

## Epistemic Luck

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In almost any domain of endeavour, successes can be attained through skill, but also by dumb luck. An archer's wildest shots occasionally hit the target. Against enormous odds, some fair lottery tickets happen to win. The same goes in the case of purely cognitive or intellectual endeavours. As inquirers, we characteristically aim to believe truly rather than falsely, and to attain such standings as knowledge and understanding. Sometimes such aims are attained with commendable competence, but of course, not always. *Epistemic luck* is a species of luck which features in circumstances where a given cognitive success—in the broadest sense, some form of cognitive contact with reality—is attained in a manner that is (in some to-be-specified sense) interestingly lucky—viz., chancy, accidental or beyond our control. In the paradigmatic case, this involves the formation of a belief that is luckily true, and where the subject plausibly deserves little credit for having gotten things right. Although the literature on epistemic luck has focused predominantly on the relationship between luck and propositional knowledge—which is widely taken to (in some sense) *exclude* luck—epistemologists are increasingly exploring the compatibility of epistemic luck with other kinds of epistemic standings, such as knowledge-how and understanding.

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### 1. Epistemic luck and propositional knowledge

The following is near-platitudinous in epistemology (see Epistemology):

**Anti-luck platitude:** For all  $S, p$ , if  $S$  *knows* a proposition,  $p$ , then  $S$ 's belief that  $p$  is (in some to-be-specified sense) not 'true by luck'.

As Jonathan (Dancy 1985, 134) puts it, the platitude that knowledge excludes luck '[...]was just the point of the Gettier counterexamples; nothing in the tripartite definition excluded knowledge by luck' (see also Zagzebski 1996, 283; Pritchard 2017a, §2) (see Gettier problems; Knowledge, concept of). Moreover, it is common practice to dismiss an analysis of knowledge as materially inadequate if the analysis is clearly incompatible with this platitude (e.g., Chisholm 1989, 93) (see Chisholm, Roderick Milton (1916-1999)). For example, it is often with reference to the anti-luck platitude that

epistemologists explain why Alvin Goldman's (1967) early causal theory of knowing is unsatisfactory (e.g., Ichikawa and Steup 2014, §4) (see Knowledge, causal theory of).

If it can be determined in what precise sense knowledge excludes luck—and correspondingly in what sense or senses knowledge *tolerates* luck, as it surely does in some fashion—then we will have gained an important insight into the nature of knowledge, conceived of as a standing that is essentially luck-resistant in some specific way (e.g., Pritchard 2005; 2007). Moreover, clarity on the matter of just how knowledge excludes luck could also provide useful insights into what makes knowledge valuable in a way that mere (unknown) true belief is not (e.g., Kvanvig 2003; Pritchard 2009; Haddock, Millar, & Pritchard 2010) (see Belief and knowledge; Epistemic value).

However, the utility that the notion of epistemic luck stands to have in the theory of knowledge depends importantly on how satisfactorily (at least) three distinct (though interconnected) issues can be addressed. These issues have to do with (i) the philosophy of luck, more generally, of which epistemic luck is a species; (ii) the distinction between malignant and benign epistemic luck, *vis-à-vis* propositional knowledge; (iii) recent a priori and experimental challenges to received epistemological thinking about the relationship between knowledge and luck.

## 2. Theories of luck: probabilistic, lack of control, and modal

Given that luck is a variety of the more general phenomenon of luck, it is natural to suppose that a viable theory of epistemic luck will be premised upon a more general account of luck. But it is highly contentious amongst philosophers—in epistemology, and elsewhere—what counts as *luck*, in the more general sense (e.g., Lackey 2008; Hales 2014) and how it relates to similar phenomena such as chance and fortune (e.g., Pritchard 2005; Pritchard and Whittington 2015; Broncano-Berrocal 2016).

To start with, a natural way to think of luck (shared in science and mathematics) takes into account the characteristic probabilistic profile of lucky events. In this sense, the *probabilistic account of luck* has it that an event is lucky if it was objectively unlikely prior to its occurrence (Baumann 2014). But although paradigmatic instances of luck (such as winning a fair lottery) fulfil this probabilistic profile, not all lucky events are unlikely prior to occurrence. If holding a winning ticket is the only way in which lottery participants can escape a painful death, holding a loser ticket represents a stroke of bad luck for anyone taking part in such a deathly game. But the probabilistic account delivers the wrong verdict. After all, the probability of losing and consequently dying is high, given the odds. This indicates that, while *most* lucky events are (prior to occurrence) unlikely, there might also be highly probable lucky events.

A related probabilistic view has it that lucky events are subjectively unlikely, i.e., events whose occurrence is unlikely from the agent's perspective (Latus 2003). At first blush, the view might enjoy some plausibility, since luck is an agent-relative concept. On reflection, however, modelling luck as a perspectival notion (in terms of subjective probability) fails to capture our salient intuitions about how the concept should be applied. For instance, the view entails that firm believers in fate are never lucky, because anything that happens to them is (from their perspective) irremediably bound to happen. But if they won a fair lottery, it would be hard to deny that they are *actually* lucky, which is compatible with saying that they are *apparently* lucky (see Rescher 2014 for the distinction between apparent and actual luck).

