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PERCEPTUAL KNOWLEDGE AND RELEVANT ALTERNATIVES

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ABSTRACT. A very natural view about perceptual knowledge is articulated, one on which perceptual knowledge is closely related to perceptual discrimination, and which fits well with a relevant alternatives account of knowledge. It is shown that this kind of proposal faces a problem (the *closure problem*), and various options for resolving this difficulty are explored. In light of this discussion, a two-tiered relevant alternatives account of perceptual knowledge is offered which avoids the closure problem. It is further shown how this proposal can: (i) accommodate our intuitions about perceptual knowledge and perceptual discrimination in terms of the notion of *primary relevance*, (ii) give an account of how alternatives can be rationally excluded without appeal to perceptual discrimination in terms of the notion of *secondary relevance*, and (iii) deal with the problem posed by *inverted Gettier cases*, and hence explain what it means to rationally exclude alternatives which are of secondary relevance.

1. THE RELEVANT ALTERNATIVES ACCOUNT OF PERCEPTUAL KNOWLEDGE AND THE CLOSURE PROBLEM

Intuitively, there is a very close connection between perceptual knowledge and discrimination. When at the zoo, one can come to perceptually know that the creature before one is a zebra because one can, via perception, discriminate zebras from other non-zebra items that might plausibly be in the neighbourhood (such as elephants, lampposts, penguins, rubbish bins, and so on). Of course, in one's present situation one can't discriminate between zebras and, say, cleverly disguised mules, but intuitively this sort of contrast is by-the-by, at least insofar as conditions are normal (i.e., that this is a normal zoo etc.). One's knowing that the creature before one is a zebra is essentially constituted—at least in major part—by one being able to discriminate between zebras and plausible non-zebra alternatives; not by one being able to discriminate between zebras and *implausible* non-zebra alternatives, such as the cleverly disguised mule alternative.¹

This way of thinking about the relationship between perceptual knowledge and discrimination fits very neatly with an intuition that is widespread in epistemology, which we will refer to as the *core relevant alternatives intuition*. This intuition states that in order to know a proposition, p , what is required is that one is able to rule out all those not- p alternatives that are (in some sense to be specified) *relevant*. What is not required is that one is able to rule out the *irrelevant* alternatives.

Notice that the conception of perceptual knowledge just described, which treats such knowledge as being essentially concerned with the possession of certain discriminatory capacities, seems to represent one way of fleshing-out the core relevant alternatives intuition in the perceptual case. To begin with, it offers an answer to the question of what it means to ‘rule out’ an alternative. In the perceptual case at least, to be able to rule out an alternative is to be able, via perception, to make the relevant discriminations between the target object and the object at issue in the alternative—e.g., to be able to perceptually discriminate between zebras and elephants.

Moreover, we also have an answer to the crucial question of what determines relevance, at least in the perceptual case. For what makes an alternative relevant is whether it is the kind of alternative that might ordinarily obtain in one’s neighbourhood. The possibility that one is looking at an elephant right now is relevant to one’s belief that one is presently looking at a zebra because elephants are the kinds of things that one might ordinarily find in one’s current environment. In contrast, given how we are understanding one’s current environment (such that it is normal), the possibility that one is looking at a cleverly disguised mule just now is *not* relevant because this is not the kind of thing that one might ordinarily find in one’s current environment.

The best way of capturing what is going on here is in modal terms by saying that the class of relevant alternatives is, roughly, all those alternatives that obtain in near-by possible worlds.² On this reading of relevance, if one had the misfortune to be in an abnormal environment in which there were near-by possible worlds in which what one was looking at just now was not a zebra but a cleverly disguised mule, then in order to be able to know that what one is looking at is a zebra, one would have to be able to perceptually discriminate between zebras and cleverly disguised mules. In this environment, then, it is very hard to know that one is looking at a zebra (in that it would require that one undertook further inquiries, or that one possesses special expertise), even though this is something that is very easy to know in normal environments.

That one's environment can in this way have an impact on how hard it is to acquire perceptual knowledge is perfectly in accordance with intuition, as the famous barn façade case illustrates. Gaining perceptual knowledge that what one is looking at is a barn in a normal environment is very easy, since it merely demands very mundane discriminatory powers. In contrast, gaining perceptual knowledge that what one is looking at is a barn in an abnormal environment in which barn façades are the norm is very hard, since it demands very specialised discriminatory powers—in particular, it demands the ability to perceptually discriminate between barns and barn façades.

Call the view just described the *relevant alternatives account of perceptual knowledge*. According to this proposal, perceptual knowledge is often very easy to possess. At least in normal environments, one can know relatively mundane perceptual truths simply in virtue of being able to undertake relatively mundane perceptual discriminations.³ And this seems just right.

As Fred Dretske (1970) famously showed, however, there is a problem lying in wait for the relevant alternatives account of perceptual knowledge; a problem that is brought out by considering the principle that knowledge is closed under competent deductions, or the *closure principle* for short. This principle can be formulated as follows:

The Closure Principle

If S knows that φ , and S competently deduces ψ from φ (thereby coming to believe that ψ while retaining her knowledge that φ), then S knows that ψ .⁴

So construed, the principle seems utterly uncontroversial. The problem posed by this principle for the relevant alternatives account of perceptual knowledge becomes clear once we suppose that one knows certain entailments to the denials of supposedly irrelevant alternatives, and that one makes competent deductions on the basis of this knowledge.

For example, imagine a person—we'll call her 'Zula'—who is at the zoo, and who gets a good look at one of the zebras in the clearly marked zebra enclosure. Zula has all the usual cognitive abilities and background knowledge one would expect of a normal person, and the circumstances are in every relevant respect entirely normal too. Does Zula know that what she is looking at is a zebra? Intuitively, we would say so. Her belief meets many of the criteria we might wish to lay down on a theory of knowledge. For example, it is reliably formed, it is virtuously formed, it is safe (i.e., roughly, her true belief could not have easily been false), it is sensitive (i.e., roughly, had what she believed been false, then she wouldn't have believed it), it is evidentially well-founded, and so on.

The trouble is, we can stipulate that Zula happens to know that if what she is looking at is a zebra, then it follows that what she is looking at is not a cleverly disguised mule, and that she

makes a competent deduction on this basis. Given the closure principle, it therefore follows that Zula knows that she is not looking at a cleverly disguised mule, and thus that she knows that what she is looking at is a zebra *rather than* a cleverly disguised mule. The problem, however, is that Zula is just a normal person with normal epistemic powers. Accordingly, she's in no position to perceptually discriminate between zebras and cleverly disguised mules. It is not as if she has some special expertise in this regard—such as might be possessed by a zoologist, for example—or that she has made any special checks—such as going up to the creature and checking for paint.

