Pritchard vs. Pritchard on Luck

ABSTRACT In this paper, I argue for a particular account of luck by comparing two distinct versions of the modal account of luck that have been provided by Duncan Pritchard (2005, 2014). More specifically, I argue that there are three respects in which Pritchard's earlier account is better than his later account: it accounts better for the fact that luck comes in degrees, it includes a significance condition, and it seems to be less vulnerable to an analogue to the famous 'reference class problem'. I then discuss two consequences of the points made in the paper: an alleged pragmatic encroachment, and a particular view on the relation between knowledge, luck and justification.

Keywords

Luck, modal account, Pritchard, pragmatic encroachment, knowledge, justification

Luck features prominently in our daily lives, as well as in our philosophical theories.[1] The modal account of luck is one of the most prominent explications of the concept of luck.[2] Duncan Pritchard's *Epistemic Luck* (2005) provides one of the most comprehensive and illuminating expositions of this account. In recent writings, however, Pritchard modified his views (2014). In this paper, I attempt to accomplish two things: first, I identify and review the proposed changes to the modal account of luck. Perhaps surprisingly, I shall argue that Pritchard was wrong to change his views: overall, his 2005 time-slice has a better account of luck than does his 2014 time-slice.[3] Second, I examine two consequences of the points made in this paper for epistemology specifically.

1. Three Differences

According to Pritchard (2005), luck is subject to two conditions, individually necessary and jointly sufficient for an event to be lucky:

> (L1) If an event is lucky, then it is an event that occurs in the actual world but which does not occur in a wide class of the nearest possible worlds where the relevant initial conditions for that event are the same as in the actual world. (Pritchard 2005: 128)

[1] For some examples in epistemology, see (de Grefte, 2017; Pritchard, 2005). For examples in ethics, see (Levy, 2011; Williams & Nagel, 1976)

[2] That is not to say it is uncontested, of course. See for example (Goldberg, 2015; Hiller & Neta, 2006; Lackey, 2008)

[3] Pritchard's thought moves quickly; his most recent work focusses not luck but on the related notion of risk (Bondy & Pritchard, 2016; Pritchard, n.d., 2015). In this paper, I focus on the notion of luck exclusively.

(L2) If an event is lucky, then it is an event that is significant to the agent concerned (or would be significant, were the agent to be availed of the relevant facts). (Pritchard 2005: 132)

The core thought behind the modal account of luck is that lucky events are events that could have easily failed to occur. This thought is supported by considering paradigmatic cases of luck, such as finding a treasure in one's yard by randomly digging a hole. If one randomly digs, one could have easily dug at another location, and so one could have easily failed to find the treasure. If we modify the case, such that I use a metal detector, then I could *not* have easily failed to find the treasure, and we would correspondingly no longer regard the event as lucky.

(L2), on the other hand, is meant to express the thought that all lucky events have some significance. (L2) is required, according to Pritchard (2005), because there could be some events that satisfy (L1) but that we would not consider to be lucky, such as small avalanches occurring at the South Pole, or the wind on Mars creating dunes in the shape of a heart. If no sentient being accords any significance to the event, it is not a matter of luck, it seems.

Pritchard (2014) has made it clear that he deviates from Pritchard (2005) as far as the rôle of (L2) is concerned: contra Pritchard (2005), he does not consider (L2) to be necessary for luck. I believe, however, that there are in addition at least two other respects in which Pritchard (2014) deviates from Pritchard (2005). The first of these concerns the various ways in which luck is said to come in degrees, the second the question whether luck is a subjective or an objective notion. Below I will defend Pritchard (2005) against Pritchard (2014) with respect to each of these three differences.

2. Significance

The first difference between Pritchard's time-slices has, as we said above, been mentioned by Pritchard himself: Pritchard (2005) does, whereas Pritchard (2014) does not think that (L2) is necessary for luck.

Are lucky events always events that are significant to some agent? There are (at least) three reasons to believe that they are. The first is based on ordinary usage. Normally, we do not say that small avalanches at the South Pole are lucky, or that heaps of sand on Mars luckily form certain patterns. When we are

uninterested in an event, we call the event ‘unlikely’, or ‘improbable’, but not ‘lucky’. It is no accident that The Oxford English Dictionary defines luck as "the fortuitous happening of an event favourable or unfavourable to the interest of a person." This indicates that significance is a central feature of our ordinary usage of the concept of luck.

