct precisification is three core features of the settled core of the concept of logical consequence which they claim are “central to the tradition [of logic], and any account of logic must take account of them”.⁵ Those three features are the following:

1. **Necessity** - the truth of the premises of an argument necessitate its conclusion
2. **Normativity** - if you believe the premises of a valid argument and disbelieve its conclusion, *ceteris paribus*, you’ve done something wrong
3. **Formality** - arguments are about forms of the premises/conclusion, rather than the content

[Beall and Restall 2006, pp. 14-23]

According to Beall and Restall, any formal system which satisfies these three constraints (plus one other formal constraint which we can for the moment set aside) counts as a correct precisification of the concept of logical consequence, and is thus

⁵[Beall and Restall 2006, p. 14].

properly deserving of the title “logic”. It is important to note that on this view there is nothing further to being logic than satisfying these requirements, and that each of the logics have equal claim to the name logic and are thus all *equally* correct.

Before we examine some other examples of underspecified concepts, it is important that we note that Beall and Restall (and most other pluralists) do not hold logical consequence to be an example of an ambiguous term relating to two (or more) precisified concepts. “Logic”, “valid” and “follows from” are not taken to be like “bank”, which refers to two vastly different concepts – a part of a river and a financial institution. There are at least two considerations which make this understanding of logical pluralism untenable. First, ambiguous terms do not give rise to real debates about the subject matter. If two people are debating about how to apply an ambiguous term like “bank” it is sufficient for one of the speakers to note that the term is ambiguous; once that fact has been realized, the debate dissipates. If the logical pluralist were to hold what we might call an *ambiguity theory of logical pluralism*, they would be claiming that terms like “logic” were ambiguous between “classical logic” and “intuitionistic logic”, and terms like “follows from” are ambiguous between “classically follows from” and “intuitionistically follows from”.

Given this understanding, logical pluralism would again be non-controversial; there is no debate as to whether, for example, A follows from $\neg\neg A$ in classical logic, or that it does not unrestrictedly follow in intuitionistic logic. If all that one means by being a logical pluralist is that there are multiple different conceptually disconnected formal systems which we call “logic”, then the view is at best, no better off than MLP, and at worst, worse off. If the ambiguity theory is correct, then logical

pluralism should again be a trivial view, and easily recognizable as true by speakers of the language and especially by experts in the subjects at hand. However, as noted above, there is serious disagreement over whether logical pluralism is true. The ambiguity theory, like MLP, is best interpreted as philosophically uninteresting.

If the ambiguity theory were to be interpreted as a philosophically interesting view, it would have to be interesting in virtue of claiming that the various uses of “logic” are conceptually unconnected. This view falters because it cannot make intelligible claims by various different positions in the philosophy of logic over the past century. If the ambiguity theory is correct, then classical logic shares no conceptual core with any given non-classical logic, yet non-classical logicians routinely see themselves as offering a revision of classical logic. Further, this reading of the ambiguity theory makes any reading of Beall and Restall’s use of a “settled core of the concept of logical consequence” nonsensical, because there is no such single concept, but many unconnected ones.

To further see this point, consider the way in which Beall and Restall speak about the concept of logical consequence. They quote a famous passage from Tarski as their starting motivation:

The concept of logical consequence is one of those whose introduction into the field of strict formal investigation was not a matter of arbitrary decision on the part of this or that investigator; in defining this concept, efforts were made to adhere to the common usage of the language of everyday life. ... With respect to the clarity of its content the common concept of consequence is in no way superior to other concepts of

everyday language. Its extension is not sharply bounded and its usage fluctuates. Any attempt to bring into harmony all possible vague, sometimes contradictory, tendencies which are connected with the use of this concept, is certainly doomed to failure. [Tarski 1983, p. 409]

Like Tarski, Beall and Restall hold that the primary object of investigation in the philosophy of logic is a *single* concept of logical consequence. Like many other concepts that we use, the concept of logical consequence is not precisely settled in every way, and the ways in which it is applied often conflict. They choose to understand these types of concepts in terms of *unsettledness*, in a way they compare to vagueness as it is discussed in philosophical logic [Beall and Restall 2006, p. 27]. Consider for example the term “bald” and its corresponding concept; while these certainly do apply to some people and certainly do not apply to others, there are a wide number of cases in the middle in which it is unclear how to proceed. On Beall and Restall’s view, the settled part of the concept settles the fringe cases, and then we can precisify in order to handle the further, unsettled cases. How we precisify will depend on a number of different constraints, including perhaps the rest of our language, the context of utterance, and so on. Further, there may be some precisifications which dub one person bald and another which dubs her not bald; this is not taken to be a contradiction or a flaw in the theory, but data which suggests that there are multiple, equally good precisifications of a single concept.

In the case of logical consequence, Beall and Restall hold that there are at least three precisifications of the concept, each of which agrees with the settled core (the three constraints noted above, including **Normativity**): classical logic, intuitionistic

logic and relevance logic [Beall and Restall 2006, pp. 31-2].⁶ On their view, each of these has equal claim to being called “logic”, because there is nothing more to being logic than being an admissible precisification which agrees with the settled core of the unsettled concept. The fact that these three logics disagree on certain inferences, rules, etc. is of no consequence, and does not imply any sort of confusion or ambiguity – they are simply three ways of making the same, underspecified concept clearer.

While Beall and Restall use vague expressions as their paradigm case of unsettled concepts, I do not believe that it is the only way, nor the best way, to understand the target phenomena. This is because the literature on vagueness is notoriously difficult and controversial, and many might disagree with the way in which Beall and Restall characterize vague expressions. The primary understanding of vagueness is in the Sorites paradox sense, and indeed, the first two examples that they use – “bald” and “rich” are best understood as vague in the Sorites-sense. The only other example of an unsettled concept they give is of necessity, but they analyze it in the same way (i.e. via unsettledness) that they do the concept of logical consequence, thus it us of no help in understanding the general explanatory strategy, unless one had a prior and primitive understanding of the case of necessity, which they do not offer [Beall and Restall 2006, pp. 27-8].⁷ While they note that there are non-Sorites understandings of vagueness, as in the case of necessity, claiming that “While it typically serves as

⁶Unlike “classical logic” and “intuitionistic logic”, the term “relevance logic” is used to refer to a wide variety of different logics, and Beall and Restall do not specify which relevance logic(s) they might have in mind, and their criteria do not fully specify a single logic. Because of this, the actual number of precisifications defended in [Beall and Restall 2006] is unclear.

⁷Beall and Restall do not state what they take to be vague in the case of necessity; presumably it is the concept and not a predicate as in the case of “bald” and “rich”. Their use of italics seems to indicate concepts in this context, although they don’t note what the notation is meant to indicate [Beall and Restall 2006, p. 27].

a paradigm, vagueness is not the only example of unsettledness” they do not go on to discuss any alternative ways to understand their thesis [Beall and Restall 2006, p. 27].

An additional problem arises when considering that vagueness is typically taken to have an extremely close connection with logic, as the primary way of solving the vagueness paradoxes is to alter one’s logic. This close connection might lead one to think that certain logical principles underwrite various different proposals in the vagueness literature, including the setup provided by Beall and Restall, and so an alternate understanding should be helpful. In the rest of this section I will offer two readings of Beall and Restall’s pluralism which should be amenable to their pluralism and pluralists of all stripes, and which will help set the stage for the problem which I’ll introduce in the following section.

In CHAPTER 3 I introduced my logical functionalist framework, and interpreted Beall and Restall’s account in functionalist terms. Let us briefly recall that discussion here. The logical functionalist proposes that we understand the concept of logical consequence in functionalist terms. That is: logical consequence is a concept understood in terms of its functional role, or what functions it plays in our overall theoretical inquiry. This functional role is pinned down by several core theoretical principles which define the concept and are essential to any understanding of that concept (as opposed to some other concept).

I proposed that Beall and Restall’s logical pluralism could easily be interpreted in functionalist terms, by interpreting their remarks about the settled core of the concept (defined by **Necessity**, **Normativity** and **Formality**) as core theoretical

principles. As Beall and Restall say - these features are central to logic, and any account must take account of them, or fail to be an account of logic at all.

In what follows I will introduce an alternative form of conceptual analysis – the open-texture analysis – and show how it can be used to interpret Beall and Restall’s view. While I believe that the argument of this chapter may go through using the functionalist analysis of the previous chapter, there are several advantages to using the open-texture analysis for our purposes here. First, the open-texture analysis is particularly well-suited to understanding Beall and Restall’s talk of “unsettledness” in a way that logical functionalism is not. Logical functionalism understands this talk of unsettledness by suggesting that the settled core of logical consequence is its core theoretical principles (**Necessity**, **Normativity** and **Formality**), and that the unsettled portions are other principles may be less central to pinning down the theoretical role of the concept. The open-texture analysis that follows will draw directly upon the talk of vagueness that Beall and Restall sometimes use, and thus may stick closer to what Beall and Restall originally intended.

More importantly for the purposes of the argument that follows, functionalist analyses do not require that all core theoretical principles defining a concept be satisfied in order to realize its theoretical role. How many are required is a matter of theoretical debate, but it is possible that some theoretical principles – especially those less central to the concept – will not be satisfied by every realizer. The open-texture analysis on the other hand relies on preserving the settled core of the concept being analyzed in its entirety and then extending it in new and novel ways. This feature of the open-texture analysis will be important in understanding the strength

of the problem for logical pluralists.

With that proviso, I propose that we follow [Waismann 1945] in distinguishing vagueness from what he called *open-texture*.⁸ Open-texture is, according to Waismann, “something like the possibility of vagueness”, where vagueness is not to be understood in the Sorites-series sense, as will become clear [Waismann 1965, p. 123]. Open-texture predicates are those whose usage cannot be fully defined by rules, no matter how exact, because their usage is under-determined by the language and the non-linguistic facts. While the usage of open-texture predicates can be extended in novel ways, there are certain aspects which *are* held fixed, and cannot be violated.