Thus, the closure principle seems to require that in order for Zula to know that she is looking at a zebra she must be able to rule out (i.e., know to be false) the cleverly disguised mule hypothesis. But since Zula lacks the discriminative abilities to do this, we have a problem. In particular, there is a tension between the relevant alternatives account of perceptual knowledge and the closure principle, since the latter seems to demand that Zula should have knowledge which the former insists she lacks. Call this the *closure problem*.

Famously, Dretske's response to the closure problem was to abandon the closure principle. Denying the closure principle is not an easy thing to do, however, since the principle is so incredibly compelling. Moreover, there has been a general consensus that the kind of epistemology that Dretske and others (e.g., Nozick 1981) have advanced in order to account for the failure of the closure principle brings with it some fairly serious problems.⁵ But if closure is not to be denied, then how are we to respond to the closure problem? In particular, how can we respond to this problem while respecting the intuitions that we saw driving the relevant alternatives account of perceptual knowledge above?⁶

2. ZULA'S (PERCEPTUAL) EVIDENCE: TWO PROPOSALS

One way of responding to the closure problem could be to revisit the conception of evidence which is implicit in the set up of this problem. That is, it is taken for granted in the closure problem as described that Zula's evidence should be understood as restricted to the bare visual scene that is present to the agent. After all, as one might put the point, Zula has done nothing more than looked at the creature in question, and thus it seems to follow that the perceptual evidence she has is restricted to the kind of evidence that she can gain by looking alone, where this means, roughly, the bare visual scene which is presented to her. As one commentator has put it, the grounds available to Zula concern "just the look of the beasts" in the zebra enclosure.

(Wright 2003, 60) And isn't Zula's perceptual evidence all the relevant evidence she has in this regard?

With Zula's evidence so construed, however, it is a foregone conclusion that she cannot have an adequate evidential basis for knowing that what she is looking at is a zebra as opposed to a cleverly disguised mule, since of course cleverly disguised mules will look, to Zula's untrained eyes, just like zebras. In particular, on this conception of Zula's evidence, she possesses essentially the same evidence regardless of whether the creature she is looking at is a genuine zebra or a cleverly disguised mule. It is thus no wonder then that this evidence doesn't suffice to enable Zula to know that what she is looking at is a zebra rather than a cleverly disguised mule. Accordingly, if one could resist such a restrictive conception of Zula's evidence, then one might have a basis for evading the closure problem.

There are at least two grounds that one might offer in support of crediting Zula with a significantly more expansive evidence set. The first is that Zula will almost certainly possess all kinds of additional evidence, such as background evidence, which has a bearing on what she ought to believe in this case. For although it is true that Zula doesn't do anything by way of *acquiring* evidence in this regard other than look at the zebra enclosure, this doesn't entail that the perceptual evidence so acquired is all the evidence she possesses with regard to her belief in the target proposition. Once this additional evidence is factored in, however, then perhaps it would suffice to enable Zula to know that what she is looking at is a zebra rather than a cleverly disguised mule (such that she can through competent deduction come to know that what she is looking at is not a cleverly disguised mule).

This first line of response effectively grants that Zula's perceptual evidence is restricted to the bare visual scene that is presented to her, such that her perceptual evidence is essentially the same whether she is presented with a genuine zebra or a cleverly disguised mule, but argues nonetheless that Zula's total evidence suffices to enable her to know that what she is looking at is a zebra rather than a cleverly disguised mule. In contrast, the second line of response objects even to the conception of perceptual evidence in play here. In particular, one might argue that even setting aside whatever additional evidence that is available to Zula in this regard, the perceptual evidence that she possesses should be understood in a much more robust way.

Consider, for example, what *epistemological disjunctivism* says about the perceptual evidence available to Zula in this case. According to this view, if Zula really is in the good epistemic conditions that we stipulated as part of the example, then she can come to know that the creature before her is a zebra in virtue of *seeing that* it is a zebra, where seeing that p entails p . In contrast, Zula's counterpart who is faced with a cleverly disguised mule will not count as seeing

that the creature before her is a zebra because, aside from anything else, this simply isn't the case. Moreover, epistemological disjunctivism holds that seeing that p can be one's reflectively accessible rational support for believing that, and hence knowing that, p . There is thus a kind of rational support, perceptually acquired, which is available to Zula in the good cognitive conditions that she finds herself in which is simply unavailable to her counterpart in poor (i.e., deceptive) cognitive conditions.

Although there are interesting questions just how rational support and evidential support are related to one another, we can at least say this much: according to epistemological disjunctivism the perceptual evidence available to Zula in good cognitive conditions can be of a kind that favours her belief that she is looking at a zebra over the alternative scenario that she is looking at a cleverly disguised mule. The upshot is that even if we set aside the question of what additional evidence Zula has for her belief, according to epistemological disjunctivism Zula can potentially possess perceptual evidence which suffices to ensure that she can exclude the cleverly disguised mule error-possibility (such that she can through competent deduction come to know that what she is looking at is not a cleverly disguised mule).

We mention these two possible responses to the closure problem in order to set them to one side. For while there is merit in both of them, they are not the kind of response that we wish to explore here. In particular, each of these lines of response is bedevilled with difficulties which, we claim, do not afflict our preferred solution to the closure problem.

Take the first proposal, which appeals to additional evidence. The drawback that faces this approach is that it effectively raises the bar for perceptual knowledge, and hence is in danger of making such knowledge too difficult to acquire. For while it is undeniable that Zula, if she is a normal member of the public, probably will have all kinds of additional evidence available to her which she could legitimately cite in support of her belief, and which might well enable her to know that the creature before her is not a cleverly disguised mule, we surely do not want to make the possession of such evidence a pre-requisite of having perceptual knowledge.

In order to see this point in action, suppose for a moment that we replace Zula, who is (we have stipulated) a normal member of the public who lacks any specialist expertise with regard to zebras, with *Zula-C*. *Zula-C* is a child, old enough to have the relevant conceptual repertoire to be able to reliably identify zebras in normal conditions, but not so intellectually sophisticated that we could plausibly credit to her the kind of additional evidence in support of her belief that we were granting to Zula above. In the right conditions (i.e., where there is no deception taking place, etc.), couldn't *Zula-C* come to know just by looking that the creature before her is a zebra? Note, after all, that *Zula-C* will be able to perceptually discriminate

between zebras and non-zebra objects that might plausibly be in the vicinity. She thus seems to satisfy the intuition about the relationship between perceptual knowledge and perceptual discrimination that we began this paper with.

But if we do credit Zula-C with perceptual knowledge, then it follows that we should not insist that it is a general requirement on perceptual knowledge that one must be in possession of relevant additional evidence of a kind which would enable one to rationally dismiss alternatives such as the cleverly disguised mule error-possibility. So even while it might be true that Zula will ordinarily have all kinds of additional evidence available to her which bears on alternatives like the cleverly disguised mule scenario, we should not make the possession of such additional evidence a prerequisite for perceptual knowledge.

