Chisholm, Naturalism, and the Role of Logic in Epistemology

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October 1, 2004

1 Introduction

Traditionally, the pre-theoretic notion of epistemic justification is thought to possess two properties: *accessibility* and *truth-conduciveness*. Epistemic justification is thought to be accessible in the sense that an agent S who is justified to believe a proposition p is in a position, even if only in principle, to access the item (assertion or cognition) that justifies p—whether that item be a linguistic item, precept, memory, or other belief. First-person accessibility is thought necessary for S to demonstrate or evaluate his reason for holding p, which is one type of role that the notion of justification is thought to play. Saying one is justified in believing p seems to imply that one has a good reason to believe p, which suggests a capacity to view those items so to judge their bearing on p.

Truth-conduciveness concerns the contribution that justification seems to make to the possession of true beliefs. We aren't interested in epistemic justification simply to have a just-so story for our belief that p. Rather, we're interested in epistemic justification because we think that, all other things being equal, a set of justified beliefs tends to bring us closer to the truth of the matter than a set of unjustified beliefs does. The idea here is that justification appears to include a property or procedure that tends to yield true beliefs. That truth-conduciveness and accessibility are difficult properties to fully maintain in a single concept of justification is a key back-story to philosophical theories of epistemic justification. As a consequence, fundamentally different conceptions of justification arise from viewing one of these properties as primary.[1]

Even how to evaluate these two conceptions of justification is a topic of debate. It is common to frame the debate between first-person conceptions of justification and primarily truth-conducive conceptions of justification in terms

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[1] An overview of recent work in epistemology with an excellent bibliography is (Prior 2001).

of *internalist* versus *externalist* theories of justification, respectively.[2] But this may not be the clearest way to view the issue, since there are a variety of ways to construe both internalism and externalism. For instance, epistemic internalism may be construed broadly by stipulating that the items that justify a belief should be accessible to the subject possessing the belief. This view of internalism, called *access* internalism, is the version of internalism advanced by Roderick Chisholm (Chisholm 1966). The view holds that

(i) items that justify a belief should be accessible to an agent, and

(ii) an agent may establish on reflection whether a particular belief is justified.

Internalism may also denote a view that is more restricted than access internalism. *Mentalist internalism*, advanced by Rich Feldman and Earl Conee (Conee and Feldman 2004), is a version of internalism that restricts the items that may serve as justifications for beliefs to only mental states. Hence, mentalist internalism would replace condition (i) of access internalism with

(i') mental states are the only items that can justify a belief and those that do justify an agent S's belief should be accessible to S.

Externalism, by contrast, is simply the denial of access internalism. It follows at once that this is not equivalent to the class of truth-conducive theories, for theories of justification that feature the property of truth-conduciveness are but one type of externalist theory.[3]

Aside from the imprecision of the terms 'internalism' and 'externalism', there is another problem: the purported bearing of *epistemic naturalism* on the relative merits of internalist and externalist theories of justification. Epistemic naturalism holds that the results or methodology of the cognitive sciences are relevant to epistemology. While there are several varieties of epistemic naturalism, what we'd like to focus on here are appeals to epistemic naturalism as a reason for favoring externalist theories of justification over internalist theories. It is common to regard externalist theories of justification as having an exclusive claim to some version of epistemic naturalism, for reasons we'll discuss shortly. The point is, these arguments have traditionally left internalists saddled, sometimes willingly, with defending a view that appears immune or altogether opposed to scientific inquiry. However, naturalism in epistemology and the discussion of the conceptual makeup of epistemic justification are entirely independent issues—or so we shall argue here.

The basis for the case that epistemic naturalism and theories of epistemic justification are independent rests on two claims, (a) that the content of an internalist theory of justification is compatible with naturalism and (b) at least some distinctively internalist notions and relations are open to scientific study. A consequence of these two claims, if true, is the detachment of epistemic naturalism

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[2]See (Kornblith 2001) and (Bonjour and Sosa 2003).

