Knowledge and decision

Introduction to the *Synthese* topical collection

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1 Knowledge and decision

Until recently, knowledge played at best a minor role in decision theory: according to the orthodox decision-theoretic picture, a subject’s epistemic perspective is fully captured by her credence function.¹ Recently, however, various authors have pointed out that this picture of decision-making does not sit well with the fact that there is a pattern of assessment of our practical reasoning and action in terms of knowledge.²

To illustrate this pattern, consider the following two cases:

1. Suppose that Naomi, who has a severe peanut allergy, orders a dish at a Pakistani restaurant. She believes on a hunch that the dish contains no nuts, without checking the menu or asking the waiter to confirm this. Her friend can now criticize her for ordering the dish by pointing out that Naomi does not know that it does not contain peanuts.

2. Suppose that Derek is a defendant, charged with a crime, who decides to take the plea deal offered by the prosecutor. If asked why he avoided going to trial, Derek could justify his decision by saying that it was his best choice according to his reasoning: he knows that the evidence against him is overwhelming and that the plea deal will minimize the time he spends in jail.

Based on cases like these, several authors have argued that what explains the importance of knowledge for the assessment of our practical reasoning and action is that

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¹ This picture is commonly attributed to Savage (1954) and Jeffrey (1983). For other classical works on decision theory, see von Neumann and Morgenstern (1944), and Luce and Raiffa (1957).

² See in particular Hawthorne (2004), Stanley (2005), Hawthorne and Stanley (2008), Williamson (2005), Fantl and McGrath (2002; 2007; 2009), Smithies (2012), Mehta (2016), and Mueller (2021).
knowledge plays a normative role in practical matters.\footnote{Experimental philosophers have generated a significant amount of data showing that the intuitions reflected by such examples about the role of knowledge in the assessment of reasoning and action are fairly robust. See Feltz and Zarpentine (2010), Buckwalter (2010), Sripada and Stanley (2012), Pinillos (2012), Pinillos and Simpson (2014), Buckwalter and Schaffer (2015), Turri (2015), Turri et al. (2016), Turri and Buckwalter (2017), Turri et al. (2017), and Dinges and Zakkou (2020).} This topical collection is devoted to investigating what specific normative role—if any—that is.

According to a popular view, knowledge plays a role in a norm that governs the epistemic input to decision-making. This knowledge norm is thought to set the epistemic standard for either one’s premises in one’s practical reasoning or one’s reasons for action.\footnote{For the view that the knowledge norm sets the epistemic standard for one’s premises in practical reasoning see Hawthorne (2004), Williamson (2005), Stanley (2005), Simion (2021), Schulz (2021), Mueller (2021). For the view that it sets the standard for one’s reason for action see Hawthorne and Stanley (2008), Fantl and McGrath (2009), Smithies (2012), Mehta (2016). Relatedly, Weatherson (2012) advocates the view that knowledge determines what possibilities can be left out of the decision table.} The explanatory approach behind knowledge norm proposals is that competent speakers are sensitive to the proposed norms in their practice of assessing practical reasoning and action, resulting in the observed pattern (see Turri, 2015, p. 4011). Since there is an ongoing debate about whether there is any relevant difference between reasons for action and premises for one’s practical reasoning, a fairly ecumenical way to state the idea behind knowledge norm proposals is in terms of what propositions we can appropriately rely on in decision-making.\footnote{We agree with Fantl and McGrath (2019, p. 259) and Fritz (2020, p. 3) that the notion of reliance is the most ecumenical for stating the general idea behind the various knowledge norms. Additionally, it is worth pointing out that not everybody defends both the necessity and sufficiency directions of this norm. For discussion of the relation between reasons for action and premises of practical reasoning, see Dancy (2004), Hieronymi (2011), Setiya (2013), Silverstein (2016), Way (2017), Asarnow (2017), Schmidt (2021).}

**Knowledge norm for practical reliance (KPR).** It is appropriate to rely on \( p \) in one’s decision-making iff one knows that \( p \).