Now consider the second proposal—*viz.*, the claim that just by looking (and while possessing no special expertise) one can gain perceptual evidence which favours one's belief that the creature before one is a zebra over the alternative that it is a cleverly disguised mule (such that one can through competent deduction come to know that one is not looking at a cleverly disguised mule). We offered epistemological disjunctivism as an example of how such a proposal might be defended. But whichever epistemological account we offer in defence of this claim, it should be clear that it is bound to be controversial. Epistemological disjunctivism as applied to the closure problem is a case in point, since many will surely balk at the idea that Zula—who, recall, we have stipulated has an untrained eye in these matters, and has made no special checks—is in an epistemic position such that just through perception she has an evidential basis which would suffice (at least accompanied by the relevant competent deduction) to enable her to know that what she is looking at is not a cleverly disguised mule.

This is not to say that epistemological disjunctivism is false.⁷ Still less is it to say that this general approach to the closure problem is completely lacking in relevance to the issue at hand. Rather, the point we wish to make is merely that we would ideally seek a resolution of the closure problem which has broad appeal, whatever one's wider epistemological inclinations, and which is thus not allied to any particular contentious proposal in epistemology, whether it be a particular account of perceptual knowledge like epistemological disjunctivism, the rejection of an intuitive epistemic principle like the closure principle, or ... and so on. We think that such a resolution is available, and that what is key to this resolution is to recognise a distinction between two kinds of epistemic support: *discriminating* and *favouring*.

3. DISCRIMINATING *VERSUS* FAVOURING EPISTEMIC SUPPORT

To begin with, let us note the fact that Zula can know that the creature before her is a zebra even while being completely unaware of the cleverly disguised mule alternative. In general, agents can have perceptually knowledge even while being completely unaware of irrelevant alternatives. If this were not so, then we would have very little perceptual knowledge.

In itself, this doesn't help us with the closure problem, since of course Zula in this case *is* aware of the cleverly disguised mule alternative. It does, however, serve to alert us to the epistemic relevance of Zula's becoming aware of this error-possibility and its incompatibility with what she takes herself to know. Suppose that Zula was previously unaware of the cleverly disguised mule alternative, and so perceptually knows that the creature before her is a zebra, but then subsequently becomes aware of this scenario and its incompatibility with what she believes. We can imagine this scenario playing out in two ways:

ZULA-1: Zula becomes aware of the cleverly disguised mule error possibility and its incompatibility with what she believes and *forms no view* as to what would rationally entitle her to dismiss this error-possibility.

ZULA-2: Zula becomes aware of the cleverly disguised mule error possibility and its incompatibility with what she believes, and *forms a view* as to what would rationally entitle her to dismiss this error-possibility.

Does Zula retain her knowledge that she's looking at a zebra in ZULA-1? It's hard to see how. Once Zula becomes aware of the cleverly disguised mule hypothesis, it seems she must be able to rationally dismiss it in order to retain her knowledge that she's looking at a zebra. Take Zula-C who we encountered in the previous section. Presumably, Zula-C would be flummoxed by the presentation of this error possibility, and would be unable to offer a rational basis for dismissing it. But wouldn't that simply entail that her erstwhile knowledge that the creature before her is a zebra is now lost?

Fortunately, most situations in which one becomes aware of error possibilities will be like ZULA-2. This is because once one becomes aware of an error possibility (and its incompatibility with the target proposition), one is inclined to form a view as to what would entitle one to rule such a possibility out (at least insofar as one retains one's belief in the target proposition).

Here we can see how Zula's background knowledge becomes especially relevant. We noted in §2 that Zula might have additional evidence which could be relevant to the cleverly disguised mule possibility, though we didn't specify what it might be. It's fairly easy to determine relevant evidence which Zula would be likely to have in this regard, however, at least insofar as we bear in mind that she is a normal mature agent (and not, say, a child, like Zula-C). For

example, Zula will likely be aware that that there would be no practical point to such a deception, that it would be costly and time-consuming without bringing any comparable benefit, that it would be easily found out, that if caught the zoo owner would be subject to penalties, and so on. Collectively, then, Zula potentially has an evidential basis which favours her belief that what she sees is a zebra over the alternative that it is cleverly disguised mule, where this evidential basis includes both perceptual evidence and additional background evidence. But this means that there is no in principle problem with Zula coming to know, via competent deduction, that what she is looking at is not a cleverly disguised mule.

When we encountered the appeal to additional evidence in §2, this was as part of a proposal which attempted to resolve the closure problem by making the possession of such additional evidence a pre-requisite for perceptual knowledge. This is not the claim in play here. Rather, the claim is only that *if* Zula is made aware of the target error-possibility, and *if* Zula is in possession of relevant background evidence that can be brought to bear on this error-possibility, then Zula is in a position to come to know that what she is looking at is a zebra rather than a cleverly disguised mule. In particular, note that we are not here denying the point made above that Zula-C can come to know that the creature before her is a zebra even while lacking any relevant additional background evidence, still less are we denying the more general claim that we began this section with that Zula can acquire this knowledge even when completely unaware of the cleverly disguised mule error-possibility.

Even so, the mere fact that Zula can come to know in this way that what she is looking at is not a cleverly disguised mule should give us pause for thought. For wasn't it part of the very set-up of the closure problem that this simply *wasn't* possible, given that Zula didn't have any specialist expertise in this regard? Wasn't this point meant to be what was motivating the denial of the closure principle, in that with this principle in play Zula seemed to have a route to gaining knowledge that she simply couldn't possess?

I think we can see what is going on here by comparing the way in which Zula comes to know that the creature before her is not a cleverly disguised mule by appeal to additional background evidence, and the way that a counterpart of Zula, who *does* have the relevant expertise, might come to know this proposition. Call such a counterpart *Zula-E*, and let us suppose that *Zula-E* is an expert zoologist who could tell at a glance whether a creature is a zebra rather than a cleverly disguised mule. *Zula-E* thus has, and is presumably aware that she has, the ability to perceptually discriminate between zebras and cleverly disguised mules, and it is in virtue of this discriminative ability that she is able to perceptually know that the creature before her is not a cleverly disguised mule.

Zula can acquire this knowledge too, of course, at least if our reasoning above is correct. But notice that the manner in which she gains this knowledge is very different. After all, Zula by hypothesis cannot perceptually discriminate between zebras and cleverly disguised mules. Even so, she can know that the creature before her is not a cleverly disguised mule in virtue of the combination of perceptual evidence and additional background evidence that is available to her. We have thus identified two kinds of epistemic support in virtue of which one can know that the creature before one is not a cleverly disguised mule. Call the first kind of epistemic support, the kind that Zula-E has, *discriminative* epistemic support. And call the second kind of epistemic support, the kind that Zula could possess, *favouring* epistemic support.

