Philosophy of logic: 5 questions*

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Question 1: *Why were you initially drawn to the philosophy of logic?*

Answer 1: I don't know why I was drawn, but I was first drawn to logic, and in turn philosophy logic.

For setting terminology, it may be useful to give some very sweeping and basic remarks on logic and its partner – the philosophy of logic. This can serve as background to the other questions.

Logic is a necessary truth-preservation relation over our language; it is the one that obtains only in virtue of 'logical vocabulary'. Exactly what counts as logical vocabulary is hard; and it is a driving question in the philosophy of logic. And exactly how we best answer the question is equally hard and also a central (though methodological) question in philosophy of logic.

An answer that I find to be useful – and which I endorse, as far as it goes – points to very familiar tradition and topic-neutrality: the logical vocabulary is topic-neutral; and the traditional set of first-order vocabulary (at least without identity) is a good candidate for *logical* vocabulary. (All of this assumes a language. Throughout, I assume a common language, say, English – or at least some sufficiently simplified version of it.)

So-called logics of necessity, or 'logics of knowledge', or 'logics of obligation', or so on are one and all only so called. None of the given notions (e.g., necessity, knowledge, etc.) are topic-neutral in the required sense. This distinction is hard to precisely define (given the difficulty in defining *topic-neutrality*, etc.), but it is sufficiently clear and sufficiently familiar to be useful. Without the distinction, it begins to look as if every notion is a logical one, and that all theoretical pursuits – when done at a sufficiently rigorous or 'formal' or abstract or mathematical fashion – are in fact activities within logic. But that takes things too far.

*My remarks in this chapter were written very quickly. While I stand by my remarks, I probably would voice them a bit differently if given more time, and probably would add more to the remarks. (There are undoubtedly many omissions, and the omission of a name or topic should not be considered to be an intentional omission.) I am very grateful to Tracy Lupher for his patience.

A useful way to think of the logic versus non-logic divide is in terms of closure operators (familiar from Tarski and others). Think of *theories* in the common philosophical (versus not non-standard logical) sense: a theory (in a language) is a set of sentences (from that language). What we want is to close our theories via 'absolute' or 'necessary' operators. And this is where a central role of logic (and other so-called 'logics of x') come into play. In particular, *logic* is the universal closure operator – the base operator, if you will – for all of our theories. All closure operators subsume the logical closure operator – subsume logic (qua weakest of the target 'absolute' subrelations). But logic is very weak in the sense that it concerns only the foundational, topic-neutral vocabulary. What we want, when we are constructing and expanding our theories via closure, are stronger closure relations that accurately reflect the (topic-relative) behavior of non-logical vocabulary. In fact, this is what we are doing when we do (as it's called) the 'logic of knowledge' or the 'logic of necessity'. We are in fact simply constructing the appropriate (the correct, adequate, etc.) closure operators for such notions.

Example: think of theory of knowledge, with K the (non-logical) target operator. Logic says nothing about K that it doesn't say about every notion whatsoever: it ignores K and speaks only of its behavior with respect to logical vocabulary (negation, disjunction, etc.). We need a stronger closure operator for any adequate theory of knowledge. Hence, we construct our theory T's closure operator $\vdash_{\mathrm{T}}$ by adding (non-logical) rules, such as the 'release' behavior of knowledge:

$$K\varphi \vdash_{\mathrm{T}} \varphi$$

Such rules, conceived model-theoretically, have the effect of restricting the class of theory T's models. And it is the resulting class of models over which the target closure operator – the target 'necessary' or 'absolute' relation – is defined. This closure operator is not *logic*; but it subsumes and builds on logic, which, as above, is the universal, base closure operator for all of our theories.

On the foregoing way of thinking about logic, there is much room for logical theorizing. Logical theories are the theories that talk about the universal (necessary) truth-preserving behavior of logical vocabulary.[1] So-called classical logic reflects a theory according to which logical vocabulary behaves one way; various subclassical logics reflect a weaker account of such vocabulary. These differences come out vividly in the given closure operators. Example: the classical closure operator delivers all sentences into your theory if there's any negation inconsistency, while certain subclassical closure operators (viz., so-called paraconsistent operators) don't.