What notion of appropriateness is at play in KPR? This is a matter of debate. Many think that knowledge norms like KPR are norms of practical rationality. According to others, we should think of knowledge norms like KPR as epistemic norms.\footnote{For the practical rationality view see Fantl and McGrath (2002; 2007), Hawthorne (2004), Crisp (2005), Stanley (2005), Schiffer (2007), Hawthorne and Stanley (2008), Douven (2008), Gerken (2011), Weisberg (2013), Ross and Schroeder (2014), Locke (2015), Moss (2018) and Fritz (2020) for discussion. For the epistemic view see e.g. Littlejohn (2008), Lackey (2010), Smithies (2012). For knowledge-based proposal about legal reasoning, see Blome-Tillmann (2017), Littlejohn (2020).} It is important to distinguish two readings of this latter claim (see Gao, 2017, p. 1904). On a first, weak reading, one might think that KPR is an epistemic norm because it asks of subjects that they meet a condition with an epistemic content: it is appropriate to rely on a proposition \( p \) iff one knows that \( p \).\footnote{For doubts that this is how we type norms, see Simion (2018).} Trivially, every knowledge norm is an epistemic norm in this weak sense. On a second reading, KPR is an epistemic norm if it is concerned with epistemic normativity. On this more substantial reading, it is epistemically appropriate to rely on a proposition in decision-making iff one knows that \( p \).
2 Overview of the contributions

As will by now be clear, the project of explicating the connection between knowledge and action is still relatively new, and there are many open questions. Some of the most important are addressed by the articles in this collection. Specifically, the contributions collectively discuss and suggest answers to the following four:

1. What kind of norm is the knowledge norm for practical reliance? For example, is it practical or epistemic, and what does the latter involve?
2. What exactly is the relevant norm? Is it KPR, or something else?
3. If knowledge is the norm of practical reliance, then do we need a Knowledge-Based Decision Theory (KBDT)? What would such a decision theory look like?
4. Do we need to know a proposition for it to be a reason for action? And what does it mean for a proposition to be a reason for action?

We summarize the answers suggested by the contributors to each of these questions in turn.

In her contribution “Knowledge and Reasoning” to this topical collection, Mona Simion (2021) argues that there is a knowledge norm governing our practical reasoning that is concerned with the more substantive sense of epistemic normativity. The point of departure for her view about reasoning is the view that norms are grounded in functions. According to the etiological view of functions, functions concern the explanation of why something exists. For instance, a properly functioning heart pumps blood. This produced a benefit to our ancestors, which explains why hearts are still around today. According to Simion (2021, Sect. 2), norms are to be classified in terms of their underlying functions, where the latter are in turn typed by the benefits they produce. For instance, the heart brings about a biological benefit by pumping blood; it thus has a biological function.

Against this backdrop, Simion now argues that reasoning has an epistemic function: generating knowledge. How can we generate knowledge of the conclusions of our reasoning? A natural thought is that in order to do so we need to know the premises in our reasoning (ibid., 10380–10381). Thus, Simion argues, we arrive at a norm for reasoning according to which relying on $p$ as a premise in one’s reasoning is permissible iff one knows that $p$. If this knowledge norm holds for reasoning in general, it holds for practical reasoning in particular: On Simion’s view, practical reasoning generates knowledge about what one ought to do. One may wonder where this leaves the formation of intentions and the initiation of prudentially proper actions. Here Simion argues that while practical reasoning has a role to play in this regard, it also has the epistemic function to generate knowledge about what one ought to do (ibid., 10382). To see this, consider the following piece of reasoning: “It’s raining outside. And if it’s raining outside, then I ought to take an umbrella. Therefore, I ought not take an umbrella”. Now suppose the subject in question decides to take the umbrella despite what they concluded in their practical reasoning. The worry for a view on which practical reasoning only serves the function of leading to prudentially proper intentions can’t explain what goes wrong in this clearly bad piece of reasoning (ibid., 10384-10385). This speaks in favor of there being an additional epistemic norm for practical reasoning. Another advantage of Simion’s view worth highlighting is that
it can explain what happens when we reason from false premises (such that there are 53 people at one’s talk) to knowledge of a conclusion (the 100 copies of one’s handout are sufficient). Just like there are instances of improperly functioning hearts pumping blood, there are instances of improperly functioning practical reasoning that deliver knowledge of the conclusion (ibid., 10385).