Distinguishing between discriminating and favouring epistemic support also provides a natural way to appreciate the two very different roles that expertise can play in the acquisition of perceptual knowledge. Obviously, one way expertise can ground perceptual knowledge is when the agent herself (e.g., Zula-E) possesses the expertise to *discriminate* between the object in question and a relevant alternative. This is the most natural way to think about the connection. But, as we've noted, it is not the only way; even if Zula is not herself an expert, and accordingly lacks *discriminative* support for distinguishing zebras and cleverly disguised mules, we submit that she can nonetheless know that the creature before her is not a cleverly disguised mule in virtue of the combination of perceptual evidence and additional background evidence that is available to her (where some of this background evidence can include the testimony of experts).

To make this point more concrete, just suppose Zula (with no special zebra-detecting skills) sees before her a zebra which has unfortunately eaten leaves from a hybrid Red Maple tree (*acer rubrum*), which causes severe illness and changes in a zebra's physical appearance.⁸ From just the bare appearance alone, Zula would not be able to tell if what she sees is an off-colour zebra or a mule with severe dermatitis. If we suppose, however, that Zula's background evidence includes expert testimony to the effect that some of the zebras are very ill from having ingested hybrid Red Maple leaves, then Zula has *favouring* epistemic support that entitles her to rationally dismiss the mule-with-dermatitis alternative, even though she doesn't possess any *discriminatory* capacity to tell the difference just by looking at the zebra.

The upshot of the foregoing is that what has been missed in the debate regarding the closure problem is the point that it does not follow from the fact that Zula is unable to know the falsity of the cleverly disguised mule hypothesis in virtue of discriminative epistemic support that she therefore lacks knowledge of this proposition. In particular, Zula can come to know this proposition in virtue of possessing favouring epistemic support *even while lacking* discriminative epistemic support.⁹

4. PRIMARY AND SECONDARY RELEVANCE

At the start of this paper we considered a simple relevant alternatives conception of the relationship between perceptual knowledge and perceptual discrimination, such that perceptual knowledge involved being able to perceptually discriminate between relevant alternatives (but not the irrelevant ones). We found that this commonsense view—the relevant alternatives account of perceptual knowledge—was in tension with closure, in that closure demanded that agents be able to know that certain alternatives do not obtain which by hypothesis went beyond their perceptual discriminatory abilities. Thus far we have responded to this problem by noting that agents can potentially know that these alternatives do not obtain in line with closure, but argued that such knowledge is in virtue of favouring rather than discriminatory epistemic support.

If we allow that agents can know that alternatives obtain even while lacking the relevant discriminatory abilities, then does this mean that we should reject the relevant alternatives account of perceptual knowledge altogether? We think not. Instead, we suggest that it be replaced with a more refined *two-tiered* conception of how an alternative can be relevant to one's perceptual knowledge.

Call an alternative *primary relevant* if it is the kind of alternative that might plausibly occur in one's environment. When we were discussing the simple relevant alternatives account of perceptual knowledge above, this was the conception of relevant alternatives that we had in mind. So, in terms of the Zula case, and given that we stipulate that the conditions are epistemically normal (no deception is going on, etc.), then this means that Zula can know that the creature before her is a zebra in virtue of being able to perceptually discriminate zebras from the kinds of things that might plausibly be in the environment, such as elephants. It does not mean that Zula needs to be able to perceptually discriminate zebras from the kinds of thing that wouldn't plausibly be in the environment, like cleverly disguised mules.

In contrast, if Zula were in an environment in which the cleverly disguised mule alternative might plausibly obtain, and thus is primary relevant, then she *would* need to be able to perceptually discriminate between zebras and cleverly disguised mules in order to acquire perceptual knowledge that the creature before her is a zebra.¹⁰ How difficult it is to acquire perceptual knowledge—in particular, which perceptual discriminatory abilities the subject is required to have—is thus dependent upon the kind of environment that the subject is in, just as we would expect.

Note that this way of thinking about perceptual knowledge is also in keeping with the idea that Zula can have perceptual knowledge even while being completely unaware of the cleverly disguised mule alternative. Relatedly, it is also compatible with the intuition that Zula-C has perceptual knowledge. For so long as epistemic conditions are good, then the cleverly disguised mule alternative is not primary relevant, and hence a subject can have perceptual knowledge even while lacking the perceptual discriminatory abilities to rule-out this alternative.

But this cannot be the full story about perceptual knowledge, as the closure problem illustrates. In particular, where Zula is aware of the cleverly disguised mule error-possibility, and yet forms no view about why she is entitled to discount it—as in ZULA-1—then she clearly lacks knowledge that what she sees is a zebra. This is so even though her perceptual discriminatory abilities are unchanged and even if we grant that the cleverly disguised mule alternative is not primary relevant. Consider, after all, the implausibility of the converse; suppose that Zula becomes aware of the cleverly disguised mule alternative (and its incompatibility with the target proposition), and gives explicit expression to this awareness (e.g., suppose she utters the conditional that ‘if what is before me is a cleverly disguised mule, then it is not a zebra’). In light of her explicit assertion of this (known-to-be-incompatible) alternative, we would surely not ascribe Zula knowledge if Zula admits to having no grounds whatsoever for dismissing the alternative. But what goes for outward expression of Zula’s awareness goes for awareness more generally; once Zula entertains the alternative, *qua* alternative, it is incumbent upon her to rationally dismiss it in order to retain knowledge of the target proposition.

We thus need to demarcate a second tier of relevance. Call an alternative *secondary relevant* if it is not primary relevant but is made relevant in some other way. We will refine what we have in mind here in a moment, but for now we can focus on one particular way in which an alternative can be made relevant, which is by the subject becoming aware of it. As we noted in the discussion of ZULA-2, once Zula becomes aware of the cleverly disguised mule alternative it is incumbent upon her to form a view about why she is rationally entitled to dismiss it. If she is unable to do this, then she no longer counts as having knowledge that the creature before her is a zebra. Moreover, notice that this conclusion continues to apply even if we stipulate that Zula is in good epistemic conditions and thus the cleverly disguised mule alternative is not primary relevant. Merely being aware of an alternative thus suffices to make it secondary relevant.

In granting that this alternative is relevant, one can seem to be in danger of making perceptual knowledge hard to acquire (or, at least, hard to retain). For given that Zula can’t perceptually discriminate between zebras and cleverly disguised mules, doesn’t the relevance of this error-possibility entail that Zula is now unable to know that what she is looking at is a zebra?

Crucially, however, we saw above that Zula can exclude the cleverly disguised mule error-possibility, and thus come to know that this alternative is false, even while lacking discriminating epistemic support. In particular, she can come to know this proposition in virtue of possessing favouring epistemic support. In general, when it comes to secondary relevant alternatives, mere favouring epistemic support is all that is required.

It should be clear that this two-tiered conception of perceptual knowledge can retain the idea that there is a close relationship between perceptual knowledge and perceptual discriminatory abilities without being in tension with the closure principle. On the one hand, perceptual knowledge is still at root a matter of exercising the relevant perceptual discriminatory abilities, where the kind of abilities required is dependent, as one would expect, on one's environment. Moreover, one does not need to take a view about non-relevant alternatives (i.e., ones which aren't primary relevant) in order to have perceptual knowledge, much less does one need to possess the kind of additional background evidence that might be required to exclude such alternatives.