According to a more popular account of luck—the *lack of control account* (e.g., Zimmerman 1987; Coffman 2009; Riggs 2009; Broncano-Berrocal 2015)—an event is lucky for a given agent just when (in short) it is significantly enough beyond that agent’s control. The appeal of the view not only stems from the fact that it successfully accounts for paradigmatic cases of luck (e.g., lottery outcomes are typically beyond our control), but also from its liberal stance concerning the likelihood that lucky events should have: since the view is silent on the probabilistic profile of lucky events, it is compatible with attributing luck to events whose occurrence was (objectively or subjectively) likely or unlikely.

Nonetheless, it has been objected that lack of control over an event does not suffice for the event to be lucky (Lackey 2008). Many nomic necessities (e.g., sunrises) are certainly beyond our control, but that of course does not make them instances of luck. In reply, lack of control theorists try to distinguish further senses of the notion of control to argue that, despite appearances, sunrises and other relevant nomic necessities can be, to some extent, under our control. Following this strategy, Wayne Riggs (2009) and Fernando Broncano-Berrocal (2015) grant that we certainly do not exert any causal influence over sunrises and akin events (i.e., we do not have causal control over them) but argue that luck-excluding forms of control also include our ability to exploit such events in favour of our interests or our natural disposition to monitor them and to competently rely on their occurrence for achieving basic aims (such as waking up).

Finally, a view that also enjoys great popularity is the modal account of luck, whose core thesis is that lucky events are events that could easily have not occurred, where the notion of easy possibility of non-occurrence is typically cashed out in terms of closeness to the actual world (Pritchard 2005; 2015). In this sense, the modal account holds that (actual) lottery winners are lucky because they would lose in close possible worlds, or less technically, in situations that are similar to the actual or real one (see Possible worlds).

Despite its popularity, the modal view has been contested too. One flaw is that it does not seem to account for lucky events that arise out from coincidences whose components are sufficiently modally robust. To exemplify, if someone firmly decides to place a treasure at location *L*, places it (and would not have placed it at any other location), while at a later time (and in a completely independent manner) someone else (with the same determination) decides to dig the ground of *L*, digs it, and discovers the treasure, the happy discovery would still occur in close possible worlds (Lackey 2008). After all, the two persons were fully determined to carry out their respective actions. But while the discovery is clearly lucky (insofar as it arises out of a fortuitous coincidence), the modal account predicts, wrongly, that it is not.

In reply, J. Adam Carter and Martin Peterson (2016) argue that examples of this sort do not speak against every modal account, but only against closeness accounts. Like Pritchard, they think that luck is modal in nature, but unlike him, they do not believe that luck is solely sensitive to what could *easily* have not occurred, but also (although not with the same weight) to how things stand in remote (i.e., non-close) possible worlds. They tweak the modal account accordingly so as to ultimately argue that the intuitive verdict that the discovery of the treasure is a stroke of luck (at least partially) derives from the fact that such an event would fail to occur in distant possible worlds. For a related reply to such cases, see also Pritchard (2014).

Although the growing literature on luck has not reached an agreement on the nature of luck yet, most luck-theorists are confident that the ongoing conceptual work will help illuminate the nature of epistemic luck as well (but see Ballantyne 2014 for a divergent opinion in this regard). In fact, as we will see next, epistemic luck is just mundane luck affecting factors that are necessary for knowledge.

### 3. Malignant and benign epistemic luck

Even if the more general phenomenon of luck were clearly in view, it remains that *some* kinds of luck seem perfectly compatible with knowledge, as there are multiple senses in which it might be down to luck that the beliefs we have are true, even when these beliefs are known. Distinguishing knowledge-undermining from innocuous epistemic luck is accordingly a central project in the contemporary epistemic luck literature, a project that has been mainly carried out by Duncan Pritchard (2005) drawing on work by Peter Unger (1968).

Pritchard's methodological approach to taxonomizing varieties of epistemic luck consists in distinguishing several factors that are uncontroversially taken to be necessary for knowledge and in seeing what happens to our epistemological intuitions when they obtain by luck. In this way, the distinguished varieties of epistemic luck are classified as 'malignant' or 'benign' depending on whether or not they have the capacity to undermine knowledge.

Let's consider some examples of benign epistemic luck. Firstly, it is a platitude that in order to know agents need not only to exist, but also to possess the relevant physical and psychological constitution. In this way, it might be a matter of luck that someone ends up being so constituted, but such *capacity luck* is not necessarily incompatible with knowledge, at least if that person exercises the relevant luckily acquired cognitive faculties competently. Analogously, it might be entirely down to luck that there is a truth-maker for the believed proposition, but such *content luck* does not undermine knowledge either. If, after a fair qualifying round draw, it is by luck that your favourite team will start playing away, the luck in play does not obviously prevent you from coming to know the true proposition that your team will start playing away.

