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Deflationism About Logic

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Abstract

Logical consequence is typically construed as a metalinguistic relation between (sets of) sentences. Deflationism is an account of logic that challenges this orthodoxy. In Williamson's recent presentation of deflationism, logic's primary concern is with universal generalizations over absolutely everything. As well as an interesting account of logic in its own right, deflationism has also been recruited to decide between competing logics in resolving semantic paradoxes. This paper defends deflationism from its most important challenge to date, due to Ole Hjortland. It then presents two new problems for the view. Hjortland's objection is that deflationism cannot discriminate between distinct logics. I show that his example of classical logic and supervaluationism depends on equivocating about whether the language includes a "definitely" operator. Moreover, I prove a result that blocks this line of objection no matter the choice of logics. I end by criticizing deflationism on two fronts. First, it cannot do the work it has been recruited to perform. That is, it cannot help adjudicate between competing logics. This is because a theory of logic cannot be as easily separated from a theory of truth as its proponents claim. Second, deflationism currently has no adequate answer to the following challenge: what does a sentence's universal generalization have to do with its logical truth? I argue that the most promising, stipulative response on behalf of the deflationist amounts to an unwarranted change of subject.

Keywords Philosophy of logic · Deflationism · Deflationism about logic · Williamson · Hjortland · Anti-exceptionalism · Metavalidity · Meta-argument · Meta-argumentative equivalence · Abduction · Truth

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Orthodoxy construes logical consequence as a metalinguistic relation that holds between (sets of) sentences. A heterodox view is deflationism about logic.[1] According to Timothy Williamson's recent presentation of deflationism, logic's primary concern is with universal generalizations over absolutely everything. Such generalizations are non-metalingustic. Williamson's deflationism has been subject to criticism, most notably from Ole Hjortland. In this paper, I agree with Hjortland that deflationism is problematic, but not for the reasons he has given.

In Section 1, I explain deflationism in more detail, distinguishing it from two other commitments: anti-exceptionalism and abductive methodology.

In Section 2, I defend deflationism from the most important criticism it has faced to date: that it fails to discriminate between different logics. Hjortland uses the example of classical logic and supervaluationism, claiming that deflationism is not sensitive to important meta-argumentative differences between them. But the success of this example depends on equivocating about which language is being considered. Moreover, I show that, in a sense to be made precise, if two logics are equivalent by deflationism's lights, they are meta-argumentatively equivalent. I end the section by discussing this dialectic's interaction with the broader issue of how to construe metavalidity.

Finally, in Section 3, I press two objections to deflationism. The first is that it cannot do the work it is supposed to do in adjudicating between rival logics. The second is that there is no reason to think the logical properties of a sentence have anything to do with the obtaining of its universal generalization. I consider a stipulative response on the deflationist's behalf, but argue that it is problematic in two respects. First, it is exceptionalist—that is, it treats logic as discontinuous with science. In particular, the response clashes with what practitioners of logic take themselves to be doing. Second, the reply ignores pre-theoretical intuitions about logic's explananda. Since such intuitions help to delineate a discipline's subject matter, ignoring them amounts to an unwarranted change of topic.

1 Deflationism About Logic

Williamson [16, 92–95; 17] has proposed a deflationary account of logic: logical inquiry is primarily non-metalinguistic; it is concerned with investigating universal generalizations over absolutely everything. His deflationism is part of a general anti-exceptionalist picture according to which logic is continuous with science. This

[1] Here I focus on Williamson's [17] deflationism. Shapiro [13] has also explored a view which goes by this name. Williamson's deflationism is different from Shapiro's "mere-expressive device" (MED) deflationism. Williamson's focus is to shift the primary purview of logic from the metalinguistic to the non-metalinguistic. Shapiro [13, 326], by analogy with MED deflationism about the truth predicate, considers the claim that "we have no reason to hold that 'is a consequence of' expresses a relation whose nature is amenable to substantive characterization". Shapiro then argues that MED deflationism about logical consequence is no less plausible than MED deflationism about truth. Although it would be interesting to consider Williamson's and Shapiro's views together, this is beyond the scope of the paper. Thanks to Mike De for bringing Shapiro's work to my attention.

means that the truths of logic are arrived at by deploying whatever method characterizes scientific inquiry.[2] Moreover, Williamson holds that sciences proceed by abduction. So he's committed to the following three claims:

(1) *Deflationism about logic*. Logic is concerned not with metalinguistic attributions of logical truth, but with non-metalinguistic universal generalizations over absolutely everything.[3]
(2) *Anti-exceptionalism*. The claims and methods of logic are continuous with those of science.
(3) *Abductive methodology*. The method employed in the sciences is abductive.[4]

Although Williamson himself is committed to all of (1)–(3), the claims are independent. This leaves room to embrace some aspects of Williamson's view, while rejecting others. In particular, while I'll ultimately argue against deflationism, this is compatible with retaining anti-exceptionalism, abductive methodology, or both.

Before saying what deflationism is, let me say what it is not, by contrasting it with the other features of Williamson's overall view. Here is the abductive methodology in his own words:

> Scientific theories are compared with respect to how well they fit the evidence, of course, but also with respect to virtues such as strength, simplicity, elegance, and unifying power [17, 334].

The idea is that we have data and candidate theories for explaining those data. The candidates are evaluated according to a range of theoretical virtues, the most familiar of which Williamson highlights.

Anti-exceptionalism extends this method to logic. Logical theories compete to explain the available evidence. The correct theory is the one that does best by abductive lights.[5] This leaves two important questions: what counts as evidence? And, what is a logical theory? For the present purposes, we can follow Williamson [17, 335] in using anything we know as evidence. Williamson's deflationism about logic answers the second question. It gives an account of what a logical theory *is*. Let me explain.

The first step to deflationism is to notice a fact about the Tarskian account of logical consequence for an interpreted language, $\mathscr{L}$.[6] For concreteness, suppose it's the language of first-order predicate logic with identity. Then a sentence is logically true

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[2]By "truths of logic" I mean not just theorems of a particular logical system, but the totality of claims that a logical theory—like classical logic—gives rise to. This might include *that modus ponens is a valid argument form*, and *that the consequence relation is monotonic*. Compare Hjortland [6, n. 7].

[3]My use of the term "deflationism" is inspired by Hjortland [6], who calls this a "deflationary account of logic".

[4]It follows from this and (2) that logic also employs an abductive method.

[5]For simplicity, I'll speak as if applying the abductive method yields one and only one logic. As Hjortland [6] points out, however, abduction doesn't guarantee logical monism.

[6]Rather than rehashing Williamson's [17, 325–329] full presentation, I refer the reader to the source for details. Here, when it aids readability at minimal cost to clarity, I will indulge in some imprecision—for instance, over the use-mention distinction.

just in case it is true under all reinterpretations of its non-logical constants.[7] Formally, this is done by letting α^v be the result of uniformly substituting in α variables for each non-logical constant. Then, let an assignment be a function that assigns an entity to variable, constrained by the variable's semantic type: objects to names, properties to predicates, and so on. Finally, we define logical consequence as follows:

> (LC) α is a logical consequence of Γ ($\Gamma \vDash \alpha$) iff α^v is true on every assignment on which every member of Γ^v is true.[8]

Logical truth is construed in the usual way: α is a logical truth iff α^v is true on every assignment.