Even so, once we introduce the closure principle into the mix, and make subjects aware of secondary relevant error-possibilities, then it is incumbent upon the subject to be able to rationally exclude such alternatives. If the subject cannot do this, then the knowledge she previously acquired via perception is lost, just as we would expect. But if she can rationally exclude such alternatives, then she not only retains this knowledge but can also come to know the denial of the target error-possibility, in line with the closure principle. What is crucial here, however, is that the subject can gain this knowledge of the denials of secondary relevant alternatives in virtue of possessing favouring epistemic support. In particular, it does not require that the subject possesses the kind of perceptual discriminatory abilities which by hypothesis she lacks.¹¹

5. SECONDARY RELEVANCE

In the last section we witnessed the distinction between primary and secondary relevant alternatives, and we gave an example of what would suffice for the latter—*viz.*, that the subject becomes aware of an alternative which is not primary relevant.¹² We now need to say more about what is involved in secondary relevance. Here are two questions we might naturally ask about secondary relevance:

- (1) Does it make any difference whether the alternative in question is rationally motivated?

(2) What about alternatives of which the subject is not aware, but ought to be?

Let's take the questions in order. We take it that the natural way that an alternative might be raised in a conversational context will be in terms of a rational motivation, at least implicitly. For example, if an alternative were raised in a conversational context one would typically suppose that the person raising it had some rational motivation for thinking that this alternative might obtain, even if they don't state one, since why else would they raise it? Even so, a subject might find herself considering an alternative simply because they come to recognise that it is inconsistent with something they believe. In such a case this alternative is not rationally motivated at all.

As we noted in our discussion of ZULA-1 and ZULA-2, it is hard to fathom how a subject who becomes aware of an alternative *qua* alternative—i.e., and recognises its incompatibility with what one believes—could form no view at all as to what rationally entitles her to disregard this alternative while retaining her knowledge of the target proposition. That suggests that merely being aware of an alternative suffices to make it secondary relevant. At the very least, being aware of an alternative *qua* alternative suffices to make it secondary relevant, and thus an alternative that the subject needs to rule-out, even if only by appeal to favouring epistemic support.¹³

If becoming aware of a non-rationally motivated alternative *qua* alternative can make that alternative secondary relevant, then rationally motivated alternatives will certainly be secondary relevant. The rational motivation in question will be misleading, of course, in that we have already stipulated that the alternative in question is not primary relevant, but that does not prevent the rational motivation from being *bona fide*. It follows that a subject must be able to rule-out such an alternative.

Note, however, that it does not follow that the epistemic demands made on a subject by a rationally motivated alternative are the same as that imposed by a non-rationally motivated alternative, even if the subject is required to rule-out both kinds of error-possibility. In particular, we take it that the kind of favouring epistemic support that is required to rule-out a rationally motivated alternative ought to speak to the specific grounds that have been offered in support of this error-possibility. If, for example, one is told by someone who *works at the zoo* that the creature in the pen is not a zebra but rather a cleverly disguised mule, then it may not suffice to rule-out this error-possibility that one appeals merely to the general background evidence listed earlier. In this way, rationally motivated alternatives can impose more austere epistemic demands on the subject than corresponding non-rationally motivated alternatives.

We now turn to question (2). Suppose, for example, that the zoo that Zula is visiting has a number of signs posted near the zebra enclosure which state (falsely) that the creatures therein are not zebras but cleverly disguised mules. Suppose further that Zula should have spotted these signs, but fails to simply because she is a very inattentive person. Had Zula been attentive, then she would have been made aware of the cleverly disguised mule alternative, and it would have been incumbent upon her, if she is to retain her knowledge that the creature before her is a zebra, to adduce favouring epistemic support which excludes this alternative. Does the mere fact that Zula has failed to spot this (misleading) counterevidence suffice to ensure that this epistemic demand is not placed upon her?

We think not. More generally, we submit that what matters for secondary relevance is *either* that the subject is aware of the alternative *qua* alternative *or* that this is an alternative that she ought to be aware of. Either condition suffices to place the additional epistemic demand on the subject.

This way of thinking about secondary relevant alternatives has a pleasing consequence. For notice that since the subject who is unaware of the alternative is *ipso facto* not in a position to form a view about what entitles her to dismiss it—and so will not satisfy the additional epistemic demand in question—it follows that alternatives that the subject ought to be aware of but aren't will hence be knowledge-defeating. This strikes us as exactly the right result.¹⁴

6. INVERTED GETTIER CASES

A further element of the two-tiered view that requires further elucidation is the question of just how one's favouring epistemic support rationally excludes a secondary relevant alternative, when it does. In particular, does the mere possession of the relevant favouring epistemic support suffice for ruling out secondary relevant alternatives?

This is essentially the question that Jonathan Schaffer (2001) notably raised—albeit not in terms of our terminology of course—against David Lewis's (1996) version of the relevant alternatives account.¹⁵ Schaffer's pet cases to this end were what he called 'inverted Gettier cases.' As Schaffer sees it, Gettier cases are cases where one follows evidence that only accidentally leads one in the right direction.¹⁶ In Schaffer's inverted Gettier cases, however, the agent sees *but does not appreciate* information that genuinely leads in the right direction (such cases thus involve 'missed clues', as Schaffer puts it). Here's his toy example (slightly adapted) to illustrate this point:

ORNITHOLOGY: A Professor is testing a student, Jonathan, on ornithology. The Professor shows Jonathan a goldfinch and asks ‘goldfinch or canary?’ The Professor thought that this would be an easy first question: goldfinches have black wings while canaries have yellow wings. Jonathan sees that the wings are black (this is the clue) but he does not appreciate that black wings indicate a goldfinch. So Jonathan answers, ‘I don’t know.’ (Schaffer 2001, 203)

In terms of our terminology, in ORNITHOLOGY an alternative is made secondary relevant to Jonathan (by being explicitly raised by the Professor) and so must be rationally dismissed by him if he is to know the target proposition.¹⁷

Interestingly, there’s a clear sense in which Jonathan *has evidence* that favours the goldfinch proposition over the (known to be incompatible) canary alternative (namely, he sees that the wings are black and, moreover, he believes that he has this evidence). As Schaffer (2001, 203) notes, however, it is ‘obvious that [Jonathan] does not know that the bird is a goldfinch’ and, plausibly, this is because rationally dismissing an alternative demands not merely possessing evidence that favours the target proposition to the alternative, but in addition something like appreciating that it does so.