Finally, it is entirely possible that, due to sheer luck, someone ends up having access to a certain batch of evidence (see Evidence). For example, Sherlock Holmes may have got his (conclusive) evidence that the butler is the murderer by accidental eavesdropping. *Evidential luck*, however, is not knowledge-undermining, because the luckiness of the evidence does not necessarily transmit to knowledge. Sherlock's evidence, in a way, puts him in a position to know, but just as being by luck in a position to play basketball does not make Michael Jordan's shots lucky, being by luck in a position to know does not make Sherlock's knowledge lucky. After all, Sherlock's reasoning capacities remain extremely reliable no matter how fortunate he is to be in a position to exercise them.

By contrast, if after acquiring his evidence (luckily or not), Sherlock gets things right by luck, he fails to know regardless of the truth value of his beliefs. Suppose that (luckily or not) he overhears a conversation in which the butler tells to a (supposed) accomplice 'Do not worry, I killed him' and that, on that basis, he comes to believe that the butler is the murderer, which is true, as a matter of fact. However, also suppose that (here comes the Gettier-style twist) with the pronoun 'him' the butler was not referring to the (human) victim, but to his own dog, who got rabies. In this way, Sherlock comes to form a true belief, but by sheer luck. This sort of *veritic luck* is called *intervening*

*epistemic luck* (because it is as if luck intervened in the way the agent's belief hits, so to speak, the truth), and it's the kind of luck involved in standard Gettier-style cases like the previous example.

Non-standard Gettier-style cases, however, involve a different sort of veritic luck called *environmental epistemic luck*. In the famous barn façade case (Goldman 1976), a driver, Henry, forms the lucky true belief that there is a barn right in front of him by directly looking at the only real building in an area full of indistinguishable barn façades that he could easily have erroneously believed to be real barns. Unlike in standard Gettier-style cases, in these sorts of cases luck does not directly intervene in the way the subject forms his belief. Instead, the environment is such that possibilities of error could easily have become actual. In this way, since it is a matter of chance that such a thing does not end up being the case, the resulting true beliefs are formed in an environmentally lucky fashion (but see McKinnon 2014 for criticism on the distinction between intervening and environmental luck).

Epistemic luck might also operate at the reflective level. Consider professional chicken-sexers, who are very reliable in distinguishing male from female chicks. It might be the case that some of them turn out to be mistaken about their reliable cognitive performances, for instance, by holding false beliefs about the nature of their belief-forming methods (e.g., they might think that they are tracking olfactory instead of visual or tactile cues) or by being unconfident about their own reliability (see Reliabilism). Pritchard (2005) argues that subjects in such an epistemic position are reflectively lucky, not because they would get things wrong in standardly ordered close possible worlds (as it happens with veritic luck), but because they would get things wrong in the closest possible worlds that are *consistent with what those subjects can know by reflection alone in the actual world*. Nonetheless, it is an open question whether or not this special kind of epistemic luck, *reflective luck*, undermines knowledge. Most externalists would surely endorse the negative claim (see Internalism and externalism in epistemology). After all, they reject that we need reflectively accessible grounds to know and, in this sense, they would be happy to claim that a belief can be both reflectively lucky and knowledge.

#### **4.Challenges to the anti-luck platitude: a priori and experimental**

A third central project for anti-luck epistemologists is to address two very different forms of scepticism about the insight that knowledge excludes luck. One such strand of argument has been advanced on *a priori* philosophical grounds (e.g., Hetherington 1998; 2013; Baumann 2014) (see A priori). For example, according to Stephen Hetherington (1998, 456), the anti-luck platitude articulated in §1 rests upon what he terms the 'Epistemic Counterfactuals Fallacy', according to which actual lack of knowledge is inferred from counterfactual lack of knowledge. Such a fallacy is committed, Hetherington claims, by epistemologists who fail to attribute knowledge in certain cases simply because the agent in question could easily have not known. As Hetherington puts it, when diagnosing the classic barn façade case, 'Epistemologists infer from the fact that Henry would be deceived if he were to continue his drive that he does lack knowledge' (Hetherington 1998, 456). Such an inference, he claims, confuses *genuinely* lacking knowledge with *almost* lacking it.

In response to this argument, Brent Madison (2011) has suggested that proponents of the anti-luck platitude should grant Hetherington's claim that it is fallacious to infer from the fact that one could easily have not known that *p*, that one thereby does not know that *p*. However, Madison argues that

this concession is ultimately not problematic for proponents of the anti-luck platitude because, *contra* Hetherington, proponents of the anti-luck platitude are not relying on this fallacious inference, even if they might appear to do so.