In his contribution “Practical reasoning and Degrees of Belief”, Moritz Schulz (2021) likewise argues that there is a substantial epistemic knowledge norm of practical reasoning, although with an additional twist. His point of departure is that beliefs come with a willingness to rely on them in practical reasoning. Willingness to rely on a belief in practical reasoning amounts to practical certainty: we take the believed proposition for granted. Schulz observes that this willingness is not equally distributed among our beliefs. We are willing to rely on some beliefs in a wide range of circumstances (ibid, 8069-8071), including circumstances in which one’s practical reasoning carries high stakes, but willing to rely on other beliefs only in a narrower range of circumstances. To mark this difference, Schulz posits that outright beliefs, similar to credences, come in degrees. If one’s degree of outright belief vis-à-vis \( p \) is low, one is willing to rely on \( p \) only in practical reasoning where little is at stake. If, by contrast, one’s degree of outright belief vis-à-vis \( p \) is high, we are also willing to rely on \( p \) in practical reasoning where a lot is at stake. If outright beliefs come in degrees, what norm governs their usage in practical reasoning? By building on the popular idea that beliefs aim at knowledge, Schulz argues that degrees of outright belief aim at corresponding knowledge of different strength. The higher one’s degree of belief, the stronger the knowledge one takes oneself to possess (ibid., 8082). This idea is natural given that a belief qualifies as knowledge only if it satisfies a certain epistemic standard (be it safety, justification, warrant, or something else). Stronger knowledge comes with higher epistemic security, explaining why we are only willing to rely on beliefs of high degree in high-stakes practical reasoning: high-strength knowledge provides the necessary epistemic security for practical reasoning when a lot hangs on the truth of the premises we rely on. To incorporate the envisaged flexibility, Schulz offers a graded variant of KPR. It says that it is epistemically appropriate to rely on \( p \) in practical reasoning of stakes \( n \) iff one knows \( p \) by satisfying an \( n \)-high epistemic standard for \( p \) (ibid., 8083). This graded version of KPR can explain why we rely on some beliefs more willingly than others if stakes are high, while at the same time avoiding issues with earlier proposals (see Schulz 2017).

In his contribution “The Knowledge Norm for Apt Practical Reasoning”, Andreas Mueller (2021) offers a different view about what form a knowledge norm for practical reasoning should take. His point of departure is cases of practical reasoning involving reliance on either justified false beliefs or Gettierized belief (ibid, 5397), which have been seen as counterexamples to KPR. While subjects’ reasoning in these cases seems to be defective, it is not, Mueller argues, because the subjects fail to be rational. Rather, Mueller argues, their practical reasoning is rational but fails to be apt. According to Sosa’s (2007, 2010) analysis of performance, a performance is accurate if it is successful, it is adroit if it was skillfully executed, and it is apt if it was successful because it was skillfully executed. When it comes to practical reasoning, Mueller suggests that practical reasoning is adroit if it determines an intention to act and accurate if it leads to an intention to act that realizes one’s end. Apt practical reasoning,
then, yields an intention to act that realize one’s end due to one exercising one’s intellectual abilities as a reasoner. Mueller now argues that in all of the counterexamples in question, aptness is absent. Practical reasoning involving justified false beliefs fails to be accurate as it does not lead to an action that realizes one’s ends (Mueller 2021, p. 5401). Practical reasoning involving Gettierized belief is both adroit and accurate, but not apt: the epistemic luck present in Gettier cases means that the subject’s practical reasoning is not accurate because it was adroit (ibid., 5401).

Based on this diagnosis, Mueller proposes the following knowledge norm for apt practical reasoning (ibid., 5403):

**Knowledge Norm for Apt Practical Reasoning (KAP).** Practical reasoning in which

\[ p \]

is treated as a reason is apt only if one knows that \( p \).