Exactly which account of the logical vocabulary (i.e., which logical theory) is the right account – or whether there can be more than one right account (given a

[1]Let me pause to highlight a huge issue in my (intended-to-be) broad and basic presentation: proof-theoretic versus truth-/model-theoretic accounts of consequence. I find it much easier to present things in the latter terms, but nothing that I say is intended to be in major conflict with a proof-theoretic account of logic – a proof-theoretic account of the target consequence relation or, better, universal closure operator.

language) – is the central question in the philosophy of logic with which I began these remarks. And it is a good place to stop, and turn to the next question.

Question 2: *What are your main contributions to the philosophy of logic?*

Answer 2: My main contributions to the philosophy of logic involve the advancement and defense of non-classical logic in philosophy. Two examples of this work are my *Logical Pluralism* (OUP, 2004) with Greg Restall, and *Spandrels of Truth* (OUP, 2009), and another is my current project *Logic without detachment* (to appear with OUP), which advances and defends a strictly *subclassical* logic for truth theory. I will briefly say something about each work. (I also hope that some of my textbooks have been useful to philosophers interested in key ideas in philosophical logic; but I won't discuss these beyond mentioning them, namely, *Possibilities and Paradox: An Introduction to Modal and Many-Valued Logic* with Bas van Fraassen, and also *Logic: The Basics.*)

Logical Pluralism. This is the view that a single language can – and, in the case of our (say, English) language, does – enjoy a plurality of different consequence relations, that is, different logics. Some of the logics are paraconsistent (whereby arbitrary ψ fails to follow from arbitrary φ and $\neg\varphi$); some are paracomplete (in the sense that arbitrary ψ fails to imply either arbtrary φ or $\neg\varphi$); and some are neither. This elementary view continues to receive attention and criticism; and the prospects of an interesting and important logical pluralism remain under debate.

Spandrels of Truth. This is an account of how we enjoy a so-called transparent truth predicate, a transparent usage of 'true' whereby, for suitable names $\langle\varphi\rangle$ of sentences φ, $\langle\varphi\rangle$ *is true* and φ are everywhere-non-opaque intersubstitutable with each other. The account I give is a 'glutty' one, whereby familiar paradoxes (e.g., the liar) – the spandrels of 'true' – are true falsehoods, truths with true negations. In giving a transparency theory of truth, I join a tradition of truth theorists going back to early deflationists (Frank Ramsey, Paul Horwich, among others), though most explicitly (qua transparency) advocated by Hartry Field. In giving a glutty account, I join a camp of theorists going at least back to Florencio Asenjo, along with Chris Mortensen, Graham Priest, Richard Routley, and others – with Priest perhaps the most famous advocates of glut theory, at least in philosophy. But the account I give is very modest with respect to gluts: the only gluts are the 'spandrels of truth', the results of bringing in our transparent truth predicate. Were it not for our practical decision to introduce the truth predicate, there would be no gluts whatsoever; and the only gluts that do exist are ones in which 'true' is ineliminable. This account provides a simple way in which the standard view that eschews gluts – eschews negation-inconsistent theories – is mostly right; it's just the peculiar side effects of introducing 'true' that makes the general, no-gluts-at-all view incorrect.

Logic without detachment. The philosophical account of truth in *Spandrels of Truth* is correct (I think); but the overall account of the underlying logic was too complicated. The tricky problem for non-classical truth theories (or, for that matter, classical truth theories) comes with a detachable conditional – a conditional for which modus ponens is (logically) valid. (For the main issue, see discussions – easily accessible – of Curry's paradox.) A simple and natural paraconsistent logic may be achieved by weakening classical logic; the logics called 'FDE' (or 'first-degree entailments' or 'tautological entailments') and 'LP' (for 'logic of paradox' or, as in Asenjo, 'calculus of antinomies') are such logics. In my previous work, I endorsed LP as the basic first-order logic, but then – following a longstanding tradition – went on a quest to find a suitably detachable conditional. But this complicates the philosophical and logical picture more than it needs to be – or so I now think. My current project is to advance the idea that we have no detachable conditional – at least no conditional which is logically detachable (i.e., obeys modus ponens according to logic). This project faces an immediate challenge: how to explain (or explain away) our apparent use of modus ponens in rational theory construction. These ideas are the focus of a current book project, and some of the ideas are available in papers. (Examples: 'Free of detachment' in *Noûs*, 'Shrieking against gluts' in *Analysis*, and 'LP^{+}, $\mathrm{K3}^{+}$, FDE^{+} and their classical collapse' in *Review of Symbolic Logic*.)

