

Philosophy of Logic: 5 Questions is a collection of interviews with some of the world's most influential scholars working on philosophy of logic. The questions:

Why were you initially drawn to the philosophy of logic?

What are your main contributions to the philosophy of logic?

What is the proper role of philosophy of logic in relation to other disciplines, and to other branches of philosophy?

What have been the most significant advances in the philosophy of logic?

What are the most important open problems in philosophy of logic, and what are the prospects for progress?

There are more than 30 books in the 5 Questions Series

Go to

www.vince-inc.com

for the complete listing

Cover image © Jess Burns

WWW.VINCE-INC.COM

Blackwell Press • 2010

PHILOSOPHY OF LOGIC

PHILOSOPHY OF LOGIC

5 QUESTIONS

Blackwell Press • 2010

JC Beall
John Lane Bell
Johan van Benthem
Patricia A. Blanchette
Otávio Bueno
James Cargile
Mark Colyvan
Newton Carneiro Afonso da Costa
Pascal Engel
Susan Haack
Jaakko J. Hintikka
Dale Jacquette
Penelope Madley
Lawrence S. Moss
Catarina Dutilh Novaes
Ahti-Veikko Pietäinen
Graham Priest
Stephen Read
Nicholas Rescher
Stewart Shapiro
Peter Simons
Timothy Williamson
Jan Wolenski

Edited by | Thomas Adajian | Tracy Lupher

Blackwell Press • 2010

Edited by | Thomas Adajian | Tracy Lupher

Automatic Press ♦  P

Information on this title: www.vince-inc.com

© Automatic Press / VIP 2016

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of the publisher.

First published 2016

Printed in the United States of America
and the United Kingdom

ISBN-10 / 87-92130-56-9
ISBN-13 / 978-87-92130 56-3

The publisher has no responsibilities for the persistence or accuracy of URLs for external or third party Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

Cover design by Vincent F. Hendricks
Cover image: Jess Burns

**PHILOSOPHY OF LOGIC:
5 QUESTIONS**

EDITED BY

THOMAS ADAJIAN

TRACY LUPHER

Automatic Press ♦ $\frac{V}{I}$ P

11

Susan Haack

Distinguished Professor in the Humanities, Cooper Senior Scholar in Arts and Sciences, Professor of Philosophy and Professor of Law, University of Miami, USA.

*FIVE ANSWERS ON PHILOSOPHY OF LOGIC**

We come to the full possession of our power of drawing inferences, the last of all our faculties; for it is not so much a natural gift as a long and difficult art.

—C. S. Peirce¹

1. Why were you initially drawn to philosophy of logic?

In my student days—though it was by then (up to a point, and still somewhat grudgingly) admitted that women maybe *could* do philosophy—the usual assumption was that we were more suited to the supposedly “softer” side of the discipline, ethics in particular. But I found ethics formidably difficult; indeed, I still fondly recall, as a B.Phil. student in Oxford, writing a paper on deontic logic for a tutorial on moral philosophy with Philippa Foot—and her kind response: “yes, I see, *this* is more your kind of thing.”

So, at that time, perhaps I was drawn to philosophy of logic in part out of a temperamental resistance to those thoughtless assumptions about women’s supposed intellectual bent; in part because questions in this area seemed exactly hard enough to be genuinely challenging, but so not slippery and evanescent as to elude my grasp entirely; and in part, of course, because as I began to read Frege’s, Russell’s, Tarski’s, Quine’s and, a little later, Peirce’s writings on the subject, I found so much to think about.

* © 2013 Susan Haack. All rights reserved.

¹ C. S. Peirce, *Collected Papers*, eds. Charles Hartshorne, Paul Weiss, and (vols. 7 and 8), Arthur Burks (Cambridge, MA: Harvard University Press, 1931-58), 5.358-59 (1877).

2. What are your main contributions to philosophy of logic?

I'll start with the Ph.D. dissertation that became my first book, *Deviant Logic*.² This is, as the saying goes, a young man's book. But there's a lot in it: an examination of the distinction between deviant logics (systems with the same vocabulary as classical logic, but different theorems and/or valid inferences) and extended logics (systems with additional vocabulary and additional theorems and/or valid inferences involving that new vocabulary);³ a diagnosis of what goes wrong with Quine's confused, and confusing, arguments that deviant logicians (a.k.a. "pre-logical peoples") are "a myth invented by bad translators";⁴ an exploration of the understandings (and misunderstandings) of truth behind various deviant systems; and chapters on future contingents, Intuitionism, vagueness, reference failure, and even quantum mechanics.