Why think that knowledge plays this role? Mueller argues that the anti-luck condition of knowledge and apt practical reasoning are either “identical or co-extensional” (ibid., 5404). What explains that one’s practical reasoning fails to be apt, then, is most plausibly the fact that one fails to know at least one of the reasons for action one employs in practical reasoning (ibid., 5403–5406). Finally, Mueller thinks that KAP is an evaluative norm that tells us how things ought to be (ibid., 5410). However, since aptness entails accuracy and accuracy is not under the subject’s control, KAP is not a norm of rationality that is concerned with what the subject ought to do. This picture could also explain why we only sometimes criticize those whose practical reasoning fails to satisfy KAP: the latter is only a norm for optimal practical reasoning, but reasoning suboptimally is not always blameworthy (ibid., 5412).

In his contribution “An Epistemic Modal Norm of Practical Reasoning,” Tim Henning likewise argues that KPR, understood as a norm of rationality, has shortcomings. According to what he calls the problem of negative bootstrapping (see Henning 2021, pp. 6667–6668), epistemic norms that entail a belief condition (as does KPR, given the commonly accepted assumption that knowledge entails belief) run into trouble with cases in which one irrationally fails to believe a proposition that is relevant for one’s decision. Since the relevant proposition is not believed, it is not known and thus cannot be rationally relied on in practical reasoning. However, if the proposition in question cannot be relied on, the balance of a subject’s reasons might speak for an action that is intuitively not rational for them to perform. Henning raises another problem for KPR, which he calls the “problem of level confusion” (ibid., 6669–6672). Since KPR is not luminous, most proponents of KPR accept secondary or derived norms that tell us when violating KPR is not blameworthy. According to some of these accounts, one has to justifiedly believe that one satisfied KPR to be non-blameworthy for violating it.8 While one may know that \( p \), one my fail to be justified in believing that one knows that \( p \). Henning now worries that one might find oneself not relying on \( p \) not because of uncertainty regarding \( p \), but because one has doubts regarding whether one is justified in believing that one knows that \( p \) (ibid., 6669), doubts that are intuitively irrelevant to one’s decision.

(2021, p. 6675) proposes a norm of his own to avoid the observed pitfalls, namely:

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8 Other accounts do not involve a doxastic condition, e.g. Williamson’s (forthcoming) dispositional account. For discussion of Williamson’s account, see Boult (2017, 2019).
**Epistemic Must Norm (EMN).** Rely on \( p \) only if it must be that \( p \).

According to his favored domain semantics of epistemic modals (see Yalcin, 2007), the phrase ‘it (epistemically) must be that \( p \)’, formally \( \Box p \) is evaluated relative to information states. Henning’s view is fairly nuanced and flexible, so we will only mention two of its advantages. One important advantage of EMN is that a proposition can be part of the relevant information state without being believed (on one construal of the information state). Thus, since what one should rely on, according to EMN, is not affected by what one irrationally fails to believe, the problem of negative bootstrapping does not arise. EMN does not face the problem of level confusion, either: If epistemic modals are evaluated relative to information states, then \( \Box p \) does not express a proposition about an information state, but performs a test on an information state as to whether all worlds in it are \( p \)-worlds. Thus, inquiring whether \( \Box p \) and inquiring whether \( p \) coincide, which allows EMN to avoid level confusions (see Henning, 2021, p. 6678).

Norms like KPR are concerned with what is appropriate for us to rely on in decision-making. Now, if we accept KPR, how should we think about the relation between knowledge and action? This is an important question to answer for proponents of KPR, for the following two reasons. On the one hand, cases involving the assessment of action have been used to motivate KPR. In our initial example, it is Naomi’s action of ordering the dish that is criticisable because she relies on a belief which does not constitute knowledge in the practical reasoning that leads to performing it. On the other hand, critics of norms like KPR have pointed to cases involving the assessment of action as counterexamples to the right-to-left direction of KPR (see Brown, 2008a; 2008b; Reed, 2010; Anderson, 2015; Roeber, 2018). In Brown’s (2008b, p. 176) influential case, a surgeon is said to know which leg to operate on. However, it seems inappropriate to start the operation before double-checking the patient’s records: the surgeon knows the decision-relevant proposition \( p \), but would be criticisable if they acted on this knowledge in a salient way (starting the operation immediately). To assess the support for KPR and counterexamples against it, it is thus crucial for proponents of KPR to clarify the relation between knowledge and action.9

