

## Anti-Exceptionalism about Logic II

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### 1. Recap

Last week we looked at Anti-Exceptionalism about Logic (“Anti-Exceptionalism”).

In a slogan, this is the view that LOGIC IS NOT SPECIAL. In particular:

(C) The claims of logic are fundamentally of the same kind as science.

(M) The methodology of logic is the methodology of science.

(C) means at the very least that logic is not *a priori* and logical claims are revisable.

- Some anti-exceptionalists, e.g., Quine, maintain that logical claims are also not analytic (true in virtue of meaning) and are not necessary truths.
- Others maintain that anti-exceptionalism is consistent with logical truth being analytic truths and necessary truths, e.g., Russell.

(M) means that we decide on which logical theory to adopt on the basis of its theoretical virtues, e.g., simplicity, strength, fit with data, and elegance.

- These theoretical virtues are *precisely* those used for theory selection in natural science, i.e., the methodology of logic and science is continuous.

We also looked at some objections to Anti-Exceptionalism.

(i) Which logic do we presuppose in our methodology?

*When anti-exceptionalists disagree, or make their case for a particular logic, will they need to presuppose some background logic? How is that justified? Will it be thrown into the mix? Will this cause problems for anti-exceptionalists?*

(ii) What is the “fit with data”?

*The relevant data for the sciences is clear. But it is less clear what the relevant data for deciding a logical theory is. What observations must we do to confirm a logic?*

(iii) Objection from normativity of logic.

*Logic is normative, science is descriptive. They are not, then, continuous.*

## 2. Anti-Exceptionalism in More Detail

Let's look at Anti-Exceptionalism in some more detail

In turn, we'll see how this extra detail interacts with the above objections.

### 2.1 Logical Theories

Recall, Gillian Russell:

The simplicity, elegance, fertility, low-cost, and explanatory power of an entire logical theory played a part in the ... reasons for believing or not believing it ... the process was epistemically holistic ... logical laws like the law of excluded middle were given up or adopted as a part of an entire logical theory. The law did not receive an atomistic justification of its own ... except relative to some theory, say classical logic. (Russell, 2015: 800)

The Anti-Exceptionalist methodology is applied to logical *theories*, e.g., classical logic, not individual logical laws, e.g., law of excluded middle.

Big question: what is a logical theory? What is it about?

(1) WILLIAMSON: Logical theories as *theories of unrestricted generalisation*.<sup>1</sup>

<sup>1</sup> See (Hjortland, 2017: 635–640)  
See also (Williamson, 2017)

- Logical theories are sets of sentences which describe the most general aspects of the world. Generalisations are not specifically about anything, they are about how everything fits together in the most general way. That is they are sets of sentences which meet the following requirements.
  - (i) *Unrestricted Generalisation*: The sentences contained in the theory are unrestricted universal generalisations.
  - (ii) *Universal Closure*: These unrestricted universal generalisations are universal closures of valid arguments.
  - (iii) *Non-metalinguistic*: The sentences in the logical theories are about the world, not about language or about concepts.

**Example.** Take "DNE", i.e.,  $\neg\neg A \vDash A$ . If we think that this is valid, then we want it in our logical theory of how the world very generally fits together. We include the universal closure of the *corresponding theorem* in our theory:

$$\neg\neg A \vDash A \Rightarrow \vDash \neg\neg A \supset A \Rightarrow \forall\phi(\neg\neg\phi \supset \phi)$$

Our theory is then full of claims like  $\forall\phi(\neg\neg\phi \rightarrow \phi)$  and we assess it against competing theories by appealing to the theoretical virtues.

**Some Problems.** Hjortland (2017) notes some problems with this approach.

(1) Not always a 'corresponding theorem'. In some logics:

$$\Gamma \vDash B \text{ but } \not\vDash (A_1 \wedge \dots \wedge A_n) \supset B, \text{ where } A_1, \dots, A_n \in \Gamma$$

Why? Infinite premises, but no infinite conjunction in the language, or the so-called deduction theorem, i.e.,  $A \vdash B \Rightarrow \vdash A \supset B$ , fails.<sup>2</sup>

– Williamson’s solution: allow for infinite conjunction.

(2) To get universal closures, we need a distinction between logical and non-logical elements of the language. From  $\vDash \neg\neg A \supset A$  we get  $\forall\phi(\neg\neg\phi \supset \phi)$  because we generalise over all non-logical elements of  $\vDash \neg\neg A \supset A$ , i.e., ‘ $A$ ’. Importantly, we leave alone  $\supset$  and  $\neg$ . But what counts as ‘logical’?

– Williamson’s solution: we don’t need a ‘once-and-for-all’ account of logic. The details of this account will be relative to one’s purposes.

– Logicity: ‘part of the abductive package’ (Hjortland, 2017: 637).

(2) PRIEST: Logical theories are *theories of validity*.<sup>3</sup>

The central notion of logic is validity, and its behaviour is the main concern of logical theories. Giving an account of validity requires giving accounts of other notions, such as negation and conditionals. Moreover, a decent logical theory is no mere laundry list of which inferences are valid/invalid, but also provides an explanation of these facts. An explanation is liable to bring on other concepts, such as truth and meaning. A fully-fledged logical theory is therefore an ambitious project.

This is an *inflated* conception of logical theory compared to Williamson’s.