This first book remains in print, now in an expanded edition with a longer title, *Deviant Logic, Fuzzy Logic: Beyond the Formalism*.⁵ The longer title tells a story: a reviewer of the original edition had pointed out that, though the book covered a lot of ground, it didn't include fuzzy logic. In fact, I'd never even *heard* of fuzzy logic; so I went straight to the library to check it out. This was in the early days of computer searches; and I still remember how I chuckled when I read the opening line of the first article on the reading list a librarian compiled for me: "In this paper we will discuss modal logic and probability theory, *but we will not discuss fuzzy logic.*" Other things on the list proved more informative, however; and in due course I would write critical papers both on fuzzy logic and on the idea that truth is a matter of degree.

Fuzzy logic is described by its inventor, electrical engineer Lotfi Zadeh, as a logic in which truth-values are fuzzy, local, and subjective, the set of truth-values is not closed under the usual propositional operations, and "linguistic approximations" have to be introduced to guarantee closure; in which inference is approximate rather than exact, and semantic rather than syntactic; and completeness, consistency, axiomatization, and proof-procedures are "peripheral."⁶ But this sacrifices all the virtues that Frege wanted formal logic *for*. Moreover, when you

² *Deviant Logic* (Cambridge: Cambridge University Press, 1974).

³ *Id.*, chapter 1.

⁴ W. V. Quine, *Word and Object* (New York: Wiley, 1960), p.387. Haack, *Deviant Logic* (note 2 above), 8-10. See also Haack, "Analyticity and Logical Truth in *The Roots of Reference*" (1977), reprinted in Haack, *Deviant Logic, Fuzzy Logic: Beyond the Formalism* (Chicago: University of Chicago Press, 1996), 214-31.

⁵ Haack, *Deviant Logic, Fuzzy Logic* (note 4 above).

⁶ Lotfi Zadeh, "Fuzzy Logic and Approximate Reasoning," *Synthese* 30 (1975): 407-25.

read the fine print you realize that the real work is being done by informal linguistic analysis, and the elaborate formal apparatus is largely redundant; and you notice that that, despite his insistence that fuzzy logic is itself vague, Zadeh ends up imposing a completely artificial precision: truth is defined as: “ $0.3/0.6 + 0.5/0.7 + 0.9/0.9 + 1/1$ ”—i.e., as the fuzzy set to which degree of truth 0.6 belongs to degree 0.3, degree of truth 0.7 to degree 0.5, ..., etc.; and “very true” is defined as “true squared”(!).⁷ In any case, Zadeh’s underlying idea, that “true” is vague, is the result of his first misconstruing legitimate locutions like “very true,” “quite true,” and then compounding the mistake by introducing such bizarre locutions as “rather true” and “fairly true.”⁸

Some defenders of fuzzy logic objected that I just *had to be* mistaken; after all, they argued, in its electrical-engineering applications, fuzzy logic *works*. So in the new edition of *Deviant Logic* I added an explanation of the workings of “fuzzy controllers” for air-conditioning systems and the like, showing that they *don’t*, in fact, rely on fuzzy logic.⁹ So when, shortly after this second edition appeared, I received a mysterious package from Bart Kosko, I held it to my ear to make sure it wasn’t ticking—but no, it wasn’t a bomb, but a copy of his enthusiastic book about fuzzy logic, inscribed “to Susan Haack, with warm fuzzy feelings.” (So far as I know, Prof. Zadeh has never responded to my critique of fuzzy logic, nor to my comments on fuzzy controllers; but to this day he will occasionally send me little puff-pieces about the wonders of fuzzy engineering.)

As a graduate student in Oxford, I taught elementary logic; as a college lecturer in Cambridge, I made a deal with Renford Bambrough: I would teach the young men from St. John’s logic, if he would teach the young ladies from New Hall ethics;¹⁰ and then for many years I taught a year-long course on philosophy of logic at the University of Warwick. Before long, though, I began to chafe at the lack of a suitable textbook; which was how I came to write my second book, *Philosophy of Logics*.¹¹

⁷ Susan Haack, “Do We Need ‘Fuzzy Logic?’” (1979), reprinted in *Deviant Logic, Fuzzy Logic* (note 4 above), 232-42.