As for my second reason, we may observe that the same event can at the same time be a case of luck for one person, but not for another. Suppose Jane wins the lottery. Jane is clearly lucky, but the event is not a case of luck (good or bad) for John, when John has no interests in either Jane or the lottery. Importantly, we are not concerned with Jane and John’s own judgements about luck. No doubt, Jane would regard her lottery win as lucky, whereas John would not. Even from an objective, disinterested perspective, however, the lottery win *is* lucky for Jane but not for John. This suggests that luck is a relation between an event and an agent, rather than a property of events. An event is lucky only *for someone*. A significance condition on luck allows us to nicely capture this agent-relativity of luck. In the above example, the lottery clearly has high significance for Jane, which would explain why we think her case is a case of luck. But it has no such significance for John, which would explain why we think the event is nog a case of luck *for him.*

My final reason is that we have available a slew of related notions, such as ‘chanciness’ and ‘unlikelihood’, that seem to share the modal profile of lucky events but do not require significance. Again, we would call avalanches at the South Pole unlikely or chancy, but not lucky. However, if we modify our example such that the same unlikely avalanche destroyed the Amundsen–Scott South Pole Station, this would surely constitute a case of bad luck for the relevant research community. A significance condition of luck would allow us to explain these divergent usages. Without significance, the avalanche is merely unlikely, when it acquires significance, it becomes a case of (bad) luck.

The way we ordinarily use the concept of luck thus seems to indicate in several ways that luck requires significance. To be sure, one can propose to revise our pre-theoretical concepts, but there must be a good reason to do so. The main reason Pritchard (2014) provides is that

> [w]e shouldn't expect an account of the metaphysics of lucky events to be responsive to such subjective factors as whether an event is the kind of thing that people care about enough *to regard as* lucky. (2014: 604)

I think Pritchard is right to the extent that we don't need the notion of significance to describe the modal profile of lucky events. But what I have been arguing is that if we want to understand the role the concept of luck plays in our ordinary thought and language, these *metaphysics* of luck alone will not suffice. For that kind of project, Pritchard (2005) is much better equipped.

3. Degrees of Luck

The second difference between Pritchard (2005) and Pritchard (2014) concerns the various ways in which luck is said to come in *degrees*. Of particular importance is the proportion of nearby worlds where the relevant event fails to occur. Here the difference between the earlier and the later Pritchard is that Pritchard (2005) states that in order to be lucky, an event must fail to occur in a *wide class* of nearby possible worlds, whereas Pritchard (2014), appears to find it sufficient that there are *any* "close possible worlds in which the event does not obtain" (2014: 599)

So, the crucial question here is: do a few nearby possible worlds where event E fails to occur suffice to make E lucky? Matters are somewhat complicated here, but ultimately I believe Pritchard (2005) has the better formulation.

At first, sight, however, things may appear otherwise. Suppose Jane participates in a fair lottery. Without consulting the results, Jane forms the belief that she lost, purely on the basis of the statistics involved. Jane's belief turns out to be true. Pritchard (2014) submits that Jane's belief is luckily true:

> the subject's true belief is just down to luck, since she could so very easily have formed a false belief (i.e. had the balls fallen in a slightly different configuration, such that she owned the winning lottery ticket). (2014: 597–598)

Here I think Pritchard is right. If we let our account of luck be informed by the master intuition that a lucky event could have easily failed to occur, then Jane's belief should be counted as luckily true, since in this case Jane's belief *could* have easily been false: the nearest world in which it is false is almost exactly like the actual world.[4]

On the contrary, Pritchard (2005) seems to be committed to the claim that Jane's belief is not a matter of luck, since while it is false in *one* nearby possible world, it is not false in a 'wide class' of them.[5] In the vast majority of the nearest possible worlds, she will be right, and her ticket will be a loser. In this respect, Pritchard (2014) is in a better position to make sense of our lottery case than Pritchard (2005): Jane's belief could have easily failed to be true, and thus needs to be counted as a case of luck if we are to remain faithful to the central thought guiding the modal account of luck, that lucky events could have easily failed to occur. But Pritchard's (2005) account does not allow this.