[3]In making this distinction, we are following the standard, traditional conception of truth as a realist, non-mentalist, substantial semantic property of propositions, which is in contrast to epistemic, pragmatic or otherwise constructivist conceptions of truth. See (Soames 1999).

simpliciter as relevant grounds for preferring one type of theory of justification over another.

In this essay, we wish to defend a stronger version of (*b*), namely

(*b'*) With respect to internalist epistemic relations, internalism *should* reject the traditional method of common-sense introspection in favor of methodological naturalism.

Our project is to study the mathematical structure of epistemic support relations using both theoretical and experimental methods developed in the logical artificial intelligence community. A consequence of our proposal is a case for fully naturalizing evidentialism.

2   Substantial Naturalism and Internalism

Let us first consider the first claim for our project, namely

(*a*) The content of an internalist theory of justification is compatible with naturalism.

Claim (*a*) concerns the relationship between internalism and *substantive* naturalism.[4]

Substantive naturalism in epistemology is the view that, to be meaningful, epistemic terms must denote natural facts—either directly, or by reducing suspect terms to natural terms. The motivation behind substantive naturalism is the sensible advice that one should be wary of analyses that appeal to properties or relations that are not as well understood as the *analysandum*. The specific restriction of substantive naturalism is to bar non-natural terms from appearing in theoretical accounts of justification since there is no way, in principle, for these terms to be made less obscure by scientific methods of inquiry.

A reason to think that internalist theories of justification are incompatible with naturalism is that internalist theories of justification tend to rely upon terms that appear to be purely *epistemic*, which might be thought suspect. Alvin Goldman has raised a version of this objection (1979, 1986), claiming that an analysis of epistemic justification should not rely upon other epistemic terms, such as "'justified', 'warranted', 'has (good) grounds', 'has reason (to believe)', 'knows that', 'sees that', 'apprehends that', 'is probable' (in an epistemic or inductive sense), 'establishes that', and 'ascertains that'" (Goldman 1979), since the account would fail to give us purely factive conditions for the justificatory status of a belief. On Goldman's account, terms such as "'believes that', 'is true', 'causes', 'it is necessary that', 'implies', 'is deducible from', and 'is probable (either in the frequency sense or the propensity sense)" are not evaluative and so may serve this purpose (Goldman 1979). It should be noted that Goldman's aim was to avoid having epistemic terms appear in the analysis of justification on

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[4]For an overview, see (Kornblith 1999) and the edited collection (Carruthers, Stich and Siegal 2002).

the grounds that doing so would yield an incomplete or circular analysis, not on the grounds that purely epistemic terms are non-natural. However, substantive naturalism may be construed as saying that the epistemic terms that appear in traditional accounts of justification fail in virtue of failing to denote (or be reduced to terms that denote) natural facts. So, for instance, the evidentialist analysis of justification

> S is justified to believe p iff S has evidence supporting the belief that p.

and deontological theories of justification

> S is justified to believe p iff S has the right (duty) to believe p[5]

would fail because each appeals to epistemic terms that are, necessarily, non-natural.

One can find internalists that appear to endorse this non-naturalistic view. For instance, Roderick Chisholm held that epistemic properties and epistemic relations are *irreducible*, meaning that they are of a kind that simply cannot be defined by a complex of psychological or familiar logical operations (Chisholm 1966). Chisholm thought that the aim of epistemology was to study these relations, which, given his internalism, were first-person accessible. He thought that we could devise epistemic principles by reflecting upon these states, proposing principles that appear to capture their structure, and then test those principles by considering purported counter-examples. Such are the defining features of "armchair" philosophy.