⁸ *Id.*, 240-42; Susan Haack, “Is Truth Flat or Bumpy?” (1980), reprinted in *Deviant Logic, Fuzzy Logic* (note 4 above), 243-58.

⁹ Haack, *Deviant Logic, Fuzzy Logic* (note 4 above), pp. 230-31. (Perhaps needless to say, I have no background in electrical engineering; so it took me most of a very long, and very hot, summer to figure this out!)

¹⁰ Among those “young men from St. John’s” was Graham Priest, whom I taught logic, my first year in Cambridge, from the propositional calculus through Gödel’s theorem. I am not, however, responsible for the dialethic logic for which he is now known, which I presume was due to the influence of Richard Routley.

¹¹ Susan Haack, *Philosophy of Logics* (Cambridge: Cambridge University Press, 1978).

This book has also proved long-lived; and, in its Spanish, Italian, Portuguese, Korean, and Chinese editions,¹² has been used around the world.¹³ Almost everywhere I give lectures, it seems, someone in the audience was brought up on “Phyllis” (as this book is affectionately known at home). Especially memorable was a 2008 visit to the University of Valparaíso, Chile, where the philosophy department had used the book (the faculty the English edition, the students the Spanish edition) since its publication, and where I gave a lecture entitled “*Filosofía de las Lógicas, Treinta Años Después*,” explaining how I would write the book today; and a recent e-mail from a forensic scientist in England—in response to my request to an electronic list of people in the area for information about how fingerprint-matching software works—an e-mail that asked: “Are you THE Susan Haack, the one who wrote *Philosophy of Logics*?” Ermm, well, yes.

Like the new title of the second edition of *Deviant Logic*, the plural “logics” in the title of *Philosophy of Logics* tells a story. In the concluding chapter,¹⁴ I carefully disentangle the central metaphysical and epistemological questions about logic, and give my answers. On the metaphysical side, I articulate a tentative defense of a kind of global pluralism. And on the epistemological side, in a paper from the same period, “The Justification of Deduction,”¹⁵ I argue that problems analogous to those that notoriously arise in the attempt to justify induction also arise in attempts to justify deduction.

There’s a lot else in Phyllis, too: including chapters on the distinctions between logic, philosophy of logic, and meta-logic, on validity, sentence connectives, quantifiers, singular terms, truth-bearers, theories of truth, paradoxes, modal logics, and many-valued logics. Maybe it’s worth mentioning specifically my diagnosis of Quine’s objections to modal logic,¹⁶ and my exposition of Tarski’s theory of truth.¹⁷ Patiently working through the tangle of issues about Tarski’s theory and its philo-

¹² There were, of course, the usual pitfalls of philosophical translation: the Spanish edition, for example, translated “relevance logicians” as “lógicos relevantes,” making them seem more important than I believe them to be; the Portuguese translation had F. P. Ramsey using an analogy, not from cricket, but from baseball; and the Italian edition made the memorable mistake of translating “rat,” in Quine’s observation that “rat” is not semantically part of “rat,” any more than it is of “Socrates.”

¹³ And as I write this, a projected French translation has, at last, just begun.

¹⁴ *Philosophy of Logics* (note 11 above), chapter 12.

¹⁵ Susan Haack, “The Justification of Deduction” (1976), reprinted in *Deviant Logic, Fuzzy Logic* (note 4 above), 183-91. This paper has by now been reprinted several more times, and in 2013 appeared in Spanish.

¹⁶ Haack, *Philosophy of Logics* (note 11 above), pp.178-187.

¹⁷ *Id.*, pp.99-127.

sophical implications was hard work; but, to be candid, at the time I didn't think it especially remarkable. Now, however, when Tarski is routinely described as a correspondence theorist, or as a deflationist, or a disquotationalist, or as having given a theory of the truth of propositions, or, etc., my exposition seems like a more important contribution to keeping the record straight than I dreamt at the time.