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

Answer 3: Logic is about what follows from what in virtue of logical vocabulary; and this relation is logical consequence or logical entailment or logical validity or, in a word, logic. The philosophy of logic, like any *philosophy of x*, raises standard philosophical questions about logic, about the target relation of logical consequence. Such questions are standard across philosophical subfields: what is the epistemology, ontology, metaphysics, normative status of the relation? (And other standard topics can and are raised.) In this sense, I do not think that the philosophy of logic has any special status in relation to other branches of philosophy, except that perhaps its target phenomenon (viz., logical consequence) is the weakest – broadest – constraint on theorizing in other subfields; it is the base or foundation of other (non-logical) theoretical closure operators on our theories.

On the other hand, there is significant interaction between philosophy of logic and other branches of philosophy. The philosophy of logic and other standard subfields have much in common, such as metaphysics (or at least 'formal' metaphysics) and philosophy of language. Example: one major topic in philosophy of logic concerns the appropriate level of logical analysis. In propositional logic, one only looks at the sentential level as the appropriate level of analysis; but logicians generally agree that logical validity demands a dive into the atomic innards – for example, names and predicates (and, of course, at least object variables if not predicate variables). It is here where discussions in (say) philosophy of language and philosophy of logic directly intersect. In particular, the behavior of names can make a big difference to logical validity, in particular the (in-) validity of various quantifier patterns. (This is why debates about 'free logic' in logical studies has been of direct interest to philosophers of language, and vice versa.)

Of course, sometimes, one is well-versed in logic and directly applies the formal picture to debates in metaphysics, philosophy of language, and philosophy of logic. Example: if one were well-versed in the standard (sometimes called 'Kripke') model theory of normal modal logics, one could simply take a face-value reading of the given model theory – the formal 'semantics' – and have interesting things to say in the metaphysics of possible worlds (e.g., Kripke, Lewis) or the philosophy of language (e.g., 'rigid designators' a la Kripke, Kaplan, and others). On a merely practical level, philosophers – perhaps especially graduate students in philosophy – would benefit from a rigorous study of standard model theories – formal 'semantics' – of standard logics, including both subclassical, anti-classical, and various model logics (e.g., epistemic, deontic, etc.). On a practical level, such study often opens up new philosophical views that are not easily seen except via a stark formal picture, such as the pictures delivered by standard model theories.

Question 4*: What have been the most significant advances in the philosophy of logic?*

Answer 4: I will note some significant advances, staying neutral on whether they're the most significant advances – a question that would be hard to answer.

*** Applications of non-classical logic.** One significant advance is the recognition and embrace of non-classical logics in philosophy. Great work continues to be done by a host of classical-logic driven philosophers of logic (e.g., Timothy Williamson, Brian Weatherson, Roy Sorensen, Stewart Shapiro, Kevin Scharp, Marcus Rossberg, Greg Restall, Rayo Agustin, Øystein Linnebo, Hannes Leitgeb, Volker Halbach, Michael Glanzberg, among many, many, many, many others); but there is a rising interest in philosophical applications of non-classical logic (e.g., myself, Roy Cook, Aaron Cotnoir, Catarina Dutilh Novaes, Elena Ficara, Hartry Field, Kit Fine, Leon Horsten, Ole Hjortland, Dom Hyde, Carrie Jenkins, Ed Mares, Julian Murzi, Graham Priest, Stephen Read, Greg Restall, Dave Ripley, Gemma Robles, Gill Russell, Lionel Shapiro, Zach Weber, Nicole Wyatt, Elia Zardini, and many others).[2] Many of the salient applications concern familiar paradoxes; however, there is much work that goes well beyond paradoxical phenomena into areas of metaphysics – for example, truth-making, grounding, conceptions of time (involving 'gaps' and 'gluts'), and more. While it's more of a sociological than conceptual shift, the full recognition, advancement, and acceptance of applying non-classical logics in philosophy is a significant advance in the field.