The question before us is whether internalists must be anti-naturalists. Rich Feldman has recently addressed half of this question by considering whether there is any reason to think epistemic terms—as those used in evidentialism— must denote non-natural facts (Feldman 2001a). Feldman notes that there isn't anything about the epistemic terms used in evidentialism—evidence and the evidential support relation—to suggest that each is ontologically mysterious. One may well conjecture that there is a relation called 'evidential support' that holds between a belief and either a precept, memory or other belief. Assuming that the *relata*—beliefs, memories, precepts—are naturalistically acceptable, there doesn't appear to be *prima facie* grounds for regarding this a relation as more objectionable on substantive naturalist grounds than the relations of causation or entailment. (We might still wonder about Goldman's original worry over vacuity, but set that issue aside for the moment.) Feldman's point is that, while traditional accounts of epistemic properties typically use epistemic terms and do not provide definitions in purely naturalistic terms, this does not entail

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[5]It is worth remarking that these these two conceptions of epistemic justification are distinct, even though one will find arguments against evidentialist theories in the literature that presume that evidentialism is committed to a deontological notion of justification (e.g., consider Sosa in (Bonjour and Sosa 2003).

"that epistemic relations are not themselves natural relations or that naturalistic definitions of them are ruled out in principle" (Feldman 2001a).

However, note that Feldman's argument only addresses the ontological status of evidential facts and evidential support relations: they are terms purported to pick out natural facts or natural relations. It remains to be seen whether there are such facts and relations, but one shouldn't doubt the kind of items these terms are thought to denote. Evidentialism, so construed, is the claim that the world includes evidential support relations and evidential facts; it is not the claim that evidential facts or evidential support relations exist as mysterious entities or relations.

Feldman's endorsement of naturalism stops short of embracing *methodological naturalism*, the view that holds that methods and results from the cognitive sciences are relevant to epistemology. We consider the grounds for this position next.

3   Methodological naturalism and internalism

Consider the claim,

(b) Some distinctively internalist notions and relations are open to scientific study.

However, there is considerable resistance to this view among epistemologists.[6] Even though there are notable exceptions, most current philosophical theories of knowledge are advanced as though logic offered little analytical insight into the structure of the relations mentioned in each theory, including epistemic relations.

> Formal logic tells us that if a given set of statements is true then such and such other statements are true as well; but it does not tell us what statements to believe or to act on. Indeed, the notion of accepting certain statements, like the notion of total evidence, is pragmatic in character and cannot be defined in terms of the concepts of formal deductive or inductive logic (Hempel 1965, p. 66).

Goldman, remarking on the claim that a system of rules derivable from logic and probability theory may determine an acceptalbe set of rules for epistemic justification (J-rules), remarks that

> This [claim] accords with a widespread assumption that logic provides us with proper methods. Since 'proper method' is easily construed as 'justification conferring method', it is natural to

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[6]Methodological naturalism in epistemology is traced back to Quine's "Naturalized Epistemology", appearing in (Quine 1969). See (Kim 1988) for a critical reply to Quine's program and (Kornblith 1999) for a contemporary defense of the Quinean view.

assume that J-rules—at least those governing reasoning—can be derived from logic. This assumption is false (Goldman 1986, p. 81).

There is no way, then, in which J-rules are literally *derivable* from, meaning entailed by, truths of formal logic (Goldman 1986, p. 82).

Finally, and most recently, Gilbert Harman has encapsulated the received view in the title of (Harman 2002),

"A Logic is not a Theory of Reasoning and a Theory of Reasoning is not a Logic."

However, it is a mistake to think that logic plays no role in modeling epistemic relations. It is standard methodological practice for analytic philosophers to offer theories of justification assembled from a conceptual analysis of both epistemic concepts and epistemic relations, where the behavior of epistemic relations—including inference relations—is described rather than formally defined. But we should be well aware, from our intellectual history, how easy it is to be entirely wrong about the behavior of complicated relations and concepts that we describe rather than define. Thus, there is a need in epistemology to understand the structure of epistemic support relations—the mathematical structure of such relations—which is not a problem that traditional introspectionism is best suited to tackle.[7]