Realizing that my earlier distinction of deviant vs. extended systems needed modification to acknowledge that some relevance logics, for example, are *both* deviant *and* extended, I was led to some serious thinking about the concept of relevance; which, I came to see, is not a formal but a material concept. This, I now believe, undermines the hope of a formal logic of relevance. It also helps explain how Kuhn arrived at the mistaken idea that standards of quality of evidence are paradigm-relative;¹⁸ and it sheds light on the concept of relevance crucial to evidence law.¹⁹

As my philosophical interests have grown, I have turned my attention to other areas, writing books on epistemology²⁰ and philosophy of science,²¹ and numerous articles in these fields and in philosophy of language, metaphysics, social philosophy, etc., and yes, even in ethics—in papers on the ethics of research (1996),²² on affirmative action (1998),²³ and on academic virtues (2010).²⁴ And by now I've been drawn into other fields too—notably, the law. Some years ago I started still-ongoing work on issues involving evidence, proof, and scientific testimony, and on legal philosophy more generally. But I've not left my interest in philosophy of logic behind; I have written a whole series of

¹⁸ Susan Haack, *Defending Science—Within Reason: Between Scientism and Cynicism* (Amherst, NY: Prometheus Books, 2003), pp.76-77.

¹⁹ Susan Haack, "Legal Probabilism: An Epistemological Dissent" (first published, in Spanish, in 2013), in Susan Haack, *Evidence Matters: Science, Proof, and Truth in the Law* (New York: Cambridge University Press, 2014), pp. 47-61.

²⁰ Susan Haack, *Evidence and Inquiry* (Oxford: Blackwell, 1993; 2nd, expanded edition, Amherst, NY: Prometheus Books, 2009).

²¹ Haack, *Defending Science—Within Reason* (note 18 above).

²² Susan Haack, "Preposterism and Its Consequences" (1996), in *Manifesto of a Passionate Moderate: Unfashionable Essays* (Chicago: University of Chicago Press, 1998), 188-208.

²³ Susan Haack, "The Best Man for the Job May be a Woman ... and Other Alien Thoughts on Affirmative Action," in Haack, *Manifesto of a Passionate Moderate* (note 22 above), 167-87.

²⁴ Susan Haack, "Out of Step: Academic Ethics in a Preposterous Environment" (2010), in Haack, *Putting Philosophy to Work: Inquiry and Its Place in Culture* (Amherst, NY: Prometheus Books, 2008; expanded ed. 2013), 251-67 (text) and 313-17 (notes).

papers on truth, for example; a paper on Peirce and logicism;²⁵ a piece on formal methods in philosophy;²⁶ and a much-downloaded study of the place of logic (including deontic logic!) in the law.²⁷

The “truth” series began with two pieces defending the legitimacy of the concept;²⁸ and continued with two more articulating the ramifications of the distinction between truth, i.e., the phenomenon, and truths, i.e., particular true claims, beliefs, propositions, etc. While there are many truths, I argued, there is only one truth;²⁹ while some truths are vague, truth is not a matter of degree; while some truths are made true by things people do, truth is objective; while some truths make sense only relativized to a place, time, or jurisdiction, truth is not relative; and while some propositions are only partly true, truth does not decompose into parts.³⁰ In 1974 I had shown that Post’s non-standard many-valued logic serves to represent partial truth in the sense of “part of p is true”;³¹ in 2008 I also explored the other meaning of “p is partially true,” “p is part of the truth.”³² Again, in 1974 I had written at length about (what I would now call) the logical conception of precision;³³ in 2008 I also explored another kind, the poetic.³⁴ The same year I published a paper comparing truth in science and in the law,³⁵ and by 2010 I was ready to present a full-dress account of legal truth.³⁶

And my longstanding interest in the scope and limits of logic has lately begun to bear new fruit. In *Defending Science*, I showed that, and why, formal-logical models of scientific reasoning, whether inductivist,

²⁵ Susan Haack, “Peirce and Logicism: Notes towards an Exposition,” *Transactions of the C. S. Peirce Society* 29.1 (1992): 33-56 (text) and 301-13 (notes).

²⁶ Susan Haack, “Formal Philosophy? A Plea for Pluralism” (2005), in *Putting Philosophy to Work* (note 24 above), 235-50 (text) and 301-313 (notes).

²⁷ Susan Haack, “On Logic in the Law: ‘Something, but not All,’” *Ratio Juris* 20.1 (2007): 1-31.

²⁸ “Confessions of an Old-Fashioned Prig,” in *Manifesto of a Passionate Moderate* (note 22 above), 7-30; “Staying for an Answer: The Untidy Process of Groping for Truth (1999),” in *Putting Philosophy to Work* (note 24 above), 35-52.

