Knowledge and Practical Reasoning

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Abstract

The idea that knowledge is conceptually related to practical reasoning is becoming increasingly popular. In defending this idea, philosophers have been relying on a conception of practical reasoning that drastically deviates from one which has been more traditionally advocated in analytic philosophy and which assigns no special role to knowledge. This paper argues that these philosophers have failed to give good reasons for thinking that the conception of practical reasoning they have been assuming is the right one, and that hence they have been rash to conclude that there is a conceptual relation between knowledge and practical reasoning.

By "practical reasoning," let us designate any reasoning involved in one's deliberations about how to act or what to choose in a given situation. The idea that knowledge is conceptually related to practical reasoning is becoming increasingly popular. In defending this idea, its proponents have been relying on a conception of practical reasoning—which, for reasons that will become apparent, one might call the "deductive conception"—that drastically deviates from the "Bayesian conception," which has been more traditionally advocated in analytic philosophy, and which assigns no special role to knowledge. In this paper, I argue that these philosophers have failed to offer good reasons for thinking that the deductive rather than the Bayesian conception is the right one, and that hence they have been rash to conclude that knowledge and practical reasoning are conceptually related.

John Hawthorne's careful articulation of the above idea in his [2004] book serves as my launching point in the following, but the gist of what I have to say applies to all similar proposals which are premised on the deductive conception of practical reasoning.[1] Section I offers a description of Hawthorne's proposal and of what seem to be its main virtues. In Section II, I challenge the significance of these virtues partly by challenging Hawthorne's assumption of the deductive conception of practical reasoning and his quick dismissal of the Bayesian alternative. In Sections III–V, I then consider, and seek to defuse, possible objections to the Bayesian conception which, if valid, might well constitute reasons for endorsing the deductive one.

[1] See, for instance, Williamson [2000:47], [2005a] and Stanley [2005, Ch. 5]. Weatherson [2005], who criticizes Hawthorne's and Stanley's proposals (among others), seems to agree with his opponents about the proper form of practical reasoning.

I

Early on in his book, Hawthorne considers the proposal that

> it is acceptable to use the premise that p in one's [practical] deliberations if one knows it and . . . unacceptable to use the premise that p in one's practical reasoning if one doesn't know it. (p. 30)[2]

In short, one knows that p if and only if it is acceptable to use p as a premise in one's practical reasoning. Hawthorne thinks that this proposal is on the right track, but that it is unable to account for certain linguistic data concerning our use of the verb "know" and its cognates (more on these data below). To overcome this, he adds to the initial proposal the clause that one's knowing something also depends on the practical environment one happens to be in, yielding the following as a more definitive proposal (see pp. 173–180):

(H) A proposition p qualifies as knowledge in a given practical environment if and only if p is acceptable as a premise for practical reasoning in that environment.

The notion of acceptability, as it occurs in (H), is supposed to be pre-theoretically clear; at least Hawthorne does not elaborate on it. Nor does he attempt to specify the term "practical environment," but the examples he gives to bolster (H) suggest that by it he means no more than a decision-making situation. So, for example, if you are in the process of deciding whether to sell your lottery ticket to someone, then you are in a different practical environment than you would be in if you were in the process of deciding whether to buy a book.

I called (H) a "more definitive proposal" because Hawthorne is quite explicit that, as it stands, he is not fully prepared to commit himself to it. However, he does deem the proposal worthy of further exploration, which is what I intend to do in the following.

In Hawthorne's view, the proposal's main virtues are, first, that it accords well with what "ordinary folks" (p. 30) say about the acceptability (or otherwise) of certain arguments, and second, that it seems to offer a solution to what is sometimes called "Harman's paradox"[3] and thereby seems to deal successfully with the linguistic data adumbrated above.

As to the first alleged virtue, suppose you own a ticket in a fair lottery with 10,000 tickets and a prize of $5,000 for the winner; the ticket cost you a dollar. Now someone offers you a cent for the ticket. You then reason as follows (p. 174):

(i) The ticket is a loser.
So, if I keep the ticket, I will get nothing.
But if I sell it, I will get a cent.
So, I should sell the ticket.

Hawthorne seems right that this is a "manifestly bad piece of reasoning" (*ibid.*). He may also be right that when asked why the reasoning is bad, ordinary folks will answer that it is because you do not know that the first premise is true (p. 30). Clearly, (H) accords perfectly with this verdict.

[2] All page references given in parentheses are to Hawthorne [2004].
[3] At least I called it so in my [2007].

As for Harman's paradox, this concerns the puzzling phenomenon that while we are typically disinclined to attribute knowledge to ourselves or others of the losing of a lottery ticket previous to the drawing, this does not seem to bar us from attributing to ourselves or others knowledge of certain consequences of the ticket's losing previous to the drawing.[4] For instance, we are typically reluctant to say that we know of a lottery ticket we own that it is a loser, but far less, or not at all, reluctant to say such things as that we know we will not have enough money to go on an African safari in the near future. Yet, that we will not have enough money for a safari obviously implies that our ticket will lose (we may suppose). Hence, given any plausible closure principle for knowledge, it would seem that in such cases we are willing to say inconsistent things about what we know.[5] Philosophers have sought for a more elegant response to this problem than the simple concession that people are often in inconsistent states of mind, or something similar.