Instead of having variable domains, the Tarskian presentation of logical consequence fixes the domain as absolutely everything. This results in the to-be-noticed fact: if a closed sentence of $\mathscr{L}$ is free from non-logical constants, then its logical truth is equivalent to its mere truth. That's because the quantification over assignments in LC adds nothing. Consider:

(4) $\exists x \exists y\, x \neq y$

(4) is true because there are, presumably, at least two things. Moreover, (4) is thereby *logically true*; its mere truth guarantees its logical truth. Since it contains no non-logical constants, assignments contribute nothing to its evaluation.

The second step to deflationism is to generalize this feature by extending $\mathscr{L}$. The extended language, $\mathscr{L}^+$, includes new variables corresponding to universal quantifiers for each non-logical constant. This allows us to take any sentence of $\mathscr{L}^+$ and universally quantify into each of its non-logical-constant positions. More precisely:

> UNIVERSAL GENERALIZATION. If α is a sentence of $\mathscr{L}^+$, then its *universal generalization*, UG(α), is the result of prefixing α^v with zero or more universal quantifiers to bind all the free variables.[9]

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[7] The Tarskian account of truth and consequence yields notions relative to a selection of logical constants [14]. I follow Williamson [17, 327] in assuming "the usual suspects" are included in that selection.

[8] LC obeys four familiar structural principles:

ASSUMPTION $\{\alpha\} \vDash \alpha$

MONOTONICITY If $\Gamma \vDash \alpha$, then $\Gamma \cup \Delta \vDash \alpha$

CUT If $\Gamma \vDash \alpha$ and $\Delta \cup \{\alpha\} \vDash \beta$, then $\Gamma \cup \Delta \vDash \beta$

UNIFORM SUBSTITUTION Where $\sigma(\alpha)$ is a uniform substitution throughout α and $\sigma(\Gamma) = \{\sigma(\alpha) : \alpha \in \Gamma\}$, if $\Gamma \vDash \alpha$, then $\sigma(\Gamma) \vDash \sigma(\alpha)$.

Williamson assumes that any adequate consequence relation obeys these principles. Let's grant this not by fiat, but on abductive grounds: there's good abductive reason for thinking that a consequence relation that fails to obey one of the above principles will not be the abductively best logic.

[9] Note that, since the universal generalization of α can have zero initial universal quantifiers, "$\exists x \exists y\, x \neq y$" is its own universal generalization.

Here's an example. Take the following sentence.

(5) $Fa \rightarrow Gb$

Now, replace all the non-logical constants in (5) with variables of the appropriate type, and prefix with universal quantifiers to get:

UG(5) $\forall X \forall Y \forall x \forall y (Xx \rightarrow Yy)$

According to deflationism, (5) is a logical truth if and only if UG(5) is true. Presumably, the latter is not true, so the former is not a logical truth.

The equivalence between a sentence's logical truth and the mere truth of its corresponding universal generalization allows deflationism to effect its shift of investigative focus to non-metalinguistic matters. While the question "Is UG(α) true?" is a metalinguistic one, the closely connected question "UG(α)?" is not.[10] The latter question is about a universal generalization over absolutely everything. And whether, say, absolutely everything is self-identical ("$\forall x x = x$") is no more a metalinguistic issue than whether all same-charged particles repel one another. This is what makes Williamson's account of logic *deflationary*. Instead of being concerned with attributions of logical truth to sentences, logic is concerned with non-metalinguistic universal generalizations over absolutely everything.

The final step to deflationism is to generalize the foregoing account to deal with logical consequence. Logical theories concern not only logical truths, but also consequence relations. Many consequence relations are *theorem reducible*. $\vdash$ is theorem reducible iff: for any argument from $\{\gamma_1, \ldots, \gamma_n\}$ to α, $\{\gamma_1 \ldots \gamma_n\} \vdash \alpha$ iff $\vdash \gamma_1 \rightarrow (\gamma_2 \rightarrow (\ldots(\gamma_n \rightarrow \alpha)))$.[11] Thus the consequences of $\vdash$ are reduced to theorems.[12] The latter can then be converted to universal generalizations, allowing the output of a logical theory, consequences and all, to be captured by way of non-metalinguistic generalizations.

There's a problem, however. As Williamson himself notes, a consequence relation will be theorem reducible only if a connective is definable in the language that obeys the standard introduction and elimination rules for the conditional. Strong Kleene logic provides a useful example of a consequence relation that is not theorem reducible. Familiarly, there are no K_3-theorems: for any $\alpha, \nvdash_{K_3} \alpha$. But there *are* K_3-valid arguments. For instance, $\{Fa\} \vdash_{K_3} Fa$. So there are K_3-logical-consequences, but no K_3-logical-truths.

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[10] Exactly how close is the connection between these two questions? They would be equivalent if the deflationist endorsed a disquotational principle, such as: for all S, $\ulcorner S \urcorner$ is true iff S. Williamson himself takes such a principle to need jettisoning, or at least restricting, in the face of semantic paradoxes. But he notes that "even if we cannot assume that an ascription of truth to UG(α) is always exactly equivalent to UG(α) itself, we might find the latter more interesting or fundamental than the former...[T]he metalinguistic question of the logical truth of α may just be a convenient but approximate device for raising the nonmetalinguistic question of UG(α)" [18, 330]. I grant this for now, though I have more to say about the relation between truth, disquotation, and deflationism in Section 3.1.

[11] I follow Williamson in reserving "$\vDash$" for the consequence relation delineated by LC and using "$\vdash$" for arbitrary consequence relations that meet ASSUMPTION, MONOTONICITY, CUT, and UNIFORM SUBSTITUTION (see n. 8).

[12] I use "theorem" and "logical truth" interchangeably.

Williamson's solution is to use competing consequence relations as closure operators on well-established theories. Rival logical theories are then compared by evaluating the respective closures. More precisely, let Γ be a set containing the sentences of a well-established theory and let $Cn_{\vdash}(\Gamma) = \{\alpha : \Gamma \vdash \alpha\}$. Then, when we have rival logical theories with consequence relations $\vdash_1$ and $\vdash_2$, we compare them by comparing $Cn_{\vdash_1}(\Gamma)$ and $Cn_{\vdash_2}(\Gamma)$.

Construing a logical theory in this way allows the deflationist to accommodate non-theorem-reducible consequence relations. This is because the members of the closure of Γ will not in general be metalinguistic: the entailments of a theory of physics will also be about physics [17, 334].[13]

Deflationism is an elegant rival to orthodox metalinguistic accounts of logic. But it is no mere theoretical nicety, devoid of further interest. Williamson draws on deflationism—along with anti-exceptionalism and abductive methodology—to evaluate a pressing issue in the philosophy of logic: semantic paradoxes. The upshot of the paradoxes is that classical logic and a disquotational theory of truth cannot both be endorsed without contradiction.[14] The classical logician opts to abandon the latter; the deviant logician embraces a non-classical logic, such as K_3, and keeps the disquotational theory of truth. Which of these options is to be preferred? According to anti-exceptionalism, we proceed as if evaluating rival scientific theories. And according to abductive methodology, the way to do that is by abduction. By Williamson's [17, 339–342] lights, classical logic is the winner, mostly on grounds of strength and unificatory power. But he also thinks that altering a theory of truth is to be preferred to altering a logical theory "on general methodological grounds" [17, 340].[15] The reason stems from deflationism about logic. Because it concerns non-metalinguistic universal generalizations, logic—and classical logic in particular—is about the fundamental structure of absolutely everything. But a theory of truth "seems to express much less fundamental matters, specific to the phenomenon of language" [17, 339].[16]

This move is not available to the orthodox philosopher of logic, for whom both logics and theories of truth are metalinguistic. So, as well as providing a novel account of logic, deflationism promises to be of use in resolving debates between rival logics.