²⁹ “The Unity of Truth and the Plurality of Truths” (2005), in *Putting Philosophy to Work* (note 24 above), 53-65 (text) and 271-73 (notes).

³⁰ Haack, “The Whole Truth and Nothing but the Truth,” *Midwest Studies in Philosophy* XXXIII (2008): 20-35.

³¹ Haack, *Deviant Logic* (note 4 above), 62-63.

³² Haack, “The Whole Truth and Nothing but the Truth” (note 30 above), 28-29.

³³ Haack, *Deviant Logic* (note 4 above), chapter 6.

³⁴ Haack, “The Whole Truth and Nothing but the Truth” (note 30 above), 25-28.

³⁵ “Of Truth, in Science and in Law,” *Brooklyn Law Review* 73.2 (2008): 985-1008.

³⁶ Susan Haack, “Nothing Fancy: Some Simple Truths about Truth in the Law” (2010) in Haack, *Evidence Matters* (note 19 above), 294-324.

deductivist, or probabilistic, must fail; for the “grue” paradox teaches us that such reasoning relies, not on form alone, but on the relation of scientific vocabularies to real kinds of thing and stuff in the world.³⁷ In “On Logic in the Law,”³⁸ I showed that, and why, formal-logical models are also inadequate to capture legal reasoning; for such reasoning inevitably involves stretching and adapting legal concepts as society, technology, manufacturing, etc., change. And in “The Growth of Meaning and the Limits of Formalism,”³⁹ with the help both of Peirce and of Oliver Wendell Holmes, I developed an approach to meaning that unified these two lines of argument.

3. What is the proper role of philosophy of logic in relation to other disciplines, and to other branches of philosophy?

As my answer will reveal, I’m uneasy with the implication of uniqueness in “*the proper role.*”

Let me begin by distinguishing two uses or senses of the word “logic”: a broad, in which it refers to the theory of whatever is good in the way of reasoning (“LOGIC”), and a narrow, in which it is restricted to the syntactically characterizable aspects of good reasoning (“*logic*”).⁴⁰ LOGIC, so conceived, includes both *logic* and philosophy of *logic*—as one sees in Peirce’s writings. This broad conception can still be found in, e.g., Dewey’s *Logic: The Theory of Inquiry*.⁴¹ But in the wake of Frege’s by now hugely influential work in *logic*, the narrow conception has become predominant.

As the title of Dewey’s book suggests, LOGIC would include in its very broad scope at least much of what would today be thought of as epistemology, philosophy of science, etc. But the question of the relations of *logic* to other fields is very different, and far from straightforward.

As I explained in the last paragraph of the previous answer, *logic* falls well short of exhausting what can be said about the quality of reasoning either in the sciences, or in legal arguments—or, I will now add, in philosophy. Yes, occasionally a philosopher will make a formal-logical error. For example, as I argued in *Deviant Logic*, Aristotle’s argument that future-contingent statements are neither true nor false rests on a modal fallacy;⁴² and, as I argued in *Evidence and Inquiry*, Davidson’s

³⁷ Haack, *Defending Science* (note 18 above), pp. 40, 52, 84-86.

³⁸ Haack, “On Logic in the Law” (note 27 above).

³⁹ “The Growth of Meaning and the Limits of Formalism,” *Análisis Filosófico* XXIX.1 (May 2009): 5-29.

⁴⁰ As I did, for example, in “On Logic in the Law” (note 27 above), 9-10.

⁴¹ John Dewey, *Logic: The Theory of Inquiry* (New York: Henry Holt, 1938).

⁴² *Deviant Logic* (note 4 above), 77-78, 80-81.

Omniscient Interpreter argument that our beliefs are mostly true does, too.⁴³ (Aristotle argues from “Necessarily, if it is true that there will be a sea battle tomorrow, then there will be a sea battle tomorrow” to “If it is true that there will be a sea battle tomorrow, then necessarily there will be a sea battle tomorrow.” Davidson argues from “It’s impossible that there be an omniscient interpreter unless people’s beliefs are mostly true,” and “It’s possible that there’s an omniscient interpreter” to “People’s beliefs are mostly true.”) But far more often, in my experience anyway, problems in philosophical arguments are likely to be the result of unnoticed ambiguities,⁴⁴ flabby concepts, untenable dualisms, false presuppositions, and the like.

