Logic *and* Reason? On the Possibility of a Positive Account of their Relationship

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Introduction

During the first two decades of this century, a challenge was leveled against a philosophical orthodoxy exemplified by figures such as Kant and Frege. This orthodoxy can be called the “normative logic” view because it holds that logic is best understood as both intrinsically tied to and as bearing normative authority over what may be called “ordinary reason.” The normative logic view can be summarized in the following syllogism, excepting differences in specific views:

1. If logic is the study of sound arguments,
2. And if reasoning is making arguments,
3. Then the results of logic should be construed as normative for reasoning.

Here, the fact that logic takes argument as its content means that it takes reasoning as its content—the two are essentially connected by virtue of reason’s being the meaningful content of logic. Against this view, Penelope Rush argued in “Logic or Reason?” that logic and reason have little in common, and ultimately are best understood as separate, by developing a sustained critique of attempts to provide a positive account of the relationship between logic and reason. Rush’s argument hinges on the idea that proponents of the normative logic view face an “obvious burden of proof…that such a claim left undefended entails” (Rush, 2012; p.6). The two problems that any positive account of the relationship between reason and logic must answer are the twin problems of kind and degree. The first regards the *kind* of relationship that holds between logic and reason; is logic a description of what people do when reasoning? Is there an overlap of principle between logic and reasoning? Is logic an abstraction from what people do when reasoning? Further, any answer to the problem of kind must then provide an account of the *degree* of relationship; supposing logic is a description, is it a complete description? Is it an incomplete description? Or is it an idealized description?

Differences in accounts of the kind and degree of relation between logic and reason allow for distinctions within the range of views referred to above as “normative logic” views. The idea that logic is intrinsically both dependent on and normative for reasoning can be called a strong normative logic view—here, logic is conceptually dependent on what people do in the process of everyday reasoning and it holds normative authority over that process. This view does not require commitment to any specific view about how the relationship between logic and reasoning should be conceived, except that they are linked in some fundamental manner. What’s more, that linkage underwrites logic’s normative significance for reasoning. This strong normative logic view can be contrasted against a *weak* normative logic view. While the former involves a positive account of the relationship of logic to reason that already allows for both why and how logic is normatively significant for reasoning, the latter follows Rush’s separation of logic and reason. For a “weak normative logic” view, then, there is no intrinsic link between logic and ordinary reasoning, but logic can still hold normative significance for reasoning.[1] That Rush’s position falls into this latter category can be adduced from her claims that “the idea that logic and reason…have an important and instructive relationship is not at issue here…” and that “the relevance of logic to cognition—or, at the very least, the human ability to think

[1] There is an entire literature on whether logic is normative, let alone whether it is normative for reasoning. I will not take the time to review this literature here, except as the claim that logic is normative will play a role in attempting to answer the question of how best to construe the relationship between logic and reasoning.

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logically—seems indubitable." (Rush, 2012; p.6: Rush, 2014; p.32). On this last point, I agree with Rush's assessment. However, it seems that the relevance and instructiveness of logic for reasoning poses a significant problem for a logical realist position such as Rush's, where logic is held to be something existing independently of human cognition. It may turn out that this problem is insurmountable from a view of logic that attempts to reify logic into an objective, entirely mind-independent structure.

This paper addresses one of the most pertinent arguments Rush presents against the idea that logic is essentially related to reason: specifically, the case of "the many examples of successful reasoning that are not reducible to logical laws…" as well as "wholly pragmatic utterances and inferences…" and instances of thought where "reasoning takes place despite the apparent failure of the relevant logical laws." (Rush, 2012; p.34) In pursuit of this agenda, this paper takes a two-pronged approach. First, three examples Rush raises as examples of reasoning that are not, or only with great difficulty, reducible to properly logical inferences will be assessed. Then, Wilfrid Sellars' notion of material rules of inferences will be examined. Sellars' work will be instructive given its status as one of the most thorough theories of reasoning that is intended to stand apart from logical inference. Through these two segments, it is possible to assess the problems of degree and kind of relationship that Rush points to as problematizing the strong normative logic view. The goal here is not to develop a thoroughgoing account, but simply to construct a floor plan for the possibility of such an account.