[13] At least, the members of Γ will not be solely metalinguistic. Disjoining a member of Γ with an arbitrary sentence might introduce mixed sentences with both metalinguistic and non-metalinguistic content. But set that aside.

[14] A disquotational theory of truth is one that licenses a disquotational principle as in n. 10. Note that, as I am using the terms "disquotational" and "deflationary", a disquotational theory of truth needn't be deflationary.

[15] The best way to read this is not as some metaprinciple that transcends the abductive method, but as subsumed under that method: changing a more fundamental theory typically results in a worse abductive result than changing a less fundamental one.

[16] I object to this line of argument in Section 3.1.

2 Deflationism Defended

In this section, I defend deflationism from the most important objection it has faced to date, due to Hjortland [6].[17] The problem is that deflationism fails to distinguish between distinct logics. That is, it cannot capture differences between logics that any adequate account of logic ought to be able to accommodate.

Hjortland [6] presses this criticism by way of an example. He argues that deflationism fails to distinguish between classical logic—CL—and supervaluationism—SV. If deflationism is to be part of a general strategy for deciding between logics on abductive grounds, it ought to be able to distinguish clear rivals such as these. Hjortland argues that it cannot. This is because classical consequence and supervaluationist consequence are *closure equivalent*: for any Γ, $Cn_{\vdash_{CL}}(\Gamma) = Cn_{\vdash_{SV}}(\Gamma)$.[18] So the sentences to be subjected to abduction are identical.

But, Hjortland points out, there are meta-argumentative differences between classical logic and supervaluationism that ought to be captured. A meta-argument is an inference from the validity of zero or more arguments to the validity of another argument. Schematically:

$$\frac{\Gamma_1 \vdash \alpha_1 \quad \cdots \quad \Gamma_n \vdash \alpha_n}{\Delta \vdash \beta}$$

When the validity of the metapremises guarantees the validity of the metaconclusion, the meta-argument is metavalid.[19] More precisely, let $\Gamma_1 \vdash \alpha_1 \cdots \Gamma_n \vdash \alpha_n$ and $\Delta \vdash \beta$ be the metapremises and metaconclusion respectively of an arbitrary meta-argument, $\dot{A}$, and let K be an arbitrary logic.

Metavalidity and Meta-invalidity. A meta-argument, $\dot{A}$, is K-metavalid if: for each Γ_i and α_i, if $\Gamma_i \vdash_K \alpha_i$, then $\Delta \vdash_K \beta$. Otherwise $\dot{A}$ is K-meta-invalid.[20]

As Hjortland [6, 9–10] points out, classical logic and supervaluationism do not metavalidate the same meta-arguments.[21] Consider the meta-argumentative schema for conditional proof:

$$\frac{\Gamma, \alpha \vdash \beta}{\Gamma \vdash \alpha \to \beta}\text{CP}$$

[17] Hjortland's paper raises other interesting issues that I do not have scope to do justice to here.

[18] As I'll explain in more detail shortly, classical and supervaluationist consequence are closure equivalent only for relatively expressively weak languages.

[19] Hjortland speaks of meta-arguments being "valid". I prefer "metavalid" to keep arguments and meta-arguments separate.

[20] Hjortland himself does not give a precise characterization of metavalidity. My construal of metavalidity is essentially that found in Cobreros et al. [1, 849–853]. (Thanks to an anonymous reviewer for bringing their work to my attention.) I'll consider another notion of metavalidity, and how that affects the argument I'm about to make, at the end of this section.

[21] I use "K metavalidates $\dot{A}$" as a terminological variant of "$\dot{A}$ is K-metavalid".

Classical logic does, whereas supervaluationism does not, metavalidate CP.[22] To see why supervaluationism fails to metavalidate CP, consider a simple propositional language, $\mathscr{L}_P$. A trivalent interpretation, $\mathscr{I}$, assigns exactly one of *true*, *false*, or *neither* to each sentence letter of $\mathscr{L}_P$. A precisification of $\mathscr{I}$ is a bivalent interpretation that preserves the classical values of $\mathscr{I}$ and assigns a classical value wherever $\mathscr{I}$ assigns *neither*. Then a sentence, α, of $\mathscr{L}_P$ is *supertrue* on $\mathscr{I}$ just in case α is assigned *true* on each precisification of $\mathscr{I}$. Supervaluationist validity is construed as preserving supertruth on all interpretations: the argument from Γ to α is SV-valid just in case for every interpretation, $\mathscr{I}$, for each $\gamma \in \Gamma$, if γ is supertrue on $\mathscr{I}$, then α is supertrue on $\mathscr{I}$.[23] Finally, we add a definitely operator, Δ, the semantics of which is more complicated than need concern us here.[24]

Now, consider the following instance of CP, with $\Gamma = \varnothing$, $\alpha = P$, and $\beta = \Delta P$.

$$\frac{P \vdash \Delta P}{\vdash P \rightarrow \Delta P}\ \mathrm{CP}_1$$

To show that SV fails to metavalidate CP_1, we show that (i) $P \vdash_{SV} \Delta P$ but that (ii) $\nvdash_{SV} P \rightarrow \Delta P$. Rather than giving a full-blown semantics for Δ, here are some intuitive considerations. For (i), consider an arbitrary interpretation, $\mathscr{I}$. If P is supertrue on $\mathscr{I}$, then it is assigned true on all precisifications of $\mathscr{I}$.[25] Hence, on any reasonable semantics for Δ, ΔP will also be supertrue on $\mathscr{I}$—no matter how we precisify, P is assigned *true*.

For (ii), let $\mathscr{I}$ be an interpretation that assigns *neither* to P. Then $P \rightarrow \Delta P$ will fail to be supertrue on this interpretation since on some precisifications P will be assigned *true*, while ΔP will not. For instance, let P stand for a claim that is neither definitely true nor definitely false, like "Balding Barry is bald". Since it is a borderline case, P is true on some precisifications of $\mathscr{I}$, but it is not *definitely* true. Hence the metaconclusion of the argument isn't supertrue on $\mathscr{I}$, and so is not an SV-logical-truth.

If this is right, then deflationism is in trouble. By cashing out a logic in terms of its closure of a well-established theory, it renders classical logic and supervaluationism equivalent. But, by the above argument, it seems that classical logic and supervaluationism have crucial meta-argumentative differences, and so must be distinguished. Thus deflationism is not fit for purpose.