If logicism had been a viable account of mathematics, philosophy of mathematics would be a branch of philosophy of *logic*. But I don’t believe logicism *is* viable. Similarly, if natural-kind terms were rigid designators, at least a significant part of philosophy of science would, again, be a branch of philosophy of *logic*. But I don’t believe natural-kind terms *are* rigid designators; on the contrary, I believe that they have meanings, and that these meanings grow as our knowledge of the world grows.⁴⁵

Nor am I convinced that formal-logical tools offer more than very limited help in our understanding of natural languages. The collapse of the “Davidson program” shows that Tarski was right all along to insist that rigorous formal methods like his apply only to well-behaved formal languages, and aren’t suitable to natural languages like English or Polish.⁴⁶ Davidson himself would eventually conclude that there is no such thing as a language, in the sense that he and many philosophers of language had assumed.⁴⁷ My view is that what we loosely call a natural language is really better conceived as a kind of federation of similar-enough idiolects, and that how similar is “similar enough” depends on the task at hand.⁴⁸

⁴³ Donald Davidson, “A Coherence Theory of Truth and Knowledge” (1983), in Alan Malachowski, ed., *Reading Rorty* (Oxford: Blackwell, 1990), 120-34, p.131. Haack, *Evidence and Inquiry* (note 20 above), pp.105-06.

⁴⁴ The subject of my B.Phil. dissertation, by the way, was ambiguity and its consequences in philosophy.

⁴⁵ “The Growth of Meaning and the Limits of Formalism” (note 39 above), §2.

⁴⁶ Alfred Tarski, “The Concept of Truth in Formalised Languages” (1933), in Tarski, *Logic, Semantics, Metamathematics*, trans. J. H. Woodger (Oxford: Clarendon Press, 1956), 152-78, p.165.

⁴⁷ Donald Davidson, “A Nice Derangement of Epitaphs,” in Ernest Lepore, ed., *Truth and Interpretation* (Oxford: Blackwell, 1986), 433-46, pp. 445-46.

⁴⁸ Susan Haack, “The Growth of Meaning and the Limits of Formalism” (note 39 above), §1; “Belief in Naturalism: An Epistemologist’s Philosophy of Mind,”

4. What have been the most significant advances in philosophy of logic?

I'm puzzled by this question: am I being asked to talk about the most significant advances in philosophy of logic *ever*, or just about what has happened recently?

Obviously, sketching even a few of the important advances made by Aristotle, Frege, or Peirce would take far more words than I have. And, while it's quite possible that somewhere in the world there's a new Peirce or a new Frege, working in obscurity as they did, whose thought is as ground-breaking as theirs was, if so, sadly, I'm not familiar with his or her work.

What I am familiar with, I'm afraid, is that philosophy of logic doesn't seem to be bucking recent trends in philosophy more generally. Just like other areas, it seems to be becoming more and more detached from its own history, more and more fragmented, more and more cliquish, more and more self-absorbed, and more and more inclined to set older problems aside unresolved as attention shifts to a new fad. And while I'm sure there's worthwhile work out there, the pressure to publish is now so severe, and the volume of publications so bloated, that it's nearly impossible to find the good stuff among the dross. That said, the footnotes in my next answer will mention some recent work I think is promising.

5. What are the most important open problems in philosophy of logic, and what are the prospects for progress?

I'm as uncomfortable with "*the most important*" as I was with "the proper role"; so I'll begin by saying that on such crucial matters as truth, meaning, modality, and the grounds of logic there's a lot more work to be done; and then go on to list some of the topics on which I'd like to have a better theoretical grasp than I believe we now have—a list in which, not surprisingly, Peirce will loom large.

- In *Philosophy of Logics* (like everyone else at that time), I called Ramsey's a "redundancy theory" of truth. By now, however, when all his papers on truth are available, and it's clear that Ramsey *didn't* think "true" was redundant, I prefer "laconicism."⁴⁹ More importantly, it's well worth exploring the questions that Ramsey's account left open, among them: whether there is an adequate understanding of propositional quantifiers (as in, "for some p, Plato said that p, and p") that doesn't itself rely on the concept of truth;

Logos & Episteme 1.1 (2010): 1-22.