According to Hawthorne, his proposal does quite well in this respect too. As he explains the solution:

> One is offered a lottery ticket. At that point one doesn't know that one will be unable to afford a trip to Mauritius. One buys the ticket, forgets about the lottery, and goes to the bookstore. One chooses the "local destination guide" over the much more expensive "worldwide guide," reasoning from the premise "I won't be able to afford to go to an exotic destination." At that point you do know that you will be unable to afford a trip to Mauritius. Someone comes and offers you a penny for the lottery ticket. At that point you don't know. And so on. (p. 176 f)

So the thought is that, when faced with the choice between buying the local destination guide or buying the much more expensive worldwide guide, the following reasoning would be all right (p. 177):

(ii) I won't be able to afford a trip to an exotic destination.
Thus, I won't have any use for the worldwide guide.
Thus, I should buy the local destination guide.

From (H) it then follows that, in the present practical environment, the reasoner does know that she will not have the money to go on an African safari, for instance, even though she has a lottery ticket in her pocket that *might* turn out to be the winner, and even though it would be wrong for her to reason

> My ticket is a loser.
> Thus, I won't be able to afford to go to an exotic destination.
> . . .

and then to go on as in argument (ii). If this is correct, then Hawthorne's proposal allows for the possibility that one knows something which entails that one's ticket is a loser without knowing that one's ticket is a loser, which seems all that is required to solve Harman's paradox.

[4] Harman [1986:71] was the first to draw attention to this type of phenomenon—hence the name of the paradox.

[5] Vogel [1990] shows that Harman's paradox generalizes effortlessly to cases not involving lotteries; see Douven [2007, Sect. 2] for a precise characterization of these cases. Everything to be said about Harman's paradox below is to be understood as applying to these other cases as well.

II

How much support do the above alleged virtues give to Hawthorne's proposal? I will not say much about the second one here. In previous work I have argued that Harman's paradox can be dissolved making use of nothing but resources that are more or less generally accepted by those working in the area of pragmatics (cf. Douven [2007]). As a result, in my view it cannot be adduced to warrant any revision of epistemology; in particular, it does not warrant adopting (H).

Let us therefore turn to the other claimed virtue of Hawthorne's proposal: the alleged fact that (H) does justice to folks' intuitions about what is wrong with (i). First off, it is not obvious to me that what ordinary folks would say is that the reasoning involved in that argument is wrong because you do not know the first premise. A priori, I would expect to hear a variety of responses, including that you fail to have justification for the premise and that you do not really believe it previous to the drawing. But let us suppose that Hawthorne did an opinion poll among folks about their thoughts concerning (i) or similar arguments, and that the predominant or even universal response was that the reasoning is wrong because of the lack of knowledge concerning the first premise.[6] The question still remains how much support for (H) one can derive from this.

It is not to depreciate ordinary folks to say that, by itself, the supposed fact is not very telling. I submit that ordinary folks do not think the best explanation of why water spins when it goes down a drain is in terms of the Coriolis force. How could they, given that the main concept required even to conceive of this explanation is typically possessed by someone only if she has a relatively solid background in physics? Similarly, the evaluation of arguments, especially informal ones in natural language, and the classification of the various ways in which such arguments can be wrong, is considered to be a highly non-trivial field of study; it is the specialty of logicians and argumentation theorists. It would thus be unsurprising if the best explanation of what is wrong with (i) of which ordinary folks can think is that one of the argument's premises is unknown, but that this is just because they lack the conceptual resources to conceive of a better explanation, which *is* available (thanks to the specialists). For example, we could not very well expect ordinary folks to note that, as it stands, argument (i) is enthymematic and thus not even formally valid, lacking premises to the effect that you prefer a cent to nothing and, respectively, that you should choose in accordance with your preferences. But this is simply because ordinary folks are not generally familiar with the concept of (formal) validity and the various ways in which an argument may be invalid. My point is not, of course, that the real explanation of what is wrong with (i) is that it is formally invalid; even if you add the aforementioned premises, the argument will still seem wrong. The example is merely meant to buttress the point that ordinary folks are not in general the people best qualified to analyze the wrongness of wrong arguments.

[6] Though even then there would be the problem that, as Kyburg and Teng [2001:135 f] observe, "In everyday usage . . . we do not make a hard distinction between 'knowledge' and 'belief.' When we say we know something, sometimes we just mean that we think it is true, or that we believe it to be true." Indeed, anyone who has ever taught an introductory course in epistemology will know that some freshmen are fully prepared to assert such monstrosities as that long ago people *knew* that the earth is flat (" . . . at least they knew it provisionally"). Such facts give reason to think that many non-philosophers are unable to make the right conceptual distinctions (even implicitly) between "knowledge" and "belief" or "justified belief." This alone should already keep us from attributing much weight to the kind of linguistic data Hawthorne musters in support of his position.