But Hjortland's argument does not work. To see this, it will help to formulate it more carefully.

(6) *Closure equivalence*. Classical logical and supervaluationism are closure equivalent.

[22] Strictly, since CP is a schema and not a meta-argument, it is not the kind of thing that can be metavalidated. Let's extend the notion of metavalidity so that a meta-argumentative schema is metavalid just in case all of its instances are.

[23] This is the "global" construal of validity for supervaluationism [15, 148–149].

[24] Roughly, it is a modal operator acting as $\Box$ over accessible precisifications. See Fine [4] for details.

[25] I am using classical reasoning here, and will do so elsewhere as well. One might object that this is illegitimate since Hjortland is not a classical logician. But this gets the dialectic wrong. Hjortland's objection is that Williamson fails to distinguish between logics that are different by Williamson's own lights. It is thereby legitimate to draw on classical logic both in setting up the objection and in responding to it. I am grateful to Erik Stei for discussion on this point.

(7) *No difference*. According to deflationism, if two logical theories are closure equivalent, then there is no difference between them.
(8) *Difference*. But there *is* a difference between classical logic and supervaluationism.
(9) *Conclusion*. Deflationism about logic is inadequate.[26]

The deflationist must grant (7), because it is a crucial feature of her view. To resist Hjortland's objection, she thus needs to reject (6) or (8). This looks difficult. (6) is a familiar fact about the logics in question. (8) seems to follow from the meta-argumentative facts, namely that CL metavalidates some meta-arguments that SV does not.

The deflationist can escape this bind, however. Hjortland equivocates between two different languages in (6) and (8).[27] Classical logic and supervaluationism are only closure equivalent for relatively expressively impoverished languages. In particular, they fail to be closure equivalent when the theory they close is couched in a language with a "definitely" operator.[28] But the meta-argumentative difference that supports (8) requires the deployment of just such an operator.[29] So the deflationist merely needs to insist that Hjortland keeps his languages straight, and the objection is dealt with: either the language includes a definitely operator, in which case (6) is false; or the language lacks such an operator, in which case (8) is false.[30]

One might concede this but wonder whether Hjortland's point doesn't go through for some consequence relations other than those given by classical logic and supervaluationism. It can be proved, however, that it does not. More precisely:

Meta-Argumentative Equivalence (MAE) *If two logics are closure equivalent, then they are meta-argumentatively equivalent.*[31]

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[26]The conclusion doesn't follow deductively from the premises. This could be easily fixed by adding more structure to the argument, but I spare the reader the tedium of so doing.

[27]It has been brought to my attention by an anonymous reviewer that Williamson [18, n. 7] makes essentially this reply. However, my discussion is more general than Williamson's in two important respects. First, by considering meta-arguments, I will make a point that applies to all logics, not just classical logic and supervaluationism. Second, I will tie the dialectic to the broader question of how to define metavalidity. This not only deepens the present discussion of deflationism about logic, but also highlights the need to theorize more carefully about the relatively underexplored topic of metavalidity.

[28]Two elucidations. First, CL can apply to a language with a "definitely" operator by letting ΔP be true on a classical interpretation just in case P is true on that interpretation. Hence $P \dashv\vdash_{CL} \Delta P$.

Second, to see that CL and SV are not closure equivalent, consider the following. In virtue of the fact that $\vdash_{CL} P \rightarrow \Delta P$, the classical closure of any theory will contain $P \rightarrow \Delta P$. But we just saw that $\nvdash_{SV} P \rightarrow \Delta P$, and so the supervaluationist closure of a theory need not contain $P \rightarrow \Delta P$. Indeed, letting P be "Balding Barry is bald" and a member of Γ, $P \rightarrow \Delta P \notin Cn_{\vdash_{SV}}(\Gamma)$.

[29]Hjortland's citation to Williamson [15, 151–152] makes this clear.

[30]*Objection*. Isn't the latter cold comfort for the deflationist? Clearly, CL and SV are different, and deflationism should recognize that. *Reply*. Agreed, but deflationism will recognize the difference, as long as Γ is chosen accordingly. Since in general it seems like a good idea to try candidate consequence relations on a variety of theories, this isn't problematic.

[31]The logics K and J are *meta-argumentatively equivalent* iff: for any meta-argument, $\dot{A}$, $\dot{A}$ is K-metavalid iff $\dot{A}$ is J-metavalid.

I prove MAE in the Appendix. Here is a sketch of the proof. Suppose two logics K and J are closure equivalent. We show that an arbitrary meta-argument, ARG, is K-metavalid iff it is J-metavalid. Let the metaconclusion of ARG be $\Delta \vdash \beta$. For reductio, suppose K metavalidates ARG while J does not. This means the metapremises are J-valid and the metaconclusion is J-invalid, while the meta-argument is K-metavalid. There are two ways that K can metavalidate ARG. *Case 1.* The metapremises and metaconclusion are K-valid. But this contradicts the assumption of closure equivalence: $\beta \in Cn_{\vdash_K}(\Delta)$ but $\beta \notin Cn_{\vdash_J}(\Delta)$. *Case 2.* At least one metapremise of ARG is K-invalid. Let its premises be Γ and its conclusion be α. Again we derive a contradiction with the assumption of closure equivalence, because $\alpha \notin Cn_{\vdash_K}(\Gamma)$ but $\alpha \in Cn_{\vdash_J}(\Gamma)$. That's the left-to-right direction of the biconditional; the right-to-left direction is almost exactly the same.

MAE means that Hjortland's objection as it stands is flawed. He didn't just pick an unfortunate example in classical logic and supervaluationism. If two logics are closure equivalent, they will metavalidate all and only the same meta-arguments. So deflationism seems to capture meta-argumentative differences after all.[32]

There's a complication, however. The preceding line of argument depends on a certain notion of metavalidity.[33] Following Dicher [2, n. 17], call it "global metavalidity":

GLOBAL METAVALIDITY. A meta-argument, $\dot{A}$, is K-globally-metavalid iff: for each Γ_i and α_i, if $\Gamma_i \vdash_K \alpha_i$, then $\Delta \vdash_K \beta$.

But there's another notion of metavalidity in the literature [2]. Call it "local metavalidity":

LOCAL METAVALIDITY. A meta-argument, $\dot{A}$, is K-locally-metavalid iff: for each interpretation, $\mathscr{I}$, if all the metapremises preserve the designated value on $\mathscr{I}$, then the metaconclusion preserves the designated value on $\mathscr{I}$.[34]

Global and local metavalidity fail to coincide. Moreover, they do so in a way that threatens to reinstate Hjortland's objection against deflationism. Consider the following meta-argument:

$$\frac{P \vdash Q}{\vdash P \to Q}\ \text{PROB}$$

[32] *Objection.* Fully capturing meta-argumentative differences by way of closures also requires showing the converse of MAE: if two logics are meta-argumentatively equivalent, then they are closure equivalent. *Reply.* This can be proved if neither logic is the empty logic (see the Appendix). But this isn't all that relevant. The deflationist needs to rule out meta-argumentative differences that aren't captured by closures of consequence relations, not ensure that meta-argumentative differences capture all closure distinctions.