Defining Terms

What does "reasoning" mean here? It is in-bounds for Rush's discussion to define "reason" using a standard definition of informal reasoning found throughout the literature on logic and reason. She states that "reason" should be read "in the usual internal way—including our judgments, inferences and arguments." (Rush, 2012; p.6) As John MacFarlane outlines in "In What Sense (If Any) Is Logic Normative for Thought?", "…reasoning is just "reasoned change in view" (as Harman 1986 puts it). To reason is to figure out what to believe." (MacFarlane, 2004)

To reiterate a passage quoted above from Rush, logic's normative hold on reason is not the target of her critique. Given this general agreement of definition, the potential problem of the vagueness of the term reason is put aside. Reasoning here refers just to this practice of bringing one's beliefs into rational coherence with one another. The importance of this way of defining reason for the strong normative logic position is that it forms a keystone to MacFarlane's development of his bridge principle:

> If schema S is formally valid and you apprehend the inference A, B / C as an instance of S, then you ought to see to it that if you believe A and you believe B, you believe C. (MacFarlane, 2004; p.24)

The purpose of this principle is to attempt to provide a "bridge" between our knowledge of formal validity and our practice of reasoning about our beliefs: it connects the normative weight of reasons *qua* reasons for endorsing, rejecting, or reevaluating beliefs, with the disinterested practice of examining the relations that hold among logical operators and the terms they articulate. Restated, it is the principle that when examining the relationships between one's beliefs with recourse to the use of syllogistic reasoning and logical operators, if it turns out that belief *A* and belief *B* entail *C*, then one should believe *C*. On such a reading, the normativity of logic is complementary to, or even expressive of, the normativity inherent in the practice of reasoning.

Along with this disambiguation of "reason," it is important to offer a disambiguation of "logic." The terms of the debate are critical here. Logic in this context refers capaciously to any systematic metavocabulary for analyzing logical operators (paradigmatically, this includes conjunction, disjunction, implication, negation, and equivalence). In his 2023 lectures on Wilfrid Sellars, Robert Brandom makes a case for referring to logic as a "metavocabulary" as opposed to a "metalanguage," and this requires some explanation. There are a couple of reasons for adhering to Brandom's objection to the application of "metalanguage" talk. The first is Brandom's claim that logic is not an "autonomous discursive practice" of the kind that one could speak without speaking any other language. As for the second, there is a notable difference between the lushness of Tarskian

metalanguages compared to the aridity of logical operators. A metalanguage, at least on Tarski's model, "should contain a copy of the object language (so that anything one can say in *L* can be said in *M* too)" (Hodges, 2022). This way of thinking about metalanguage dovetails with Tarski's theory of truth which, as a semantics-first theory, builds upon the analytic tradition of associating meaning and truth. But what is of note here is that a Tarskian metalanguage allows one to say something about the conceptual content of any phrase in an object language, and on the other hand, the kind of formal operations studied in logic are concerned with the relationships between statements in virtue of only one specific kind of content, namely truth-value. If a metalanguage contains comparatively more information than a natural (object) language, then logic—containing as it does less information than a natural language—ought not to be construed as a metalanguage. Brandom's notion of logic as a metavocabulary, as something that is dependent on natural language for its content, allows us to describe the distance between logic and natural language without committing to certain troublesome implications of calling logic a metalanguage. And crucially, this definition does not require us to change all that much *vis-à-vis* the normativity of logic as expressed in MacFarlane's bridge principle, nor does it present any trouble to the idea that doing logic is a metalinguistic practice.

Given these definitions, the question of the normativity of logic and reasoning turns on this claim: if it is right to say that an account of logic's relation to the process of reasoning in a natural language is one of a formal metavocabulary to a natural object language, the characteristic move for generating that metavocabulary would be abstraction or formalization. This answers the question of kind. What is needed, then, is an account of the stages of abstraction moving from reasoning in natural language to expressions of that reasoning in logical symbolism—in other words, a complementary answer to the problem of degree. To this end, the following two sections will discuss the examples that Rush uses to illustrate her point that logic and reasoning have less in common than they share. For Rush, it follows from her examples that the "weak normative logic" view is a more parsimonious way of accounting for the relationship between logic and reason. Having wrapped up the introductory remarks and laid out the definitions that frame the following discussion, it is now time to move on to analyzing Rush's examples.