In response to counterexamples by Brown and others, many have pointed out that cases in which one knows but in which it is intuitively not appropriate to act in some salient way do not constitute counterexamples to KPR by themselves.10 Here is why: KPR only tells us how to select the set of propositions that can be appropriately relied on in practical reasoning, not how to act on this set of propositions. That the decision-relevant propositions are known and may be relied on in action, according to KPR, does not mean that they sufficiently support the action that is salient in these cases. Conversely, the fact that it is inappropriate to act in some way does not entail

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9 For those who think that KPR is a norm of practical rationality, making this further step is easy. Naturally, if KPR is a norm of practical rationality and if an action is only rational if one complied with norms of practical rationality, then an action is only rational if one complies with KPR in performing it. If one thinks of KPR as an epistemic norm, then a link needs to be drawn between the epistemic rationality of belief and the practical rationality of action. For worries about this project, see Simion (2018, 2021), but see also Mueller (2017) for a possible response.

10 See Neta (2009), Ichikawa (2012), Jackson (2012), Weisberg (2013), Locke (2014), Roeber (2018), Beddor (2020) and Locke (2014, pp. 82–83) for further discussion.
without further argument that it was not appropriate to rely on some decision-relevant proposition in practical reasoning.

For an example in which this disconnect is obvious, consider the following case:

**Shovel Thief** Clara runs a gardening company. One of her high-grade shovels has been stolen \((p)\), and there are only two possible culprits: Albert and Berta, her only employees with access to the tool shed \((q)\). Albert was working nearby on the day of the shovel’s disappearance; Berta had the day off, but still had her key to the shed \((r)\). Suppose that all Clara knows is that \(p, q\) and \(r\). According to KPR, she may rely on these propositions in action. Now, when Clara is asked why she won’t fire Albert, she says that she would need further evidence.

Is Shovel Thief a counterexample to KPR? Clearly not. The issue here is not that Clara is not in a strong enough epistemic position with respect to \(p, q,\) and \(r\), but rather that these three propositions, taken together, simply don’t sufficiently support firing Albert. He is an experienced employee and only conclusive evidence for him being the thief would make firing him appropriate. But \(p, q\) and \(r\) do not conclusively show that Albert stole the shovel.

Let us suppose that a norm like KPR is true, so that we can appropriately rely on what we know. How then should we act on the propositions we may appropriately rely on? According to a widely accepted proposal, we should utilize expected utility theory to draw the normative link between knowledge and action. On such a view, it is rational to perform an action if it maximizes expected utility, *conditional on what one knows*.11 A different proposal is reasons-based. On such a view, it is rational for one to perform an action \(A\) if the weightiest set of reasons contained in one’s knowledge speaks in favour of performing \(A\).12 Let’s call a view that tells us how to act based on what we know a *knowledge-based decision theory* (KBDT).

In her contribution to this volume, “The Key to the Knowledge Norm of Action is Ambiguity”, Patricia Rich (2021) argues that offering the correct KBDT makes a difference for avoiding objections against KPR. According to an objection by Mueller and Ross (2017), for instance, there are cases in which a subject acts on their credence \(x\) in \(p\) (say, that it is going to rain) but their corresponding belief that the chance that \(p\) is \(x\) fails to qualify as knowledge because the epistemic probability of \(p\) varies in an unnoticeable fashion in close worlds [because, say, the sky is “one nano-shade less gloomy” (Mueller and Ross 2017, p. 286)].13 What one can know in such a case is only that the probability of \(p\) lies in some interval \([x-t, x+t]\). Mueller and Ross argue that, in combination with expected utility theory, such a view makes proponents of KBDT vulnerable to money-pump arguments. In response, Rich argues that utilizing expected

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11 That knowledge connects to rational action in this way is an assumption that is typically made in arguments for or against views like KPR. See Fantl and McGrath (2002, 2007), Schiffer (2007), Hawthorne and Stanley (2008), Douven (2008), Reed (2010), Weatherson (2012), Locke (2014), Ross and Schroeder (2014), Schulz (2017), Moss (2018), Dutant (forthcoming), and Comesana (2020).