Many, if not all, open-texture predicates will be open-texture because the concepts which they predicate of are themselves open-texture. An open-texture concept then is a concept with a fixed yet non-exhaustive core, which can be extended in various ways. Waismann claimed that most of our empirical terms were open-texture [Waismann 1965, p. 123]. His example was that of gold (the metal, not the color). The entirety of the section is worth reproducing here:

The notion of gold seems to be defined with absolute precision, say by the spectrum of gold with its characteristic lines. Now what would you say if a substance was discovered that looked like gold, satisfied all the chemical tests for gold, whilst it emitted a new sort of radiation? ‘But such things do not happen.’ Quite so; but they might happen, and that is enough to show that we can never exclude altogether the possibility of

⁸My discussion here differs from other understandings of open-texture like that of [Shapiro 2013], who uses open-texture as a way of approaching certain cases in the vagueness literature. See esp. [Shapiro 2013, fn. 9].

some unforeseen situation arising in which we shall have to modify our definition. Try as we may, no concept is limited in such a way that there is no room for any doubt. We introduce a concept and limit it in some directions; for instance we define gold in contrast to some other metals such as alloys. This suffices for our present needs, and we do not probe any farther. We tend to *overlook* the fact that there are always other directions in which the concept has not been defined. And if we did, we could easily imagine conditions which would necessitate new limitations. In short, it is not possible to define a concept like gold with absolute precision; i.e., in such a way that every nook and cranny is blocked against entry of doubt. That is what is meant by the open texture of a concept.

[Waismann 1945, pp. 122-3]

It is worth stopping for a moment to do some exegesis here. Waismann seems to think that *all* concepts are open-textured. In the above quote he claims that “no concept is limited in such a way that there is no room for any doubt” [Waismann 1945, p. 122]. He reiterates this in his later book:

Try as we may, no concept is outlined in such a way that there is no room for any doubt. ... But what then would be an exact concept? One which anticipated all cases of doubt, one which is outlined with such precision that every nook and cranny is blocked against entry of doubt? But then we have to own, that *no* concept satisfies this demand... [Waismann 1965, p. 223]

We needn't be committed to this strong of a claim; instead we need only that there

are some concepts which are open-texture in the sense that Waismann illustrates. Given that natural kinds like ‘gold’ can be taken post-Kripke to be rigid designators, it is worth noting that there are other plausible candidates for open-texture, e.g. ‘game’ or ‘religion’. In both cases there is some minimal core to each concept: games can be won and religions involve ritual, and these cores can be extended in new and novel ways.

Importantly for our discussion here, we do not assume that all open-texture concepts will be extended in the same direction – that is, we do not assume that all expansions will be built on top of previous expansions in a way that preserves all previous aspects of the concept. In his example of the open-texture concept of gold, Waismann describes a situation in which we add various new aspects to our previous concept of gold, and may need to continue to do so in perpetuity. He does not explicitly discuss cases in which we extend our original concept in two or more conflicting directions, but nothing prevents us from adopting this view so long as the core, settled portion of the concept (or core, settled usage of the predicate) is not violated. To return to one of our examples: in the case of religion, some extensions of the concept hold that deities are involved, whereas others have no deities whatsoever. It is also important to note that there is no reason to assume that the reason for a novel extension will always hold into the future in such a way that would cause it to be, in a sense, added to the core of the concept. In fact, we should be careful to retain a distinction between the core of the concept and the extensions of it, even if they were to remain fixed, as we may have reason to hold onto the original concept, e.g. if it is the folk theory concept.

I propose that we understand the concept of logical consequence as an open-texture concept in order to get a better grasp on what Beall and Restall are getting at. The concept's fixed core is made up of the three features noted earlier, including importantly for our purposes **Normativity**. On this account the concept of logical consequence is an open-texture concept which can be expanded in a number of different and conflicting ways, but which are nonetheless related in virtue of sharing a common core, each of which are logic proper.⁹ This new type of open-texture account gives the most defensible account of Beall-Restall pluralism, and one which makes clear the importance of the **Normativity** role, which leads us to the central problem of the paper as discussed in the next section.

4.3 The Normative Problem for Logical Pluralism

As we saw in the previous section, the logical pluralist holds that there are multiple, equally correct logics. In this section, I will argue that logical pluralism is incompatible with the traditional conception of logic as normative. This is the **NORMATIVE PROBLEM FOR LOGICAL PLURALISM**, which can be put forth as a dilemma:

1. The logical pluralist maintains her pluralism at the cost of abandoning the traditional conception of logic as normative.

⁹[Shapiro 2014] also invokes Waismann's open-texture theory in the context of logical pluralism. For Shapiro however, it is the logical connectives themselves (or to be more precise, the term "means the same as" as applies to the logical connectives) which is open-texture, rather than the concept of logical consequence or meta-logical terms like "entails" or "valid". That is, Shapiro's pluralism does not require or stem from the open-textured nature of logical consequence, while on my interpretation of Beall-Restall that is their central thesis and insight.

2. The logical pluralist maintains the the traditional conception of logic by abandoning her pluralism.

How does the NPLP arise? Consider a logical pluralist who holds that there are two correct logics: classical logic and intuitionistic logic. We can set aside the exact details of how to cash out the normativity of logic for the moment; for now it is sufficient to consider a simple view according to which, if you believe the premises of a valid argument are true, then you ought to believe its conclusion. Given these two assumptions, consider the following argument:

1. $\neg\neg A$
2. $\therefore A$

According to classical logic the above argument is valid, while according to intuitionistic logic it is invalid. If logical pluralism is true, what ought the pluralist believe?¹⁰ By assumption, she holds that logic is normative in our reasoning; it is part of the core concept of logical consequence, and thus must be part of any way in which we extend or precisify that concept. Because the argument is classically valid, and classical logic is normative in our reasoning, she seemingly ought to believe A . On the other hand, her other logic demurs from the validity of the above argument, which seems to cast reasonable doubt on whether she ought to believe A . Independent of this doubt, intuitionistic logic, which again is normative in our reasoning, says she need not believe A .

¹⁰By this we mean “what ought she believe on the grounds of logic”. Of course she may have alternative reasons for believing (e.g. coercion), but these are irrelevant for our purposes. I will omit the modifier for readability going forward.

Before moving forward, let us first return to Beall and Restall's conception of **Normativity**. Beall and Restall describe the normative role of logic as:

Normativity - if you believe the premises of a valid argument and disbelieve its conclusion, *ceteris paribus*, you've done something wrong

According to classical logic, the pluralist does something wrong if she believes $\neg\neg A$ but disbelieves A , as A is the conclusion of a (classically) valid argument whose logic is normative in our reasoning. But again, her other logic demurs from the validity of the above argument, and makes no claim about the wrongness of disbelieving A whilst believing $\neg\neg A$, and intuitionistic logic is *also* normative in our reasoning.

In this way it seems that the logical pluralist faces a bind: she seemingly does something wrong on the grounds of logic by disbelieving A and simultaneously must acknowledge that she does not do anything wrong on the grounds of logic by disbelieving A . When her logics conflict their normative assessments – whether evaluative or deontic – conflict as well.

As argued earlier, logical pluralism cannot plausibly be a version of the ambiguity theory, and thus simply recognizing that one of her logics (classical) gives the evaluation and the other (intuitionistic) demurs is not sufficient to resolve the problem. According to the logical pluralist both classical logic and intuitionistic logic are *logic*, because there is nothing more to being logic than being a precisification of the underspecified or family-resemblance concept. Her logics seem to give her conflicting claims. That is, the pluralist seems committed to the following, inconsistent claims:

CN: I do something wrong by disbelieving A .

IN: It is not the case that I do something wrong by disbelieving A .

CN is due to the argument being classically valid, while the argument being intuitionistically invalid gives rise to IN. Note here that IN is the direct negation of CN, and should *not* be read as implying that “I do something right by disbelieving A ”; rather, it simply negates the evaluation codified in CN. As IN is the negation of CN, the pluralist seems committed to believing a contradiction. Both CN and IN stem from the belief that logic is normative, which was a shared and essential feature of the traditional conception of logic. Unfortunately, this shared normative role seems, when paired with logical pluralism, to give rise to two incompatible normative guidances. Thus, it seems that she must give up on the normativity of logic itself, which was an essential part of her concept of logic to begin with. This is the NPLP: one must either give up on logical pluralism or on the normativity of logic.

Beall and Restall’s **Normativity** introduces a notion of disbelieving into the mix – one which we need to stop and take explicit account of. The logical pluralist must not equate disbelieving a proposition with believing that proposition’s negation, on pain of undermining their commitment to their non-classical logics. If we meant by “disbelieving A ” believing $\neg A$ this would force some sub-classical logics, including intuitionistic logic, to hold that they disbelieve the characteristically non-classical propositions. But almost all philosophically interesting non-classical logics (and all of the ones that Beall and Restall are interested in) are *sub*-classical logics: logics which never validate any principles that classical logic does not. To consider an

example: intuitionistic logic does not say that one can infer $\neg A$ from the invalidity of double negation elimination. Further, intuitionistic logic cannot say this on pain of (intuitionistic) contradiction. Intuitionistic logic is a sub-classical, rather than contra-classical, logic.

Given this, the pluralist must mean something else by disbelief. Following [Restall 2005] and [Ripley 2011], we should distinguish between the following four phenomena:

- **Assertion:** a positive speech act of assent
- **Denial:** a negative speech act of dissent
- **Acceptance:** a positive attitude of assent
- **Rejection:** a negative attitude of dissent

As the norm under consideration is about attitudes we can constrain ourselves to the pair of attitudes: **Acceptance** and **Rejection**. Both are primitive attitudes – to reject a proposition is simply to dissent from it and not to believe its negation.¹¹ To reject a proposition is not to believe its negation, or to believe that it is false, but rather to simply dissent from believing it. In this way, rejection is compatible with suspension of belief.

We can understand **Normativity** in these terms, so that the issue boils down to the conflict between two claims: one which has it that the pluralist does something wrong by rejecting A , and one which has it they do nothing wrong by rejecting A . It is clear that the two claims conflict: the intuitionistic claim negates the classical

¹¹Of course one can reject a proposition in virtue of believing its negation, but rejection is not defined in terms of negation.

one. According to intuitionistic logic, one does nothing wrong when they reject A whilst believing $\neg\neg A$, while the classical norm has it that she did something wrong or irrational.