⁴⁹ F.P. Ramsey, *On Truth*, eds. Nicholas Rescher and Ulrich Majer (Dordrecht, the Netherlands: Kluwer, 1992). The word "laconicism" was coined by Kiriake Xerohe-mona.

and what a detailed laconicist approach to the semantic paradoxes would look like.⁵⁰

- As the last point suggests, one consequence of the outstanding difficulties in the theory of truth is that we don't yet have a complete understanding either of the source of the semantic paradoxes, or of the most appropriate response. In this context I will mention Peirce's remarkable presentation and diagnosis of what we would now call the Strengthened Liar. Peirce begins with two columns of parallel arguments: one from the premise that "this proposition is not true" is *true*, to the conclusion that it is *not true*, and the other from the premise that "this proposition is not true" is *not true*, to the conclusion that it is *true*. Every step is valid, Peirce argues; so the source of the problem must be their only shared premise, that "whatever is said in the proposition is that it is not true." This, he concludes, is false; rather, like every proposition, the paradoxical proposition *also* asserts its own truth.⁵¹
- This analysis of the Strengthened Liar takes up just a few pages of Peirce's early paper "The Grounds of Validity of the Laws of Logic."⁵² While at this time (1868) the logic Peirce uses is still syllogistic,⁵³ his approach to this issue is a good deal more sophisticated than, for example, the conventionalism that would come later. Further thought about Peirce's arguments specifically, and about the still-unresolved question of the grounds of logic more generally, would be welcome.
- While Peirce is on my mind, I'll also mention that, though modern modal logic has its roots in C. I. Lewis's work, Peirce had long before represented modal arguments in his "Gamma Graphs."⁵⁴

⁵⁰ There seems to have been some progress on this, in the work of Arthur Prior, C. J. F. Williams, and María-José Frápolli. See Frápolli, "The Logical Enquiry into Truth," *History and Philosophy of Logic* 17 (1996): 179-97.

⁵¹ Peirce, *Collected Papers* (note 1 above), 5.340-41 (1868).

⁵² *Id.*, 5.318-57 (1868).

⁵³ In 1902—after he had made the logical innovations that led him, a few years later but independently of Frege, to a unified propositional and predicate calculus—Peirce raises another excellent question: "Why Study Logic?", and lists ten assumptions that must be true if such study is to be worthwhile: e.g., that there is objective truth, and that good reasoning can lead to it. *Id.*, 2.119-216 (1902).

⁵⁴ The "gamma graphs," as the name suggests, refers to the third part of his "existential graphs," a diagrammatic logical notation. See *Collected Papers* (note 1 above), 4.510-29 (1902), and 4.573-84 (1906). In 1903 Peirce writes that "possibility and necessity are relative to the state of information" (4.517); but by 1906 he acknowledges that "a mere possibility may be quite real" (4.580).

Perhaps because his diagrammatic notation, very intuitive at the propositional level, is pretty complex at the level of quantifiers, and formidable at the modal level, Peirce's approach to modal logic seems to have been little explored; but a serious study might prove as worthwhile as an examination of his 1909 experiment in three-valued logic turned out to be.⁵⁵

- One consequence of the dynamic approach to language proposed in "The Growth of Meaning" was that what statements are analytic (or express analytic propositions, if you prefer) changes over time. Shocking? Not really. In Shakespeare's day, when "silly" meant "simple" and "sooth" —as in "soothsayer"—meant "truth," "silly sooth is simple truth," which is now pretty much meaningless, was analytic. But I have as yet only a very incomplete understanding of the consequences of this temporal relativity, or of what exactly a neo-descriptivist conception of naming might look like if we took the growth-of-meaning idea to heart.⁵⁶

There's nothing canonical about this list; but I've already used more words than I was allotted, so I'll stop here.⁵⁷

⁵⁵ Robert E. Lane, "Peirce's Triadic Logic Revisited," *Transactions of the C. S. Peirce Society*, 35 (2), 1999: 284-311.

⁵⁶ Here, I think, some progress has been made by Chen Bo in his "Kripke's Semantic Argument against Descriptivism," *Croatian Journal of Philosophy* XIII, no.39 (2013): 421-45, and two as-yet unpublished papers, "Social Constructivism of Language and Meaning" and "Socio-Historical Causal Descriptivism: An Alternative Theory of Names."

⁵⁷ My thanks to Mark Migotti for his helpful comments on a draft.