Rush's Examples

The first example comes in the section entitled "No Logic" and involves a disanalogy between a false, questionably valid syllogism and a formalization of the type of reasoning used in the syllogism. The example runs as follows:

(NL)

1. Birds fly.
2. Tweety is a bird.
3. Therefore, Tweety flies.

which is supposed to be translatable into symbolic logic like this:

(DL)

1. $\forall x(B(x) \rightarrow F(x))$
2. B(a)
3. F(a)

which can be captured in language closer to ordinary speech like this:

1. For a class x, an instance of x [B(x)] is capable of function [F(x)].
2. a is an instance of x. [B(a)].
3. Therefore, a is capable of function [F(x)]. [F(a)].

It is taken as true by Rush (and I follow her here) that (NL) is unsound because it is false (Tweety, the cartoon character, cannot fly) and only *potentially* valid, pending disambiguation of the first premise. It is as constructed only potentially valid, and even then, is untrue. Validity would only be accomplished by quantifying the boundaries of the statement "birds fly" into some more precise form. The options for quantification range from falsehoods (all birds fly) to axiological judgments about what functions birds ought to be capable of (normal birds fly). One possible solution is simply turning the claim into a probability claim; "most birds fly." (Rush, 2012; p.23) But I want to suggest that to reach the level of formalism desired by the logical formulation that Rush gives, we would need a tautological quantification of the form "all birds that aren't flightless birds fly." This could be rendered in natural language as:

> For the class of entities 'birds,' if any bird is not a flightless bird, that bird can fly.

It is a great virtue of a tautological premise such as this that it must be true, and this seems therefore to stand as a reasonable starting point for the syllogism. But this helpful tautology belies yet another problem; that Tweety flies only follows from this premise if it is granted that "Tweety" names a bird that belongs to a species of birds that are capable of flight.[2] And this is a question about conceptual content; a question about *naming*. There are, then, two problems that any positive theory of the relationship of reason to logic needs to be capable of answering in this example. Both are related to the problems of kind and degree outlined above. First, to decide whether the *type* of formalization suggested can be said to help move us from (NL) to (DL) without sacrificing too much of the original meaning[3], and second, to answer the question of *how much* formalization can be read into the admittedly more natural formulation that "birds fly." Whatever the case, if it is right to say that the question of validity is undecidable without introducing *some* formalization (no matter the kind or degree), then the only remaining question is the question of whether the syllogism is *true*. But this, as Sellars argued (discussed in section IV), is not a question of formal validity but rather a question of the meaning of the descriptive, empirical concepts that fill in the argument. As such, the question of whether the inference is legitimate is an extra question over and above the question of whether the suggested formalization can be read into the natural language formation. If it is right to read *ceteris paribus* clauses as implied in the use of the concept "birds," as part of the semantic or conceptual content of that descriptive term, then it is reasonable to suggest that all one needs to do to formalize (NL) is to specify the first premise by making explicit the implicit commitments taken on board by one who makes the inference.

The second example Rush addresses gives a hint as to what other steps might be taken to develop a proper theory of how logic is related to natural language. This is the well-known problem of the disanalogy between the usage of terms in natural language and their translations in formal logical symbolism. Specifically, Rush points out the difference between "and" and "&," as in the following pair of sentences:

> Sally got pregnant and got married.
>
> Sally got married and got pregnant.

The meanings of these sentences are captured by the conjunction operator in the logical statements:

> P & M
>
> M & P

This is because conjunction is commutative; the latter two formulations express the same meaning in terms of truth-value. Where the former two sentences bear an implication of ordering—specifically the suggestion that the statement following "and" was preceded by the other in time—the latter two are indifferent to ordering. Rush points up the pragmatic/semantic distinction as having value in analyzing this contrast, and this paper follows her lead. However, contrary to Rush's claim that this presents a serious problem for the view that logic and natural language have something essential in common, it seems that an account of pragmatics along the

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[2] Among other *ceteris paribus* clauses such as "Tweety is a healthy adult bird of that species."