At this point it may be helpful to consider an analogy to see how the NPLP arises. Imagine that you are the executive decision maker of some organization, and that you must determine what course of action you will take. You have two advisers who will give you advice based on different viewpoints or theories. One of your advisers suggests that you ought to go forward with some action, call it A . When you turn to your other adviser, she disagrees with the first's suggestion. This does not mean that she wants to advise you to do the opposite of A , or take some other action B which is inconsistent with A . She simply believes that the first adviser's advice is flawed: whatever guidance the first gave you, you needn't follow it.¹²

When considering the normative role that logic plays in our reasoning, the above situation is much like the situation that a pluralist faces in the NPLP. Your advisers give you normative guidance relating to an argument at hand, and you must determine whose advice to follow. In the case above, classical logic gives the pluralist a positive normative guidance, based in recognizing the classical validity of the argument. Our intuitionistic adviser defers, and tells us that we are not required to

¹²This analogy may be particularly helpful in considering how the NPLP arises even for a view like Field's, as given in [Field 2009b]. Field's logical pluralism is a form of expressivism which holds that the normative role of logic is in forming, evaluating and revising our beliefs [Field 2009a, p. 354]. Further, these norms, according to Field, will be relative to our goals, and there is no reason to think that there is a uniquely best norm for each goal; thus, pluralism arises [Field 2009b, p. 355]. As Field is happy for there to be two conflicting norms even relative to the very same goal, the normative guidance is conflicting, and thus only one logic will actually be taken as normatively guiding. But according to the conceptual analysis of logic given earlier, to be a logic is to be (in part) normative in our reasoning. Thus, even for the expressivist the NPLP arises.

believe A on the logical basis of $\neg\neg A$, because double negation elimination is not unrestrictedly valid according to her logic. Even though she does not go so far as to suggest the pluralist believe $\neg A$ she disagrees with the classical adviser, because the classical logician believes that the pluralist has some normative guidance arising from the argument, whereas the intuitionistic logician does not.

The logical pluralist could accept a permissive view, according to which we should believe the conclusion of any valid argument according to any correct logic. In this case then, the pluralist should believe A . The problem with this approach is that if you are dealing with multiple logics which are sublogics of one another, as in the case of intuitionistic logic and classical logic, the only logic which plays any normative role will be the strongest logic, as it will validate all the inferences of its sublogics by definition. Because nearly every logic proposed by philosophers as a proper “logic” is a sublogic of classical logic (or classical logic itself), this problem quickly threatens to trivialize the pluralist’s view.

The restrictive view faces a dual problem. The restrictive view is the one according to which you should only believe the conclusion of arguments which are valid according to *every* correct logic. In the above case the pluralist need not to believe A , because one of her logics deems it invalid. Again, if the logics which the pluralist holds are correct are sublogics of one another, then there will only be a single logic which plays any normative role: the weakest one, as only its validities will always be maintained in the other logics. As before, a further problem lies in the wings; if the pluralist does not accept a logic which is a sublogic of every other logic she accepts, i.e. if the correct logics are incomparable, then there may be very few, or possibly no

arguments whose conclusions we should believe due to the normative role of logic.

Let us now differentiate between the NPLP and three other similar problems that the logical pluralist might face. One might take the above line of reasoning to show that the logical pluralist is committed, or might end up being committed given the right logics, to believing both A and $\neg A$ for some A . This will not be the case given reasonable logics, unless the pluralist would have been committed to believing A and $\neg A$ on monistic grounds as well. Consider again a pluralist who accepts classical logic and intuitionistic logic. Because intuitionistic logic is a sublogic of classical logic, there will be no intuitionistically valid argument which entails $\neg A$, but classically entails only A . Sublogics only ever say *less* than the logic which they are a sublogic of; so if intuitionistic logic entails $\neg A$ classical logic would as well. Further, because classical logic is consistent, there will be no valid arguments which entail both a proposition and its negation, so if intuitionistic entails A , classical logic will not entail $\neg A$.

If the logical pluralist is to be committed to believing both A and $\neg A$, the reason she is committed would not stem from her pluralism but instead monistic grounds as well. Consider the pluralist who holds that there are two correct logics: classical logic and Graham Priest's LP. LP is a paraconsistent logic which holds that some propositions are both true and false; so for at least some A both A and $\neg A$ are true. Again, LP is a sublogic of classical logic, so while both A and $\neg A$ will be true, there will be no valid arguments whose conclusions go further than classical logic does, i.e. no two arguments whose conclusions are A and $\neg A$ respectively. A simple fact about the two logics helps make this clear. Classical logic and LP share the same class of

logical truths: if A is a logical truth of one logic then it is a logical truth of the other. Because classical logic is consistent, none of its logical truths are contradictory, and thus so are none of LP's. LP does allow for contradictions, but only as premises, and the classical logician would just deny that those premises are jointly true (thus making any of the LP inferences trivially valid). In this case, classical logic has no part to play in the believing of a contradiction, and thus logical pluralism has no part to play; it was all due to the paraconsistent logic accepted.

If a logical pluralist accepted both classical logic (or one of its sublogics) and a *contra-classical* logic, a logic which directly contradicts classical logic by having $\neg A$ where A would be entailed (or vice versa), then the logical pluralist could end up in the bind described above. But few find such logics mathematically interesting, and no philosopher I'm aware of has proposed any contra-classical logic as being a good conception of what the philosopher means by "logic".¹³ It seems safe to conclude then that it is not the case that the pluralist is committed to believing an outright contradiction.

A related problem might claim that the logical pluralist is committed to both affirming and denying that $\neg\neg A$ entails A . Put formally, the logical pluralist may be said to committed both to the truth and falsity of DNE:

$$\text{DNE: } \neg\neg A \vdash A$$

The NPLP differs from the above problem in being a proposition of the metalanguage of the pluralist's logic; it is a proposition about some logical entailment. The

¹³Here it is worth noting again that what the philosopher means by "logic" is not what MLP means by "logic". Of course there are contra-classical formal systems which are perfectly fine (qua formal systems).

logical pluralist could be thought to be committed both to the truth of DNE and its falsity because while $\neg\neg A$ does classically entail A , it does not intuitionistically entail A .

This problem is not the one facing the logical pluralist either. The logical pluralist does not recognize an unrestricted or general formal relation of validity. There is classical validity, intuitionistic validity, relevant validity, and so on, and each of these are a precisification of the (single) concept of validity, but the unsettled core concept itself has no formal features, and thus there is no general formal relation of validity.¹⁴ That is, there is no such thing as logical validity, except insofar as that is shorthand for referring to all the various types of logical validity, including classical and intuitionistic validity.

While Beall and Restall never explicitly deny the existence of a general formal notion of validity, they must not accept one. If they accept a generalized account of validity their pluralism will quickly collapse into a monism, as has been suggested by [Priest 2001]. Thus, we should interpret the logical pluralist as defending a view which holds that DNE does **not** express a proposition. Instead, she should propose the following two principles as the way to understand what DNE attempted to express:

$$\text{DNE}_C: \neg\neg A \vdash_C A$$

$$\text{DNE}_I: \neg\neg A \not\vdash_I A$$

where \vdash_C is to be read “classically entails” and \vdash_I is to be read “intuitionistically

¹⁴This is to be distinguished from the core having no features whatsoever; it has at least three on the Beall-Restall account: **Necessity**, **Normativity** and **Formality**. However these are not *formal* features. The formal features come with the logics themselves, which are extensions of the concept, not with the core of the concept itself.

entails”.

Suitably understood, the contradiction no longer arises. The pluralist recognizes that A is classically entailed but not intuitionistically entailed, that both are senses of validity, and that there is no further, general sense of validity to be had. The pluralist denies any reading of generic validity like that in DNE, in favour of more-specified readings like that of DNE_C ; there simply is no such thing on the pluralist account of validity simpliciter, on pain of contradiction.

Finally, I want to distinguish the NPLP from other, similar problems in the literature that also attempt to show that logical pluralism is flawed. [Caret 2017] identifies several critics of logical pluralism who put forth what he calls a *collapse problem* for logical pluralism, namely that “despite its intention to articulate a radically pluralistic doctrine about logic, the view unintentionally collapses into logical monism”.¹⁵ Caret first cites [Read 2006], who gives the collapse problem thusly:

[S]uppose there really are two equally good accounts of deductive validity, K_1 and K_2 , that β follows from α according to K_1 but not K_2 , and we know that α is true... It follows K_1 -ly that β is true, but not K_2 -ly. Should we, or should we not conclude that β is true? The answer seems clear: K_1 trumps K_2 . After all, K_2 does not tell us that β is false; it simply fails to tell us whether it is true... K_1 and K_2 are not equally good. K_1 answers a crucial question which K_2 does not. [This] question is the central question of logic. [Read 2006, pp. 194-5]

Caret also points to another, similar collapse problem as given in [Keefe 2014].

¹⁵[Caret 2017, p. 740].

Keefe claims that:

...when the consequence relation of one logic is contained within that of another, we should work with the latter in preference to the former if we want to know whether our conclusion is true. For example, it is enough that A follows classically from not-not-A to warrant reasoning that way, despite the fact that it does not follow by intuitionistic logic. Even if there's no strongest relation among those relations that a pluralist admits, there will still always be a right answer to whether we should draw some conclusion from some premises, namely that we should if it follows according to any of the logics they accept.

This thus yields a privileged consequence relation. The central role of logic is to use it to infer truths and our privileged consequence relation fills that role in such a way that it is plausible to say that a conclusion found to follow in this sense from some premises but not “follow” in another, simply fails to satisfy some stronger condition... [Keefe 2014, p. 1385]¹⁶

Caret interprets both Read and Keefe as giving a collapse argument based in the normativity of logic. He notes that with respect to Read's view of the central question of logic “What makes this question ‘central’ to logic, it seems, is that the answers to this question delineate logic's normative role for reasoning”.¹⁷ As for

¹⁶This view is similar to the permissive view of logical pluralism I sketch above.

¹⁷[Caret 2017, p. 143].