12 See e.g. Ichikawa (2012, pp. 50–51), Fantl and McGrath (2009, p. 90) and Lord (2018) for proponents of knowledge-based views (although Lord considers the relevant epistemic condition to be what one is in a position to know; more on this below).

13 See also Schiffer (2007), who first identified cases in which one relies on one’s credences in action as challenges to KPR.
utility theory in the case suggested by Ross and Mueller is unmotivated (see Rich 2021, pp. 9682–9685). A case in which the epistemic probability varies across close worlds is best construed as a case in which the agent faces ambiguity with respect to \( p \); the precise credence fails to reflect this ambiguity, but the agent’s knowledge does reflect it. A KBDT, moreover, must be such that the epistemic inputs to an agent’s decision count as knowledge. Expected utility theory is therefore not a universally adequate theory to characterize the link between knowledge and rational action. Rich argues that proponents of KPR should instead look for alternative decision theories to provide a KBDT. The option she explores (ibid., 9687–9693) is the meta-utility theory (see Grant et al., 2019, 2022): According to this proposal, what is rational for the agent to do depends on the worst and best possible expected utilities. There are various ways to weigh these lower and upper expected utilities, resulting in different concrete proposals for KBDT that suit different agents with different ambiguity preferences (see Wald 1950, Hurwicz 1951, Bimmore 2008). Exactly which KBDT we use is not of primary importance; Rich ultimately shows that proponents of KPR are not committed to basing their KBDT on expected utility theory, but should instead “embrace the presence of ambiguity in subjects’ epistemic states and [...] characterize their decisions accordingly” (Rich 2021, p. 9687). The meta-utility theory is just one plausible and mathematically rigorous way to do this, and is not vulnerable to Ross and Mueller’s money-pump arguments.

Jie Gao and Davide Fassio (2021) are skeptical about there being a link between knowledge and rational action. In their contribution “Do We Really Need a Knowledge-based Decision Theory?”, they object to KBDT, conceived of as the aforementioned version of expected utility theory that takes as input the probabilities one arrives at by conditionalizing on the subject’s totality of knowledge (ibid., 7032). Gao and Fassio argue that KBDT is not only badly motivated, but that it performs worse than familiar competitors. To take one point of contention, Gao and Fassio argue that KBDT does not capture what is intuitively rational to do (ibid., 7036–7039). Like Henning (2021, p. 6667), they point to cases in which the subject is “irrationally unresponsive to immediate and inequivocal information” that \( p \) (Fassio and Gao, 2021, p. 7036) to show that conditionalizing on one’s knowledge does not yield the intuitively correct verdict about what the subject rationally ought to do. The needed knowledge that \( p \) is not available because the subject irrationally fails to form the needed belief that \( p \). Intuitively, though, what is rational for them to do depends on \( p \), a feature that is not captured by KBDT. Gao and Fassio further argue that conditionalizing instead on what one is in a position to know (after all, the subject is in a position to know that \( p \)) is not a promising option either. What one is in position to know fails to agglomerate over conjunction, resulting in different partitions within a single subject and incompatible probability functions as a result of conditionalizing on these partitions (ibid., 7038–7039). They also argue that KBDT performs worse than subjectivist approaches to rationality when it comes to being action-guiding and worse than objectivist approaches when it comes to the phenomenon of advice. Moreover, Fassio and Gao hold that KBDT does not fare as well as KPR when it comes to capturing our intuitions about lotteries (ibid., 7048–7049) and the ascription of blame (ibid., 7049–7050) and responsibility (ibid., 7052–7054). If Gao and Fassio are right in their overall assessment of KBDT, then proponents of KBDT have their work cut out:
they need to clarify the exact standard of normative assessment KBDT is concerned with (rationality? some more objective standard of assessment?), motivate the view more robustly and show its advantages over alternatives from the literature (ibid., 7057).