This is particularly relevant to the present topic because many philosophers will say that the best explanation of why (i) is wrong *is* in terms which ordinary folks may be supposed to be unacquainted with. As will be clear from the above, Hawthorne's proposal and its defense are premised on the assumption that practical reasoning falls under the heading of deductive reasoning, the distinctive feature being that the conclusion we hope to get out of it concerns something that is open to us to do. There is at least something strange about the fact that this assumption has remained uncontested so far. For were we to ask our colleagues working in the areas of moral or political philosophy, or political scientists, what the best theory of practical deliberation is, then the great majority of them would undoubtedly answer that it is (some version of) Bayesian decision theory (BDT), a theory that, in the words of David Lewis [1981:5], is "simple, elegant, powerful, and conceptually economical."[7] No doubt many will want to add to this that the theory is the heart of microeconomics, and so also enjoys some empirical support. Most readers will have heard of the theory and presumably even know it in some detail. Let me nevertheless briefly recount its basics.

The central tenet, succinctly put, is that the rational agent maximizes expected utility, where the expected utility of an act is defined to be the probability-weighted average of the utilities of that act under the various relevant circumstances. More precisely, given a finite or infinite set $\{H_i\}$ of hypotheses which partition logical space into the relevant circumstances, the expected utility, $\mathrm{EU}(x)$, of choosing act x is defined as follows:

$$\mathrm{EU}(x) \;=\; \sum_i \Pr(H_i) \times u(x, H_i),$$

where Pr is a probability function representing the agent's degrees of belief, and u is the agent's utility function. The value $\Pr(H_i)$ measures the degree to which the agent believes H_i to be the true hypothesis, and $u(x, H_i)$ measures the degree to which she desires the consequences produced by choosing x under the circumstances described by H_i.[8]

For our concerns, the crucial thing to observe about this theory is that its basic elements are probabilities and utilities, and that the key notion of evaluation is that of rationality. In particular, knowledge has no role in the theory![9] This means that

[7] Lewis himself in effect advocates a "causal" version of BDT (for reasons having to do with how standard BDT handles so-called Newcomb cases; see his [1981]). For present purposes, the difference between his version of the theory and standard BDT is immaterial.

[8] For more detailed expositions of the theory see, for instance, Luce and Raiffa [1957], Jeffrey [1983], Maher [1993], and Kaplan [1996].

[9] It is sometimes said that all probabilities are probabilities conditional on the background knowledge. For Bayesians, however, one's background knowledge is the totality of propositions to which one assigns probability 1; as far as Bayesianism goes, none of these need to be known in the strict sense of the word. Recently, Williamson [2000, Ch. 10] has proposed a non-Bayesian decision theory on which all probabilities *are* probabilities conditional on one's knowledge strictly understood. It seems to me that some of the same considerations that were brought to bear in Douven [2006] against the so-called knowledge account of assertion apply, *mutatis mutandis*, to Williamson's decision theory. This seems particularly true for the claim, argued for in the just-cited paper, that the knowledge account of assertion seems unable to deal satisfactorily with the fact that we tend to judge a person who asserts some falsehood to be irreproachable if she has excellent reasons for believing that what she asserts is true. The parallel observation pertinent to Williamson's decision theory is that if the input for a person's expected utility calculation was based on false assumptions of which, however, she was fully convinced they were true, then pre-theoretically her decision could still be rational, even if she would have decided differently had she had correct information; on Williamson's theory, any such decision is irrational. Hawthorne [2005, Sect. 3] is skeptical about the tenability of Williamson's decision theory for somewhat related reasons.

if the advocates of BDT are right that theirs is the best theory of practical reasoning around, knowledge does not play a role, or at least ought to play no role, in such reasoning, contrary to what Hawthorne and others are presupposing. From a Bayesian perspective, then, what is wrong with (i) has nothing to do with the lack of knowledge concerning a premise. For a Bayesian, the *conclusion* is wrong because selling the ticket has a lower expected utility ($\$0.01$) than keeping it ($\$0.50$),[10] and the *argument* is wrong because it deploys the wrong kind of reasoning for the purposes at hand: a decision about whether or not to sell a lottery ticket (or any other decision, for that matter) is not to be taken on the basis of a deductive argument like (i), but on the basis of expected utility calculations.[11]

But *are* the advocates of BDT right? Some of them think of the theory as being barely more than a truism, not standing in need of any justification. Once you have admitted that beliefs and desires come in degrees—and casual introspection should suffice to convince you of that—how could you deny that it is rational to maximize expected utility? Others have wanted to offer more than an appeal to intuition and have devised scenarios in which people are reduced to beggary by violating BDT in the choices they make. In spite of this, some philosophers have remained unconvinced that BDT really is our best theory of practical reasoning. In particular, some have complained that the theory sets the standards of rationality so high that it is impossible for us ordinary mortals to meet them.[12] Just consider (they say) that, for instance, according to Bayesians we should be logically omniscient in order to be rational.[13] This is also Hawthorne's complaint about BDT[14] and the reason why he thinks that "there is room for a normative framework more directly tied to human reasoners" (p. 136), by which of course he means the deductive sort of practical reasoning exhibited by arguments (i) and (ii).