Keefe, she “echoes this thought when she asserts in the quote above that ‘the central role of logic is to use it to infer truths’”.¹⁸

While I agree that Caret is correct in recognizing that there is a general phenomenon of collapse problems, and correct in claiming that both Read and Keefe put forth such problems, I think he fails to distinguish between different types of collapse problems. Both Read and Keefe are concerned with the role of logic in determining which propositions are true, by way of determining what follows from what. This goal is a primarily *alethic* one. Of course there is a connection between normativity and truth, in large part because it is commonly assumed that truth is normative in our reasoning. But this is not to claim that logical pluralism fails for failing to account for the normativity of logic. In both Read and Keefe’s collapse problems, logical pluralism fails because one logic fails to recognize the truth of a proposition that another logic the pluralist accepts does recognize. Keefe herself explicitly touches on this when she considers whether the pluralist may be able to appeal to differing notions of truth-preservation to explain why there is no collapse:

But does this line of thought ignore the fact that we should and do require more of our arguments than mere truth-preservation – typically *necessary* truth-preservation? Perhaps when a conclusion follows by one of our logics and not by another, we can’t ignore the narrower relation, because it also appeals to a sense of necessary truth-preservation that is legitimate to require. That, however, raises the question why we should insist on more than truth-preservation, when what we are interested in

¹⁸[Caret 2017, p. 143].

is the truth of our conclusions. [Keefe 2014, p. 1386]

Compare Read and Keefe to the problem that I raise. In the NPLP, there is no concern as to whether the conclusions of the arguments in question are true. The problem arises independently from concerns about truth-preservation; what is at stake is the conflicting normative guidance. It is not as if the intuitionist in our case above is in disagreement about whether A is true – she merely disagrees as to whether we should believe A *on the grounds of logic*. This is perfectly consistent with acknowledging that the classical logician is correct about truth-preservation, if she so chooses.

To follow Caret’s helpful terminology, in giving the NPLP I am also giving a collapse argument against logical pluralism. But while Read and Keefe’s collapse arguments are alethic in nature, the NPLP is a normative collapse argument: the collapse stems from the conflicting normative guidance, as opposed to the conflicting determination as to the truth of the conclusion of an argument.

4.4 Attempts to Solve the NPLP

One *Normative* Logic

I now want to move on to considering some responses to the NPLP. One intuitive response is to claim that while the pluralist holds that there are multiple equally correct logics, she needn’t hold that every logic is equally good in every respect. That is, some logics may be better than others for particular purposes. This is a natural view, and one which can easily be taken to be suggested by Beall and Restall,

who hold that while classical logic and relevance logic are both equally correct as far as being logic goes, relevance logic better models inconsistent theories.¹⁹ If some logic can be better for some purpose than another logic, let the normative role of logic be such a purpose and designate one and only one of the correct logics as the one giving us norms regarding deductive arguments. This would then eliminate the conflicting normative guidance, and the pluralist would be able to account for both the normativity of logic and keep her pluralism.

Unfortunately for the pluralist, this move is not open to her. The pluralist agreed with the traditional conception of logic, according to which it is *essential* to logic that it is normative. That is, it is constitutive of our concept of logic itself that it play a normative role in our reasoning. On the traditional conception, something simply cannot be logic if it is not normative. Put in Beall and Restall's terms, it is part of the core of the concept; any further precisification preserves all the core features, and thus every correct logic will have to account for the normativity of logic. Thus, designating one logic as normative would be to either give up on this conception of logic, and claim that logic isn't essentially normative, as there are logics which play no normative role, or to give up on logical pluralism and admit that the "logics" which play no normative role really weren't logic proper after all, but instead something more akin to the heterodox conception of logic in play in MLP.

¹⁹[Beall and Restall 2006, p. 59].

The Normativity of Truth In Addition to Normativity of Logic

The logical pluralist may instead attempt to help herself to additional normative resources to solve her dilemma. Consider again our argument from above:

$$\text{DNE}_C: \neg\neg A \vdash_C A$$

$$\text{DNE}_I: \neg\neg A \not\vdash_I A$$

While classical logic requires her to believe A , intuitionistic logic demurs. If the logical pluralist could find a way for both of her normative guidances to agree the NPLP would seem to dissolve. She may attempt to do this by appealing to the further normativity of *truth*. If truth is normative and A is true, then she seemingly ought to believe A .

The question then is: is A true? Another crucial aspect of logical consequence requires her to say yes. A common way of defining validity is as the “necessary preservation of truth in virtue of logical form”. This is the reason that Beall and Restall include **Necessity** among the core features of logical consequence:

Necessity - the truth of the premises of an argument necessitate its conclusion

Classical logic must satisfy this requirement as well, and thus we know that, if $\neg\neg A$ is true, A is as well. And thus the pluralist must acknowledge that A is true in both circumstances. Further, because truth is normative, and if the pluralist knows that A is true, she ought to believe that A .

This response misses the mark. It is not sufficient to fall back on some additional normative requirement that would require us to believe the consequences of one of our valid arguments. The issue is that the two logics each must play some normative role, and that in doing so they disagree on what agents ought to do. Adding another reason for the pluralist to believe A does not fix this problem; regardless of how many more reasons to believe A she might have, intuitionistic logic, in its normative role, does not tell her to believe A , while classical logic does.

Put otherwise; the NPLP is not a problem because it is unclear what the pluralist ought to believe. Rather, the dilemma arises from trying to account for the conflicting natures of pluralism and normativity.

Relativist Pluralism

The NPLP arose because the pluralist's logics ranged over the same propositions. If the pluralist were to relativize logical consequence then perhaps she could avoid the problem which gives rise to the NPLP. Call a view which holds that whether a logic is correct is *not* relative to any feature, e.g. contexts, languages, domains, a type of *global logical pluralism*. The pluralism of Beall and Restall is the primary case of global logical pluralism²⁰

Compare global logical pluralism with what we might call *logical relativism*. The logical relativist holds that whether something is a correct logic is relative to some phenomena, e.g. a conversational context or a domain of discourse. A paradigm case of relativism is from [Lynch 2009], who proposes what he calls *domain-specific logical*

²⁰[Beall and Restall 2006, p. 88].

pluralism: the view that whether a logic is correct is relative to a domain of inquiry, and there are at least two domains which call for at least two different logics.²¹ [Shapiro 2014]’s recent Hilbertian-inspired logical pluralism, which holds that logics are relative to contexts involving particular mathematical structures, is another example of a pluralist/relativist view. Contextualist views of logical consequence may also qualify, e.g. [Caret 2017]. These views may be both relativist and pluralist, so long as they hold that there is a single concept of logical consequence. According to these views, the way in which the concept is extended or precisified has to do with what logic is being relativized to, e.g. domains of discourse or conversational contexts.

According to the relativist pluralist, only one logic holds in the restricted setting. For example, if we consider Lynch’s domain-specific logical pluralism, classical logic holds for empirical propositions and intuitionistic logic for moral propositions.²² Given this, and the assumption that every proposition falls into exactly one domain, the problem which gave rise to the NPLP goes away: *A* is governed by merely one logic, so there can be no conflict.

This does indeed do away with the problem which made the NPLP possible, but at a significant cost. Logical relativists go against another aspect of the traditional conception of logic: the idea that logic is universal or fully general. Consider Frege’s quote earlier, which held that the laws of logic were the most general laws of thought. This idea is also codified under a different heading in Beall and Restall’s account, where they claim that logic must obey **Formality**:

²¹[Lynch 2009, p. 94].

²²[Lynch 2009, pp. 95-6].

Formality - arguments are about forms of the premises/conclusion, rather than the content

This requirement requires that logic not be concerned with particular propositions but with their most general aspects. Another way of formulating this requirement is in the idea that logic must be *topic neutral* – it must apply to all topics whatsoever. Relativist proposals restrict logic in ways that require the rejection of **Formality** by paying attention to the semantic content of the proposition.

The relativist pluralist escapes the NPLP and is able to accept both the normativity of logic and her logical pluralism. But she must abandon another key feature of logical consequence, and is thus subject to what we might call the GENERALISED NORMATIVE PROBLEM FOR LOGICAL PLURALISM (GNPLP):

1. The logical pluralist maintains her pluralism at the cost of abandoning some part of the traditional conception of logic (**Normativity** or **Formality**).
2. The logical pluralist maintains the the traditional conception of logic by abandoning her pluralism.

The GNPLP is just as pressing as the original problem, and thus no headway has been made.

Weakening the Norms

In SECTION 2 when introducing the NPLP we worked with a very basic norm of logic, according to which one ought to believe the conclusions of (deductively) sound

arguments. This is an obviously simplistic picture, and one way out of the NPLP may be to attempt to work with some other norm. [MacFarlane ms.] seems to take the primary problem with logic's normativity to be figuring out which norm one ought to adopt. He calls these links between logical validity and norms of belief "bridge principles": principles which connect claims about logical validity with normative claims about belief.²³ The basic structure of a bridge principle is as follows:

BRIDGE PRINCIPLE: If $A, B \models C$, then (normative claim about believing A, B , and C). [MacFarlane ms., p. 6]

This is obviously in need of fleshing out, and MacFarlane does so by varying three parameters: the type of deontic operator involved in the norm, the polarity of that operator and the scope of that operator.²⁴ MacFarlane's variations along these lines give 18 bridge principles from which to select, each which codify a different norm of belief on logical grounds. The norm which I used earlier (if you believe the premises of a valid argument are true, you ought to believe its conclusion) is a particularly implausible one of these bridge principles, because it would require us to believe all of the infinitely many logical consequences of our beliefs, which is both impossible and would be mostly irrelevant for our actual concerns.²⁵

Much work has been done recently on elucidating various different logical bridge principles in an attempt to determine which are most plausible.²⁶ No attempt to vary the bridge principle can satisfy the NPLP however. This is because the NPLP

²³[MacFarlane ms., p. 5].

²⁴[MacFarlane ms., p. 6].

²⁵This is first forcefully pointed out by [Harman 1986, pp. 5-6].

²⁶See e.g. [Steinberger 2019].

is not concerned with the structure of the bridge principle in question, but merely whether any normative guidance has been offered at all. Consider again the two claims which the pluralist is committed to:

CN: I ought to believe A on the grounds of logic.

IN: It is not the case that I ought to believe A on the grounds of logic.

No matter how one varies the deontic operator involved in CN and IN the basic structure remains: CN gives the pluralist normative guidance, while IN negates that normative guidance. From the perspective of the pluralist's differing logic, the question of which bridge principle to invoke never arises, because there simply is no valid argument here to be considered; the complexity and details of the bridge principle itself are a red herring.

4.5 Conclusion

If my arguments hold, then the NPLP raises a significant problem for the logical pluralist. One lesson learned may be that pluralism is simply untenable if one also wants to maintain the traditional conception of logical consequence. This itself is not necessarily an argument against logical pluralism. In theory choice we must always weigh our various theoretical options and their costs and benefits against one another, deciding which net the best benefits at the least costs. It may turn out that pluralism is so beneficial as to make negligible the cost of abandoning the traditional conception of logic. This would need to be argued however, and we do not have the space to investigate that possibility here; after all, we have not even examined

the benefits of logical pluralism but merely adopted it as a starting point for this discussion.