If cases like ORNITHOLOGY leave Lewis’s particular formulation of the relevant alternatives account in a lurch, it is only because Lewis had committed himself to thinking about ruling-out alternatives specifically in terms of (simply) what one’s evidence *is*. For our purposes, we can set the details of Lewis’s proposal aside. It should be obvious that the two-tiered proposal we developed above is not in principle restricted in this way. Even so, with inverted Gettier cases in mind it is incumbent upon us to explain how favouring evidence is to be understood such that it is sufficient to rationally exclude secondary relevant alternatives.¹⁸

One might think that there is an easy solution available to the inverted Gettier problem. If what Jonathan lacks is an appreciation of the evidence that he possesses, then all we need to insist upon is that he has this appreciation—*viz.*, Jonathan needs to in addition have the belief that black wings indicate a goldfinch. Mere possession of the relevant evidence (i.e., seeing the black wings) does not suffice; rather one must also in addition believe that it is relevant evidence (i.e., one must believe that black wings indicate a goldfinch).

Unfortunately, this proposal does not stand up to close scrutiny. After all, the belief in question might well have a lousy epistemic pedigree, such as being formed on the basis of unreliable testimony. If that were so, then Jonathan wouldn’t know that the bird was a goldfinch even if he saw that the bird had black wings and believed that black wings indicated goldfinches.¹⁹

One might now respond by arguing that the reason why merely adding a belief fails is because a belief is not evidence, so what we need to add is specifically that Jonathan has

evidence that black wings are indicators of goldfinches. Indeed, on this proposal, Schaffer's argument against Lewis's view arguably fails. This is because it understates Jonathan's evidential situation, such that had his evidential situation been properly described then he would have had sufficient evidence to exclude the canary alternative, and thereby know that the bird was a goldfinch.

Unfortunately, merely possessing this additional evidence will not suffice to resolve the problem. For the sake of argument, let us grant that Jonathan not only sees that the bird has black wings, but also *knows* that black wings are indicators of goldfinch, so that there can be no doubt that this latter proposition really does form part of his evidence. Even so, it is consistent with Jonathan seeing the black wings on the goldfinch and knowing that black wings are indicators of goldfinches that he nonetheless fails to know that the bird is a goldfinch. This could be because he fails altogether to form the target belief, or because he forms this belief but does so on an entirely different epistemic basis, such that it doesn't suffice for knowledge.

More generally, it should be clear that merely adding additional beliefs or additional evidence (even in the form of knowledge) will not suffice to resolve the problem. In the former case, this is because such beliefs might not have the required epistemic status to ensure knowledge of the target proposition. In the latter case, this is because adding additional items of evidence is always consistent either with the agent failing to form a belief in the target proposition or (and more importantly, since we could stipulate that the belief is formed) forming this belief on a distinct epistemic basis which is not knowledge-supporting.²⁰

Indeed, once we recognise this point then it becomes apparent that the underlying issue here has nothing to do with 'missed clues' specifically, as one can in the relevant sense 'have' the clue (/evidence) in question and this problem still arise. For the same reason, the problem in hand is now some distance from the original inverted Gettier problem that we began with. In a nutshell, the issue is what epistemic position does a subject need to be in if she is to rationally exclude an alternative (e.g., the canary alternative) and thereby come to know the target proposition (e.g., that the bird is a goldfinch)? We think that the answer to this question can be found by looking at the distinctive epistemology of understanding, and we will close by briefly outlining how this sort of proposal would work.

7. EVIDENCE AND UNDERSTANDING

Consider *understanding-why* a specific event occurred, such as understanding why a house burnt down. On one simple account of understanding-why—known as the *knowledge account of understanding*—a subject understands why X is the case provided the subject knows some proposition, or set of propositions, which specifies the cause of X. So to understand why one's house burnt down is to know that that it burnt down because of, say, faulty wiring. Understanding-why is thus a kind of propositional knowledge regarding causes.²¹

But the knowledge account of understanding has proven to be problematic on a number of fronts, including in terms of being too inclusive.²² For example, imagine a scientist, Kate, who hears from a reliable expert that oxygen caused a particular chemical reaction. On any plausible account of testimonial knowledge, Kate can in this case acquire knowledge that oxygen caused the chemical reaction in question.²³ Even so, Kate could still fail to understand why the reaction took place insofar as she lacks a sufficient conception of how the cause and effect are related, a conception that won't always be attained simply in virtue of believing some true causal proposition, but nonetheless, a conception that seems *necessary* for understanding-why. In such cases, knowledge-that can thus come apart from the corresponding understanding-why.

We suggest that it is precisely understanding-why—a state that demands of the subject not merely correct belief or beliefs, but further, a certain conception of the explanatory relations between them²⁴—that is required in order for a subject to rationally exclude an alternative, where this means an understanding of why the subject's evidence favours the believed proposition over this alternative. It is, after all, such a conception that is lacking in a case where one's evidence E counts against A, and yet the subject fails to rationally exclude A, either by dismissing A for the wrong kind of reason (e.g., on the basis of E*, which doesn't count against A²⁵), or by inattention—e.g., as when the subject simply fails to appreciate that E actually does rationally entitle her to dismiss A. Neither of these shortcomings is compatible with understanding-why E excludes A.

Notice, in particular, that merely having *knowledge* of the relevant evidence, much less anything which falls short of knowledge (like belief), will not suffice. If one thought that understanding-why was simply a form of knowledge-that along the lines suggested by the knowledge account of understanding, then this conclusion would look puzzling. But once we realise that understanding-why comes apart from knowledge-that—and in particular that an agent can have the latter while lacking the former—then it becomes apparent why this is a theoretical option in this regard. In short, understanding-why one's evidence rationally excludes a

certain alternative is not merely a matter of one's having the right knowledge-that (or, for that matter, evidence, belief, etc.).

So what does understanding-why involve, if not a particular set of propositional knowledge? Elsewhere, one of the present authors has argued for the *cognitive achievement account of understanding*. On this proposal, roughly, understanding-why involves a cognitive achievement, where a cognitive achievement in turn involves a cognitive success which is primarily creditable to one's agency (i.e., as opposed to other factors, such as another person's cognitive agency).²⁶

Our scientist Kate fails to satisfy the cognitive achievement account because her cognitive success in forming a true belief that oxygen caused the chemical reaction is not primarily creditable to her cognitive agency but is rather significantly creditable to factors outwith her cognitive agency (such as her informant's cognitive agency). In contrast, had she been able to grasp how cause and effect were related in this case—even if she initially formed a belief about this relationship on testimonial grounds—then the cognitive success would be primarily creditable to her cognitive agency, and hence she would count as having understanding-why.

The same goes for Jonathan in the ORNITHOLOGY case. Even if we add to this example that Jonathan has knowledge of the additional evidence in question, it can still be the case that he fails to rationally exclude the target error possibility, and this will be because what he lacks is an understanding of why his evidence rationally excludes this alternative. As we have seen, mere propositional knowledge will not suffice for such understanding-why. What is required is rather a cognitive achievement on Jonathan's part, such that his cognitive success in forming a true belief that black wings are indicative of goldfinches is primarily creditable to his cognitive agency.

