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Traditional Deduction and Default-Justification

Joe Reich

The Problem

The number of possible deductive systems is considerably larger than the number of systems we actually consider valid. Even within the confines of propositional logic, the possibilities abound. Looking past the standard, “classical” logic, we find a variety of alternatives, many backed by philosophers advancing particular theoretical programs. One such system is intuitionist logic. With the goal of abolishing the Law of Excluded Middle ($p \vee \sim p$), it eliminates double-negation elimination and redefines *or*. Otherwise, it resembles classical logic. Prominent examples like intuitionism, however, do not exhaust the ranks of possible deductive systems; we can also imagine a host of propositional logics with no philosophical support whatsoever. For one, a system of inference might include a new logical connective, $*$, for which the introduction and elimination rules were $(p \mid - p * q)$ and $(p * q \mid - q)$, respectively.¹ A system including this rule would be considerably more powerful than classical logic; in fact, given a single proposition p , it could prove the truth of absolutely any statement.

¹ This example is the invention of Arthur Prior. Cf. “The Runabout Inference-Ticket,” *Analysis* 21, no. 2 (1960), 38-39.

Clearly, we would like to say that some and only some deductive systems are valid, in a sense of the word stronger than mere validity-according-to-the-rules. Arguments making the case for or against some deductive system are hardly unimaginable. For example, there is a strong temptation to point out that acceptance of a logical system that included the rules for * (defined above) would force one to accept true contradictions. Assuming that contradictions can never be true, this seems to be a perfectly adequate reason to abolish such a system straight off. Even if we admit the law of non-contradiction, though, such an argument will succeed only if we presume a meta-logic that allows for if-then reasoning. However, presupposing a meta-logical rule of *modus ponens* does not seem like a helpful way of justifying *modus ponens* at the logical level.² Without access to *modus ponens* or the other usual rules of inference, we cannot make the claim that *if* we accept such a deductive system, *then* we will have contradictions. This paper addresses the following predicament: any *argument* for choosing one system of inference over another will necessarily presume some deductive system. Deductive arguments for choosing particular deductive systems seem to beg the question.

What appears to be needed, then, is some *non-inferential* method of justifying deductive systems. If a putative justification does not contain any inferences, then it can hardly be circular. Frege offers a suggestion that fits the bill: he claims that the truths of logic are *self-evident* axioms; their validity is simply obvious to everyone who understands

² This consideration also blocks reliance on the notion of validity defined in terms of necessarily truth-preserving inference. In order to gain access to a system's semantics (and with it, the definition of truth for that system), one would first have to give a soundness proof, which shows that what is syntactically provable in the system lines up with what is semantically true. However, such a proof would itself rely on a meta-logical version of *modus ponens* (among other things), a relative of the very point we want to justify.

them.³ Such axioms, he elaborates, are to be true, certain, and intrinsically impossible to prove.⁴ Unfortunately, history has taught us that truth and certainty can be difficult to recognize. Indeed, as Russell notoriously showed, the fifth axiom of Frege's system leads directly to paradox, and thus cannot be true, despite its seeming obviousness. My own solution to the problem of justifying deductive systems will bear a certain resemblance to Frege's notion of self-evidence. However, I will try to avoid placing any weight on the shaky ground of certainty and truth.

The solution I propose relies on a distinction between what I term *traditional* and *radical* deductive systems. A deductive system is traditional if and only if it captures the sorts of inference that reflective people would intuitively accept. (In other words, if you explained the details of some deductive system to an ordinary, intelligent person, would they admit that such a system adequately characterized the inferences they already made?) Any non-traditional deductive system is radical. This distinction is meant to include such philosophically viable logics as classical, intuitionist, relevance, etc., while excluding systems like the one with the * connective. Rational people untrained in formal logic will sometimes reject instances of the Law of Excluded Middle (say, regarding the unspecified characteristics of fictional entities), so intuitionism can fairly claim to capture some aspect of people's inferential practice. On the other hand, no one would ever assent to the sort of unrestricted inference permitted by the rules for *.