If it turns out that, all things considered, logical pluralism is not worth the cost of breaking with the tradition of philosophy of logic for the last few centuries, then the upshot of the NPLP would be that logical monism (or perhaps logical nihilism) is the most defensible position in the philosophy of logic. But even if the pluralist gives up on her pluralism she may find ways to recapture some of the benefits of logical pluralism without committing herself to pluralism proper. For example, if one adopts a weak logic as their One True Logic, they can appeal to non-logical principles, specifically metaphysical principles, to explain how certain arguments are necessarily truth preserving, even if they're not *logically* valid.²⁷ Other strategies can also be employed; consider a monist who adopts classical logic, but can consider other relevant (non-logical) properties of interest, like constructivity or relevance. Adoption of strategies like these may be enough to recapture the benefits of pluralism, without the cost.

I want to conclude by considering a final possibility: that the normativity of logic is much more like the normativity of ethics than previously considered. In the moral domain we recognize the existence of moral dilemmas, where a moral theory determines that there simply is no best moral option all things considered. Faced with a decision between choosing one's own child and a family friend's child one may face an impossible task for the theory. As a parent, you have a moral obligation to save your child. Likewise, you have a moral obligation to your friend to save their

²⁷Recalling that logical validity is not mere necessary truth preservation but necessary truth preservation in virtue of logical form.

child. There simply is no answer as to what you should do all things considered, independently of the obligations you have as a parent or a friend.

One way to proceed would be to consider logic no better – nor worse – off than morality when it comes to dilemmas. The existence of moral dilemmas does not (generally) suggest that any moral theory which leaves open the possibility of their existence is flawed and must be rejected. Instead, we may simply have to appeal to a distinctly non-moral norm to guide our actions, e.g. a prudential norm. Along the same lines, perhaps the answer to these logical dilemmas is not to be found in logic, but elsewhere, such as the truth norm. As noted before, while this solves the practical tension between the pluralist’s commitments, it does not do so on logical grounds, and thus the conflict between pluralism and the normativity of logic still persists. But perhaps this is simply the best we can do; there is no logical solution to be had.²⁸

²⁸An earlier version of this chapter was published as [Kellen 2018b]. Thanks to the editors of *Inquiry* for their permission to reprint here.

Chapter 5

The Logic of Truth Pluralism

5.1 The Logic of Truth (via Manifestation)

According to Michael Lynch¹, truth pluralism is an endorsement of the following claim:

TRUTH PLURALISM: There is more than one property of propositions in virtue of which propositions (that have that property) are true. [Lynch 2013, p. 21]

For example, a truth pluralist may hold that propositions can be true in virtue of some sort of (robust) correspondence with the world, or in virtue of having the

¹For reasons of simplicity and time constraints I will refer only to truth pluralism as developed by Lynch, primarily in [Lynch 2009], as his pluralism is the most well-developed and well-known account in the literature. That being said, my argument will apply to any of the various forms of pluralism which are influenced by Lynch's account, e.g. [Edwards 2013], [Pedersen 2014], and also to the earlier, but similar pluralism of Crispin Wright, e.g. in his [Wright 1992].

property of superwarrant²:

SUPERWARRANT: P is superwarranted just when believing P is warranted at some stage of inquiry and would remain warranted without defeat at every successive stage of inquiry. [Lynch 2013, p. 21]

More generally, the truth pluralist claims that a proposition P is true iff it has the property M which *manifests* truth for P , where manifestation is understood as follows:

MANIFESTATION: A property M manifests truth for a proposition P iff it is a priori that the following three features are a proper subset of the features of M : all propositions which possess M are objective, correct to believe, and those we should aim to believe in inquiry. [Lynch 2013, p. 25; 33]

With this, we can see how the truth pluralist's metaphysics of truth operates. She must pick out some truth-manifesting properties, each of which play the role of truth for some class of propositions. The two properties we picked out earlier, correspondence and superwarrant, are examples of truth-manifesting properties. For example, our truth pluralist may hold that correspondence manifests truth for all propositions about empirical matters, e.g. medium sized dry goods, while superwarrant manifests truth for moral propositions.

This is the truth pluralist's account of the truth of a proposition, but what is their account of falsity? Lynch claims that a proposition is false just when there is a

²The property of superwarrant is closely connected to Crispin Wright's property of superassertibility; see [Wright 1992], esp. pp. 44-57.

truth-manifesting property for the proposition in question, but that proposition fails to have it.³ While this is a standard account of falsity, we must be careful here in order not to undermine the motivation for truth pluralism itself. One of the initial motivations behind accepting an epistemic property like superwarrant is to allow for the possibility of propositions which are neither true nor false. Consider for example, the following example involving the characters from the novel *Sophie's Choice* which Lynch uses to motivate his epistemic theory:

s: Sophie's choice [of sacrificing her daughter] is morally right.

Lynch claims:

(s) claims that her actual choice – to give up the younger of the two children – is the morally right one. But it is difficult to see how that could be. The more natural thought is that neither choice is right; hence we have warrant to think that any judgment to the contrary is neither [superwarranted]⁴ nor not [superwarranted], and hence neither true nor false. [Lynch, 2009, p. 179]

This motivation extends past Lynch's example. In general the move towards an epistemic property which makes propositions true is an attempt to tie the semantic value of propositions to the epistemic abilities of rational agents. However, because rational agents are finite in nature, there will be no guarantee that every proposition

³[Lynch 2013, p. 33].

⁴[Lynch 2009] uses a different epistemic truth-manifesting property here; we bypass those details for simplicity.

is either true or false, and further, good reason to doubt that this will be the case. For a counterexample, consider propositions like the following:

E: The number of stars in the universe at this point in time is even.

Given the size of the universe, its physical laws and the natures of rational agents, propositions like (E) simply will not be superwarranted, even in principle. That is, their superwarrant, or truth, if superwarrant manifests truth for propositions like (E), will forever be beyond our ken. This is the sense in which truth pluralism is the contemporary successor to anti-realist theories of truth, e.g. those of Michael Dummett and Hilary Putnam.⁵

If the truth pluralist is to accommodate these gaps, she must be careful about how she treats falsity here. The worry is as follows: if a proposition is true just when it possesses its truth-manifesting property, and false when it fails to have its truth-manifesting property, then it would seem that every proposition is either true or false. But this is in conflict with the original motivation for accepting an epistemic truth-manifesting property, namely the desire for it to be possible for some propositions to fall within a gap between truth and falsity, and thus, with the motivation for truth pluralism altogether.

In order to evaluate this argument, we can formalize the connection between manifestation and truth in part with the following principle:

M-RELEASE: $M\langle P \rangle \vdash P$

⁵See e.g. [Dummett 1991] and [Putnam 1981]. See also Crispin Wright's discussion of truth pluralism and its relation to these theories in [Wright 1992], esp. pp. 3-6; 33-61.

Because the truth-manifesting properties play the role of truth, they must obey their version of the T-schema; call this the M-schema. From the M-schema and contraposition⁶, we know that:

$$\neg\text{M-RELEASE: } \neg M\langle P \rangle \vdash \neg P$$

But the problem is now clear: one of the release rules gives us P , and the other $\neg P$, and thus we have $P \vee \neg P$ for every proposition, undermining our initial motivation for truth pluralism.

However this argument relies on a certain understanding of what it means to fail to have a truth-manifesting property. One way of understanding this notion is along the same lines that Lynch suggested we treat falsity - that of the truth of the proposition's negation. On this understanding, to claim that P fails to have a truth-manifesting property is just to say that $\neg M\langle P \rangle$. We can then see that in order to derive our undesired result, we used an instance of LEM above: one which applied to the manifesting properties themselves. More formally:

$$\text{M-LEM: } M\langle P \rangle \vee \neg M\langle P \rangle$$

That is, we implicitly assumed that either every proposition possessed its truth-manifesting property, or that it was true that it did not possess said property. In order to avoid this, the truth pluralist ought to give her account of the falsity of proposition in terms of the truth of their negations, but to treat those negations in a way familiar from anti-realist theories of meaning and logic, rather than classically.

⁶Given the argument given later in this paper, it is worth noting that this instance of contraposition is both classically and intuitionistically valid.

Our epistemic truth-manifesting property from above, superwarrant, can be seen as modeled after the familiar Kripke-frame semantics for intuitionistic logic. In addition to modeling the positive (or truth) aspect of superwarrant after the Kripke semantics, the pluralist should adopt its falsity semantics as well, which we can formalize with the following:

\neg SUPERWARRANT: $\neg P$ is superwarranted just when believing that $SW\langle P \rangle$ would lead to absurdity

That is, $\neg P$ is superwarranted just when were P superwarranted, we would be in contradiction. This account of negation makes it quite difficult to show that $\neg P$. This is useful for the truth pluralist, as it undermines any belief that M-LEM should hold generally, and thus allows us to avoid undermining the motivation for pluralism with which we began. That is not to say that M-LEM will never hold; in fact, there is good reason to suspect that the more specific version of it that involves correspondence will hold generally, because many correspondence theorists hold that either every proposition corresponds to a fact or does not.⁷ However the cost of showing that a proposition is *not* superwarranted makes it difficult to claim that either every proposition is either superwarranted or it isn't superwarranted, driving a gap between $M\langle P \rangle$ and $\neg M\langle P \rangle$ – a gap which we can preserve downwards as desired.

What does this tell us about the logic of truth pluralism? I have shown that the truth pluralist can avoid the unfortunate conclusion that all proposition are true and false. However in order to do this, she must avoid making M-LEM universally valid.

⁷See e.g. [Newman 2007, Ch. 3].

The easiest way to do this would be to revise the logic of the theory from classical logic to intuitionistic logic. After all, the move to superwarrant was an attempt to return to familiar anti-realist theories of truth, and Dummett argued forcefully that such theories required a revision towards intuitionistic logic.⁸ Strictly speaking this isn't necessary however. If classical logic is imposed globally disaster would strike via the problematic argument above, but the pluralist needn't impose a single logic globally; they could instead restrict logic in some way.