Hjortland (2017: 641–642) spells this out in more detail. What matters:

- The theory is not just unrestricted generalisations.
  - *The theory is restricted*: the theory consists of claims about ‘all sentences, all negations, or all contradictions’, not everything *tout court*.
  - The theory also *explains why* certain sentences follow from others—it is not a mere laundry list of valid patterns.
  - *The theory is metalinguistic*: the claims are about sentences, e.g., which follow from which and why such arguments are valid.

Priest and Williamson disagree over the content of logical theories.

For Priest, logical theories do not describe the world; but we assess those theories in the same way as scientific theories because that’s how we assess any theory.

## 2.2 Fit with Data

A core aspect of anti-exceptionalism is assessing theories using theoretical virtues.

Hjortland’s paper nicely fills in the detail about how we go about deciding between logical theories. Let’s focus on what he says about fit-with-the data.

We’ve said that logical theories, insofar as they are continuous with the sciences, are justified, in part, by the available evidence. This needs unpacking.

<sup>2</sup> If the argument  $\Gamma \vDash B$  involves an infinite  $\Gamma$ , then there will be corresponding conditional, if we do not have infinite conjunction, i.e., infinitely long  $A_1 \wedge A_2 \wedge \dots$  and there is no compactness theorem for the logic. A compactness theorem states that for any  $\Gamma \vDash B$ , there is a finite subset  $\Gamma' \subset \Gamma$  such that  $\Gamma' \vDash B$ . Compactness theorems hold for some logics but not all.

<sup>3</sup> Priest, G. (2016). Logical disputes and the a priori. *Logique et Analyse*.

- What is the evidence? (Hjortland, 2017: 643–4)
  - This will differ, depending on how we understand logical theories.
- How does the evidence confirm a theory? (Hjortland, 2017: 645)
  - We may say that it is consistency with the data. But consistency is precisely one of the logical notions which is being examined by the theory.
  - In fact, Hjortland stresses that many classic accounts of evidential confirmation presuppose some background logical consequence relation.
  - This takes us back to the presupposition objection. Hjortland has an interesting response:
 

... the abductive criteria of fit with the evidence is not logic neutral. As a result, the theory selection is not always done on the background of a prior logic—justified or not. An abductive argument for a logical theory might therefore have an underlying theory of evidential confirmation that is biased. The anti-exceptionalist will just have to live with that. An abductive argument for a logical theory will inevitably presuppose some laws of logic, but that is not incompatible with revision of logic. All the laws of logic cannot be subject to revision simultaneously, nor is that a requirement. The anti-exceptionalist only needs to hold that no law of logic will be beyond revision. (Hjortland, 2017: 645)

### 3. Normativity of Logic

Now, it is undeniable that logic as a discipline is closely related to reasoning.

The normative objection to anti-exceptionalism, however, makes this relationship fatal to understanding logic as continuous with science.

- Loosely put: unlike science, logic is not a descriptive exercise, but a prescriptive one: logic is about the correct norms of reasoning.

How can we make this a more precise argument? How we do so is sensitive to how we understand the content of logical theories.

**Simple Normative Argument** Logic is about the norms of reasoning. Any logical theory ought to contain claims about norms, not claims about the world. Therefore, anti-exceptionalism is false.

Is this a good argument? Note:

- On Priest's view, logical theories are not about the world (or at least not exclusively). They are about validity and will also be about a variety of other phenomena needed to account for validity, e.g., meaning and truth. But they are also not about norms of reasoning but about what follows from what.

- On Williamson’s view, logical theories are about the world—containing unrestricted generalisations—and definitely not about norms.
  - But this doesn’t make the simple argument good. It’s circular.
  - It simply states that logic is not how either Priest or Williamson understand and because of this they are wrong.

Let’s try again. Ditch the Simple Normative Argument. Instead:

**Sophisticated Normative Argument** We should be able to *extract* norms of reasoning from a logical theory. Insofar as anti-exceptionalists can’t extract norms of reasoning, we shouldn’t be anti-exceptionalists.<sup>4</sup>

<sup>4</sup> For more on the normativity of logic, see (Steinberger, 2022)

Is this a good argument? It’s not circular like the last argument. It’s consistent with both Priest and Williamson’s views of logic that we should be able to extract norms of reasoning from logical theories. Also, this is reasonable. However:

- If we couldn’t extract norms of reasoning, why would that show that anti-exceptionalism was wrong? Norms of reasoning are about how we use the knowledge logic gives us.
- There doesn’t seem to be anything particular troubling about norms of reasoning for anti-exceptionalists. This would be an issue even if logic were *a priori*—the issue with extracting norms from logic holds regardless of the status of logic.<sup>5</sup>
- What shape the norms of reasoning should take is itself controversial.
  - As MacFarlane notes, we don’t want them to be too constraining, We also don’t want them to be too lenient.<sup>6</sup>

<sup>5</sup> Maybe it is even *worse* if logic were *a priori*. How do we know that logic is applicable?

We might suppose that the fact that  $A, A \supset B \models B$  licenses anyone who believe  $A$  and  $A \supset B$  to believe  $B$ . But it does not. If  $B$  is absurd or clearly false (in light of one’s other beliefs), one should instead abandon one’s belief in  $A$  or  $A \supset B$ . It is even less plausible that one is *obligated* to believe all of the logical.<sup>7</sup>

<sup>6</sup> MacFarlane, J. (2004). In what sense (if any) is logic normative for thought? Unpublished Manuscript.

<sup>7</sup>Ibid. p. 5.

## Questions.

1. What should logical theories be about?
2. Is it problematic that the anti-exceptionalist presupposes some logic?

## References

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