In this essay, I argue that we can choose traditional deductive systems over radical ones without circularity by claiming that traditional deductive inference needs no positive

³ See, for example, *Collected Papers on Mathematics, Logic, and Philosophy*, ed. Brian McGuinness, (Oxford: Blackwell, 1984), 273.

⁴ I borrow this gloss from Tyler Burge. See "Frege on Knowing the Foundation," *Mind* 107 (April, 1998), 305-347, especially p. 311.

justification to count as justified. First, I lay out this proposal. Then I consider and respond to objections. Finally, I discuss the limitations of the proposal, most notably that it does not provide any non-circular method for adjudicating among conflicting systems of traditional deduction.

Default-Justified Beliefs

One way to approach the problem of justifying our choice of deductive system without circularity, and skeptical problems in general, is to claim that certain beliefs deserve “justified” status even though there is nothing in particular that justifies them. Barring specific concerns about their veracity, we can consider such beliefs *default-justified*.⁵ This is an appealing way to think about epistemology: it is not that all knowledge rests on an unjustified foundation, but rather that the foundation is composed of the sort of beliefs that are innocent until suspected of guilt. Frege's Axiom V, for example, could have been held to be default-justified until Russell's paradox came to light. Of course, we need some way of spelling out exactly which beliefs are to count as default-justified. Several philosophers writing on skepticism about justification have invoked this criterion: if the process of justification itself typically presupposes some belief, then that belief is default-justified. Belief in the traditional principles of logical deduction clearly meets this standard—every time someone justifies a point by making an argument, she relies on deductive inference. If the preceding is correct, then we do not need any positive grounds for believing in the logical rules we already accept.

Herbert Feigl exemplifies this approach. In his words,

⁵ Paul A. Boghossian, “How Are Objective Epistemic Reasons Possible?” *Philosophical Studies* 106, (December 2001), 8.

We have reached the limit of justification...Can we then in any fashion provide a “reason” for this acknowledged principle of “reasonability”? Obviously not...The attempt to validate one of the major principles of all validation, it must be amply obvious by now, is bound to fail. We would be trying to lift ourselves up by our own bootstraps.⁶

As Feigl sees it, deduction and induction are the grounds *for* justification. Seeking to justify the justifiers themselves is a confused and hopeless project. Therefore, we can presume our principles of deductive reasoning to be default-justified.

Objections and Responses

Paul Boghossian rejects this account of the matter. He has two related worries: first, “what is default reasonable has to be relativized to individual thinkers, for different thinkers may build their epistemic systems around different claims.”⁷ According to Boghossian, standards for justification might vary from person to person and from community to community. Without any higher ground from which to adjudicate between systems, fair-minded people would be forced to admit that no system of deduction was better than any other. If what we originally sought was a way to choose between deductive systems without circularity, this approach seems to fail.

Second, Boghossian fears that if we made default-justification relative to individuals or communities, we would be forced to accept that nonsensical deductive systems were default-justified for people who reasoned according to them. Returning to the example mentioned in the introduction, if a

⁶ Herbert Feigl, “*De Principiis Non Disputandum...?*” In *Probabilities, Problems and Paradoxes: Readings in Inductive Logic*, Sidney A. Luckenbach, ed., (Encino, California: Dickenson Publishing Company, 1972), 190-91. This passage is in fact specifically directed to Hume’s problem of the justification of induction. However, Feigl would undoubtedly give the same answer regarding the justification of deduction.

⁷ Boghossian, 8.

community were to base its epistemic system around the logical constant *, then they would be able to justify absolutely anything. Since it should not be possible to justify belief in *every conceivable proposition*, we should not accept the proposed criterion for default-justification, Boghossian would argue.