However, in response to this kind of critique, several authors have argued that Bayesians are not really committed to the idealizing assumption of unlimited cognitive capacities. The responses fall into two broad groups. First, there have been attempts to develop so-called concretized or de-idealized variants of BDT. Here the

(Incidentally, in his [2005b] response to Hawthorne, Williamson claims that we cannot always expect the verdicts standard BDT issues to match common sense either. But his reasons for this claim have largely to do with the idealizations inherent in that theory, and as we shall see further on in this section, in light of relatively recent work on BDT that seems no longer a valid criticism, at least not without further argumentation.)

It further merits remark that to say that knowledge has no role in BDT is to say that it has no *essential* role in the theory. What one knows at the time one determines one's prior degrees of belief will constrain one's degrees-of-belief function, of course (cf. de Finetti [1974:25]). But in this role knowledge is indistinguishable from subjective certainty.

[10] Note that we need not assume here that utilities are linear with monetary values, just that a greater monetary value has greater utility.

[11] The latter point, about the reasoning, is the more crucial one. As a referee noted, one can easily conjure up an example where the expected value of the ticket is less than a penny, and the folk would still deem (i) a bad piece of reasoning. But so would the Bayesian! While she would in that case agree with (i)'s conclusion, she would still object to the reasoning by which this conclusion is reached; that would be none the better for leading to a correct conclusion.

[12] See, for instance, Harman [1986].

[13] Or at least we should assign probability 1 to all logical truths. Strictly speaking, this does not require logical omniscience on our part: one may assign probability 1 to a logical truth without realizing that it *is* a logical truth. But of course it may be said that the requirement to assign probability 1 to any logical truth (whether or not one does so because one realizes that it is a logical truth) is already unrealistically demanding.

[14] At least in his [2004] book; see Section IV below.

work carried out by Paul Weirich in the past decade or so deserves special mention. In this work, which has culminated in his [2004], he develops a decision theory which is still recognizably Bayesian but which is responsive to various human cognitive limitations, such as, most notably, that we lack perfect computational capacity.[15] Second, authors have proposed alternative interpretations of standard BDT on which people are only liable to charges of irrationality if they have violated BDT in an inexcusable manner, where prominent among the excusable violations are those that arise from our being logically non-omniscient; see for instance Mark Kaplan's [1996] and [2002] for an example of this approach.[16] Someone may be able to think of another way still to respond to the idealization charge. But it already seems clear that in view of the currently available work it is no longer possible simply to claim that the Bayesian framework fails to offer an account of practical reasoning for real people merely on the grounds that *standard* BDT can hold only for ideal people, and then only under *some* interpretations of that theory.[17]

It cannot be stressed enough that the foregoing is not meant as a defense of BDT or any of its variants. Nor, of course, is such a defense needed here: I am not claiming that BDT is the right account of practical reasoning; I am not even claiming that the deductive conception of practical reasoning is wrong. Rather, the point of the foregoing is to make manifest that the burden is on the other party: in view of BDT's empirical and theoretical virtues, and in view of its popularity in large parts of the analytic community, the theory cannot simply be dismissed on the basis of some quick considerations; it seems incumbent on Hawthorne and those who share his view on knowledge to give good reasons for thinking that the conception of practical reasoning which underlies their claim about the relation between knowledge and practical reasoning is correct, and that BDT is wrong.[18] And to date such reasons are still glar-

[15] For another—though less ambitious—attempt in this vein, see Douven [2002]. Pollock [2006] also offers a decision theory for non-ideal agents. While he takes standard BDT as his starting point, his theory in the end departs rather radically from BDT. Nevertheless, it remains a probability-based decision theory in which knowledge plays no essential role. Incidentally, the alternatives to BDT mentioned here all seem to accommodate, each in its own way, the specific intuitions that underlay the development of Simon's [1979], [1983] satisficing approach to rationality, which to date may still be the most famous non-Bayesian response to the concerns raised by the idealizations under which standard BDT appears to operate.

[16] See Armendt [1993] and Christensen [2004, Ch. 6] for responses similar to Kaplan's. Christensen [2004:145 f] also aptly notes that idealizing assumptions are commonplace in science. So even if Bayesians were committed to the view that anyone falling short of strictly obeying the norms of standard BDT qualifies as being irrational, then this would not obviously invalidate their position. To be sure, it may be that reliance on idealizing assumptions is somehow more problematic for BDT than for, say, theories in the natural sciences, or that BDT relies on idealizing assumptions that are of a particularly pernicious nature. I cannot quite exclude that either (or both) of these are the case. But of course the burden is on Hawthorne and those who hold similar views on knowledge to show that, even if reliance on idealizing assumptions is not problematic in general, it *is* in the case of BDT.