[33] I'm grateful to an anonymous reviewer for pointing out the importance to my argument of how metavalidity is defined. They also gave the helpful example of the meta-argument from $P \vdash Q$ to $\vdash P \to Q$, which I use below.

[34] Two clarifications. First, the designated value is whatever needs preserving from premises to conclusion for an argument to be valid. For instance, supertruth for supervaluationism, truth for classical logic, and either truth or truth-and-falsity for Priest's [8] logic of paradox.

Second, for a metaconclusion with no premises ($\vdash \alpha$), the designated value is preserved on $\mathscr{I}$ just in case the conclusion (α) has the designated value on $\mathscr{I}$.

As far as global metavalidity is concerned, PROB is both CL-globally-metavalid and SV-globally-metavalid. This is because $P \vdash Q$ is neither CL- nor SV-valid (and should come as no surprise given MAE). So far, the deflationist has nothing to worry about: there is no meta-argumentative difference, just as there should not be, given the closure equivalence of classical logic and supervaluationism.

But this deflationism-friendly result ceases to hold for local metavalidity. PROB is CL-locally-metavalid: any interpretation on which the metapremise preserves truth is also one on which the metaconclusion preserves truth (either $\mathscr{I}(P) = \mathscr{I}(Q) = \mathit{true}$, or $\mathscr{I}(P) = \mathit{false}$). But PROB is SV-locally-meta-*in*valid. Consider an interpretation, $\mathscr{I}$, such that P is not *supertrue* on $\mathscr{I}$, and such that there is a precisification of $\mathscr{I}$ on which P is *true* but Q is *false*. Then supertruth is preserved by the metapremise on $\mathscr{I}$, because P is not *supertrue* on $\mathscr{I}$. Yet supertruth fails to be preserved by the metaconclusion on $\mathscr{I}$, because $P \rightarrow Q$ is not *supertrue* on $\mathscr{I}$. This means that Hjortland's objection is reinstated when deploying the local notion of metavalidity: despite their closure equivalence, supervaluationism and classical logic are not locally meta-argumentatively equivalent. So, deploying local metavalidity, (8) is true even for a language without a definitely operator: there is a difference between classical logic and supervaluationism, which deflationism seems unable to capture.

There are two ways for the deflationist to respond. The first is to argue that global metavalidity is superior to local metavalidity, at least given the deflationist's other commitments.[35] The second response is to agree that local metavalidity should be focused on, but to argue that constraints can be imposed that undercut the foregoing, anti-deflationist line of argument. Since I'm not a deflationist, I won't pick a response as the one on which deflationism should stand. Instead, I'll develop both.

First response: global metavalidity is superior. Proponents of local metavalidity endorse it partly precisely because of its strength relative to global metavalidity [2]. Whereas any meta-argument with an invalid metapremise is globally metavalid, only those meta-arguments that track rules of inference are candidates for local metavalidity. But the deflationist can turn this supposed advantage for the local notion on its head. Consider Williamson's motivation for starting with the Tarskian account of consequence:

> Tarski's austerely clean and clear definition is perfectly suited to a discipline as fundamental as logic. In abstracting away from the specific meanings of non-logical constants, it enables us to recognize the patterns formed by the logical constants, which pick out the field of interest [17, 328].

Similarly, the deflationist argues, it is global metavalidity that is to be preferred exactly because of its abstraction from specific rules of inference. By the deflationist's lights, we should build only as much into a notion of (first-order) validity as

[35] The deflationist needs to provide reason to favor the global construal of metavalidity independent of the fact that adopting it allows her to avoid Hjortland's objection. That would be unacceptably ad hoc. The reader who already has their own reasons for favoring global metavalidity can skip ahead to Section 3. If global metavalidity is secured independently of the Hjortland-deflationism dialectic, then Hjortland's objection is answered.

is needed to undertake the investigations into universal generalizations over absolutely everything. So we shouldn't require that, in addition to exemplifying Tarskian consequence, an argument is, say, analytic in order to count as valid. Just so with metavalidity, according to this response. Global metavalidity is to be preferred, because local metavalidity includes extra constraints that the deflationist's general conception of logic should not incorporate. This allows MAE to block any version of Hjortland's objection.

Second response: local metavalidity is fine given deflationist constraints. When explaining the closure procedure, Williamson writes that when

> comparing the consequence relations $\vdash$ and $\vdash^*$ ... we should compare $Cn_{\vdash}(\Gamma)$ with $Cn_{\vdash^*}(\Gamma)$ ... for various independently well-confirmed sets Γ of sentences of [$\mathscr{L}$]. We require Γ to be highly confirmed because the best of logics will draw some bad conclusions from bad premises [17, 334].

The suggestion on behalf of the deflationist is to extend this line of thought to meta-arguments: even the best of meta-arguments will draw bad metaconclusions from bad metapremises. So we should impose a constraint when considering questions of metavalidity, whether global, local, or otherwise. Letting $\dot{A}$ and K be an arbitrary meta-argument and logic, respectively:

CONSTRAINT. Each of $\dot{A}$'s metapremises is (first-order) K-valid.

Just as the deflationist requires closing consequence only on well-confirmed sets of sentences, she requires that metavalidity holds only for meta-arguments that are in good order, that is, meta-arguments the metapremises of which are valid.[36] The problematic meta-argument, PROB, is not in good order in this sense, because $P \vdash Q$ is neither CL- nor SV-valid. Moreover, given CONSTRAINT, no such meta-argument will be forthcoming: local metavalidity and global metavalidity are equivalent under that assumption.[37] So, against the background of CONSTRAINT, the deflationist can appeal to MAE even when local metavalidity is at issue.

While neither of these responses is conclusive, they both have merit. In particular, they reply to the objection from local metavalidity by recruiting commitments that are reasonable by the deflationist's own lights. That is all that is required: Hjortland's objection is so threatening because, if successful, it undermines deflationism from

[36] *Objection*. Williamson [17, 334], immediately after the last passage quoted, writes that "for reasons of methodological fairness we require the confirmation [of Γ] to be independent in the sense that it is not too sensitive to the choice of logic". But there is no such logic-independent way of confirming the validity of arguments and so the line of thought cannot extend to meta-arguments as the response requires. *Reply*. There is a good analogue of "methodological fairness" in the meta-argumentative case: no particular logic is privileged. CONSTRAINT merely requires that a meta-argument's metapremises are K-valid, no matter the logic, K.

[37] *Proof*. By CONSTRAINT, for an arbitrary argument, $\dot{A}$, and arbitrary logic, K: $\dot{A}$ is K-globally-metavalid just in case $\dot{A}$'s metaconclusion is K-valid. By CONSTRAINT, $\dot{A}$'s metapremises preserve K's designated value on every interpretation. So $\dot{A}$ is K-locally-metavalid iff its metaconclusion preserves K's designated value on every interpretation. But preservation of K's designated value on every interpretation is equivalent to K-validity. Therefore, given CONSTRAINT, $\dot{A}$ is K-locally-metavalid iff $\dot{A}$ is K-globally-metavalid.

within the deflationist's own framework. But, within that framework, the deflationist has promising responses to give. So Hjortland's objection loses much of its sting.