I have serious concerns about both of Boghossian's objections. The first objection, that Feigl would have to make default-justification relative, hinges on the claim that *any* deductive system would count as a method of justification. Feigl clearly says that induction and deduction comprise the process of justification, and as such cannot be justified themselves. Although it is less clear, I contend that we should interpret Feigl as saying more: justification itself consists of *only* those rules of deduction and induction like the ones we actually use. If a putative justification used deductive inferences of a sort substantially different from our own, it would not be a justification at all. To use Wittgensteinian terminology, the game of giving justifications has very specific and strict rules. Calling deductive systems other than our own *justificatory* would be to change the meaning of the term. Consider the following example: "Since Des Moines is the capital of Iowa, and by the * rule, we can infer from this fact that snow is green, you should believe that snow is green." While the example seems to have the grammatical form of a justification, I contend that it is merely parasitic on the concept of justification. We often make jokes by taking linguistic structures from one area of discourse and misapplying them elsewhere; in the process, they lose their normal meaning. In the same way, justification based on unacceptable rules of inference does not really *justify* its conclusion. If this is right, then Boghossian's objections do not stand, and we can exculpate Feigl's approach to justifying traditional rules of inference.

Furthermore, even if Boghossian's first objection were compelling, it only seems damning for Feigl's view if we also accept the second objection, that his account would

force us to accept absurd deductive practices as default-justified. If, as I will argue, it is not really possible for an individual or community to operate on bizarre deductive systems like the one involving $*$, then we need not worry about having to make default-justification relative. Relativizing what counts as default-justification to people who all exhibit nearly identical deductive practices does not seem a result disastrous enough to require the rejection of Feigl's position. The considerations in the next few paragraphs should make clear that Boghossian's second objection is overstated.

Logical deduction forms the basis for not only justification, but also linguistic communication. In conversation, we frequently make unstated deductive inferences (say, from $p \rightarrow q$ and p to q) without worrying that other people will misinterpret these moves. Donald Davidson argues that if two people are to understand each other, they must assume that they share a common system of logical inference. On Davidson's account of language, all attempts to understand the speech of others involve *radical interpretation*. By this, he means that hearers must constantly try to fit the utterances of others into their own belief systems.⁸ So when a French child points to the sky during a rainstorm and exclaims "Il pleut!" the American au pair assumes they both believe that rain is falling from the sky and interprets this expression as meaning, "It is raining." It is only by assuming that speakers share a preponderance of beliefs that we can fruitfully understand how mistakes and disagreements come about, Davidson claims.⁹ At the basis of

⁸ Donald Davidson, "Radical Interpretation" In *Inquiries into Truth and Interpretation* (Oxford: Clarendon Press, 1984), 125-6. Quine also discusses the implications of his radical translation thesis for conflicts between logical systems. Cf. *Philosophy of Logic* (Cambridge: Harvard University Press, 1986), 82-83.

⁹ Donald Davidson, "Belief and the Basis of Meaning" In *Inquiries into Truth and Interpretation* (Oxford: Clarendon Press, 1984), 153.

this must be a complete, or nearly complete, agreement about the logical structure of language, i.e. which beliefs entail which other beliefs. In his words, "it is unlikely that the difference between acceptable theories will, in matters of logical form, be great...correct theories [of interpretation] will agree on the whole."¹⁰

If two people could not agree on a common logic, then they would have trouble finding a basis of common belief adequate for communication. Suppose the same child pointed to the sky during a rainstorm and exclaimed, "Ce chat est grand," ("That cat is big"), which he had inferred via the * rules. The first time this happened, the au pair would mistakenly interpret his words as meaning, "It's raining." However, if the child used this sort of reasoning frequently enough, it would become clear that communication between the two of them was suffering. That the child could infer that "Ce chat est grand" during any rainstorm and regardless of the size of any particular cat implies that he simply would not mean the same thing by the French expression as we do by "That cat is big." The circumstances under which a statement is true must play at least some part in determining its meaning, and since the two speakers would claim that the sentences were true under different circumstances, they could not mean the same thing. However, unlike ordinary failures of translation, the problem at hand would be insurmountable, as far as it went. It would be difficult, if not impossible, for the speakers to communicate across the gap between their underlying logics.