[17] Williamson [2000:63 ff] argues that sometimes knowledge is essential in the explanation of action. If that is right, then Bayesian explanations of actions will not always do of course. However, as Kaplan [2003:108 f] shows, the kind of actions that according to Williamson require an essential appeal to knowledge can be fairly easily explained along Bayesian lines, too; see Jackson [2002] for a somewhat similar critique of Williamson.

[18] An anonymous referee remarked that

> I need some milk for coffee.
> Thus, I will go to the store.

seems to be an utterly normal kind of practical reasoning and that if according to Bayesians this is bad reasoning, then that constitutes grounds for doubting the Bayesian theory. I agree. But note that Bayesians need not consider the above as bad reasoning. It is perfectly consistent with Bayesianism to

ingly missing from the literature. Nevertheless, in the following I want to consider three reasons one might have for claiming that the deductive account of practical reasoning is correct indeed, or at any rate that it is preferable to the rival Bayesian account. I will argue that all three reasons are unconvincing.

III

Even if BDT or some version thereof offers a decision theory that is practicable for ordinary humans, the sort of practical reasoning that Hawthorne and others assume in their accounts of knowledge might still be a *more* practicable one. For instance, people might have greater facility in reasoning deductively from a set of premises than in doing the kind of mental arithmetic required for expected utility calculations. If so, that would make it reasonable to think that we do, and perhaps even should, reason practically in the way Hawthorne assumes. However, in this section I want to argue that, for all we know, the mental arithmetic BDT requires is indispensable anyhow and that the deductive reasoning involved in arguments such as (ii) has, in decision making, at best a decorative function.

Consider argument (ii) again, which concludes that the reasoner should buy the local destination guide instead of the worldwide guide. According to Hawthorne, this argument is intuitively acceptable. But is it? Hawthorne provides very little by way of background information about the case. In particular, it is perfectly consistent with the information he does provide to suppose that the worldwide guide is of outstanding quality and that you have been informed that it is the last copy anywhere to be found (and that this is not so for the local destination guide). But if that supposition should be correct, then it would seem that, even though the worldwide guide is more expensive than the local destination guide, and even though the chance that you will have enough money to travel to an exotic destination in the not-too-distant future is remote, buying the worldwide guide might still be the best thing to do. Perhaps you expect to be in a vastly better financial situation in a couple of years or so and are fully determined to go on an African safari as soon as you have the money for it; you realize that then it would be terrific to have not just any old worldwide guide, but *this* one. I strongly suspect that if we assume that this possibility obtains—and that it does is still consistent with our information about the case—then philosophers and ordinary folks alike would be reluctant to grant that (ii) embodies acceptable reasoning.

But it may be that Hawthorne is trusting that we know which premises are supposed to be added to it.[19] Perhaps from the fact that there is no mention of the

hold that, especially when we face repetitive decisions, it may sometimes be better, in order to reduce decisional burdens, to adopt a policy as to how to act in situations of a given type than to calculate expected utilities each time one finds oneself in such a situation; adopting such a policy may be the best option at a second-order level (see, e.g., Sunstein and Ullmann-Margalit [1999:8 ff]). In the case at hand, given that I will be out of milk frequently, adopting something like the policy "Whenever you are out of milk, go to the store across the street" may well be a better second-order option than "Whenever you are out of milk, consider, each time anew, the various (first-order) options you have for buying milk, calculate, each time anew, the expected utilities of these, and choose the one that has highest expected utility."

[19] Or which we are to presuppose in the evaluation of (ii). For my purposes, the premises which in the following I shall suggest Hawthorne must want us to add to the argument might as well be ones he wants us to presuppose when we evaluate it. I am thus not attributing to him a view of practical reasoning on which, in making a decision, a reasoner must consciously in his mind go through all steps of a deductively valid argument.

possibility of your travelling to an exotic destination in one or two years or so we are supposed to conclude that this possibility does not obtain, and thus we are supposed to add to the argument the premise that you will not only in the near future be unable to afford a trip to an exotic destination but that you will never be able to afford such a trip. That is to say, Hawthorne may well be assuming that it will be obvious to the reader that a more accurate statement of the argument as he intends it is this:

(iii) I won't be able to afford a trip to an exotic destination, *ever*.
Thus, I won't have any use for the worldwide guide, *ever*.
Thus, I should buy the local destination guide.

Very well. But now consider that even if you will never have a use for the worldwide guide, maybe your favorite niece is planning an African safari, and you would love to make her happy by giving her the guide as a present. If it is assumed that this possibility obtains, as again we can consistently do, then no doubt few will want to grant that (iii) (let alone (ii)) is acceptable. Naturally, we can add a further premise to the argument:

(iv) I won't be able to afford a trip to an exotic destination, ever.
Thus, I won't have any use for the worldwide guide, ever.
No one else I know and like has any use for the worldwide guide (or will ever have a use for it).
Thus, I should buy the local destination guide.