In (Wheeler and Pereira, forthcoming) we propose a positive approach for addressing this problem—namely the study of epistemic relations—that uses theoretical and experimental methods and results from logical artificial intelligence. We won't review that proposal here, but wish to make the following remarks concerning the criticisms mentioned above. First, one should note that some objections to using logic as an analytical tool hinge on a presupposition that logic serves as "a language of thought", which is a widely discredited thesis that our proposal does not entail. A second kind of objection assumes that our proposal is to derive epistemic principles from logic (or logic and probability theory), usually along the lines of a classical or, perhaps, modal system of epistemic logic or Bayesian, personalist probabilities. But, again, this is not our proposal. We are advancing an epistemic logic along the lines of Hintikka's approach (Hintikka 1962; Meyer van der Hoek 1995), nor are we claiming to derive principles as in (Eberle 1974), but, rather, are proposing to model epistemic support relations, which are a specific class of relations thought to hold between a belief and either another belief or some other item. Bearing this last point in mind, we turn to the last kind of objection, which Harman spends most of his time commenting upon, namely the difference in the act of making a rational inference and that of applying an admissible rule from a formal system. We are not, to repeat, proposing to do this: rather, we're proposing to have a better

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[7]Note that this point is recognized by Goldman, who concedes that knowing the semantic properties of such rules "is undoubtedly *relevant* to belief forming principles" (1986, p. 82), but would nevertheless be resisted by Harman, Hempel, and Chisholm.

mathematical understanding of a class of relations that internalist epistemologists use in their theorizing. True enough, we think that success along these lines is necessary to progress toward achieving the kind of higher-level principles that these philosophers have thought impossible—but this long term project is irrelevant to the bearing of these objections to our current project.

In what remains we consider the question of which methodology evidentialism should adopt, the weaker version Feldman advances or our stronger version.

4 Naturalizing evidentialism

Consider now

(b') With respect to internalist epistemic relations, internalism *should* reject the traditional method of common-sense introspection in favor of methodological naturalism.

Our plan is to discuss (b') by focusing on evidentialist epistemic relations; we will not offer remarks about deontological conceptions of evidential relations. Since our proposal is new, we don't pretend to offer a knock down defense but rather aim to consider one line of objection to the view offered by Rich Feldman in his defense of traditional, introspective "armchair" philosophy.

Feldman (2001b) frames the discussion of methodological naturalism in terms of a position he calls *Cooperative naturalism*, which holds that epistemology should examine evaluative questions, but that empirical results from the cognitive sciences concerning how we actually think and reason are essential for making progress in addressing evaluative questions.

Feldman holds that in epistemological theorizing there are at least three views of possible sources of information for epistemological theorizing: the pure *a priorists*; armchair epistemologists, who rely upon common-sense empirical knowledge; and scientific epistemologists, who "proclaim the value or (or need for) the results from empirical studies for epistemology" (2001b). Feldman writes

> This three way classification complicates the discussion of Cooperative Naturalism. If Cooperative Naturalism is the view that empirical information is important for resolving epistemological issues, then armchair epistemologists can accept it. However, if Cooperative Naturalism is the view that detailed information from the empirical sciences is important for epistemology, then armchair epistemologists are likely not to agree.

Before pressing on, there are two important points to keep in mind. First, we should be clear about the type of scientific input one is proposing before considering the question of whether scientific input is appropriate for studying epistemic support relations. It is worth remarking that 'cognitive science', 'empirical results', 'natural sciences' and 'cognitive psychology' are sometimes used

interchangeably in arguments about methodological naturalism. But clearly these are not synonyms. Hence, care should be taken when evaluating arguments purporting to show that cognitive psychology is not relevant to the study of epistemic relations as sufficient to demonstrate that cognitive science is not relevant to the study of epistemic relations. Clearly, that is not a valid inference.

The other point to keep in mind, when evaluating methodological questions, is a distinction between evaluating whether there is value in seeking the help of (some of) the cognitive sciences for studying epistemic support relations and evaluating whether (some of) the cognitive sciences are *necessary* to carry out epistemology. There are a few cases where decision over methodology are settled by nomological necessity, but most interesting cases are settled over the more pedestrian issue of which method is likely to yield better results. It should be clear that we are addressing the first typic of question concerning the value of seeking input from applied logic. Our claim is that we are likely to yield better results if the study of epistemic relations includes results and methods from applied logic. Since this is an empirical claim, its verification will come from the results, if any, that arise from attempting to perform this research program.