At first sight, we might thus think that Pritchard's (2005) has the upper hand on Pritchard (2014) in this respect. Problems arise for the latter, however, when we consider the various ways in which luck comes in degrees. It is evident that luck is a gradual notion: one can be more, or less lucky. The question before us is how the accounts under consideration accommodate this feature. Pritchard (2014) explains graded nature of luck solely in terms of the *nearness* of nearest possible worlds in which the event fails to occur. Thus, "the degree of luck involved varies with the modal closeness of the world in which the target event doesn't obtain" (2014: 600). While this principle seems plausible enough – I was more lucky to run into an old friend from Australia than to run into my flat mate today, because *more* would need to change with respect to the actual for the second event to fail to obtain than for the first – it cannot be the only factor influencing degree of luck. If modal nearness were the only driver for differences in degree of luck, then Pritchard (2014) could not accommodate the following reasonable assumption: John's belief that he will *win* the lottery, if true, is subject to a much higher degree of luck than Jane's belief that she will *lose* the lottery, if that belief would also be true. For the minimal modal distance between the worlds where

[4] To be as clear as possible, assume that we are considering the event just one second after it occurred, such that it does not have any consequence yet for Jane's life.

[5] To handle lottery cases, Pritchard (2005) proposes a strict safety condition (2005, p. 163). This safety condition, however, does not seem to impact his general analysis of luck.

one loses and the actual world if one wins, is exactly the same as the minimal modal distance between the worlds where one wins and the actual world if one loses. In both cases, just one ball would have to fall in a different location for the outcome to be radically different. If degree of luck is solely determined by distance to the actual world, the events should be subject to the same degree of luck. Note, moreover, that we *still* have the intuition that John's belief is luckier than Jane's belief if we add that winning and losing would have the same (but inverted) significance to them. Our intuition is thus does not trade on the fact that winning a lottery is much more significant, usually, than losing it.

Pritchard (2014) does not comment on this issue, but Pritchard (2005) seems to be aware of it: "as the width of the worlds in which the event in question does not obtain recedes, then our intuition that luck is involved recedes with it" (2005: 130). This would explain the difference between John and Jane: John's belief is false in a much higher proportion of nearby possible worlds than Jane's. What we need is an account of luck that accommodates the relevance of the proportion of nearby possible worlds where the event fails to obtain for the overall degree of luck to which it is subject.

It thus seems advisable to include the width of the nearby worlds in which the event fails to obtain in our definition of luck, as Pritchard (2005) does. In our example, Jane's belief that she will lose is subject to a low, but still significant degree of luck.[6] But it is easier for Prichard (2005) to accommodate this fact than for Pritchard (2014) to do so. Interpreting luck as a graded notion would then still allow us to say that Jane's belief is *somewhat* luckily true. While her belief is not false in many nearby possible worlds, it is still false in some of them, and this suffices to make her belief a genuine case of luck. For Pritchard (2014) Jane's belief is as lucky as John's, even if we regard luck as a gradual notion.

4. Subjective or Objective Luck?

The third and final difference between Pritchard (2005) and Pritchard (2014) to be discussed concerns the fact that the later Pritchard, much more than the former, stresses the objective nature of luck: "… our subjective judgements about luck are not to be taken at face value, but rather evaluated relative to an

[6] At the very least, the degree of luck is significant enough to prohibit us from ascribing knowledge in such lottery cases.

objective standard for lucky events" (2014: 605). And we already saw that when discussing the absence of a significance condition in his later account, Pritchard writes that a proper account of the metaphysics of lucky events should *not* be responsive to such subjective factors as whether an event is the kind of thing that people care about enough *to regard as* lucky, again seeming to draw a distinction between his earlier account, which did include some subjective factors like significance, and his later account, which does not.

As we have already argued, a complete account of luck does include a significance condition, and therefore luck is, at a fundamental level, a subjective phenomenon. The degree to which an event is a case of luck for a particular agent partly depends on the significance that agent accords to that event. Since various agents will may presumably attach varying degrees of significance to the same event, this introduces a subjective factor in the analysis of luck.

There is another reason, however, why I think we should conceive of luck as a subjective phenomenon. Namely, even without a significance condition on luck, various agents may provide different descriptions of the same event, and these different descriptions will imply different degrees of luck. Consider another lottery case. Jones buys a ticket, and wins the lottery. As we have been arguing, cases like these constitute clear cases of luck. But note that this requires that we hold certain 'relevant initial conditions' fixed. For example, Jones' win is lucky only provided that the lottery is fair. If Jones instead rigged the lottery in his favour, he could no longer easily have lost and so his win would not be a case of luck anymore. This means the degree of luck to which an event is subject will depend on how we specify the initial conditions for that event.