To appreciate Madison's rejoinder here, it will be helpful to recall again the distinction between *evidential* and *veritic* luck noted in §3. In cases of evidential luck, where one is lucky to possess the evidence one has, it is true that one could easily have failed to possess knowledge. However, the proponent of the anti-luck platitude is not committed to concluding in such a scenario where evidence is luckily acquired that one actually does lack knowledge. And this is for the reason, already outlined in §3, that what is crucial to the anti-luck platitude is not that one's knowing a proposition precludes one from being such that one could easily have not known that proposition; rather, the crucial commitment is the more refined claim that propositional knowledge precludes being such that, given how one has formed one's belief, one could easily have believed falsely. Thus, if the slogan that knowledge precludes luck—as it is traditionally defended—is false on *a priori* grounds, it need not be because the slogan relies on the fallacious reasoning captured by the Epistemic Counterfactuals Fallacy. For some additional arguments by Hetherington against the anti-luck platitude, see Hetherington (2013).

Another very different source of scepticism about the anti-luck platitude comes from the camp of experimental philosophy (see Experimental philosophy). In a recent study by John Turri (2016b), over 80% of participants surveyed attributed knowledge in a barn façade style case, despite the presence of environmental (veritic) epistemic luck. Similar results have been reported in other experimental studies (e.g., Colaco, Buckwalter, Stich & Machery 2014; Turri, Buckwalter & Blouw 2014). What to conclude from these results remains controversial. To the extent that folk judgments about knowledge, as reported in such experiments, should inform epistemological theories of knowledge, proponents of the anti-luck platitude incur at least some explanatory burden in light of these results. One strategy of response, championed by Timothy Williamson (2007), is to simply discount the evidential weight of folk judgments about philosophical thought experiments on the grounds that philosophical training is relevant to picking up on the relevant nuances of such cases. This expertise reply to the experimental data could be countered by critics of the anti-luck platitude on experimental grounds if experimental studies could also demonstrate that those with philosophical training are inclined to attribute knowledge in barn façade cases. On this point, however, what to make of the evidence is debatable. Recent results reported by Hovarth & Weigmann (2017, 11) and Carter, Pritchard and Shepherd (2016) indicate that while participants with self-reported philosophical expertise do in fact attribute propositional knowledge to some extent in barn façade style cases, they do so to a *lesser* extent than those without self-reported expertise. What to infer from this comparative data is open to philosophical interpretation.

## 5. Epistemic luck and knowledge-how

Recently, the question of whether knowledge-how is compatible with the kinds of epistemic luck that knowledge-that is generally regarded to exclude has been a point of contention between *intellectualists* and *anti-intellectualists* about knowledge-how (see Knowing how to). Intellectualists claim that knowledge-how is just a kind of propositional knowledge, viz., knowledge-that (i.e., Stanley and Williamson 2001; Stanley 2011). If this is right, then knowledge-how should be

compatible/incompatible with epistemic luck to the same extent as the items of propositional knowledge the anti-intellectualist identifies with knowledge-how, a point that intellectualists such as Stanley have explicitly granted (e.g., 2011, 215). However, Poston (2009), Cath (2011) and Carter and Pritchard (2015) have on the basis of different kinds of counterexamples, argued that this luck-based intellectualist prediction is not borne out, and that therefore, *contra* intellectualism, knowledge-how is not a kind of propositional knowledge.

Poston and Cath have in common that they think intervening veritic luck (of the sort canvassed in §3), which is granted to be incompatible with knowledge-that, is nonetheless compatible with knowledge-how. An example Cath relies on to make this point involves an individual, 'Charlie', who wishes to learn how to change a lightbulb and accordingly consults the 'Idiot's Guide to Home Repair'. Unbeknownst to Charlie, the guide was written by pranksters who filled the book with misleading and inaccurate instructions. However—and here is the twist in the tail—the text at the printer's was rearranged so that the entry under 'Lightbulbs' just so happened to include correct instructions, which Charlie relies on to successfully change the bulb. Cath's claim is that, firstly, Charlie intuitively knows how to change a light-bulb after reading these correct instructions. If this intuition is granted, then if intellectualism is correct, then Charlie must also know, of some way *w*, that *w* is the way for Charlie to change a lightbulb. However, as Cath points out, Charlie lacks such knowledge, given the presence of intervening luck. Thus, as this line of argument goes, intellectualism should be rejected.

Stanley (2011, 179) has since replied to such cases, on behalf of intellectualism, by claiming that Cath's argument overgeneralises so as to apply problematically to cases of knowledge-wh (e.g., knowledge-where, knowledge-when, knowledge-why, etc.). Regardless of whether Stanley's overgeneralisation strategy is viable (cf., Carter and Pritchard 2015, 448-9)—a point we lack the space to cover here—there remains a further way to challenge intellectualism on luck-based grounds which does not rely on the claim that intervening luck is compatible with knowledge-how.