What about the reasons-based proposals mentioned earlier? According to proponents of reasons-first views about ultima facie justification, what justifies an attitude or action are the reasons one possesses. Why do reasons need to be possessed to play this role? According to the popular view of perspectivism, a reason needs to be within one’s ken to matter for what one ought to do. Suppose that the gas in your car has been siphoned by a thief at night. While the fact that your fuel tank is empty is a reason to go to the gas station, it plausibly does not determine what you ought to do if you have no way of knowing this fact (suppose you just wake up, blissfully unaware of the stressful way to work that awaits you). The reason is not in your possession, hence it does not affect what you ought to do. When is a reason in one’s possession, then? According to some, the condition has to involve the concept of knowledge, be it that one either has to know or be in a position to know the reason to possess it.14

In his contribution “Possessing Reasons: Why the Awareness-First Approach is better than the Knowledge-First Approach”, Paul Silva (2021) argues that knowledge-based conditions for possessing reasons face a variety of problems. First, he argues that proponents of knowledge-based conditions have trouble capturing the process of updating our beliefs via deduction, in particular when it comes to correctly predicting what kind of reasons one possesses between recognizing a certain entailment of one’s knowledge and responding appropriately by forming a corresponding belief (ibid., 2930–2934). Suppose one knows that \( p \) and comes to know that \( p \) entails \( q \). The problem concerns the part of the deduction after one has deduced \( q \) from \( p \) but before one comes to believe that \( q \) as a result. Silva argues that one intuitively possess \( q \) at this point as a reason, but since one does not believe \( q \) yet, one does not know that \( q \) (ibid., 2932–2933). Similar counterexamples can be construed against possession entailing one being in a position to know the relevant reason (ibid., 2933–2934). Second, Silva argues that in cases of environmental luck (such as fake barn country), the believed proposition (such as that there is a barn) is not known but possessed (ibid., 2934–2936). According to Silva, the kind of luck present in these cases undermines what one can/is in a position to know, but not reason possession.

Based on these considerations, Silva proposes an alternative epistemic state of possession—what he calls “awareness”—which he considers to be a generalized state of “non-accidental true representation” (ibid., 2937). What proponents of the knowledge-based view get right is that a non-accidental true representation of a reason is needed for possession. What they get wrong is the supposition that knowledge is the only way to be so non-accidentally related to a true proposition. Silva now argues that \( S \) possesses a fact \( p \) only if \( S \) is in a position to be aware of \( p \) (ibid., 2939). How should we understand the proposed non-accidentality condition? Silva is open to cashing it out in different ways, e.g. in terms of safety (the subject could not easily have had a false representation that \( p \)) or in virtue-epistemological terms (the subject has a representation that \( p \) “from a non-defective exercise of her cognitive competences”

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14 For discussion, see e.g. Kiesewetter (2017), Lord (2018), Lasonen-Aarnio (2019), and Littlejohn (2019).
The awareness view of possession could potentially avoid both issues raised against knowledge-based accounts. In the case of deduction, deducing $q$ from $p$ without (yet) believing $q$ puts one in a position to be aware of $q$. After all, one correctly deduced it from $p$, putting one in a position to represent $q$ in non-accidental fashion. In cases of environmental luck, the subject possesses, according to Silva, the reason that the object in front of them is a barn. Now Silva holds that the subject non-defectively exercised their cognitive competences leading to a true belief about the barn that is sufficient for awareness, but not knowledge.

3 Conclusion

The contributions to this topical collection show that there are a plethora of views one can take about the relation between knowledge and decision-making. Likewise, the contributions indicate that views like KPR and KBDT face a variety of challenges. There is much more work for their proponents to do.

We believe that one important focus of this work should be unification: the work on knowledge and decision-making is currently conducted through diverse debates, with interpretative differences when it comes to various aspects of KPR, such as whether it is concerned with premises in practical reasoning or reasons for action, whether it is a norm of epistemic rationality, of practical rationality, or whether it is a prescriptive norm at all. Furthermore, KBDT, a natural fit for KPR, is often discussed in isolation, without being fitted into and motivated by a broader knowledge-based framework. Such a framework—one that is set up to deal with all the challenges across the board—has not yet been offered and is needed to defend a knowledge-based picture of decision-making and action in the light of explanatorily powerful competitors.

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