What are the relevant initial conditions for an event? I believe this is not an objective matter. Suppose we take the relevant event to be Jones' fair lottery win. There are still various possible ways of spelling out the relevant initial conditions. For examples, we may take the relevant initial conditions for the event to be the exact microphysical state of the universe just before draw, together with all the laws of physics. Given this set of initial conditions, it may well be determined whether Jones wins or not. That is, given these conditions, there will be no possibility, near nor far, where Jones loses. Under this description luck will be completely absent from Jones' win, even if he does not rig the lottery. But I take it most of us

would take a less specific set of conditions in assessing whether Jones' was lucky to win. On such a coarse-grained description of initial conditions, there are nearby worlds where these conditions hold but the event fails to obtain.[7] Which description should we choose then, a course-grained description of Jones' win which will provide the intuitive result that his win is a case of luck, or a fine-grained description which will mean we have to revise our intuitive judgments regarding the luckiness of lottery-wins? There seems to be nothing in the modal account of luck that allows us prefer one description of the event over the other on principled grounds. I suspect that what the 'proper' set of relevant initial conditions is for an event will depend on factors such as the importance of the event in question and the information that we happen to have in our possession in each particular instance. The inclusion of a set of 'relevant initial conditions' in both of Pritchard's definitions of luck therefore introduces another subjective element in the analysis of luck besides significance.

If my suspicion turns out to be right, and there is no fact of the matter about what the relevant initial conditions for an event are, and consequently, about whether an event is a case of luck or not, this has remained largely unnoticed in the literature on luck.[8] This is striking, the more so because it closely resembles a well-known problem for objective theories of *probability*. This related problem is known as the 'reference class problem', and concerns the fact that the probability of an event depends on what we take to be the relevant reference class for that event.[9] This would not be a problem for objective theories of probability if there were one reference class that were the 'correct' one, such that its corresponding probability would be the 'correct' probability for the event. Unfortunately, this is not the case (Hájek 2007: 565). Interestingly, luck resembles probability in this respect. For similarly, the degree of luck to which an event is subject depends on the specification of its relevant initial conditions, and it does not seem to be the case that there is a 'correct' set of relevant initial conditions that allows us to pick out an 'objective' degree of luck.

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[7] For example, we may restrict the set of initial conditions to just the claim that Jones bought a random ticket in a fair lottery. Given this condition only, Jones could have easily lost.

[8] Nicholas Rescher is a possible exception, when he says that "The idea of good (or bad) luck is inherently context relative" (2014: 623). Perhaps this is due to the fact that he considers luck in a probabilistic framework.

[9] See for example (Hájek, 2007; Reichenbach, 1949). Hájek traces the problem back to John Venn (1888). A more full comparison between these problems for luck and probability is called for. I hope to undertake such a project in the future.

In the debate about probability, the reference class problem has led many to abandon an objective interpretation of probability. I think a similar move is in order in the debate about luck. Pritchard (2014) says that "as philosophers our interest is ultimately not in our subjective judgements about luck as such … but rather in luck as an objective phenomenon" (2014: 605). If I am correct, we should rather re-focus our attention on luck as a subjective phenomenon.

5. Two Consequences

In the preceding paragraphs I argued that there are three respects in which the earlier modal account of luck seems to have the upper hand over the later version of the modal account. That concludes the first part of this paper. In the second part, I shall review some of the consequences of the account of luck emerging from this paper for some of the philosophical debates in which luck plays an important role. Here I will focus my discussion on recent work in epistemology.[10]

First, as epistemologists have argued for a long time, certain kinds of luck are incompatible with the possession of knowledge.[11] In particular, many people have thought that *veritic luck* is incompatible with knowledge, where veritic luck can be defined as follows:

> **Veritic Luck:** S's belief that p is veritically lucky if and only if p is true in the actual world, but the belief-forming method that generated S's belief that p produces a false belief in a nearby possible world.

The idea behind this form of anti-luck epistemology is thus that a method that could have easily produced false belief cannot generate knowledge. For belief-forming methods to generate knowledge, a certain counterfactual robustness is required. Not too easily may these methods lead one to believe falsely if they are to produce knowledgeable belief.