In order to rationally exclude a secondary relevant alternative, one must thus not merely possess the relevant favouring evidence, but must also possess an understanding of why this evidence rationally excludes this alternative.²⁷

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NOTES

¹ The zebra/cleverly disguised mule example is due to Dretske (1970). Note that not all perceptual knowledge is knowledge of objects—for example, some perceptual knowledge is of distances. We take it, however, that perceptual knowledge is paradigmatically about objects, and so in order to simplify matters in what follows we will set these other types of perceptual knowledge to one side. (If one prefers, then one can think of the type of perceptual knowledge at issue as specifically *objectual* perceptual knowledge). Moreover, in order to keep matters as simple as possible, in what follows we will be focussing on cases of perceptual knowledge where there is a single object at issue.

² Notice that we are understanding the ordering of possible worlds in the standard way in terms of their similarity to the actual world. See especially Stalnaker (1968) and Lewis (1973). A different way of understanding relevance is in probabilistic terms, such that what makes an alternative irrelevant is the fact that it concerns low-probability possibilities. Although the difference between the two views is not particularly important here (because, for the most part, low probability possibilities are far-off possibilities, and high probability possibilities are close possibilities), we favour the first sort of proposal because of the fact that low probability events can occur in near-by possible worlds (think, for example, of lottery wins). In such cases, we maintain that the modal nearness of the possibility will make it relevant even despite the fact that it is a low probability event. For a defence of a version of the probabilistic account, see Cohen (1988).

³ Notice as well that this account of perceptual knowledge is very anti-intellectualist, which might also be thought to be an advantage of the proposal. For example, a small child may lack the concept of a horse and yet, because she can nevertheless perceptually discriminate between zebras and horses, she can still come to know that what she is looking at is a zebra.

⁴ This is a different—and, we think, more plausible—way of understanding the closure principle to how Dretske (1970; cf. Dretske 2005a) himself understands it, though nothing hangs on this difference here. This formulation of the closure principle is essentially that offered by Williamson (2000a, 117) and Hawthorne (2005, 29). For the most recent critical discussion of the closure principle, see the exchange between Dretske (2005a; 2005b) and Hawthorne (2005).

⁵ What is common to these views is a commitment to something like the sensitivity principle as a condition on knowledge: roughly, that one's belief should be such that, had what one believed not been true, one would not have believed it. One key problem that faces such proposals is that once the sensitivity principle is expressed in the right way, then it is no longer obvious that it generates the kinds of counterexamples to the closure principle that it was designed to explain, and nor is it obvious that it is authentic to the core relevant alternatives intuition that motivated the rejection of this principle in the first place. On the first point, see Williams (1991, ch. 9) and Black (2002). On the second point, see Pritchard (2002; 2005, chs. 2-3). There are lots of other objections that have been levelled against sensitivity-based views, of course. For a recent statement of one such objection, see Sosa (1999). For an overview of the literature on modal conditions on knowledge, see Pritchard (2008b).

⁶ Notice that in spelling out the closure problem we have set to one side *radical sceptical* alternatives. This is because error-possibilities of this kind raise special problems of their own, and hence are best discussed in their own right separately.

⁷ Indeed, see Pritchard (2012) for a recent articulation and defence of epistemological disjunctivism.

⁸ See Weber (1997) for further discussion of this phenomenon.

⁹ It is an interesting question why this possibility has been largely overlooked in this debate. See Pritchard (2010, §5) for a discussion of some possible explanations.

¹⁰ One very natural way to think of the requirement that *S* be able to distinguish *As* from (primary-relevant) *B*-alternatives will be in terms of a simple subjunctive conditional analysis—*viz.*, *S* is able to distinguish *As* from (primary-relevant) *Bs* in conditions *C* if and only if *S* would correctly distinguish the two, if *C* were the case (Lewis 1997; Choi & Fara 2012). On the standard semantics for subjunctive conditionals, this would mean that *S* would distinguish *As* from (primary-relevant) *Bs* in conditions *C* provided *S* distinguishes *As* from (primary-relevant) *Bs* in all close *C*-worlds. Of course, any more detailed proposal will have to, *à la* Choi (2008), include some kind of 'anti-disrupter' clause to deal with finks, masks and mimics. (See here also Alfano 2014 for a helpful discussion). While this issue of how to refine something like this subjunctive conditional analysis is a point of contention amongst proponents of relevant alternatives theories, we will remain neutral on the matter of how best to understand the right way to refine the discrimination requirement.

¹¹ See Pritchard (2010) for an earlier presentation of a two-tiered relevant alternatives account of perceptual knowledge along these general lines.

¹² We are using awareness in broadly the same way as access internalists about epistemic justification use the term when specifying, as a condition on epistemic justification, that a subject 'be aware' of the relevant justifiers for the target belief. Whilst some access internalists simply take the matter of what constitutes awareness at face value, there are some attempts to cash the condition out. As a (relatively uncontroversial) first pass at doing so, consider Alston's (1986, 186) proposal that *S* is aware of *p* when *p* is something 'that falls within the subject's ken, something

of which she has taken note.’ Of course, Alston’s somewhat generic view invites the question of what it is in virtue of which S counts as taking note of p , when S is aware of p . On this point, Bergmann has remarked that:

‘All such awareness will [...] involve *conceiving* of the justification-contributor that is the object of awareness as being in some way relevant to the justification or truth of the belief.’ (Bergmann 2006, 13)

This suggestion is plausible; correspondingly, and recasting Bergmann’s insight, it’s plausible to suppose that one is aware of an alternative, *qua* alternative, only when one conceives of the alternative as being incompatible with the target proposition. Accordingly, and intuitively, one does not count as being ‘aware’ of the alternative, *qua* alternative, when one merely considers the alternative without appreciating it, or conceiving of it, as incompatible with the target proposition.

¹³ It is tempting to consider how the notion of secondary relevance might be applicable in epistemology more generally, beyond just perceptual cases. For instance, consider an auditory case, where an individual, Opie, is listening to a vocal operatic performance. Opie, an amateur opera enthusiast, thinks that he is listening to a baritone, though he suddenly subsequently entertains the matter of whether one of the performers that evening could be a countertenor. Plausibly, we might say that—and in a fashion relevantly analogous to what we say in the perceptual case—that the proposition that the singer is a countertenor now becomes secondary relevant for Opie, and that he must accordingly be able to rationally dismiss this (secondary-relevant) alternative in order to know that the present vocal operatic performance is by a baritone. (This is so, we suspect, even if countertenors don’t ordinarily perform in the particular venue Opie is visiting). We find this suggestion to be plausible, and in fact, it may be that a relevant alternatives account of perceptual knowledge will bear close resemblances to a plausible relevant alternatives account of auditory knowledge. It is beyond the scope of the present proposal to trace out to what extent the ‘second tier’ of our relevant alternatives view is going to be applicable outside the arena of perception, which is our central focus. That said, however, we do want to highlight one point of contact between secondary relevance and epistemology more generally. On the proposal offered here, we’ve submitted that what matters for secondary relevance is *either* that the subject is aware of the alternative *qua* alternative or that this is an alternative that she *ought* to be aware of. The latter element of the two-tier view might be best served by adverting to a more general account of normative defeaters, one not restricted to perceptual cases. See here Goldberg (*forthcoming*).