Concerned with the well-known problems of mixed compounds and inferences⁹, Lynch has previously proposed that truth pluralists adopt a form of *domain-specific logical pluralism*, in which logic is relativized to truth-manifesting properties.¹⁰ While the logic of correspondence may well be classical, the logic of superwarrant must lack LEM for the reasons above, and so Lynch suggests intuitionistic logic be used. In the case of mixed compounds and inferences, Lynch suggests a principle of *logical modesty*:

MODEST: Where a compound proposition or inference contains propositions from distinct domains, the default governing logic is that of the compound or inference's weakest member. [Lynch 2009, p. 100]¹¹

Lynch's suggestion, although aimed at solving the problems of mixed compounds and inferences, would certainly solve the problem I raise, because MODEST will not allow M-LEM to be generally valid. However an appeal to logical pluralism and

⁸See mainly [Dummett 1991].

⁹First raised by [Tappolet 1997].

¹⁰[Lynch 2009, p. 94].

¹¹By 'propositions from distinct domains' Lynch means propositions with different truth-manifesting properties.

MODEST are unnecessary at best. What I have shown above is that the logic of truth-manifestation in general – or more forcefully, of truth pluralism at its base – must be intuitionistic. That is, if we start from the core of the theory, the metaphysics of truth, its logic is fundamentally intuitionistic. These considerations arise completely independent of any worries about the problems of mixed compounds and mixed inferences. Further, they arise (theoretically) prior to those worries, at least in an intuitive sense regarding the methodology of theory-building. Not only is there no need to adopt a form of logical pluralism, but theoretical parsimony suggests that we shouldn't commit us to additional theoretical apparatuses if they are not needed.¹²

Given these considerations, the logic of truth pluralism ought to be intuitionistic logic. But is this a boon to truth pluralism, or a mark against it? A truth pluralist may consider a commitment to a non-classical logic as a mark against her theory of truth, given the strong historical tradition of accepting classical logic and against revising logic. However this attitude seems odd, given her initial motivation. Truth pluralism is at base an attempt to combine various realist and anti-realist theories of truth together into a coherent framework which captures the best of both theories. If she is motivated by anti-realism with regard to truth, what reason would she have to be so skeptical of anti-realism with regard to logic?

The truth pluralist may nonetheless wish to avoid a commitment to non-classical logic. One route that she may pursue to have her cake and eat it too is to give an alternative understanding of what it means to fail to have a truth-manifesting

¹²These problems may still arise for the truth pluralist who adopts intuitionistic logic. If they do, then they will arise for Lynch as well, so my position is no worse off than his. Even if these problems arise, they are conceptually “down the road”, and thus should not be taken to imply something about the more fundamental aspects of the theory.

property. Instead of treating this notion along the same lines as she treated falsity, she may opt for a less traditional route. But it is hard to see how such a strategy could work in a way that is compatible with classical logic. The pluralist might claim that for a proposition to fail to have a truth-manifesting property is just for it to not be the case that $M\langle P \rangle$ is true. But by the M -schema, we can easily see that this is equivalent to $\neg M\langle P \rangle$. So the truth pluralist must give up on the M -schema. Given that truth-manifesting properties are co-extensive with the truth predicate, the M -schema stands and falls with the T-schema. But giving up on the T-Schema seems incompatible with truth pluralism itself, as the T -schema is widely held to be platitudinous of truth; a rejection of the T-schema would be beyond the pale for truth pluralists.

5.2 A Problem for Intuitionists

Given the argument in the previous section, truth pluralists ought to hold that intuitionistic logic is the One True Logic, rather than commit themselves to a form of logical pluralism. The considerations in favour of intuitionistic logic stem from considering the nature of truth and manifestation itself, rather than any of the familiar problems that truth pluralists face down the line, like that of mixed inferences. However the truth pluralist who is a logical monist seems to face an immediate problem that the logical pluralist would not. As we noted earlier, many truth pluralists are drawn to view which ascribes different manifesting properties to the moral and empirical domains. Part of the initial draw towards this treatment, as we stated earlier,

is that while one may be comfortable in claiming that every empirical proposition is either true or false, one may want to actively avoid such a commitment to Bivalence about e.g. moral propositions. Adopting intuitionistic logic as the logic of their theory allowed the truth pluralist to respect her intuition that some moral proposition should be neither true nor false – or in terms of the manifesting property, neither superwarranted nor not superwarranted – because intuitionistic logic does not have LEM as a logical truth.

While this respects our intuitions about moral discourse, one might worry that it does serious harm to our intuitions about empirical discourse. As Crispin Wright notes, one of the motivations behind adopting a robust notion of correspondence as a truth-manifesting property is a certain kind of *modesty*, which consists in the acknowledgment that the external (i.e. empirical) world exists independently of our existence, conceptual schemes, thoughts, beliefs, etc.¹³ This type of motivation is what explains why most theories of correspondence have it that either every proposition corresponds to a fact, in which case it is true, or it does not, in which case its negation is true. Further, either every proposition corresponds to a fact or fails to do so *independently* of our ability to come to know whether it corresponds or not, even in principle. It is a feature of the correspondence theory that $P \vee \neg P$, even if we can never know which disjunct is true. That is, correspondence is packaged naturally with a commitment to LEM. If the truth pluralist is to claim correspondence as one of her truth-manifesting properties, it seems that she must respect this motivation, and thus uphold LEM, at least with respect to propositions whose truth-manifesting

¹³[Wright 1992, p. 1]. Note that this notion of modesty is completely disassociated from the principle proposed by Michael Lynch, discussed earlier.

property is correspondence. But insofar as she holds intuitionistic logic, it seems she cannot do this.

It seems that the truth pluralist who adopts intuitionistic logic is stuck between a rock and a hard place. If she adopts classical logic, then she *over*-generates, insofar as LEM will hold for all propositions, including the moral ones, contrary to her original motivation for adopting an epistemic truth-manifesting property. But if she adopts intuitionistic logic, then she *under*-generates with respect to empirical propositions, because many disjunctive propositions, such as the following:

E' : The number of stars in the universe at this point in time is either even, or it is not even.

will fail to be true.

The truth pluralist who holds domain-specific logical pluralism has a readily available answer to this problem. She can hold that classical logic governs the domains where correspondence is the truth-manifesting property, giving her the correct logical behaviour with respect to propositions like (E'), and that intuitionistic logic governs the domains where superwarrant is the truth-manifesting property, giving her the correct logical behaviour for propositions like (s). Domain-specific logical pluralism faces no such problem of under-determination or over-determination, in part because the logic of a particular domain can be adopted in response to such concerns. It seems then that the truth pluralist must adopt logical pluralism after all; concerns about theoretical parsimony no longer arise, as logical pluralism holds a distinct theoretical advantage over logical monism.

5.3 A Way Out: Classical Behaviour “Recaptured”

If the truth pluralist were able to find a way to thread the needle above, accommodating for both the intuitionistic behaviour desired in the superwarrant cases and the classical behaviour desired in the correspondence cases, while remaining a logical monist, then logical monism would be vindicated on grounds of theoretical parsimony. This may look like a difficult goal to meet, but luckily for the intuitionist there is a way out, familiar from other non-classical logic traditions. We can put the problem in terms of *classical recapture*, where a logic exhibits classical recapture when it is able to validate the same inferences as classical logic given some additional parameters.¹⁴

While most forms of classical recapture are done by putting additional formal parameters on the logic(s) in question, nothing of the sort is required for the truth pluralist’s goal. To see this, first note that intuitionistic logic is a subclassical logic, and thus by definition may never contradict classical logic. While intuitionistic logic may not prove every theorem that classical logic does (e.g. LEM), there is no classical theorem such that intuitionistic logic proves the negation of that classical theorem. This is the sense in which intuitionistic logic is weaker than classical logic; it simply says less than the classical logician is willing to commit themselves to. While LEM is not a logical truth according to intuitionistic logic, it is always compatible with intuitionistic logic, and can be added to any argument as a non-logical premise. The path is thus clear: the truth pluralist ought to add the LEM instance of every

¹⁴The classical recapture program is most familiar from the work of paraconsistent logicians like Graham Priest, e.g. [Priest 2006, p. 117-119], who uses it to explain how the paraconsistent logician can make use of familiar rules of inference like Modus Ponens and Disjunctive Syllogism.

empirical proposition to her theory as a non-logical premise. As the truth pluralist is already familiar with carving up the language into particular domains, she has an easy way to pick out which LEM-instances to add to her set of assumptions – those $P \vee \neg P$ where P is a proposition from the empirical domain. With LEM as a premise, full classical behaviour is recaptured, as intuitionistic logic behaves classically when LEM is added.

5.4 A Further Challenge: Logical and Non-Logical Principles

While this will do the technical work, as it stands it is philosophically lacking. Lynch foresees the strategy I suggest, and sees it as a point in favour of his form of logical pluralism:

[I]t seems natural that if one domain allows some inferences as valid and another does not, they have different logics. And domains where [LEM] holds will allow some inferences as valid that other domains (which don't sanction [LEM]) will not. So the natural thought is that they have different logics. Now according to the present suggestion, it might be that some inferences are counted as valid in a given domain not because the logic counts them as so, but because there is an additional metaphysical assumption that, together with the logic, allows them to count as so. But that just seems to mean that principles which function like logical principles are not logical principles, and again, one might wonder why

that would be. [Lynch 2009, p. 103-104]¹⁵

Lynch's challenge to the logical monist consists in two parts. First, the monist must explain the "validity" of LEM, in virtue of some non-logical – or as Lynch notes, *metaphysical* – assumption. Secondly, this explanation must be able to draw a principled distinction between the logical and non-logical principles. If the classical recapture technique of the previous section holds, then logical and non-logical principles give rise to the same endpoint, and one might wonder whether there is any real or substantive difference between the two types of principles at all. Lynch doubts that these two conditions can be met, and thus decides in favour of his domain-specific logical pluralism.