[3] This indicates another, perhaps deeper question, of how much of the original meaning we *want* logic to capture.

lines developed by H.P. Grice would allow for a positive account of this disanalogy that brings us closer to the desired connection between logic and natural language. (Grice, 2004) Grice's account of implicature was developed as a response to the precise problem discussed here, and it can aid in giving an account of what kinds of meaning are removed from a term like "and" in the process of abstraction. The meanings that are cut away are describable according to a couple of distinctions drawn by Grice: speaker meaning vs. timeless meaning, and within the realm of speaker meaning, conventional implicature vs. conversational implicature. Grice's speaker/timeless meaning distinction corresponds to what is called in more contemporary terminology the pragmatic/semantic distinction. Pragmatic or speaker meaning is what a speaker can intend to imply by an utterance and what it can be taken to imply given both the overall context of the conversation and the conventions of use of words in the utterance. As such, pragmatic meaning is not reducible to strictly semantic analysis of the words in the sentence. In the example from Rush, then, to capture what is implied by saying that "Sally got pregnant and got married" one should fill out the implied ordering of events with an explicit "then": "Sally got pregnant and *then* got married." This "and then" would be an example of conventional implicature, since the fact that "and" is used to imply ordering is a matter of common norms of use. On the other hand, if this sentence was spoken by Shawn to Xiomara, and neither of them approve of premarital pregnancy, the conversational implicature might run along the lines of "Sally got pregnant and then got married, *and isn't that immoral*?" Here, the same utterance would be invested with the pragmatic force of valuation that is not captured by semantic analysis. From the strict semantic perspective, the ordering was arbitrary, in which case conjunction precisely translates what was meant by "and" in the sentence. If such an account is correct, then logical conjunction expresses an essential feature of any and every use of "and"—that is, as a connective joining descriptively or otherwise semantically meaningful expressions. This would not rule out the fact that speakers can add a variety of pragmatic nuances to their use of the word "and" in both conventional and conversational ways, but rather suggest that "&" or "·" expresses a necessary condition for any word to be considered a conjunctive term in any language.

From here it is possible to see the importance of considering logic as a minimally *semantic* metavocabulary. It is tempting to suggest that logical operators are syntactical operators governing the possible orderings of statements that conserve truth. But if instead we see truth-value as a semantic concept—even a central one for any statements made in the indicative mood, or a primitive category for an account of meaning in natural language—then logical operators are first and foremost semantic[4]. And if it is right to say that semantics is the study of what words mean, divested of implicature and pragmatic nuance, then the recognition that pragmatics of meaning is irreducible to semantics lays the foundation for understanding why the disanalogy between natural language and a formal metavocabulary is not so troubling. The kind of relation that holds between logic and natural language is one of abstraction; and the degree of abstraction can be characterized as involving a cutting away of pragmatic (i.e. implied, conventional, and conversational) meanings that are not reducible to strictly semantic analysis. The most troubling case for this way of conceiving the relationship between logical operators and natural language is the case of implication, usually expressed with either → or ⊃. To what extent can the implication operator be said to express whatever is minimally necessary for a phrase in a language to imply some other phrase?

Sellars and Material Inference

According to the bivalent truth-functional interpretation of the implication operator, statements with a false antecedent are to be considered true. This has some counterintuitive consequences. First, claims with false antecedents like "if Peru is on the Moon, then the Moon orbits the Earth" are considered true. This clashes

[4] A semantic theory of truth for logical operators would include statements like "'A · B' is true iff A · B." It is also possible to conceive of the status of logical operators as occupying a unique fourth location along the continuum of syntax-semantics-pragmatics, somewhere between syntax and semantics or along a perpendicular trajectory. Hence, my characterization of logic as *minimally* semantic.

rather severely with ordinary intuitions of what is reasonable and rational.[5] Second, no rule is supplied which governs the relevance of the antecedent and consequent to one another. So, one could equally well state that "if Peru is on the Moon, then horses are reptiles." These problems have come to be known as the "paradoxes of material implication." (Egré and Rott, 2021) These are not *stricto sensu* paradoxes; rather than formal paradoxes like Russell's paradox (Irvine and Deutsch, 2020) or the Liar, they are instances of dissonance between formalized logic and intuitions about what is reasonable. Despite these problems, there is at least one important reason to attempt to reconcile these paradoxes with the ordinary use of conditional claims. The main motivation for keeping this feature of truth-functional logic is the case of subjunctive conditionals, especially counterfactual statements. As much as it might seem intuitively absurd that claims such as the one about Peru are valid, it is also the case that judging F → F as T allows for an elegant account of the relation between indicative and subjunctive conditionals.[6]

So, how can the issues be avoided while retaining the utility of cases where false antecedents being held true is allowed? This problem is solved by Sellars' concept of material rules of inference. Sellars' position can be explicated by placing it in relation to Carnap's logical syntax. In "Inference and Meaning," (IM) Sellars lays out the distinction in the following passage:

> … Carnap draws a distinction between logical and extra-logical transformation rules. The essential difference…is that whereas logically valid inferences do not, extra-logically valid inferences do depend for their validity on the fact that they contain a certain set of descriptive terms…In Quine's useful terminology, descriptive terms occur vacuously in logically valid arguments; essentially in extra-logically valid arguments. (Sellars, 1953)

Carnap claims that it is perfectly reasonable to hold descriptive language to be inessential in the interest of developing a formal or syntactical theory of logic; logic need not involve reference to the "meaning of symbols…or to the sense of the expressions (e.g., the sentences), but simply and solely to the kinds and order of the symbols from which the expressions are constructed." (Carnap, 1964) And further, Sellars takes Carnap to argue that any P-rules (that is, rules governing the relations between conceptual contents) should be derivable from L-rules (rules governing the syntactical relations between terms) or else they should be discarded.

Throughout *IM*, Sellars works through Carnap's reasons for supposing that the inference "if it rains, then the streets will be wet" must be an enthymeme for the properly deductive inference that "whenever it rains, the streets will be wet; it is raining, therefore the streets will be wet." Carnap wants to say that any justifiable inference of the first type must be a covert modus ponens—all our inferences must be valid, even if only implicitly. Again, P-rules (conceptual content rules) should be derivable from L-rules (rules of syntax). However, this approach fails to account for the essential role that counterfactual claims play in our ordinary practices of reasoning. Because in modus ponens, both the implication p ⊃ q and p must be posited as true in order to derive q as the result of a valid argument, Carnap's account fails to capture the counterfactual character of statements such as "if it had rained earlier, then the streets would be wet." In contrast, Sellars argues that it is perfectly legitimate to infer the wetting of streets from the presence of rain, and to make this inference just based on the conceptual content of the term "rain." As Sellars wrote a few years later, "it is only because the expressions in terms of which we describe objects…locate these objects in a space of implications, that they describe at all, rather than merely label." (Sellars, *CDCM*) Concepts come pre-loaded with implications not only

[5] As a miniature excursion into experimental philosophy, I took an informal poll as part of a presentation of a portion of this research at the Bay Honors Symposium 2024. When presented with the statement "If Peru is on the Moon, then horses are reptiles," zero attendees in a group of around twenty agreed that the statement is true.

[6] I am indebted to Mario Günther and Caterina Sisti's excellent article on Frank Ramsey's theory of conditionals in relation to possible-worlds semantics for pointing this out to me; subjunctive (especially hypothetical and counterfactual) conditionals are describable as conditionals in which the antecedent is taken to be false. In a case like Ramsey's cake example, it can be true that "if you had eaten the cake, you would have gotten a stomachache" even in cases where you didn't eat the cake and therefore had no stomachache. (Ramsey and Sisti, 2022)

on the pragmatic level, as conversational and conventional implicature, but also on the semantic level as implicit or explicit inferential commitments.

By describing the weather as rainy, one takes on commitments to a variety of inferences that follow from that description as implications. In the case of rain, this includes counterfactual statements such as “if the temperature were below 32 degrees Fahrenheit, then it would be snowing, and not raining.” Self-consciously making inferences of the type “it is raining, therefore the streets will be wet” is characterized by Brandom as making explicit the implicit commitments that one takes on board by describing the weather as rainy. (Brandom, 2023) By observing implicit rules that govern the use of the word “rain,” one can infer *from* correct uses of the word *to* certain other facts about factual or counterfactual states of affairs. Sellars’ understanding of language use as a normative, rule-following behavior is central to this understanding of material inferences. Where Sellars refers to such inferences as “extra-logically valid,” recent commentary has sought to clarify the distinction Sellars is drawing here by recasting these inferences as “legitimate.” (Kuukkanen, 2023) Kuukkanen argues that countenancing a notion of material validity over and above formal validity is troubling and prefers to use a language of legitimacy in connection with the kinds of inferential moves that Sellars describes as “extra-logically valid.” Legitimate inferences, then, are justified in virtue of the conceptual content of the terms embedded in the statement. The terminology of legitimacy usefully captures the normative character of reasoning practices; rather than a physical force preventing the assertion of illegitimate inferences, concepts *qua* reasons exert a normative force over what one *should* infer and rule out on their basis.[7]