3 Deflationism Deflated

Deflationism isn't flawed in the way that Hjortland's objection purported to show. But it suffers from two major issues. First, it cannot do the work in adjudicating between rival logics that underpins a large part of its interest. This is because the argument that a theory of logic is more fundamental than a theory of truth is unconvincing. Second, it does not give a satisfactory answer to a basic challenge: what does a sentence's universal generalization have to do with its logical truth?

3.1 The Putative Fundamentality of Logic

As I explained in Section 1, Williamson deploys deflationism to resolve the impasse that ensues between classical and non-classical logicians with respect to semantic paradoxes. The classical logician abandons a disquotational theory of truth; the non-classical logician retains it at the cost of the power of classical logic.

One reason for the impasse is that one might think that logic and truth are too tightly connected to separate on abductive grounds. Williamson [17, 339–340] argues that deflationism undercuts this. The deflationist construes logics as providing either universal generalizations over absolutely everything, or closures of theories—like those of physics—that typically will not rely on the truth predicate. So, he insists, a theory of logic is more fundamental than a theory of truth. And, "on general methodological grounds", it is usually better to preserve a more fundamental theory than a less fundamental one [17, 340].

However, the deflationist cannot separate her theory of truth from her theory of logic so easily.[38] This is because the move to understand logical truths in terms of universal generalizations depends intimately on the notion of truth. Recall from Section 1 that the deflationist seeks to construe a claim like "α is logically true" as "UG(α) is true". She then investigates not the metalinguistic question of whether UG(α) is true, but the non-metalinguistic question of whether UG(α). This choice of investigative focus is the deflationist's prerogative, but she has not thereby excised truth from her account. The question "UG(α)?" is worth pursuing because of its close connection to the question of whether UG(α) is true. It is this latter question that is equivalent to the ultimate target of inquiry: whether α is logically true. So the choice to pursue the question "UG(α)?" only makes sense as an investigation into α's logical truth given the intimate connection to whether UG(α) is true.

[38]Hjortland [6] makes what is ultimately a similar point, but he frames it in a way that gives the deflationist an easy response. Because he thinks the deflationist cannot capture meta-argumentative differences between distinct logics, Hjortland saddles the deflationist with an object-language validity predicate that leads to various problems. But, given the upshot of Section 2, the deflationist needn't resort to using such a predicate.

Now, if the deflationist endorsed a disquotational theory of truth, then this worry would be avoided. Then "UG(α) is true" would be equivalent to "UG(α)", allowing the deflationist to move immediately from the question of whether α is logically true to the question of whether UG(α). This would bypass the truth-involving step and so would allow the deflationist to vindicate logic's fundamentality with respect to truth. But the deflationist cannot endorse a disquotational theory of truth without robbing her position of much of its interest.

Deflationism's appeal largely stems from its promise to adjudicate between rival logics. But the clash between classical and non-classical logics over semantic paradoxes is partly precisely an issue of whether to retain a disquotational theory of truth by adopting a non-classical logic, or whether to jettison a disquotational theory of truth in order to retain classical logic. So if the deflationist has to build a disquotational truth principle into her deflationary account of logic, it will be unable to do the adjudicatory work that it was supposed to do. Indeed, its incompatibility with a disquotational theory of truth in the face of paradox would render classical logic a nonstarter.

The point is not merely that this would be problematic for Williamson, or other deflationists who ultimately endorse classical logic. The deeper point is that, if it had to build in a disquotational theory of truth, deflationism could not perform its task of helping to decide between rival logics with respect to the crucial issue of semantic paradox. This is a problem for all would-be deflationists, even those who eschew classical logic. Because of this, the deflationist cannot rely on a disquotational truth principle to underpin the claim that a theory of logic is more fundamental than a theory of truth. But, without such a principle, we lack sufficient reason to accept the deflationist's claim that a theory of logic is more fundamental than a theory of truth.

3.2 Is Deflationism an Account of Logic?

Even waiving this issue, however, there is a deeper problem with deflationism's shift of focus to universal generalizations. The problem is that there's no reason to think that the obtaining of a universal generalization has much to do with the logical truth of any of its instances.[39] Suppose UG(α) is the case. Why should *that* mean that α is logically true? There are two natural deflationist lines of response to this challenge.

The first is substantive. It seeks to demonstrate the link between universal generalizations and logical truths by showing that the sentences the universal generalizations of which obtain have some feature or features that are associated with logical truth: necessity, a priority, analyticity, and so on. The problem with this substantive reply is that a Tarskian approach to consequence—like Williamson's—will only be extensionally adequate because of substantive generalizations in the background model theory (see Etchemendy [3], chs. 7–8). But these assumptions will involve features—like variable domains—incompatible with the deflationist goal of capturing

[39] I'm here indebted to Etchmendy's [3, 99–100] excellent discussion of a similar issue for the original Tarskian presentation.

logical truth by way of universal generalizations. To see this, consider again the claim that “there are at least two things”, which is its own universal generalization.

(4) $\exists x \exists y\, x \neq y$

(4) seems neither a necessary, nor a priori, nor analytic truth. Neither, intuitively, is it a logical truth. And this is the case on standard contemporary presentations of model theory, since there will be models with fewer than two things.[40] But this move blocks the deflationist’s assimilation of logical truths to unrestricted universal generalizations. It fails to sever the connection between logical truth and truth-in-a-model, thus preventing the deflationist from giving her non-metalinguistic account of logic.

The second line of response is stipulative. It ignores any pretheoretical intuitions about logical truth or consequence, and thereby avoids the previous objection. By stipulating that logical truths are those sentences the unrestricted universal generalizations of which obtain, (4) turns out to be a logical truth. This clashes with pretheoretical intuition, but that is to the detriment of intuition rather than deflationism. This stipulative response is Williamson’s preferred one. It’s worth quoting him at some length.

> For present purposes, we are *not* trying to analyse a pretheoretically given concept of logical consequence. Although the folk reason, and sometimes even reflect on differences between specific instances of good and bad reasoning, they have no need to distinguish between *logically* valid reasoning and reasoning valid in some much broader sense. Nor should logic as a developing theoretical discipline tailor its basic theoretical terms to fit whatever pretheoretic prejudices and stereotypes may happen to be associated with the word “logic”, any more than physics should tailor its basic theoretical terms to fit whatever pretheoretic prejudices and stereotypes may happen to be associated with the word “physics”. Like every other form of systematic inquiry, logic has the right to identify and employ whatever fundamental distinctions help it formulate the most fruitful questions and their answers. Such distinctions cut through pointless accretions and complications in folk logic [17, 325, original emphasis].

Later, he explicitly considers the present objection, namely that his account of consequence has little to do with logic.

> Notoriously, Tarski’s account does not impose any modal or epistemic constraints, yet many philosophers assume that principles of logic should be necessary or a priori or analytic. They often present themselves as speaking on behalf of some intuitive pretheoretic conception of logic. But it has already been emphasized that we are not trying to be faithful to any such conception. Rather, we are trying to *construct* a definition that will best serve the purposes of

[40] Of course, standard model-theoretic presentations of classical logic require a model’s domain to be non-empty. This makes “$\exists x\, x = x$” a logical truth. I leave it to the reader to decide whether this is a tolerable artifact of the model theory, a reason to embrace a free logic, or a discovery of a perhaps-surprising logical truth.