We begin with the first half of the challenge. Luckily, Lynch has already suggested a way to go forward in meeting this challenge, namely by appealing to metaphysical assumptions as the particular type of non-logical assumption that will do the explanatory work. The logical monist should hold that LEM is a metaphysical, rather than logical, law, and thus was never in the proper scope of logic at all. There is historical precedent for this interpretation, coming from Michael Dummett, whose work we already noted as being one of the crucial motivations for truth pluralism itself:

The second fundamental principle of classical semantics [is] that the condition for the truth of each proposition is, determinately, either fulfilled or unfulfilled. We can regard this as a metaphysical assumption - an

¹⁵Lynch uses 'Bivalence' where I have substituted LEM, where the Principle of Bivalence is the meta-semantic principle which is nearly always paired with LEM. Because our discussion concerns logic rather than semantics I have chosen to substitute terms.

assumption of the existence of an objective reality independent of our knowledge. [Dummett 1978a, pp. 120-121]

According to Dummett, one of the mistakes that the classical logician makes in espousing classical logic over intuitionistic logic is in failing to recognize that classical logic comes packaged with certain controversial metaphysical claims. Following Dummett, Neil Tennant claims that LEM is the thesis that:

...the world is determinate in every expressible regard (or at least, in the case of a particular instance of LEM, determinate in the respects answering to the propositional content P that is involved). [Tennant 1996, p. 213]

Tennant's claim that LEM is a determinacy principle meshes well with the correspondence theories that we are concerned with adequately accounting for, and especially with the modesty motivation behind them, which was an acknowledgment that the external world exists independently of us. The point of adopting a theory of correspondence in some domains, rather than an epistemic account everywhere, was to acknowledge that some things are settled without any regard to our thoughts, beliefs, etc. about them. That is, the facts about them are determinate, and thus LEM should hold for propositions regarding them.

The truth pluralist ought to take this story on board and use it to explain the legitimacy of LEM in certain domains – namely those which do not rely on us, and thus are held to be determinate or settled. This is what explains the validity, or really “quasi-validity”, reserving “validity” for the properly logical principles, of LEM with respect to propositions whose truth-manifesting property is a form of correspondence.

A further way to delineate the logical principles from the metaphysical ones is available to the truth pluralist, based on her theory of truth. In giving an account of truth in terms of manifestation and truth-manifesting properties, the truth pluralist has given a metaphysics of truth. It should come as no surprise then that the principles which codify the metaphysics we are giving are not logical, but metaphysical in nature. Our truth pluralist claims that truth sometimes consists in correspondence, and sometimes in superwarrant, and claims of these sort are not claims about the logical behaviour of truth but the metaphysical nature of it. Given that these principles are metaphysical rather than logical in nature, they should not be counted as part of the logic of the theory, but as part of the extra-logical apparatus.

According to the truth pluralist, every proposition which is true is true because it has some truth-manifesting property. We have already discussed two truth-manifesting properties: correspondence and superwarrant. Both of these truth-manifesting properties are metaphysically loaded. The correspondence theory comes packaged with the determinacy claim that we noted earlier. But superwarrant must be interpreted metaphysically as well; by tying the truth of propositions to our epistemic abilities we have made an implicit commitment to the idea that the subject matter is somehow dependent on us. There are of course a number of ways something may be dependent on us, but each way will be cashed out in metaphysical terms.

5.5 The Logic of Plain Truth

Not every truth-manifesting property need be metaphysically robust for the truth pluralist. The contrast between metaphysical principles and logical principles can be further elucidated by appealing to the role that *plain truth* plays for the truth pluralist. A proposition is *plainly true* when the only truth-manifesting property that the proposition has is truth itself.¹⁶ A natural example of propositions whose truth-manifesting property is truth itself are truth-ascriptions, e.g.:

G: The proposition that grass is green is true. [Lynch 2013, p. 34]

The most natural account of the truth-manifesting property of plain truth is one which contains little to no metaphysical assumptions. Plain truth – insofar as it is plain – is minimal. Consider the other truth-manifesting properties our pluralist proposes. Any type of robust correspondence will come with certain metaphysical commitments – to the existence of an external world, to a relationship between the world and facts, to truth bearers, and so on. Similarly, when the truth pluralist proposes superwarrant as a truth-manifesting properties she does so because of its metaphysical nature – namely, that the metaphysics is tied closely to the epistemic abilities of rational agents, or that the subject in question “depends on us”. When we theorise about the metaphysical nature of plain truth we do not add any over and above those that govern the logical behaviour of truth. Plain truth is truth without any metaphysical principles. On the strategy given here, we start with intuitionistic logic as the logic of truth, and augment it with any principles governing particular

¹⁶[Lynch 2013, p. 34].

truth-manifesting properties as non-logical assumptions to find out what follows from what in a particular domain. In the case of plain truth however, there simply are no metaphysical principles, and thus no non-logical principles. Intuitionistic logic plus no additional premise sets just is intuitionistic logic, and thus we conclude that the logic of plain truth is simply intuitionistic logic.

5.6 Logical and Metaphysical Principles

The intuitionist has met Lynch's first challenge to philosophically explain classical recapture by appealing to metaphysical principles. Lynch's second challenge – to offer a principled distinction between logical and metaphysical principles which validate the same set of quasi-valid inferences – remains. We begin to meet this challenge by considering the subject matter of each type of principles. Metaphysical principles have as their subject the world, broadly speaking. What is the subject matter of logical principles in comparison? On one influential account, logical principles are, strictly speaking, about nothing; that is, they are somehow contentless. This is the view of the early Wittgenstein, and of some influenced by the *Tractatus*.¹⁷ On another account, logic just is the investigation of the logical constants, e.g. $\wedge, \vee, \neg, \rightarrow$.¹⁸ On this account, logical principles are principles about the use of the logical constants, rather than about the world. Regardless of which of the two views one holds about logic, both have it that the subject matter of logic is distinct from that of metaphysics, thereby separating the logical principles from the metaphysical

¹⁷See [Wittgenstein 1998, §6.11].

¹⁸See e.g. [Williamson 2013].

principles.

A further distinction between the two types of principles can be made by examining their semantic statuses. Logical principles are analytic *par excellence*, if anything is. Following [Boghossian 1996] we can distinguish two senses of analyticity – truth in virtue of the meaning of the words – *metaphysical* analyticity and *epistemic* analyticity. A proposition is metaphysically analytic if its truth value is determined entirely by the meaning of the words and not at all by other facts, e.g. facts about the world. In comparison, a proposition is epistemically analytic if grasping the meanings of the words is sufficient for justified belief in its truth.¹⁹

While one might doubt that there are metaphysically analytic statements, as Quine and Boghossian do, logical principles are plausibly interpreted as epistemically analytic. Consider a logical principle, for example a principle governing the use of conjunction, like the following:

CONJ: $\langle A \wedge B \rangle$ is true iff $\langle A \rangle$ is true and $\langle B \rangle$ is true.

What is it to grasp CONJ? [Boghossian 2011] claims:

...it's hard to see what else could constitute meaning conjunction by 'and' except being prepared to use it according to some rules and not others (most plausibly, the standard introduction and elimination rules for 'and'). Accounts that might be thought to have a chance of success with other words—information-theoretic accounts, for example, or explicit definitions, or teleological accounts – don't seem to have any purchase in the case of the logical constants. [Boghossian 2011, p. 493]

¹⁹[Boghossian 1996, p. 363].

Boghossian is one of many who counts themselves as an inferentialist about the logical constants. Inferentialists hold that what is primary in our analysis of a part of language is how we use that language.²⁰ Inferentialism has especially wide purchase when restricted to logic, and is, according to many, the “only game in town”.²¹ Following [Murzi and Steinberger 2017], we can take inferentialism as a combination of two theses:²²

Meaning Determination (MD): The meanings of linguistic expressions are determined by their role in inference.

Understanding (UND): To understand a linguistic expression is to know its role in inference.

For our purposes here we are only concerned with logical inferentialism, and thus can restrict MD and UND to the logical expressions, like CONJ above. If logical inferentialism is true epistemic analyticity comes for free in exactly the way that Boghossian suggests in the quoted passage above. By understanding conjunction’s role in inference, either in terms of CONJ or in terms of a set of rules (like in a natural deduction system) we come to be justified in its truth. Put otherwise: there is nothing more to the logical principles than their inferential roles in our language; no external validation is needed, or possible.

While logical principles are plausibly epistemically analytic, it is harder to build a case for the analyticity (of either sort) of metaphysical principles. Metaphysical

²⁰For a general overview of inferentialism see [Murzi and Steinberger 2017].

²¹See [Murzi and Steinberger 2017, pp. 204-6].

²²[Murzi and Steinberger 2017, p. 199].

principles are about aspects of the world, including what exists, how those things exist, what the structure of the world is, and so on. It would be extremely strange if what made a principle about the nature of time true were simply facts about words like “time” or “past”. What makes metaphysical principles like those about the nature of time true will be metaphysical facts, including facts about the world. Thus metaphysical principles cannot be metaphysically analytic, as their truth is grounded in something other than the meanings of the terms. If logical principles are analytic *par excellence* then metaphysical principles are synthetic *par excellence*. What explains the determinacy of the world, if anything, must be a fact about the structure of the world, not the meanings of particular words.

Similarly, it is hard to see how metaphysical principles could be epistemically analytic. If they were, then simply grasping the meanings of the terms involved would be sufficient for justified true belief in the principles. It seems absurdly unlikely that simply understanding the meaning of “time” would, for example, justify our belief in a principle saying that our experience of time is an illusion, or that the future is indeterminate. Likewise, it seems highly unlikely that our understanding of a term justifies a belief in the world being fully determinate. Getting justification in highly speculative metaphysical principles for free from the meanings of everyday terms seems to come too cheap. Presumably our languages and the terms they consist in are as they are contingently. But if they’re contingent, then what would explain the miraculous connection they have to the world that gives us knowledge that the world is fully determinate? Barring a transcendental argument which would establish that our language connects with the world in the right way, it seems that metaphysical

principles cannot be epistemically analytic, and thus they cannot be analytic at all.

One might worry that this arguments cuts both ways and also rules out logical principles being epistemically analytic. But recall that the meaning of our logical principles is determined by their role in our language already - there is no need for any transcendental deduction, as the meaning of our logical terms is intrinsically linked to our language. We have so far established that logical principles are epistemically analytic, and metaphysical principles are not analytic in any sense. Thus the semantic status of logical and metaphysical principles differs.

One may try to salvage something like the analyticity of metaphysical principles by claiming that they are instead conceptual truths. On this account, metaphysical principles would be conceptual truths, where the concepts would presumably be something like “states of affairs”, “objects” or “facts”. It is far more plausible that determinacy comes cheaply as a conceptual truth about states of affairs; one could simply mount an argument that the concept of “states of affairs” is fully determinate, and every state of affairs either holds or does not. However this will not collapse the distinction the intuitionist has drawn between logical and metaphysical principles, because the concepts involved in determinacy will not be the concepts involved in logic proper. The purely logical concepts are the logical constants, including the connectives and quantifiers, whereas the metaphysical concepts include the concept of a state of affairs. Thus even if determinacy is guaranteed as a conceptual truth, a line is still drawn between the conceptual truths of logic and those of metaphysics.