*** Rise of Substructuralism.** One fairly recent advance concerns work on substructural logics, where (let me stipulate) this involves logics that give up one or more of the standard (classical) structural rules. Much of this activity builds on work from early so-called relevance logicians, though not all of the

[2] The parenthetically noted people are very far from either an exhaustive or representative list; but I note those whose current work is applying either classical logic or non-classical logic in new and increasingly influential directions. Omissions from the list does not in any way indicate that work is not notable or increasingly influential! (Restall, being a logical pluralist, counts as both classical and non-classical.)

work reflects a commitment to (or achievement of) relevance logic. Instead, the idea is that our best overall logical theory is one according to which logic fails to obey some of the standardly assumed structural features (e.g., it might be thought not to be generally transitive, or might not 'contract' in standard fashions). I will not go into the details of this work here; but it is without question currently one of the main areas of research in logical studies and the philosophy of logic; and the work is clarifying a great number of buried assumptions that have been made by a great many philosophers of logic over the last few decades (or more). (For a look at some of the recent flurry of activity in this area – namely, philosophical applications of substructural logics – see recent work of, among many others, Paul Egre, Ole Hjortland, Ed Mares, Julian Murzi, Francesco Paoli, Stephen Read, Greg Restall, Dave Ripley, Lionel Shapiro, Heinrich Wansing, Elia Zardini, and others.)

* **Distinction between negation and rejection.** While it is not new, the distinction between negation qua logical connective and rejection qua mental state is now fairly broadly recognized. Non-classical theorists of negation have long stressed the distinction between rejecting a sentence and accepting its negation. In so-called paraconsistent logics, which deliver closure operators for (negation-) inconsistent but non-trivial theories (i.e., not every sentence is in the closure of the theory), you might accept both φ and $\neg\varphi$ in your theory, but you don't thereby reject φ. (It is generally thought to be metaphysically – or at least physically, mentally – impossible to both accept and reject the same sentence.) Dually, so-called paracomplete theorists of negation, who think that our (prime) theories can be closed under logic while nonetheless being negation-incomplete (i.e., some sentence and its negation fail to be in the logical closure of our true theories),[3] sometimes reject both $\neg\varphi$ and φ in their theories without thereby also accepting $\neg\varphi$. One important effect of recognizing the distinction between negation and rejection (and, dually, acceptance and the null operator) is that philosophers of logic increasingly recognize (or should recognize) the importance of a theory of reasoning (e.g., rational acceptance/rejection behaviors, patterns, etc.) as distinct from logic. This is related to another significant advance in philosophy of logic.

* **Distinction between reasoning and logic.** Closely related to (though distinct from) the distinction between negation and rejection is the distinction between a theory of reasoning qua rational change in view (a la Gilbert Harman) and logic as a constraint on rational change in view. While the details of the distinction remain controversial, the basic distinction is generally acknowledged. And this is an advance in the philosophy of logic. For one thing, we can continue to think of logic as (let me say) truth-preservation over relevant possibilities in virtue of logical vocabulary, and so think of logic as perfectly 'absolute' and 'monotonic' and 'non-defeasible' and so on. On the other hand, we can (rightly) think of rational change in view (e.g., acceptance/rejection behavior) as very much 'non-monotonic', 'defeasible', and so on. Logic doesn't tell

[3]A prime theory is a theory – set of sentences – that contains a disjunction $\varphi \vee \psi$ only if it contains at least one of the disjuncts.

us what to accept or what to reject. Logic is used by a theory of rational change in view (a theory of reasoning) as a constraint on rational change in view: you can't rationally change your view to something that logic deems to be an invalid pattern. (Example: given the validity of $\varphi \wedge \psi \therefore \varphi \vee \psi$, our theory of reasoning tells us that it's irrational to exhibit an acceptance/rejection pattern whereby you accept $\varphi \wedge \psi$ while rejecting $\varphi \vee \psi$.) The interplay between logic and its traditional role of constraint on rational change-in-view behavior is nicely illustrated by multiple-conclusion logic, but I leave this aside here. (Some of my recent work on living with non-detachable logics makes use – at least illustrative if not essential use – of multiple-conclusion subclassical logics. Other theorists, such as Dave Ripley and Greg Restall, go much further in this direction: they *define* logic in terms of acceptance/rejection behavior – a radical though intriguing program, by my lights.) Exactly how important the distinction may be depends on the philosophical program in question; but it is an advance in the philosophy of logic that the distinction is now clearly acknowledged.