¹⁴ The claim that one’s knowledge can be undermined by defeaters that one ought to be aware of is widely held. Lackey (2010, 317), for example, both endorses this view and also credits it to a wide range of other epistemologists.

¹⁵ See Black (2003) for a defence of Lewis’s (1996) account against Schaffer’s objection. See also Brueckner (2003).

¹⁶ This characterization of Gettier cases is not entirely right, at least unless Schaffer is referring only to Gettier-style cases in which the belief in question is inferential (plausibly, there are Gettier-style cases where the target belief is acquired non-inferentially).

¹⁷ In this kind of conversational context, it’s reasonable to take it that, *from Jonathan’s perspective*, the alternative is being rationally raised, though for our purposes nothing turns on this. Incidentally, note that Schaffer sets up his ORNITHOLOGY case in terms of a choice between only two alternatives: goldfinch or canary. Knowing that something is a goldfinch rather than a canary is not, however, necessarily the same thing as knowing that something is a goldfinch *simpliciter* (e.g., because while goldfinches are easy to tell apart from canaries in the relevant environment, there are other things in the environment that look just like goldfinches). Since Schaffer (e.g., 2005) advocates *epistemic contrastivism*, however, he rejects the idea of knowledge *simpliciter* altogether, but we do not need to get into these issues here. For our purposes, then, we will treat black wings as in general good indications of a goldfinch, and not merely as a good indication that something is a goldfinch rather than a canary.

¹⁸ This point applies in equal measure to cases where the secondary relevant alternative is rationally motivated and cases where it is not. The only difference is that in the former case what is under discussion will be one’s epistemic position with respect to a more demanding variety of favouring epistemic support than in the latter case. We will be setting this difference to one side in what follows.

¹⁹ Of course, Jonathan would in this case *say* that he knew, but what interests us is whether he actually knows and not what he would report in this regard. (We mention this point because in ORNITHOLOGY Schaffer is explicitly concerned with whether the subject would say that he had knowledge).

²⁰ This point should remind us of Carroll’s (1895) parable of Achilles and the Tortoise. Here, for example, is Ryle’s spin on this parable:

“A pupil fails to follow an argument. He understands the premises and he understands the conclusion. But he fails to see that the conclusion follows from the premises. The teacher thinks him rather dull but tries to help. So he tells him that there is an ulterior proposition which he has not considered, namely, that if these premises are true, the conclusion is true. The pupil understands this and dutifully recites it alongside the premises, and still fails to see that the conclusion follows from the premises even when accompanied by the assertion that these premises entail this conclusion. So a second hypothetical proposition is added to his store; namely, that the conclusion is true if the premises are true as well as the first hypothetical proposition that if the premises are true the conclusion is true. And still the pupil fails to see. And so on for ever. He accepts rules in theory but this does not force him to apply them in practice. He considers reasons, but he fails to reason.” (Ryle 1945, 5-6)

Ryle's own view is that what this shows is that the pupil lacks a certain ability, an ability such that: for any proposition p he comes to believe, it will still remain an open question whether S has the ability in question—in this case, the ability to draw an inference. Ryle himself thought that this indicates that knowledge-how (in the sense of knowing how to draw an inference) is not merely knowledge-that. More generally, though, the resemblance to the case at issue for us is this: in both cases, one seems hard pressed to explain how the ability to do something (either, to draw an inference, or to *appreciate* how one's evidence entitles one to rationally dismiss an alternative and so know a proposition) will ever be *entailed* by the mere possession of (and belief in) further propositions (/evidence). Note however that Ryle's own gloss on the Carroll case is but one way of taking a lesson from the Carroll case. See Engel (2007) for some discussion of other potential lessons (which won't concern us here).

²¹ This kind of proposal is popular in contemporary philosophy of science. See, for example, Lipton (2004) and Kitcher (2002). See also Grimm (*forthcoming*). While Grimm agrees with Lipton and Kitcher that one understands why something is the case so long as one possesses knowledge of the relevant causes, Grimm parts company with Lipton and Kitcher in that he rejects a propositional reading of the knowledge in question. See Pritchard (*forthcoming*) for a criticism of Grimm's proposal.

²² See Pritchard (2008a, 2009, *forthcoming*) and Pritchard, Millar & Haddock (2010, chs. 1-4) for more detailed discussion of the ways in which understanding-why should be distinguished from knowledge-that. See also Carter (2013) and Carter & Gordon (2013).

²³ Plausibly, even a child could acquire such knowledge, at least provided the child can be said to have a conception of the truth-conditions of the sentence, such that she counts as knowing what the sentence in question means.

²⁴ For some further discussion on this point, see Pritchard (2009; *forthcoming*), Kvanvig (2010), Grimm (2012; *forthcoming*), and Carter (2013) and Pritchard (*forthcoming*).

²⁵ Note that any plausible factivity constraint on understanding-why precludes that S can understand why ϕ so long as S appreciates how any old *incorrect explanans* stands in relation to a given *explanandum*. For instance, even though one might think that combustion is explained by phlogiston principles, S fails to understand why the combustion occurred, and *even if* phlogiston principles stand in a kind of reflective equilibrium with the observed data. Likewise, one fails to understand why some item of evidence excludes an alternative if such an explanation is likewise riddled with falsehoods. In short, one might achieve an *intelligible* picture of the event in question, without achieving understanding-why it occurred.

²⁶ We say 'roughly' because this account needs to be refined in at least two ways. First, one will need to restrict this account of cognitive achievements to those which involve 'manifestations' of cognitive agency (see Sosa 2007, *passim*; Turri 2011). For example, both the fact that Madonna has produced lots of records and the fact that she is rich are primarily creditable to her musical abilities (and thus 'musical agency'), in the sense that the latter is (let us grant) in both cases an overarching part of the causal explanation for the former. But only the record constitute a *manifestation* of her musical ability—the wealth is rather a side-effect of this manifestation of ability. In the same way, what we are interested in here are not simply cases where cognitive success is primarily creditable to one's cognitive abilities (and thus cognitive agency), but rather those cases where in addition the cognitive success involves a manifestation of one's cognitive abilities. A second restriction needed to this account of cognitive achievement concerns a specification that the cognitive abilities in question need to be the ones salient to this cognitive success. In order to keep our discussion manageable, we will be setting both conditions to one side in what follows. For further discussion of cognitive achievements, see Pritchard, Millar & Haddock (2010, chs. 1-4).

²⁷ We are grateful to James Genone and Katherin Glüer for detailed comments on an earlier version of this paper.