According to this other strand of argument, defended by Carter and Pritchard (2015), knowledge-how is, contrary to what Cath and Poston have argued, incompatible with intervening epistemic luck of the sort that features in standard Gettier cases. However, they argue, *environmental* epistemic luck behaves differently with respect to knowledge-how and knowledge-that. The case they offer to make this argument is a variation on Cath's light-bulb case. Carter and Pritchard tweak the details so that we are to suppose that Charlie (unlike in Cath's original case) consults a genuine, authoritative guide to home improvement, instead of a guide made by pranksters but which only happened to be correct. The twist in the tail is that the genuine guide to home improvement happens to be on a library shelf, surrounded by fake guides which include inaccurate instructions for changing a lightbulb. In such a circumstance, Carter and Pritchard argue, Charlie by consulting the genuine guide knows how to change a lightbulb, despite (given the presence of environmental luck) there not being any way *w* such that Charlie knows *that w* is the way to change a lightbulb. Thus, the conclusion drawn is that knowledge-how is compatible with a kind of luck—viz., environmental epistemic luck—incompatible with knowledge-that, and so the former cannot as the intellectualist claims be a kind of the latter.

However, the intellectualist might have a final card yet to play in response to such cases. In more recent work, Cath (2015) has changed his thinking; his current line is that the intellectualist can deny

that the kinds of cases considered in this section are counterexamples by rejecting the ‘orthodox assumption that knowledge-that is *always* incompatible with Gettier-style luck’. It is open to the intellectualist, Cath claims, to maintain that while most kinds of propositional knowledge are incompatible with veritic epistemic luck, the propositional knowledge which the intellectualist identifies with knowledge-how is a special case of knowledge-that which is not. Such a retreat on behalf of the intellectualist, however, involves revisionary thinking about not just the anti-luck platitude, but also the nature of propositional knowledge.

## 6. Epistemic luck and understanding

Just as intellectualists about knowledge-how insist that knowledge-how is a kind of propositional knowledge, some epistemologists (e.g., Grimm 2006; Depaul and Grimm 2007; Sliwa 2015) working on understanding have defended a similar kind of reductionism according to which, as Paulina Sliwa (2015, 57) puts it, ‘instances of understanding reduce to instances of knowing’ (see Understanding). If this is correct, then to the extent that epistemic luck is incompatible with (propositional) knowledge, it should also be incompatible with understanding.

However, at this point, we find arguments which broadly parallel arguments surveyed against intellectualist accounts of knowledge-how as canvassed in §2. According to partial compatibilists, such as Pritchard (2008), understanding is compatible with environmental epistemic luck but incompatible with intervening epistemic luck.

Full compatibilists, such as Zagzebski (2001) and Kvanvig (2003) and, more recently, Riaz (2015), Rohwer (2014) and Morris (2012), take understanding to be compatible not only with environmental but also with intervening epistemic luck of the sort at play in standard Gettier cases. One much-discussed example case aimed at establishing this point is Jonathan Kvanvig’s (2003, 197) ‘Comanche case’, in which Kvanvig invites us to imagine that one reads a book on the Comanche tribe, thereby acquiring a belief set about the Comanche’s dominance of the Southern plains of North America between the 17th and 19th centuries. Kvanvig insists that understanding this subject matter, viz., the Comanche’s dominance of the Southern plains, is retained (provided other conditions are met) even if it turns out that all the information in the book was Gettiered. If understanding is compatible with intervening luck in this way, and indeed if understanding is compatible with environmental epistemic luck (viz., as would be the case if a genuine book on the Comanche was consulted, but which happened to be surrounded by fakes) as Pritchard (2008) maintains, then there is reason to doubt that understanding is a kind of propositional knowledge.

One potential ambiguity in the literature on understanding and its relationship to epistemic luck concerns the distinction between *objectual understanding*, as one attains when one understands a subject matter or body of information, and *understanding-why*, as when one understands an explanation. These two kinds of understanding are often run together in the contemporary debate about the compatibility of understanding with epistemic luck. While objectual understanding and understanding-why might behave exactly the same *vis-à-vis* epistemic luck, it is a theoretical possibility that they do not. For further discussion on the differences between these two species of understanding and how they interface with epistemic luck, see Gordon (2016).

## 7. Epistemic luck and epistemic risk

Pritchard (2017) and Broncano-Berrocal (2015) argue that the concepts of luck and risk are basically coextensive. The only differences are, firstly, that while luck can be positive or negative, risk has a negative connotation; secondly, we typically do not talk of low levels of luck, but we can talk of low levels of risk. Putting these two minor differences aside, they account for luck and risk in the same terms. More specifically, and in keeping with the lack of control account of luck, Broncano-Berrocal (2015) argues that an *agent* is at risk with respect to (the possible occurrence of) an event just in case it is beyond their control. By contrast, in keeping with the modal view of luck, Pritchard (2017b) thinks that an *event* is at risk of occurring just in case it would occur in at least some close possible worlds. Far from being incompatible, Broncano-Berrocal's lack of control account and Pritchard's modal view capture two complementary aspects of the notion of risk: the risk that an event has of occurring—or *event-relative risk*—and the risk at which an agent is with respect to an event—or *agent-relative risk*.