We are still not quite done, however, for even though neither you nor anyone you know and like will ever have a use for the worldwide guide, you might be able to resell the copy with a large profit to a collector of high-quality, rare worldwide guides. I again suppose that few would agree with Hawthorne that (ii) is acceptable if it is assumed that the said possibility obtains. Thus add another premise:

(v) I won't be able to afford a trip to an exotic destination, ever.
Thus, I won't have any use for the worldwide guide, ever.
No one else I know and like has any use for the worldwide guide.
I couldn't resell the worldwide guide with a profit.
Thus, I should buy the local destination guide.

The problem is that we could go on in this way, as there is an in principle endless number of possibilities consistent with the information we have about the case such that, were any of these possibilities assumed to obtain, no one would find it pre-theoretically right if you were to buy the local destination guide instead of the world-wide guide. In fact, I do not see how this could end unless we are able to arrive at something like the following argument:

(vi) I won't be able to afford a trip to an exotic destination.
Thus, I won't have any use for the worldwide guide.
. . .
Hence, buying the local destination guide is the best option.
Hence, I should buy the local destination guide.

Suppose the full argument is of this form. Then there are three possibilities to consider.

First, we will have arrived at the intermediate conclusion that buying the local destination guide is the best option by spelling out, in the argument, the relevant expected utility calculations. So in particular, the argument will contain premises of the form u(buy worldwide guide, H_i) = x_i, u(buy local destination guide, H_i) = y_i, and $\Pr(H_i) = z_i$, for all relevant hypotheses H_i, and will contain as intermediate conclusions ones of the form EU(buy worldwide guide) = x and EU(buy local destination guide) = y.[20] In this case, the sort of practical reasoning Hawthorne's proposal assumes cannot be claimed to be less complicated than the sort of practical reasoning BDT requires.

Second, Hawthorne knows of some way of determining which is the best among a number of options that does not require our doing expected utility calculations and that is simpler than doing the one which proceeds by executing such calculations. If so, then that would be an important discovery, and he should not keep it to himself. (Implication: since we don't know of it, there hasn't yet been discovered such an alternative way of determining best options.)[21]

Third, "best option" in the intermediate conclusion of (vi) does not necessarily have to be understood in such a way that the best option (in the intended sense) is also the best option in the sense of BDT. So the argument needs neither to contain a spelled-out version of the relevant expected utility calculations nor to suppose the existence of a new method for determining the best option in the sense of BDT. Perhaps the argument just has as a premise something like "If I won't ever have any use for the worldwide guide, nor will my niece ever have any use for it, nor . . . , then buying the local destination guide is the best option," where the agent can be assumed to know this premise without doing or having done any expected utility calculations and without having at hand any alternative method for arriving at the same conclusion as those calculations would lead to. However, while BDT has been criticized for its idealizing assumptions (as we saw), no one has ever even suggested that it might get things wrong in the sense of indicating some pre-theoretically suboptimal option as being the best.[22] Hawthorne would thus have to say a lot more about BDT than he now does, if he intends "best option" to be understood in a way that leaves open the possibility of disagreement with BDT.

The foregoing seems to generalize swiftly; similar points raised in connection with arguments (ii) to (v) could be raised in connection with any "practical syllogism." As a result, it seems that Hawthorne cannot claim that what according to him is the

[20] Alternatively, as indicated in the previous note, these premises and intermediate conclusions must be among the presuppositions of the argument (or the situation could be "mixed": it could be that some of them are among the presuppositions while others occur explicitly in the argument which the reasoner goes through in his head). That does not alter my point a bit, as the calculations have to be carried out either way.

[21] In the special case in which one option dominates the others—meaning that, first, it is at least as desirable as any other in all relevant circumstances and, second, for each other option there exist circumstances in which the former is strictly more desirable—it is not necessary to go through expected utility calculations in order to determine the best option. But of course that also holds on BDT.

[22] At least no one has ever suggested that BDT gets things systematically wrong in this way. Lewis thinks standard BDT may get things wrong in Newcomb cases; see note 7. The case we considered in the text is not of this kind. And as was said in note 9, Williamson thinks that, precisely because of the idealizations involved in the theory, BDT will sometimes deviate from our pre-theoretic verdict in a given decision-making situation. But, for all I am supposing, the term "best option," as it occurs in argument (vi), may well be understood as being defined by some de-idealized version of BDT.

appropriate form of practical reasoning is simpler than the form of reasoning BDT counsels.

IV

In a recent paper with Jason Stanley (Hawthorne and Stanley [2007]), Hawthorne seems to be no longer worried about the idealizations inherent in standard BDT. In fact, Hawthorne and Stanley there explicitly grant that BDT, at least on a certain reading of it, may be at least part of the story about practical rationality. The specific reading concerns the notion of probability: according to them, the probabilities that go into an expected utility calculation ought to be epistemic probabilities, that is, probabilities conditional on one's knowledge. But even then BDT cannot be the whole story about practical rationality. In particular they claim that, on its own, the theory is inadequate for being unable "to distinguish between the existence of a reason for acting and appreciating that reason in such a way as to make it *your* reason for action . . . " (p. 12 of manuscript). This is because epistemic probabilities are not luminous, so that you may not know what your epistemic probabilities are. Whereas, relative to your epistemic probabilities, a certain option may have highest expected utility for you, which may be *a* reason for you for choosing it, you may fail to know that it has highest expected utility relative to your epistemic probabilities so that it cannot be *your* reason for choosing it. To overcome this problem, we must connect action to knowledge: "As we are thinking about things, it is knowledge that constitutes the relevant sort of appreciation that converts the mere existence of a reason into a personal reason" (*ibid.*).

