

Anti-Exceptionalism about Logic I

Christopher J. Masterman
c.j.masterman@ifikk.uio.no

21st April
FIL24405/4405

1. Introduction

Anti-Exceptionalism about logic is the view that

Claims: The truths of logic are fundamentally the same kind as scientific claims.

Methodology: The methodology of logic is broadly the methodology of science.

In a slogan, **LOGIC IS NOT SPECIAL.**

- It's claim are scientific and we arrive at those claims by the scientific method.
- Logic is not *a priori*, analytic, nor is it unrevisable.

2. Some Exceptionalist Views

Anti-exceptionalism is radical. Contrast it with some more standard views.

2.1 Logical Truths are Analytic?

Some statements are true *in virtue of meaning*, i.e., analytic. Consider:

(1) All bachelors are unmarried

(1) is true in virtue of the meaning of 'bachelor', i.e., a bachelor is an unmarried man.

Some think that logical truths are likewise true in virtue of meaning, only this time true in virtue of the meaning of the *logical constants*. Consider:

(2) $(\alpha \wedge \beta) \supset \alpha$

One might think that (2) is true in virtue of the meaning of ' \wedge ' and ' \supset '.

If logic is analytic, the usual thought is that logic cannot be continuous with science.

- Scientific claims are no analytic.
- The scientific method cannot be used to establish analytic claims.¹

Problems.

- (i) Is meaning more basic than logic?
- (ii) How come there is seemingly substantial disagreement about logic?

¹ Whether or not anti-exceptionalists should deny analyticity is contentious, see (Russell, 2015).

2.2 Logical Truths are *A Priori*?

Take the following.

$$(3) \alpha \supset \alpha$$

Plausibly, this is *a priori*. We don't require us to inspect the world to establish it.

This is controversial. The most influential case: Quantum Logic as proposed by Birkhoff & von Neumann and Putnam.²

² See two papers by Putnam and Dummett both call 'Is Logic Empirical?'.
Dummett: *Is Logic Empirical?* (1978)
Putnam: *Is Logic Empirical?* (1975)

Taking logical truths as *a priori*, challenges both **Claims** and **Methodology** above.

3. Quinean Holism

We are anti-exceptionalist about logic if we are anti-exceptionalist about philosophy.

Quine was. Quine was also a holist, conceiving of our beliefs as forming a web. We construct this web of belief about the world by trying to fit the data elegantly and in the most simple way.

- Central beliefs are harder to give up than those which are less central.
- **Less central:** particular matters of fact, empirical observations.
- **More central:** fundamental presuppositions, physical laws, laws of logic.

On Quine's view, laws of logic are not *a priori* or *analytic*. They are revisable.

They appear to be *a priori*, analytic and non-revisable because they are central. Their centrality means that there are more ramifications for giving up such beliefs and so the burden of evidence must be higher.

Problems.

- Quine thought that, on the web of belief model, no logical laws were necessary.
- How do we justify principles like simplicity, elegance, fit with the data if we are holists?

4. Russell and Williamson's Anti-Exceptionalism

Gillian Russell articulates a sophisticated view about the justification of logic.

We revise (add and reject) beliefs about logic on the basis of theoretical virtues like simplicity, elegance, low-cost, and explanatory power, which we apply to *entire* logical theories, not just individual logical laws.

- So, it's holistic in some sense: we assess entire theories, not individual laws; but not completely holistic: we don't try to justify logical theories alongside the very rules by which we should justify those theories all at the same time.
- The theoretical virtues, i.e., simplicity, low-cost, etc., guiding theory choice are precisely those which guide theory choice in the sciences generally.
- That logics are revisable does not entail that they are not necessary or analytic.

The most ambitious anti-exceptionalist program to date is Timothy Williamson's *Modal Logic as Metaphysics*. Williamson argues for S5 Necessitist Logic.

Crucially, by *abductive* arguments. We have seen arguments against FQML like:

The restrictions on instantiation (for \forall) and generalisation (for \exists) complicate quantificational reasoning, at least in modal contexts, and the intended effect is a **loss of logical power**. Since both **simplicity and strength are virtues in a theory**, judged by normal scientific standards, these restrictions in contingentist logic should give one pause (Williamson, 2013: 43)

In general, Williamson's strategy can be summarised:

Williamson's Methodology In *Modal Logic as Metaphysics*, Williamson compares the theoretical virtues (like simplicity, elegance, low-cost, and explanatory power) of competing logical theories, where those theories are taken to state general, necessary truths about metaphysical modality.³

5. Some Worries for Anti-Exceptionalists

Anti-exceptionalism is radical. Here are some criticisms.

(1) Putative disagreements among logics is superficial because these disagreements do not similarly arise at the meta-logical level.

– This is not generally the case, see (Williamson, 2014)

(2) How can we *argue* about different logics without presupposing a logic?

(3) What is the relevant data for disputes between logics?

What independently testable consequences can a modal logic have? We must begin enquiry with some minimal capacity to assess simple modal claims correctly in particular cases, just as we need some minimal capacity to assess simple claims about the physical world correctly in particular cases before we can start doing scientific physics. (2013: 425)

[Though] a modal logic is at too high a level of generality to explain specific modal matters ... a logical law can still articulate and generalise a pattern in the data. (2013: 425)

(4) Logic is fundamentally normative. It tells us what is a *good* argument. Science is not normative, so logic is not continuous with science.

6. Questions for discussion.

Q1. Which of (1)–(4) do you think is the most convincing criticism? Why?

Q2. What's the best response to your answer to Q1.?

Q3. Are there different ways in which a logical theory can be simple? What are they? Do these clash in a problematic way?⁴

³ For more on the methodology of Williamson's *Modal Logic as Metaphysics*, see Bricker, Phillip (2014). **The Methodology of Modal Logic as Metaphysics**. *Philosophy and Phenomenological Research* 88 (3):717-725. and Sullivan, Meghan (2014). **Modal Logic as Methodology**. *Philosophy and Phenomenological Research* 88 (3):734-743.

⁴ Hint: Think about 'Occam's Razor'. Is Williamson applying *this* in the quote above?