If there exists a close relationship between luck and risk, it is natural to think that there also exists a close relationship between epistemic luck and epistemic risk. In this sense, Pritchard (2017b) characterises beliefs that are true by luck (i.e., veritically lucky beliefs) as beliefs that are formed in an epistemically risky fashion. In other words, lucky true beliefs are beliefs that were at risk of being false, or in modal terms, beliefs that turn out false in close possible worlds in which the agent forms them in the same way as in the actual world.

Pritchard argues that moving from an anti-luck epistemology (i.e., an epistemology that essentially aims at eliminating knowledge-undermining luck; see Modal epistemology) to an anti-risk epistemology (i.e., an epistemology that aims at eliminating epistemic risk) helps shed some light on environmental epistemic luck. In particular, there is an increasing tendency to accept that propositional knowledge is compatible with environmental luck. After all, unlike beliefs that fall short of knowledge due to intervening luck, beliefs that are environmentally lucky are true because of an exercise of cognitive ability (in the barn façade case, Henry successfully exercises his visual abilities). But Pritchard contends that since intervening and environmental luck involve the same levels of (modally understood) epistemic risk, the claim that environmental luck is compatible with knowledge translates as the claim that knowledge tolerates high levels of epistemic risk, a thesis that many epistemologists would consider considerably more controversial than the former claim.

## References

Ballantyne, Nathan 2014. 'Does Luck Have a Place in Epistemology?' *Synthese* 191: 1391–1407.

[Argues against the view that exploring the nature of luck is helpful in theorizing about knowledge.]

Baumann, Peter. 2014. 'No Luck With Knowledge? On a Dogma of Epistemology'. *Philosophy and Phenomenological Research* 89 (3): 523–51.

[Defends 'lucky knowledge' and on this basis claims the anti-luck platitude as it is ordinarily embraced in epistemology should be rejected.]

Broncano-Berrocal, Fernando. 2015. 'Luck as Risk and the Lack of Control Account of Luck'. *Metaphilosophy* 46 (1): 1–25.

[Puts forward a lack of control account of luck in terms of the concept of risk]

———. 2016. 'Luck'. *Internet Encyclopedia of Philosophy*.

[Overview of current theories of luck]

Carter, J. Adam, and Martin Peterson. 2016. 'The Modal Account of Luck Revisited'. *Synthese*, March, 1–10. doi:10.1007/s11229-016-1047-7.

[Defends a version of the modal account of luck that is claimed to overcome objections that face more traditional formulations.]

Carter, J. Adam, and Duncan Pritchard. 2015. 'Knowledge-How and Epistemic Luck'. *Noûs* 49 (3): 440–53.

[Argues that knowledge-how is incompatible with environmental epistemic luck and on this basis challenges reductive intellectualist accounts of knowledge-how.]

Cath, Yuri. 2011. 'Knowing-How without Knowing-That'. In *Knowing How: Essays on Knowledge, Mind and Knowing How: Essays on Knowledge, Mind and Action*, edited by John Bengson and Marc Moffett, 113–35. Oxford: Oxford University Press.

[Challenges intellectualism about knowledge-how on the basis of examples involving intervening epistemic luck.]

———. 2015. 'Revisionary Intellectualism and Gettier', *Philosophical Studies*, 172(1): 7–27.

[Argues for the revisionary version of intellectualism according to which knowledge-how is a kind of knowledge-that, while rejecting the view that all kinds of propositional knowledge must exclude luck.]

Chisholm, Roderick. 1989. *Theory of Knowledge* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.

[Classic overview of issues in epistemology, from a broadly internalist perspective.]

Colaço, David, Wesley Buckwalter, Stephen Stich, and Edouard Machery. 2014. 'Epistemic Intuitions in Fake-Barn Thought Experiments', *Episteme* 11(02): 199-212.

[Reports experimental results to the effect that folk are disinclined to attribute knowledge in barn façade cases.]

Coffman, E. J. 2009. 'Does luck exclude control?' *Australasian Journal of Philosophy* 87: 499–504.

[Argues for a specific way to understand the notion of control and defends a corresponding lack of control account of luck]

Dancy, Jonathan. 1985. *An Introduction to Contemporary Epistemology*. B. Blackwell.

[Introduces central issues in epistemology, including Gettier cases.]

DePaul, Michael and Stephen Grimm. 2007. 'Review Essay on Jonathan Kvanvig's *The Value of Knowledge and the Pursuit of Understanding*. *Philosophy and Phenomenological Research*, 74: 498–514.

[Suggests that understanding, contra Kvanvig, is a kind of propositional knowledge.]

Ginet, Carl. 1975. *Knowledge, Perception, and Memory*. D. Reidel Pub. Co.