Before closing, let's consider a possible objection to our proposal. In defending the tradition of armchair philosophy against stronger methodologists such as us, Richard Feldman considers a suggestion of Hilary Kornblith, who is also a proponent of methodological naturalism. Feldman writes:

> Hilary Kornblith has suggested that philosophizing in the way epistemologists often do about knowledge is something like philosophizing about aluminum. The only serious questions about aluminum, he thinks, are scientific questions. (Kornblith, Blackwell guide to epistemology) It is difficult to see, however, exactly why we should think that knowledge is relevantly like aluminum. For one thing, what we seek in the case of aluminum is an understanding of its physical constitution. We want to know what it is made of, how it interacts with other materials and why, and what we can use it for. Our analysis of knowledge does not call for an account of its physical constitution. It's doubtful that there is any such thing....But knowledge isn't a substance like aluminum or a process like cell division. So, analogies such as these don't provide reasons to seek naturalistic analyses of knowledge (Feldman 2001a).

But perhaps Kornblith's analogy isn't so far off the mark, for we are interested in the structure of knowledge and this may not be an entirely conceptual matter. As we've remarked, there are constituent epistemic concepts that do involve processes. Indeed, the very idea of belief fixation on the basis of evidence involves several candidates: an agent's access to the source of justification; revision of a set of beliefs in terms of one's evidence; inference, and so on.

Feldman writes that "Some topics and questions are amenable to armchair methods and some are not. It would be foolish to extend Kornblith's line of thinking to logical concepts such as validity or conjunction, to modal concepts

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such as necessity, or, I believe, to moral concepts such as obligation. Some concepts have a richer conceptual structure than others."

However, the claim that this would be "foolish" is clearly false. For instance, take the contributions of applied logic to the notions Feldman lists. AI's spur to the logic community has been the drive to apply various formal frameworks to model particular, concrete problems, a goal that brings with it sharp demand to know the algebraic and meta-logical properties of various logics as we search for tractable applications. We aren't claiming that this spur is metaphysically necessary, but, rather, ask our readers to consider the historical record: we are gaining a very rich understanding of the various formalisms to emerge in the last 40 years and, by extension, deeper insight into the structure of problems that may have been originally studied using only specific techniques. Take, for instance, the study of modality. It is passé in the modal logic community to view modal logic as the "logic of necessity" (Blackburn, Rijke and Venema 2001). Indeed, modal logic has matured precisely by expanding outside of the traditional boundaries of philosophy and mathematics to include AI and the specific problems of applying the formalism to various problems. This expanded research program has spurred renewed interest in structural properties and variations on modal logic, and has given us a deeper understanding of modeling *intensional* notions.

There are two points about this example we wish to stress. First, there is significant mathematical structure to the concepts 'validity', 'conjunction', and 'necessity' and studying the mathematical structure throws light on each. This is not to deny that one may apply what Clark Glymour has called the method of "using a little bit of formal logic informally" to come up with something interesting or entertaining. But the point under discussion is what methodology is likely to yield results—namely, an understanding of epistemic support relations. It appears to us that naturalist complaint is essentially that the yield of what has come to be called armchair philosophy cannot—in a practical, if not nomological sense of cannot–yield the same degree of insight to complex relations and processes as when those relations and processes are submitted to the battery of methods available in the full scientific domain.

The second point is that the AI empirical project of trying to apply logics—to build theorem provers for ever more expressive languages, to represent diverse inference operations for ever more complex data structures, and to do all of these things while worrying about computational issues—has contributed to our understanding of logical languages, their constitutive notions. The reason this is important is that it has greatly enhanced our understanding of the interrelationships between various formalisms and, as a consequence, the structural features shared by classes of problems that may have only been studied by a community using a single formalism. Turning to epistemology, we conjecture, contra Chisholm, that there are other relations that bear structural similarity to epistemic support relations.

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