> theoretical inquiry in this general area. We want to *define* logical consequence rather than treating it as primitive [17, 328, original emphasis].

According to Williamson [17, 328], it turns out the definition that best serves the purposes of theoretical inquiry is Tarski's, because it captures with complete generality "the patterns formed by the logical constants, which pick out the field of our interest".

There are two problems with this response. The first is that such a stipulation about logic is *exceptionalist*. In particular, despite the previous two quotations it treats the delineation of the subject matter of logic—"the field of our interest"—differently from other sciences. The second problem is that the stipulative response amounts to an unwarranted change of subject. Let's consider each problem in turn.

First, the stipulative response ignores what practitioners of the science of logic take themselves to be doing. Logicians, *pace* Williamson, don't tend to see themselves as uncovering absolute generalizations over everything. Rather, the common thread running through much of the practice of logic is a focus on consequence relations, on distinguishing valid from invalid arguments.[41] Williamson begins his investigation that way too, but quickly shifts the purview of logical inquiry to non-metalinguistic universal generalizations. It's hard to tolerate this on anti-exceptionalist grounds. If, as I suspect Williamson would agree, the philosopher of physics has no business telling the physicist that physics is really about, say, writing useful inference tickets rather than uncovering the nature of reality; then the philosopher of logic has no business telling the logician that logic is really about non-metalinguistic universal generalizations rather than metalinguistic properties and relations.[42]

This is an issue for those who, like Williamson, endorse anti-exceptionalism about logic.[43] The second problem with the stipulative response does not depend on a prior commitment to anti-exceptionalism. The issue involves a conflation of two kinds of pretheoretical intuition, resulting in an illegitimate change of subject. There are intuitions on the one hand about explananda and on the other hand about explanantia. The former are about what is supposed to be explained, the latter about the explanations of those phenomena. The stipulative injunction for logic to follow physics and throw off the yoke of "pretheoretic prejudices and stereotypes" gains plausibility from considering intuitions about explanantia [17, 325].[44] The Copernican theory,

[41] Examples abound. See Tarski [14], Haack [5], Read [11], Etchemendy [3], Priest [9], and Hjortland [6]. There are perhaps some logicians whose approach favors deflationism. Nathan Kellen has suggested to me that this might be the best way of reading Frege. I don't wish to get bogged down in exegesis here; even if Frege's program meshes well with deflationism, I stand by the claim that the majority of practitioners are not attempting to execute such a non-metalinguistic project.

[42] Admittedly, Williamson has made important contributions to the discipline of logic, so he is also a practitioner of the science he's investigating. But this does not override what the majority of other practitioners take themselves to be doing.

[43] Other anti-exceptionalists include Quine [10], Priest [9], Maddy [7], Russell [12], and Hjortland [6].

[44] This might sound like I'm still relying on anti-exceptionalism, but I am not. All I need for the present objection is the weaker claim that logic is like many other disciplines, scientific or not, in that its scope is sensitive to some pretheoretical intuitions. I use "discipline" for a domain of inquiry for which this holds. Thus a discipline may or may not be continuous with science in the sense that anti-exceptionalism requires.

for instance, wasn't justifiably criticizable for failing to keep the earth at the center of the universe—that is, for failing to preserve the pretheoretical explanans for the sun's rising and setting.[45] Similarly, a logical theory is not justifiably criticizable for failing to preserve the pretheoretical intuition that, say, a valid argument is one that an assessor thinks is persuasive.

So far, so good; the problem arises by allowing logic to ignore pretheoretical intuitions about explananda. This is because such intuitions help delineate a discipline's scope.[46] And so a theory can be justifiably criticizable for giving explanations of the wrong explananda, even if those explanations are good ones. For instance, suppose the Copernican theory had, while purporting to be a physical theory explaining the motion of bodies in the solar system, instead given a semantic explanation of the references of various terms, like "sun" and "earth". This counterfactual Copernican theory would have been critizable on precisely the grounds that it had explained the wrong thing. It might have given a very successful explanation of that other thing, but that is beside the point. What we were trying to explain was not semantic properties of terms like "sun", but the physical properties of objects like the sun. Similarly, a logical theory is criticizable for failing to offer a characterization of logical properties, like logical truth and consequence, and instead offering a collection of non-metalinguistic generalizations. But that is precisely what deflationism does.

The deflationist might reply that this begs the question. After all, part of the point of a stipulation is to break from the folk. But this won't do. The deflationist needs to provide some reason for thinking that she's not just changing the subject. Without such a reason, it seems deflationism is an account of *schlogic*, the discipline of non-metalinguistic universal generalizations over absolutely everything. And maybe classical "logic" is the best schlogic, on abductive grounds. But that is beside the point, since we are trying to explain not the non-metalinguistic universal structure of the world, but the metalinguistic properties of sentences. It's precisely because deflationism ignores our pretheoretical intuitions about the relevant explananda that its proponents need to provide some argument that they've given an account of logic, rather than something else.

The quotations from Williamson earlier in the section suggest a deflationist reply to this point: deflationism is an account of logic since it best serves the purposes of theoretical inquiry. This would be a good reply if logic, in the inflationary sense of the discipline of metalinguistic consequence relations, were a degenerate research program. If that conception of logic had stagnated, and failed to yield interesting results, then the change of subject might be warranted. If logical inquiry were failing to be served by the orthodox, metalinguistic account, then we should probably try something else. Compare the (caricatured) case of alchemy. It was something like the protoscience of transmuting base metals into precious ones. Thus construed, it was a degenerate research program. This is part of what justified abandoning it in favor

[45] Of course, this explanans was underwritten by another theory, and so wasn't in *that* sense "pretheoretical". But I take it that distinguishing genuine folk or pre-theoretical intuitions from those embedded in the practice of a science is a problem (if at all) for everyone, and so not something that counts for or against deflationism.

[46] This is not to say that other intuitions, including post-theoretical ones, can't also play a role.

of modern chemistry, the science, very roughly speaking, of the nature of matter. Now if inflationary logic were like alchemy, stagnating and failing in its attempts to construe consequence relations metalinguistically and to tie them to notions like necessity and a priority, then we might want to follow the deflationist in radically changing the subject. We could still call the new subject "logic", but its concern with non-metalinguistic universal generalizations suggests it would be logic mostly in name.

But logic is emphatically not alchemy. It is a thriving discipline.[47] Because of this, there's no reason to change the subject from the discipline of metalinguistic consequence relations, to schlogic, the discipline of non-metalinguistic universal generalizations. So the stipulative response fails and the challenge remains: the deflationist has failed to connect her project to logic after all.

4 Conclusion

Deflationism about logic is an interesting rival to orthodox metalinguistic construals of logical truth and consequence. Moreover, it can deal with its most troubling criticism to date: Hjortland's claim that deflationism cannot discriminate between logics that ought to be kept apart. I argued in Section 2 that Hjortland's criticism depends on equivocating about whether the target language includes a "definitely" operator or not. This is not a shortcoming unique to the choice of classical logic and supervaluationism. Meta-Argumentative Equivalence shows that if two logics are closure equivalent, then they are meta-argumentatively equivalent. On the global construal of metavalidity, this blocks any attempt at a similar line of criticism using different logics. Matters are more complicated when local metavalidity is at issue. But the deflationist can still respond to Hjortland's objection by constraining questions of metavalidity to meta-arguments with valid metapremises.