*** Distinction between logical truth and logical consequence.** Another advance concerns another old distinction which is now fairly broadly appreciated: namely, the distinction between logical consequence and logical truth (or, if you prefer a proof-theoretic version, a valid deduction and a theorem). In classical (and many other) logic(s), we have a simple deduction theorem that aligns logical consequence (here, the turnstile) and the logical truth of a certain sort of sentence (here represented via an arrow):

$$\varphi_0, \varphi_1, \ldots, \varphi_n \vdash \psi \text{ iff } \vdash \varphi_0 \wedge \varphi_1 \wedge \ldots \wedge \varphi_n \rightarrow \psi.$$

When one has this sort of deduction-theorem link between consequence and the logical truth of some sort of sentence, one can often slip into thinking of logic (qua discipline) as concerned only with logical truths (or, from a proof-theoretic angle, theorems). But it's an advance in the philosophy of logic that the distinction between consequence and logical truth is now firmly recognized by philosophers of logic. The distinction is very clear in non-classical logics, including very simple subclassical logics. Example: in Strong Kleene K3, the 'link' between logical truth of a material conditional and consequence fails, since φ implies itself in K3 but $\varphi \rightarrow \varphi$ is not logically true, at least where the arrow is the material conditional defined per usual as the disjunction of the consequent and negated antecedent. Similarly, in fact dually, in the case of the paraconsistent subclassical logic often called 'LP' – for 'logic of paradox' or, as in Asenjo's presentation, 'calculus of antinomies' – we have the logical truth of $(\phi \wedge \neg\varphi) \rightarrow \psi$ but not the corresponding implication (i.e., not the corresponding valid argument), at least where, again, the arrow is the defined material conditional.

This distinction – between consequence and logical truth – is now widely recognized by philosophers of logic, though the philosophical issues arising from the distinction remain very much under debate.

*** Logic as another theory.** One more significant advance, at least since Quine, is that one's logical theory – one's theory of logical consequence – is as much a theory as any other theory, subject to the same epistemological and metaphysical problems as other theories. One difference between logical theories and other theories has been noted throughout my remarks: namely, that logical theory deals with the weakest, broadest closure operator for all of our theories, unlike the relation(s) involved in other (non-logical) theories. But it remains an advance that philosophers of logic now accept that logical theory is theory – our rafts are afloat even more than we might hope. (I note that Quine himself seemed to be slightly confused about the reach of this otherwise very Quinean lesson. In particular, as is familiar, Quine seemed to dismiss a variety of non-classical logics as 'changing the subject', even though the main Quinean lesson – the Quine-the-good lesson, so to speak – is that the subject matter is the validity relation, and our theories of that relation may range from 'classical' to subclassical to anti-classical.)

Question 4: *What are the most important open problems in philosophy of logic, and what are the prospects for progress?*

Answer 5: I list important open problems, but remain neutral on whether they're the most important such problems – a difficult matter to assess.

* **Problem: Logic versus other entailment relations.** An old but still-open problem is the difference between logical entailment – logical consequence, logical validity – and other entailment relations, other necessarily truth-preserving relations. I have relied on a traditional answer: logical entailment is entailment in virtue of logical vocabulary. I believe that that's right, but it leaves open the criterion of logical vocabulary – an open problem. As above, I myself invoke tradition and a simple (possibly too simple) notion of topic-neutrality: the logical vocabulary are those expressions to which tradition has generally pointed as topic-neutral logical vocabulary. One way of understanding (though not precisely defining) this claim is, as above, in terms of closure operators on our theories: logical vocabulary is the vocabulary involved in our weakest, universal closure operator – the operator at the 'bottom' of all of our other theoretical closure operators. The standard first-order vocabulary is a good candidate for logical vocabulary so understood, but the issue is difficult. It would be a major accomplishment if we could find an uncontroversial criterion for logical vocabulary. The prospects on this score are not clear; but I see no reason to be pessimistic. For now, theorists need to specify what they take to be logical vocabulary, spell out their theories (and target closure operators built on top of the specified logical closure operator), and then let the theories be measured comparatively in terms of standard theoretical virtues.