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[10] That is of course not to say that the account does not have interesting consequences in other areas of philosophy, such as ethics, as well.

[11] Unger (1968) and Engel (1992) provide some of the earliest attempts to specify which kinds of luck exactly are (in)compatible with the possession of knowledge. Pritchard (2005) builds and expands on this work considerably. I have myself argued elsewhere that the distinction between internalism and externalism about epistemic justification can be drawn in terms of various forms of epistemic luck (de Grefte, 2017).

In this paper, I have argued that luck is a subjective phenomenon, in that the extent to which an event is a case of luck will depend both on the significance of that event to the agent concerned, and on the specification we use for the event. If veritic luck is incompatible with knowledge, then this will mean that knowledge itself will be something that is partly subjective too. Whether we possess knowledge may sometimes depend on how significant the truth of our beliefs is to us, and how we care to specify the relevant initial conditions for the formation of our true belief, including our method of belief-formation.[12]

It is precisely the former source of subjectivity that Nathan Ballantyne (Ballantyne, 2012, 2014) uses to argue against anti-luck philosophy in general. If, Ballantyne argues, degree of luck depends on significance, then we can construct cases in which the truth of the belief is *just* significant enough for the degree of veritic luck to be high enough to prevent knowledge. An otherwise similar event to which an agent then attaches only so slightly *less* significance would then qualify as knowledge, for the degree of veritic luck would be less. Ballantyne deems this form of pragmatic encroachment unreasonable when he writes that "it seems absurd that we could prevent a thinker from potentially knowing just by making a true belief slightly more significant for her" (Ballantyne, 2014, p. 1398).

Perhaps the modal theory of luck has these consequences. It is not clear, however, that these are entirely unwelcome. As Ballantyne is well-aware, recent work on pragmatic encroachment in epistemology seems to have similar consequences (Fantl & McGrath, 2002, 2007; Hawthorne, 2004). Ballantyne thinks the problem he identifies for anti-luck epistemology is different from 'normal' cases of pragmatic encroachment because increasing the significance of an event may not just prevent knowledge, but 'Gettierize' one's belief. This requires the assumption that all cases of veritic luck are Gettier cases. While I do believe this claim's contrary is true – that all Gettier cases involve veritic luck – I do not share this assumption. For example, forming a true belief on the basis of simple guessing would be a case of veritic

[12] It is here that the 'generality-problem' rears its ugly head (Conee & Feldman, 1998). Without a principled way to specify our belief-forming methods, we will not be able to provide a principled answer to the question whether, on any occasion, we possess knowledge. Kelly Becker (2008) argues that focussing on the demand to eliminate veritic luck from knowledge may actually pave the way for a solution to the generality problem. No such solution is attempted here.

luck on my account, since one could have easily formed a false belief in this way, but few of us would call beliefs formed in this way justified.

Whether these proponents of pragmatic encroachment are right or not, there is another line of defence to Ballantyne's charge that I think is available to the anti-luck epistemologist. This line is anticipated by Pritchard (Pritchard, 2005, n. 6.2) and further developed by Lee Whittington (2016). The main idea is that when we are assessing epistemic luck, we are in the epistemic normative domain, and so what is relevant for veritic luck is whether the event has *epistemic* significance. Since truth clearly seems to have epistemic significance – in the sense that it brings us in closer contact with reality – the significance condition will always be fulfilled if the event in question is the formation of a true belief. Whittington then argues that *any* amount of veritic luck is sufficient to prevent knowledge. On this view, Ballantyne's case where we have a vertically lucky belief that does not constitute knowledge because its truth is not important enough to the agent concerned is impossible. The formation of a true belief always has enough epistemic significance to prevent the belief from constituting knowledge if it has the 'right' modal profile. No true belief fails the epistemic significance test, and so increasing or decreasing significance in the veritic luck case will never turn the verdict on whether the relevant belief constitutes knowledge or not.