The argument is problematic for at least two reasons. First, Hawthorne and Stanley's paper contains no argument to the effect that epistemic probability is indeed the appropriate kind of probability in the context of decision making (nor a reference to such an argument to be found elsewhere[23]). This is an unfortunate omission, as the assumption of epistemic probabilities seems so crucial for what they see as a shortcoming of BDT on its own. For, granted, if, as Williamson [2000, Ch. 4] has famously argued, and Hawthorne and Stanley accept, knowledge is anti-luminous, meaning that one need not always be in the position to know what one's knowledge is,[24] then, given that epistemic probabilities are probabilities conditional on one's knowledge, one need not always be in the position to know what one's epistemic probabilities are. But since it seems much harder to argue that subjective probabilities are not luminous,[25] the question naturally arises what, according to Hawthorne and Stanley, is wrong with BDT on its *standard* (subjectivist) interpretation, that is, without the additional requirement of epistemic probabilities. Why couldn't *that* be the whole story about practical rationality?

[23] They may be tacitly relying on Williamson's [2000] defense of epistemic probabilities, but I find that unconvincing; see note 9.

[24] But see Mendola [2007] for what seems to be a serious problem for Williamson's argument.

[25] This is not contradicted by Williamson's [2008] probabilistic anti-luminosity argument, which purports to show that "The probability that condition C obtains is 1 whenever C obtains" holds only for trivial conditions C and that hence "probability 1" is anti-luminous in the same sense in which (Williamson thinks) knowledge is. As Williamson admits, his argument does not generalize to "probability greater than x," let alone to "probability x." Even more relevantly, he explicitly notes that the argument does not hold if "probability 1" is interpreted as "subjective probability 1" (the intended interpretation is that of epistemic probability 1).

And second, how can knowledge constitute "the relevant sort of appreciation that converts the mere existence of a reason into a personal reason" if knowledge is anti-luminous? According to the Reason–Knowledge Principle Hawthorne and Stanley advocate, "it is appropriate to treat the proposition that p as a reason for acting iff you know that p," where p is supposed to be relevant to one's action (p. 9 of manuscript). So, if you know that p, then, on this principle, it is appropriate to treat p as a reason for acting. We may grant that this gives you *a* reason for acting. Nevertheless, if you do not know that you know that p, which is left open by the supposed anti-luminosity of knowledge, then how can you appreciate p in such a way as to make it *your* reason for acting? Or, if you *can*, why could highest-expected-utility-relative-to-your-epistemic-probabilities not likewise be *your* reason for acting? These are not meant as rhetorical questions. They are in effect hard to answer, as Hawthorne and Stanley make no attempt to state precisely what it takes to appreciate something in such a way as to make it *your* reason for acting. But at present I can see no natural interpretation of that phrase on which they do *not* shoot themselves in the foot by the above criticism of BDT.

V

A third reason for thinking that the deductive conception of practical reasoning is correct after all might be this: "If BDT (in some version, or under some interpretation) were the proper account of practical reasoning, and thus if knowledge did not matter to practical reasoning, then that would seem to make it puzzling why so many intuit a connection between knowledge and practical reasoning. The deductive conception of practical reasoning, coupled with Hawthorne's thesis (H), has the clear advantage of explaining that intuition." My reply is that the intuition can be explained in a way which is compatible with the assumption that BDT gives the correct account of practical reasoning. The explanation is in two parts.

The first begins with the observation that, while in traditional epistemology our epistemic goal is assumed to be believing truths and only truths, or some such,[26] in Bayesian epistemology it is to have accurate degrees of belief. "Accurate," in this context, has been spelled out in various slightly different ways.[27] Whatever the differences between those, on all of them it holds that having a full true belief (assigning probability 1 to the true hypothesis) counts as being maximally accurate, and being more accurate than having a partial true belief (assigning a positive probability less than 1 to the true hypothesis), which in turn counts as being more accurate than having a full false belief (assigning probability 0 to the true hypothesis), which on all conceptions of accuracy counts as being maximally inaccurate.[28]

Now let us ask what is so great about having accurate degrees of belief and, in particular, having full true beliefs. There is a simple answer to this question deriving

[26] See, e.g., Rescher [1973:21], Lehrer [1974:202], BonJour [1985:8], and Foley [1992:183].

[27] The operational definition is in terms of a so-called scoring rule and says that accurate degrees of belief are ones which receive maximal bonus points (or a minimal penalty, depending on the exact scoring rule that is being assumed). See, for instance, Rosenkrantz [1992] and Joyce [1999].