[Features the original barn façade thought experiment, which is sometimes attributed to Goldman who concedes that this case refutes his previous causal theory of knowing.]

Goldman, Alvin I. 1967. 'A Causal Theory of Knowing'. *The Journal of Philosophy* 64 (12): 357–72.

[Goldman's first classic paper defending an externalist approach in epistemology. The view defended here is later rejected due to its susceptibility to barn-façade counterexamples.]

———. 1976. 'Discrimination and Perceptual Knowledge'. *Journal of Philosophy* 73 (20): 771–91.

[Classic paper defending Goldman's signature reliabilist account of epistemic justification.]

Gordon, Emma C. 2016. 'Understanding in Epistemology', *Internet Encyclopedia of Philosophy*.

[Provides an overview to issues central to understanding in epistemology. Focuses on various points of contact between understanding and knowledge, including their comparative susceptibility to being undermined by epistemic luck.]

Grimm, Stephen. 2006. 'Is Understanding a Species of Knowledge?' *British Journal for the Philosophy of Science*, 57: 515–535.

[Grimm's earliest position on understanding, which claims that understanding is a kind of propositional knowledge.]

Haddock, Adrian, Alan Millar, and Duncan Pritchard. 2010. *The Nature and Value of Knowledge: Three Investigations*. Oxford University Press.

[Contains three independent discussions which explore issues about the nature and value of knowledge, including Pritchard's defence of a revisionary approach to the value problems for knowledge.]

Hales, Steven D. 2014. 'Why Every Theory of Luck Is Wrong'. *Noûs*.

[Proposes counterexample cases for extant theories of luck, including moral and lack of control accounts.]

Hetherington, Stephen 1998. 'Actually Knowing', *The Philosophical Quarterly* 48(193): 453-469.

[Rejects the anti-luck platitude on the basis of the Epistemic Counterfactuals Fallacy.]

———. 2013. 'Knowledge Can Be Lucky'. In *Contemporary Debates in Epistemology*, edited by Matthias Steup and John Turri, 164. Blackwell.

[Defends, *contra* Pritchard, the view that knowledge is compatible with epistemic luck.]

Horvath, Joachim, and Alex Wiegmann. 2017. 'Intuitive Expertise and Intuitions about Knowledge', *Philosophical Studies*, 1-26. doi: 10.1007/s11098-016-0627-1

[Reports experimental results which compare folk versus expert judgments about barn façade cases.]

Ichikawa, Jonathan Jenkins, and Matthias Steup. 2014. 'The Analysis of Knowledge'. In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Spring 2014. <http://plato.stanford.edu/archives/spr2014/entries/knowledge-analysis/>.

[Overview of the analysis of knowledge. Includes discussion of Gettier problems and surveys strategies of response.]

Kvanvig, J. 2003. *The Value of Knowledge and the Pursuit of Understanding*. Cambridge: Cambridge University Press.

[Seminal discussion of the *Meno* problem for the value of knowledge, and argues that understanding has an epistemic value that is not shared by epistemic standings that fall

short.]

Lackey, Jennifer. 2008. 'What Luck Is Not'. *Australasian Journal of Philosophy* 86 (2): 255–263.

[Raises influential counterexamples to lack-of-control and modal accounts of luck.]

Latus, Andrew. 2003. 'Constitutive luck'. *Metaphilosophy* 34: 460–475.

[Defends a hybrid account of luck that features a subjective probabilistic and a lack of control condition.]

Madison, Brent JC. 'Combating Anti Anti-Luck Epistemology', *Australasian Journal of Philosophy* 89(1) (2011): 47-58.

[Defends the anti-luck platitude by challenging arguments by Hetherington claiming that knowledge can be lucky.]

McKinnon, Rachel. 2014. 'You Make Your Own Luck'. *Metaphilosophy* 45: 558–577.

[Addresses the question of what is for people to create their own luck and criticises the distinction between intervening and environmental epistemic luck]

Morris, Kevin. 'A Defense of Lucky Understanding', *British Journal for the Philosophy of Science* 63: 357-371.

[Argues that understanding is fully compatible with epistemic luck, contrary to propositional knowledge.]

Poston, Ted. 2009. 'Know-How to Be Gettiered?' *Philosophy and Phenomenological Research* 79 (3): 743–47.

[Claims that Gettier-cases featuring intervening luck cannot be constructed for knowledge-how, and on this basis concludes that knowledge-how is not a kind of knowledge-that.]

Pritchard, Duncan. 2017a. 'Knowledge, Luck and Virtue: Resolving the Gettier Problem'. In *The Gettier Problem*, edited by C de Almeida, R Borges, and P Klein. Oxford: Oxford University Press.

[Articulates the role of luck in the diagnosis of Gettier cases and their import for theories of propositional knowledge.]

———. 2017b. 'Epistemic Risk'. *Journal of Philosophy*.