Of course, the formation of some true beliefs may have *more* significance than the formation of others. Some beliefs are located at the centre of our 'web of beliefs', other more at the outskirts. Forming some beliefs will have wide-ranging implications for other beliefs that we hold, and our contact with reality in general, whereas the formation of some others may not. But the point here is that even small epistemic significance is enough to prevent knowledge, given the right modal profile. Consider the following illustration. I am at a McDonald's restaurant, and, looking at the ball pit, guess that there are 3.409 ball in there. As a matter of fact, I am right. In this case, the formation of this true belief has virtually no practical consequences for me, and so it's overall significance may be negligible. Nevertheless, the current proposal is that from the epistemic point of view, the event is significant enough to have the event be subject to substantial veritic luck. This would explain why we would clearly deny *knowledge* in this case. Relating veritic luck thus not to significance in general, but rather to epistemic significance specifically may thus

enable us to evade the objection that including a significance condition on luck will lead to unacceptable forms of pragmatic encroachment in the theory of knowledge. It is thus at the very least doubtful that the modal account of luck leads to the pragmatic encroachment Ballantyne laments, and even if does, it is not clear that this would be a bad thing.

A second consequence of our theory of luck for epistemology is that conceiving of luck as a graded phenomenon supports a particular picture of the relation between luck, knowledge and *justification.* As I have said previously some epistemologists claim that knowledge admits of *no* degree of veritic luck. But it should be clear that beliefs that are subject to only small degrees of veritic luck may still be justified. Take the case of believing that your lottery ticket will lose purely based on the odds involved. Your belief may very well turn out to be true. Even if it is, your belief will not constitute knowledge, since there is a close possible world where the same method of belief-formation will lead you to form a false belief. Nevertheless, due to the fact that, as we have seen, degree of luck decreases when the proportion of nearby worlds where your method produces a false belief drops, the degree of veritic luck to which your belief is subject will be relatively small. The fact that in this case, most of us would not ascribe knowledge but would ascribe justification provides support for the claim that justification is compatible with small degrees of veritic luck, even if knowledge is not. This also seems to be in accord with the usual understanding of Gettier cases, in which justification and veritic luck are present at the same time.

However, this does not mean that justification is compatible with all degrees of veritic luck. Our McDonald's ball pit example above suffices to show this. There the degree of veritic luck present is enough to prohibit both knowledge *and* justification. A plausible next question is then what the threshold value of veritic luck is for justification. Plausible as this question may seem, I think it is nevertheless wrongheaded. For it seems clear that justification itself is a graded notion. Just like one can be more or less veritically lucky, one can be more or less justified.

Given that justification is a graded notion, it seems plausible that the degree of justification increases when the veritic luck to which the belief is subject *decreases*. To take our earlier examples, one is *more* justified to belief that one will lose the lottery when this belief is subject to a relatively small degree of

veritic luck, than one is to believe the exact number of balls in the McDonald's ball pit is 3.409 when this belief is subject to a relatively large degree of veritic luck. Justification and veritic luck seem to move in opposite directions. On the basis of this, I submit the following theses concerning the relation between luck, knowledge and justification.

1. The higher the degree of veritic luck, the lower the degree of justification, and vice versa.
2. Knowledge requires the absence of any degree of veritic luck

Taken together, these theses imply a third one, namely that knowledge requires a *maximal* degree of justification, if the degree of justification is measured in terms of the degree of veritic luck to which one's belief is subject. Of course, the above does not provide a full argument for these claims, but I do believe these claims are made plausible by the account of luck that emerges from this paper, and some of the intuitive judgements concerning the presence or absence of knowledge and justification that we have reviewed. In any case, it provides another illustration of how one's account of luck might have important implications for one's epistemology.

6. Conclusions

The aim of this paper has been twofold. First, I explained and evaluated various respects in which Pritchard's modal account of luck has changed over the years. Concerning this point I argued that, perhaps surprisingly, the earlier Pritchard provides a better account of luck than the later one. *If* one chooses to adopt a modal account of luck, Pritchard (2005) should be the place to start.

Second, I discussed two implications of the account of luck that emerged from the first part of the paper. The first of these concerns the extent to which the account of luck defended in this paper leads to an objectionable pragmatic encroachment in the theory of knowledge. I argued firstly that, even if the account would lead to pragmatic encroachment, it is not clear that this pragmatic encroachment would be objectionable, and second, that it is unclear whether the account leads to pragmatic encroachment in the first place. I argued secondly that the account of luck defended in this paper is congenial to a particular

picture of the relation between luck, justification and knowledge, where knowledge is seen to require a maximal degree of justification.[13]

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