This line of argument is a familiar one, going back to Kant’s work on the synthetic a priori in his *Critique of Pure Reason*. [Tennant 1996] argues that, had Kant

had the formal tools we have available to us available to him, he would have characterized LEM as an example of the synthetic a priori: principles knowable a priori but whose meanings are not contained within the concepts themselves. Nothing in the logical principles – those describing the logical constants – demands or gives us the metaphysical determinacy of the world. Perhaps we can come to know that the world is determinate a priori, but to assume that this means we know this on logical grounds conflates the analytic with the a priori, a mistake we now know since Kant not to make. If LEM is true and the world is determinate it is on these grounds, not on on the basis of logic alone.

Our conclusions so far have been conditional: if LEM is true, then it is true on metaphysical grounds and not analytic grounds. It is perfectly open to us here to assent to the common thought that metaphysical principles are necessarily true (when they're true at all). Thus, LEM may be both synthetic and necessary. But what of [Kripke 1980]'s lesson that we should not conflate the necessary with the a priori? Nothing we have said here precludes LEM being known a priori, e.g. by metaphysical deduction. But similarly, nothing said here precludes it being an example of Kripke's necessary a posteriori. [Tennant 1996, p. 213] asserts that LEM is best understood as being known through non-logical a priori methods, but offers no reason why. It seems conceptually possible that, were we to come to know of the determinacy of the world it is through some empirical method, e.g. by observation or induction.

Before moving on we should consider one final objection. It is possible that one might agree to the above arguments which show that logical and metaphysical principles have different statuses, but maintain that LEM is analytic because it

follows from the meaning of the logical constants, namely conjunction and negation. This relies on a classical understanding of those connectives; LEM does not follow, analytically, conceptually or otherwise, from the intuitionistic understanding of the connectives. It thus begs the question against the intuitionist. If the arguments in the first half of this chapter are correct, the pluralist is committed to a non-classical, and as I argued, intuitionistic, understanding of the connectives, and thus this move is not accessible to the truth pluralist. Were it true that LEM followed immediately from the meaning of the logical constants the truth pluralist could not make sense of the behavior in anti-realist domains that they sought to preserve, and thus their position would undermine itself.

The combination of moves above suffices to answer Lynch's second challenge, i.e. to draw a principled distinction between the metaphysical and the logical, despite their validating the same set of quasi-valid inferences. Thus, I conclude that the intuitionist has provided a philosophically defensible account of classical recapture, and one which allows her to retain her monism on grounds of theoretical parsimony.

5.7 Future Truth-Manifesting Properties? Future Logics?

In the previous section I argued, following Dummett and Tennant, that the Law of Excluded Middle is a metaphysical, rather than logical principle. While this move has independent motivations, I have proposed it as a way for truth pluralists to adopt an account of logic which is best suited to their theory. But in giving this line of

argument, one may worry that I have undermined the truth pluralist's view. If LEM is metaphysical rather than logical, what about all of the other logical laws? That is: have I opened the floodgates, threatening to eliminate any distinction whatsoever between logical and metaphysical principles? If a previously recognized law of logic is to be recategorized, what prevents the truth pluralist from understanding *all* such principles in these lights? What logic could be left for the truth pluralist?

For a concrete example, take the Principle of Explosion, also known as *ex falso quodlibet* (EFQ). EFQ is another principle accepted as a law of logic by the classical logician which has come to be controversial in contemporary philosophy of logic, and has been rejected by the paraconsistent logicians for many reasons. If LEM is to be treated as a non-logical principle, then perhaps EFQ should be as well. If EFQ is non-logical, then we must revise our logic even further, because intuitionistic logic, the logic I have proposed as the logic of truth pluralism, contains EFQ. And so the story goes, for any putative principle of logic we might challenge it, recognizing it as metaphysical rather than logical, and thus reducing logic to an extremely minimal, or empty, theory.

This line of reasoning should be resisted, and can be on several fronts. First, it is important to note that not all the logical principles which can be challenged along various lines will be challenged by the logical pluralist. Recall that we began by considering the nature of manifestation, the core metaphysics of the truth pluralist's account. The nature of manifestation requires an adherence to a non-classical logic, because the truth pluralist accepts a truth-manifesting property, namely *superwar-rant*, which requires a non-classical logic. In order for the truth pluralist to have

reasons to revise the logic of her theory even further downwards from intuitionistic logic, she must have a candidate truth-manifesting property which requires this revision. As of yet, there is no purported truth-manifesting property in the truth pluralism literature. In fact, the only types of proposed properties are variations of correspondence and epistemic theories like superwarrant. Accordingly, there is no (current) pressure for the truth pluralist to revise downwards, or to claim other principles, such as EFQ, are non-logical.

Of course, the fact that there are no current proposals that require us to consider logics other than classical and intuitionistic logic does not mean that there will be no future truth-manifesting properties which do require future logics. The truth pluralist may, for example, consider adopting a truth-manifesting property for fictional discourses, which are notably often contradictory. If this were the case, then the truth pluralist ought to consider the nature of the principles which are up for revision, such as EFQ. She could then apply the lesson earlier regarding analyticity, and mount an argument that EFQ is not (epistemically) analytic, or a conceptual truth, and thus not a logical principle. In that case, the logic of that truth pluralist theory would be something weaker than intuitionistic logic; perhaps minimal logic (intuitionistic logic without full EFQ) or the logic of first degree entailment (FDE), which has neither LEM or EFQ. In either case, the truth pluralist should still retain her logical monism by utilizing a classical recapture programme for paraconsistent settings in addition to the one I suggest. The complication of another principle being recognized as non-logical does not require an abandonment of logical monism, or provide a vindication of logical pluralism.

5.8 Truth, Logic, Mathematics

One final route from truth pluralism to a form of logical pluralism is worth considering here, stemming from [Shapiro and Lynch forthcoming]. Shapiro and Lynch argue from a modified version of [Lynch 2009]’s truth pluralism to a form of [Shapiro 2014]’s Hilbertian logical pluralism.²³ They are concerned with the truth-manifesting properties for mathematical truths. Specifically, they are motivated by the investigation of non-classical mathematical theories, like smooth infinitesimal analysis, which is classically inconsistent but intuitionistically consistent.²⁴ As these are mathematical theories they are concerned with, the realist theory of truth that [Lynch 2009] will not do; it relies on a notion of representation which is not applicable to formal mathematical structures.²⁵ Likewise, classical logic will not suit the purposes as the logic of this domain, as it will trivialize the structures they are interested in examining.

When considering whether truth pluralism of this sort leads to a form of logical pluralism, Shapiro and Lynch offer two answers, depending on the answer to what they call (*):²⁶

(*) Do the core features of truth fix the logics that govern every domain?

If the answer to this question is yes, then they conclude that there will be only one, very weak logic.²⁷ This is because any such logic must not validate LEM, in order to avoid trivializing when considering structures like smooth infinitesimal analysis.

²³For a fuller discussion of [Shapiro 2014] see CHAPTER 4.

²⁴For the formal details see [Shapiro and Lynch forthcoming, p. 4].

²⁵Although see [Shapiro and Lynch forthcoming, p. 11] for some speculation that a correspondence theory will be possible in mathematics.

²⁶[Shapiro and Lynch forthcoming, p. 6].

²⁷[Shapiro and Lynch forthcoming, p. 10].

This analysis is thus similar to my own in this chapter, and it is possible that Shapiro and Lynch could engage in a similar recapture program to get determinacy for the classical structures where it is guaranteed a priori.²⁸ That type of recapture may proceed by means of some sort of argument for optimism that we may always be able to decide mathematical truths.²⁹

If the answer to (*) is in the negative, then Shapiro and Lynch suggest a form of logical pluralism. They settle on the Hilbertian logical pluralism proposed by [Shapiro 2014]. Hilbertian logical pluralism, like the domain-specific logical pluralism that [Lynch 2009] proposes, is relativistic. Unlike domain-specific logical pluralism, it is not relative to domains, but to particularly mathematical structures; for example, the logic of classical analysis is classical logic, while the logic of smooth infinitesimal analysis is intuitionistic logic. What is crucial to the Hilbertian account for our purposes here is that the two logics do not (necessarily) share the same language or logical terminology.³⁰ Thus we may have LEM hold in some “domains”, like the domain of classical analysis, but fail to hold in others, like the domain of smooth infinitesimal analysis.³¹

This strategy does represent a departure from the one I present in this chapter. But it rests upon the rejection of a principle which I have argued the truth pluralist should accept: that the theory of truth fixes a logic in every domain. The combined

²⁸There is one caveat here: The Hilbertian perspective which they adopt is very permissive, and may also be concerned with non-intuitionistically acceptable structures. In that case, we are in much the same situation as I described in the previous section.

²⁹See [Shapiro 1998] for a discussion of this point.

³⁰Although note that this is not always the case according to the analysis given by [Shapiro 2014]; see especially Chapter 5.

³¹This is a widening of the term “domain” as it is normally used by truth pluralists, used here for simplicity.

pluralisms that Shapiro and Lynch also faces issues that my theory do not, including giving an explanation of the nature of plain truth. On my account plain truth is understood in anti-realist terms and its logic is intuitionistic. It is unclear which way the Shapiro-Lynch program can go, and the proliferation of logical languages makes it unclear which logic and language will be adopted for the purpose of truth-ascriptions. This problem and any others are likely surmountable, but they do not face my account.

5.9 Conclusion

In order to vindicate logical monism for the truth pluralist, I suggested that she interpret LEM as a metaphysical, rather than logical principle. This allows the truth pluralist to engage in the project of “classical recapture” in certain domains; specifically the domains where we have certain metaphysical commitments to the determinacy of the world, i.e. the domains where correspondence manifests truth. In adopting this suggestion, the truth pluralist also gains the ability to distinguish between logical and non-logical principles which behave similarly; the non-logical principles are the those which govern the truth-manifesting properties other than truth. Given this, both halves of Lynch’s challenges have been met, and the truth pluralist can indeed make do with logical monism. Finally, by the theoretical considerations given at the end of SECTION 1, if she can make do with logical monism, she ought to do so, and thus truth pluralists ought to be logical monists, whose One True Logic is intuitionistic logic.

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