[28] If, as Kemeny [1955] and Jeffreys [1961], among others, have argued, rationality requires that our degrees of belief be strictly coherent, meaning that probability 1 must be reserved for logical and mathematical truths, then, of course, we could have maximally accurate degrees of belief only by being irrational. But few (if any) Bayesian epistemologists nowadays think that the requirement of strict coherence is tenable, let alone that it is part of our conception of rationality; see Howson [2000] and Hájek [2003] for some particularly compelling objections against it.

directly from BDT. Suppose your set of options is $\{a, b\}$ and suppose a does not dominate b (see note 21). Let the set $\{H_i\}$ of mutually exclusive and jointly exhaustive hypotheses describe the relevant circumstances. Then it may happen that, first, $\mathrm{EU}(a) > \mathrm{EU}(b)$, and second, $u(a, H_k) < u(b, H_k)$, where $H_k \in \{H_i\}$ is the true hypothesis. Suppose this does happen. Then, also supposing that you are an expected utility maximizer, you will choose the option whose consequences in actuality you like least. Had your degrees of belief been maximally accurate, so that $\Pr(H_k) = 1$ and hence $\Pr(H_j) = 0$ for all $j \neq k$, that would not have happened. For then you would have had, for $x \in \{a, b\}$,

$$\begin{aligned}
\mathrm{EU}(x) &= \sum_i \Pr(H_i) \times u(x, H_i) \\
&= \Pr(H_k) \times u(x, H_k) \; + \; \sum_{j \neq k} \Pr(H_j) \times u(x, H_j) \\
&= 1 \times u(x, H_k) \; + \; \sum_{j \neq k} 0 \times u(x, H_j) \\
&= u(x, H_k).
\end{aligned}$$

And so, given that, by assumption, $u(a, H_k) < u(b, H_k)$, you would have had $\mathrm{EU}(a) < \mathrm{EU}(b)$, and thus have chosen option b. The generalization of this to decision problems with more than two options is straightforward, showing that, given maximally accurate degrees of belief, expected utilities simply *are* "utilities in actuality."

So the conclusion of the first part of the envisaged error-theoretic explanation is that full true belief is valuable for practical reasoning. It may be noted that this already implies that knowledge is valuable for practical reasoning in a derivative way—assuming that knowledge entails full true belief[29]—which might be enough to explain why many think knowledge is valuable for practical reasoning.[30] Nonetheless, I suspect that those who intuit that knowledge is valuable for practical reasoning will want to insist that this value is of a more intrinsic nature. The second part explains how that might have come to be.

Central to this part is the claim, argued for by Jonathan Adler in his [2002] (cf. also his [2006]), that from a first person perspective the things that we fully believe must appear to constitute our knowledge; we cannot but regard them as being known by us. To believe something fully, yet also to think that one may not know it (for instance,

[29] And hence assuming that knowledge entails probability 1, as, among others, Moore [1962], Unger [1975:83–87], and Williamson [2000:251] do. In fairness, it should be mentioned that the assumption is not uncontested; see, e.g., DeRose [1996:568, 577 f]. I must confess that I myself do not have very clear intuitions about the relationship between knowledge and probability 1. Let me at least note, however, that, for reasons given in my [2007], I do not believe Harman-paradoxical type of phenomena—like that we are willing to ascribe knowledge to ourselves of, for instance, George W. Bush's being the president of the United States while acknowledging that there is a small probability that he has just died from a heart attack—to provide convincing grounds against holding the said assumption. (Thanks to an anonymous referee for pressing me on this.)

[30] It may further be noted that, in view of the first part of the error-theoretic explanation, the following necessary condition on knowledge, proposed by Fantl and McGrath [2002:76], is quite obviously correct from a Bayesian perspective: "S knows that p only if, for any states of affair A and B, if S is rational to prefer A to B, given p, then S is rational to prefer A to B," where they understand "S is rational to prefer A to B, given p" as meaning that S is rational to prefer $A \,\&\, p$ to $B \,\&\, p$. (The strengthening of the foregoing condition to a necessary *and* sufficient one, which Hawthorne and Stanley [2007] attribute to Fantl and McGrath, is of course *not* correct from a Bayesian perspective.) Fantl and McGrath use the proposed condition on knowledge to defend a pragmatic account of justification. For a criticism of this account, see Weatherson [2005].

because one thinks one's justification for it is somehow defective), is incoherent, argues Adler. Of course, in order for our error-theoretic explanation to go through, his argument need not even be correct in the sense that we *must*, by conceptual necessity, regard our full beliefs as being known; it suffices if people *do* regard their full beliefs as being known.

In sum, the explanation is that, first, full true belief is valuable for practical reasoning, and second, we regard our full beliefs as being known by us; jointly these facts make it understandable how so many may have come to the conviction that knowledge is intrinsically valuable for practical reasoning—a conviction that, I hope to have shown, is currently still unwarranted.[31]

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