* **Problem: Status of truth as logical.** This question is directly related to the previous open problem, but I think it worth flagging independently. That there is a simple, so-called transparent usage of 'true' (whereby, for suitable names $\langle\varphi\rangle$ of sentences φ, $\langle\varphi\rangle$ *is true* and $\langle\varphi\rangle$ are everywhere-non-opaque intersubstitutable with each other) is a commonly recognized view, if not yet widely embraced. Such a usage is one in which truth is 'deflationary', indeed perfectly 'see-through' given said transparent or intersubstitutable behavior. But a question immediately arises: is the truth predicate, so understood, a *logical*

expression? It would seem to be perfectly 'topic-neutral' in any standard sense. Philosophers of logic often describe a transparent truth predicate as – at least analogously – 'logical', in the way that the standard (first-order) quantifiers are thought to be logical, or conjunction, or etc. But is truth, so understood, really logical? Does anything important (or interesting) hang on this? This is an open problem the importance of which is itself an open problem. I think that the prospects for resolving it are fairly bright: it simply needs to be carefully discussed by the community of philosophers of logic. (NB: precisely the same question emerges for other relations, such as predication, denotation, etc.)

*** Problem: Relation between exemplification/properties and membership/sets.** There is a difference between exemplification and membership. The former motivates a principle of unrestricted comprehension: for any meaningful predicate $\varphi(x)$, there is a (say, property) exemplified by all and only the objects y of which $\varphi(x)$ is true. Membership does not motivated unrestricted comprehension, at least if standard (say, ZF/C) set theory is to be a guide to the membership relation. And there is another difference: properties can be distinct while having the same extension – even, perhaps, necessarily the same extension – and, so, do not motivate an identity-by-extension criterion; but sets, at least if standard set theory is a guide, are essentially identified by extension (so-called extensionality principle).

The distinction between exemplification and membership is not at all new. (According to Myhill, Kurt Gödel invoked the distinction to claim that set theory never faced paradox; the paradoxes, such as Cantor/Russell/Zermelo, plagued *property* theory, not set theory.) But what remains an open problem in the philosophy of logic is the relation between properties and sets, the relation between exemplification and membership. Finding a plausible account of exemplification, membership, and their relation is an important and wide-reaching problem: it has consequences in both philosophy of language and metaphysics, if not more widely. The prospects for success on this problem are good, I think; it's a problem that has lurked at the edges of mainstream philosophy of logic, but has not – perhaps until recently – gained firm attention from a wide swath of the community.

*** Problem: Philosophical understanding of substructuralism.** As noted above, there is a recent flurry of activity around substructuralist accounts of logic and standard paradoxes. This is an exciting advance in the field of philosophy of logic; however, coming to grips with an intuitive account of substructuralism is a pressing open problem. What is needed is a plausible philosophical picture that clearly motivates the failure of standard structural rules such as contraction or cut (or more!). The prospects for achieving such a philosophical picture are unclear, but there is no reason to be pessimistic. The focused application of substructuralism to problems of familiar paradoxes is very recent – or at least only very recently widely recognized and pursued.

*** Problem: Philosophical significance of dual theories.** While there mightn't be a well-defined general notion of duality, the notion is clear enough when it comes to various logics. There is an under-explored question in the philosophy of logic: are there any advantages that a glut theory enjoys over a dual gap theory, or any problems that one faces that the other doesn't. (This problem can be more precisely defined by looking at standard dual logics – like the subclassical K3 and LP logics – and their chief philosophical applications, especially transparent truth theories along Kripke, Martin-Woodruff, Dowden, et al lines.) In the one case, a theory contains both the 'glutty claim' $\varphi \wedge \neg\varphi$ *and* the 'gappy claim' $\neg\varphi \wedge \neg\neg\varphi$, while the other (say, the K3-based theory) contains neither claim. It would seem that any theoretical virtue that one theorist enjoys the other has a (dual) virtue, and similarly for any alleged problems. But the issue has not enjoyed sustained exploration: can there be philosophical advantages of a theory over its exact dual? It would be useful to have a sustained discussion of this problem by the wider community in philosophy of logic. I suspect that the prospects for discovering something interesting and important are bright.

*** Problem: deduction-theorem links.** One other notable open problem concerns logics in which there is no deduction-theorem link between consequence (the logic) and the logical truth of a given sentence (or, to focus, a given connective, often a conditional-like connective). Need there be such a link in our best account of logic? If so, what form need the link take? These questions have been discussed in the past, in the context of early work in relevance logic (e.g., Anderson, Belnap, Brady, Dunn, Steve Read, and others); but the increasing philosophical applications of non-classical logics call for an earnest return to the question. I remain optimistic that the community of philosophers of logic can make clear progress on the question. I hope so. (For background on why this 'link' can fail, see again standard discussions of Curry's paradox and, e.g., truth theories.)