As we consider cases in which usage of the * rules comes to comprise a larger and larger portion of a community's inferences, the picture gets worse and worse. If such inferential practice were the norm, not only would the child and au pair not be able to understand each other, it would be impossible for anyone in the community to learn

¹⁰ "Belief and the Basis of Meaning," 151.

the language. Without some specification of the circumstances under which it is appropriate to make an assertion, there could be no publicly understood meaning at all. Use would be completely arbitrary, and “Ce chat est grand” would therefore have no content whatsoever. A culture that relied on such a rule of inference would be one that uttered only gibberish. To put the icing on the cake, without contentful expressions, it would be impossible to recognize that the community was in fact using the rules of inference for $*$. The very idea of identifying another speaker as making an inference of the form, $p \mid - (p * q) \mid - q$, makes sense only if we can recognize p and q as specific, individual beliefs. But we have just seen that the propositions would have no content. Recognizing the logical structure of the language would be equally impossible for people within the community, who would have no more idea of the meaning of a proposition p than we would.

Less extreme scenarios are of course well within the realm of conceivability. What if we imagine a community in which people only *occasionally* reason according to the $*$ rules? Surely, communication would not suffer dramatically there, nor would language be impossible to get off the ground. However, let us remember that the criterion for default justification offered above was that *if the process of justification itself typically presupposes some belief, then that belief is default-justified*. My response to Boghossian’s second objection can now be stated as follows: to the degree that some individual (or community) *typically* reasons according to radical deductive rules, that person (or community) is difficult to construe as a genuine language-user or (community of language-users). If there are indeed theoretically possible cases in which people typically use the $*$ rules, these cases are few and far between. More likely, it seems to me, are ones on which people either typically use traditional logic, or major breakdowns in communication occur.

To quote Davidson once more, “Making sense of others requires us to find a great deal of reason and truth in

them. To see too much unreason on the part of others is simply to undermine our ability to understand what it is they are so unreasonable about.”¹¹ Given a community of rational, normally functioning people, it would be a mistake to conclude that they used a deductive system radically different from ours. If it seems unlikely that people and communities who use irrational rules of inference can really exist, Boghossian’s fears about relativism lose much of their appeal.

The Limitations of Default-Justification

I have argued against both of Boghossian’s objections to making the traditional deductive rules default-justified. Of course, the reader need only grant the adequacy of one rebuttal or the other to accept the conclusion that we need not give any justification for traditional deductive systems. That said, a staunch skeptic could still find reason to object to this picture. While making traditional deduction default-justified does not in itself require an inferential step, responding to objections does, and a skeptic might claim that those inferences themselves are suspect. However, I believe I have given enough to make such skepticism seem incoherent, albeit not demonstrably false. Without any viable alternatives to which to point, the skeptic or relativist’s demand for justification lacks cogency.

More seriously, this method of undercutting the demand for justification succeeds only in validating the choice of traditional deductive systems over radical ones; it provides no means of resolving disputes among the many conflicting traditional systems. For his part, Davidson only claimed that “correct theories will agree *on the whole*.” There can be little doubt that intuitionist logic, for example, would count as a method of giving justifications, and communication would not suffer dramatically if we were to adopt it exclusively. Nor would we want a procedure that

¹¹ “Belief and the Basis of Meaning,” 153.

dismissed out of hand certain systems of traditional logic. Philosophically-motivated proposals for revising classical logic deserve careful consideration, not the immediate dismissal appropriate for the more preposterous cases. All the same, a second problem of how to avoid circularity while deciding between the candidate traditional systems remains unanswered here.¹²

Conclusion

Faced with the claim that belief in the validity of traditional logic is impossible to justify (and hence irrational), I argued that such a belief stands even without any particular justification. To my mind, the most serious objection to this position is Paul Boghossian's claim that making traditional deductive systems default-justified would accidentally justify radical logics. I attempted to counter his objection by arguing that in fact plausible alternatives to traditional logic are difficult to envision. Finally, I noted, but did not venture much of an answer to the subsequent question of how to adjudicate between competing traditional systems without presupposing some logical system.

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¹² This is not to suggest that such a problem is unanswerable. In brief, I think we might avoid circularity in adjudicating between classical and intuitionist logic by considering reasons (of whatever sort) that could be framed in a way acceptable to both sides. However, I will not defend this view here.

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