Sellars’ account of material legitimacy provides a set of rules for distinguishing between those conditionals that are well-formed, but illegitimate, and those that are well-formed and legitimate. Semantic rules of this type play a leading role in an account of logic’s relation to reason, answering among others the questions of whether logic may dictate to us that inferences considered legitimate in pre-logical practice must no longer be, or if logic should be granted the power to bestow legitimacy on those inferences considered illegitimate during the ordinary practice of reasoning. If one is committed to a view that logic is in some sense “parasitic” on natural language—that is, logic is a metavocabulary that depends for its content on reasoning in natural language—then it ought not dictate what inferences regarding non-logical contents are legitimate or illegitimate. This returns us to MacFarlane’s bridge principle and the question of normativity in logic and reason. It may be possible to see normativity as bidirectional in a special sense here; if logic is expressive of a shared minimum meaning of functional vocabulary in argumentation, then logic holds normative authority over what instances of language-use can be considered arguments in the first place. But also, reasoning as a practice of making arguments and drawing inferences should exert a normative force on how the operators in logic are supposed to function; logical operators should be defined broadly enough to endorse any legitimate pre-logical arguments, without being so broadly defined as to license arguments that would not be legitimate in the pre-logical practice of reasoning. On the other hand, if one takes a position like Rush’s, then the fact that logic does not dictate what inferences we can or should make during ordinary reasoning and correct reasoning is an artifact of the metaphysical disconnect between logic and reasoning. Which of these accounts is more parsimonious and aligns more faithfully with the practice of doing logic is a problem for further research. But it is certainly possible that one could develop an account of how logical abstractions are reached by considering the stages of removal of meaning, first at the pragmatic level of implicature and then at the semantic level of conceptual (inferential) contents. Logic would then be a method for studying the structure of arguments emptied of all pragmatic and semantic content aside from truth-value.

[7] A useful metaphor here may be the concept of legal standing. Whether one has legitimate or illegitimate standing for bringing a case to court is a normative question based on precedent and agreed-upon definitions in the space of legal reasoning.

Conclusion and Some Implications

Though this is far from a thorough assessment of how one might relate logic to ordinary reasoning and correct reasoning, the possibility of creating such an account is at least on a steadier footing than Rush took it to be. First, the terms of the debate were laid out. Reasoning is just the practice of "bringing one's beliefs into rational coherence with each other." Logic (on the view expressed here) is a metavocabulary for expressing the essential functions of the non-descriptive or functional vocabulary used in reasoning. Contra Rush's view that any attempt to develop a positive account of the relation between logic and reason founders on disanalogies between natural language and formal operators, it was shown that Rush's examples of mismatches between natural language terminology like "birds fly" and "and" only need to be formalized to approach the standard meanings of logical vocabulary. And this is not at all troublesome for a view of logic as a formalized set of symbols for expressing the functions of some non-descriptive parts of speech that are essential to argumentation. While "and" is commonly used to imply "and then," any phrase that should be considered expressive of conjunction should share a certain minimum structure that is expressed using the formal operator. This formalization or abstraction can be thought of as requiring the removal of pragmatic implications of communicative acts in conversations, as well as the descriptive content of empirical concepts used in making arguments. These descriptive concepts were characterized according to the Sellars-Brandom inferentialist model, and therefore as implicit in the practice of reasoning.

Moving forward, it is necessary to develop a thorough account of how pragmatic meaning, as implicature, is related to semantic contents, contents that according to the inferentialist, move at the level of implication as well. This would involve adumbrating the (presumably different) types of implication at work here. A few important consequences follow from this work. First, there is the interesting philosophical question about the metaphysical status of one of the most ancient topics in philosophy—logic. How one characterizes logic influences how one ought to think about a range of important questions in the discipline: which logic is the right logic? What is the criterion for deciding which logic is correct? What is the relationship between form and content in language and in theoretical schemas in science? Answers to each of these questions bear on contemporary debates about, *inter alia*, logical exceptionalism as a methodological principle.

Aside from explicitly philosophical questions, developing a well-formed theory of reasoning is essential to contemporary debates about artificial intelligence. Though there is great public and academic interest in comparing the behavior of LLMs to human language use and reasoning, much of the debate on this topic eschews the question of what one thinks people are *doing* when we take ourselves to be reasoning. A well-developed answer to this question must include a theory of logic's relationship to reason, whether it is a coincidental overlap (such as Rush's view) or whether it bears some essential relation to reasoning and natural language.

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