[Marks a transition from epistemic luck to epistemic risk, by arguing that the claim that knowledge excludes the former can helpfully be reconstrued as the claim that knowledge excludes the latter.]

———. 2005. *Epistemic Luck*. Oxford: Oxford University Press.

[Seminal discussion of the place of luck in the theory of knowledge. Defends a safety condition on knowledge.]

———. 2007. 'Anti-Luck Epistemology'. *Synthese* 158: 277–97.

[Builds upon arguments from *Epistemic Luck* and sharpens the project of theorising about the nature of knowledge by taking as a starting point the thesis that knowledge excludes luck.]

———. 2008. 'Knowing the Answer, Understanding, and Epistemic Value', *Grazer Philosophische Studien*, 77: 325–339.

[Rejects the position that understanding is a kind of knowledge by showing how each standing can be present without the other.]

———. 2009. 'Knowledge, Understanding and Epistemic Value'. *Royal Institute of Philosophy Supplement* 64: 19–43.

[Defends the view that understanding is more valuable than propositional knowledge because the former but not the latter essentially involves finally valuable cognitive achievement.]

———. 2015. 'The Modal Account of Luck'. In *The Philosophy of Luck*, edited by Duncan Pritchard and Lee Whittington. Routledge.

[Articulates the modal account of luck and defends this account against some recent objections.]

Pritchard, Duncan, and Lee Whittington, eds. 2015. *The Philosophy of Luck*. John Wiley and Sons.

[Collection of recent papers on the topic of the philosophy of luck, broadly construed.]

Rescher, Nicholas. 2014. 'The Machinations of Luck'. *Metaphilosophy* 45: 620–626.

[Defends the objective probabilistic account of luck and draws a distinction between actual and apparent luck.]

Riaz, Amber. 2015. 'Moral Understanding and Knowledge', *Philosophical Studies* 172(2): 113-128.

[Argues that understanding is fully compatible with epistemic luck.]

Riggs, W. 2009. 'Luck, Knowledge and Control'. In *Epistemic Value*, edited by A. Haddock, A. Millar, and D. Pritchard. Oxford: Oxford University Press.

[Defends a lack-of-control account of luck as well as its relevance in epistemology.]

Rohwer, Yasha. 2014. 'Lucky Understanding Without Knowledge', *Synthese* 191: 945-959.

[Defends the view that understanding can be lucky in ways that propositional knowledge is not.]

Sliwa, Paulina. 2015. 'IV—Understanding and Knowing', *Proceedings of the Aristotelian Society* 115(1): 57-74.

[Argues that understanding is a species of propositional knowledge and challenges recent arguments by Pritchard and others which claim that understanding is compatible with epistemic luck in ways that propositional knowledge is not.]

Stanley, Jason. *Know How*. Oxford: Oxford University Press.

[Sustained defence of intellectualism about knowledge-how; maintains that considerations about epistemic luck do not show knowledge-how to come part with the items of propositional knowledge the intellectualist identifies with knowledge-how.]

Stanley, Jason and Timothy Williamson (2001). 'Knowing How', *Journal of Philosophy* 98: 411–44.

Influential early defence of intellectualism on the basis of linguistic arguments.

Turri, John, Wesley Buckwalter and Peter Blouw. 2014. 'Knowledge and Luck', *Psychonomic Bulletin & Review*. doi:10.3758/s13423-014-0683-5

[Reports experimental results according to which folk judge knowledge-that to be present in barn-façade style cases.]

Turri, John. 2016. 'Knowledge and Assertion in "Gettier" Cases', *Philosophical Psychology*. <http://doi.org/10.1080/09515089.2016.1154140>

[Defends on experimental grounds the knowledge norm of assertion against objections on the basis of assertions of Gettiered-beliefs].

Unger, Peter (1968). 'An Analysis of Factual Knowledge'. *Journal of Philosophy* 65 (6): 157-170.

[An early influential discussion of the view that knowledge excludes luck.]

Williamson, Timothy. 2007. *The Philosophy of Philosophy*, Oxford: Oxford University Press.

[Important treatise on philosophical methodology. Includes an articulation of the 'expertise defence' against results from experimental philosophy which appeal to folk judgments.]

Zagzebski, Linda Trinkaus. 1996. *Virtues of the Mind: An Inquiry into the Nature of Virtue and the Ethical Foundations of Knowledge*. Cambridge: Cambridge University Press.

[Seminal defence of robust virtue epistemology, articulated along virtue responsibilist lines, according to which propositional knowledge can be understood in terms of acquiring a true belief through the exercise of virtue.]

———. 2001. 'Recovering Understanding', In M. Steup (ed.), *Knowledge, Truth and Obligation*. Oxford: Oxford University Press, 2001.

[Defends the full compatibility of understanding with epistemic luck.]

Zimmerman, Michael J. 1987. 'Luck and Moral Responsibility'. *Ethics* 97 (2): 374–86.

[Defends, in the context of moral philosophy, a lack of control account of luck.]