Despite this, deflationism is problematic. In particular, I argued in Section 3 that deflationism faces two problems. First, it doesn't support the fundamentality of a theory of logic over a theory of truth. Thus it cannot resolve the impasse between rival logics with respect to semantic paradoxes. Second, deflationism cannot meet a basic challenge: what do universal generalizations over absolutely everything have to do with logical truth and consequence? A substantive response to this question threatens to undermine the deflationist's crucial move, namely shifting the investigative focus from metalinguistic logical properties to the obtaining of unrestricted universal generalizations. But a stipulative response, as favored by Williamson, faces two problems of its own. It is exceptionalist in ignoring what practitioners of the science of logic take themselves to be doing. Moreover, and more problematically, it amounts

[47] One might object that it is not *logic* that tries to tie consequence relations to notions like necessity and a priority but *philosophy* of logic. However, we can distinguish, following Williamson [17, 331], merely technical aspects of logic from more philosophical ones. This distinction will not be sharp, but there is a sense of "logic" that investigates consequence relations of object languages with a focus on intended, natural-language interpretations. Williamson [17, 331, original emphasis] calls this "*philosophical logic*" and seeks to supplant the orthodox, inflationary conception with deflationism. Inflationary philosophical logic is a thriving discipline, as evidenced by discussions in journals such as this one.

to an unwarranted change of subject. The deflationist needs to provide some reason to think the study of unrestricted universal generalizations is logic.

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Appendix

Meta-Argumentative Equivalence (MAE) *If two logics are closure equivalent, then they are (globally) meta-argumentatively equivalent.*

Proof Let K and J be closure-equivalent logics. Let $\Gamma_1 \dots \Gamma_n$ and Δ be arbitrary (possibly empty) premise sets, and $\alpha_1 \dots \alpha_n$ and β be arbitrary conclusions. Consider the following arbitrary meta-argument:

$$\frac{\Gamma_1 \vdash \alpha_1 \quad \cdots \quad \Gamma_n \vdash \alpha_n}{\Delta \vdash \beta}\ \text{ARG}$$

We show that ARG is K-metavalid iff ARG is J-metavalid. Consider the left-to-right direction.

Suppose for reductio that K metavalidates ARG, but that J does not. There are two cases to consider.

Case 1. K metavalidates ARG because both its metapremises and metaconclusion are K-valid, and J fails to metavalidate ARG. More precisely:

(i) $\Gamma_1 \vdash_K \alpha_1 \cdots \Gamma_n \vdash_K \alpha_n$
(ii) $\Delta \vdash_K \beta$
(iii) $\Gamma_1 \vdash_J \alpha_1 \cdots \Gamma_n \vdash_J \alpha_n$
(iv) $\Delta \nvdash_J \beta$

By (ii), $\beta \in Cn_{\vdash_K}(\Delta)$. But by (iv), $\beta \notin Cn_{\vdash_J}(\Delta)$. Hence $Cn_{\vdash_K}(\Delta) \neq Cn_{\vdash_J}(\Delta)$. But, since K and J are closure equivalent, $Cn_{\vdash_K}(\Delta) = Cn_{\vdash_J}(\Delta)$. Contradiction.

Case 2. K metavalidates ARG because at least one of its metapremises is invalid (thus the conditional "if all metapremises, then metaconclusion" obtains), and J fails to metavalidate ARG. More precisely, and (iii) and (iv) hold as in Case 1, and:

(v) For some Γ_i and α_i, $\Gamma_i \nvdash_K \alpha_i$.[48]

[48]This requires meta-arguments to have a non-empty metapremise set (though this is compatible with a metapremise—an *argument*—having an empty *premise* set). But this seems unobjectionable. A "meta-argument" with nothing above the line is just the assertion of some entailment. Even if we allow these degenerate kinds of meta-argument, the result still holds. *Proof.* For reductio suppose some zero-metapremise meta-argument is K-metavalid but J-meta-invalid. Let its conclusion be $\Delta \vdash \beta$. Then $\Delta \vdash_K \beta$ but $\Delta \nvdash_J \beta$. So $\beta \in Cn_{\vdash_K}(\Delta)$ and $\beta \notin Cn_{\vdash_J}(\Delta)$. Hence the K- and J-closures of Δ are not the same set. Contradiction with the closure equivalence of K and J.

By (v), $\alpha_i \notin Cn_{\vdash_K}(\Gamma_i)$. But by (iii) $\alpha_i \in Cn_{\vdash_J}(\Gamma_i)$. Hence $Cn_{\vdash_K}(\Gamma_i) \neq Cn_{\vdash_J}(\Gamma_i)$. But since K and J are closure equivalent, $Cn_{\vdash_K}(\Gamma_i) = Cn_{\vdash_J}(\Gamma_i)$. Contradiction.

Either way, we get a contradiction. It follows by reductio that if ARG is K-metavalid, then it is J-metavalid.

The proof for the right-to-left direction of the biconditional is almost exactly the same.

Hence, ARG is K-metavalid iff ARG is J-metavalid.

Since this was proved on the assumption that K and J are closure equivalent, and since the logics and meta-arguments were arbitrary, it follows that if two logics are closure equivalent, then they are meta-argumentatively equivalent. □

Converse of MAE *If two logics are (globally) meta-argumentatively equivalent, then they are closure equivalent.*

Proof Suppose for reductio that K and J are meta-argumentatively equivalent, but they are not closure equivalent: for some Δ, $Cn_{\vdash_K}(\Delta) \neq Cn_{\vdash_J}(\Delta)$. Without loss of generality assume that:

(i) $\delta \in Cn_{\vdash_K}(\Delta)$
(ii) $\delta \notin Cn_{\vdash_J}(\Delta)$

By (i), $\Delta \vdash_K \delta$. Hence:

(iii) Any meta-argument to the metaconclusion that $\Delta \vdash \delta$ is K-metavalid.

Consider in particular the following meta-argument, where:[49]

(iv) $\Gamma \vdash_J \alpha$

$$\frac{\Gamma \vdash \alpha}{\Delta \vdash \delta}\ \text{ARG1}$$

By (iii), ARG1 is K-metavalid. So, by the assumption of meta-argumentative equivalence, ARG1 is J-metavalid too. Either (a) the metapremise is J-invalid, or (b) the metaconclusion is J-valid. But (a) contradicts (iv), because then both $\Gamma \nvdash_J \alpha$ and $\Gamma \vdash_J \alpha$. And (b) contradicts (ii), because then $\Delta \vdash_J \delta$. Hence $\delta \in Cn_{\vdash_J}(\Delta)$ and $\delta \notin Cn_{\vdash_J}(\Delta)$. Either way, contradiction.

It follows by reductio that if two logics are meta-argumentatively equivalent, then they are closure equivalent. □

[49]This requires that J is not the empty logic. The WLOG assumption a few lines above requires that K is not empty as well. Note that Γ could be the empty set, however.

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