

THE NEW EVIL DEMON PROBLEM AT 40

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1. The New Evil Demon Problem

I shall use ‘epistemic warrant’ and ‘epistemic justification’ interchangeably for a normative property that provides a good route to true belief and knowledge.¹

Here are two facts:

FACT ONE: Beliefs based on taking perceptual experiences at face value are defeasibly epistemically warranted.

FACT TWO: Defeasibly taking perceptual experience at face value is a reliable route to true belief.

Epistemologists disagree over their relationship.

Reliabilists believe the second helps explain the first. And by “explain” the reliabilist sets out to really, genuinely explain, to “state conditions that clarifies the underlying source of justificational status, . . . conditions [that are] *appropriately deep* or *revelatory*,” not simply conditions that state “correct” necessary and sufficient conditions (Goldman 1979: 1-2, emphasis added). Reliabilists then hold that “good” psychological processes—good mind-to-mind transitions, such as forming perceptual beliefs based on perceptual experiences—are epistemically correct *because* they are reliable routes to truth.² Hence the motivation for *simple reliabilism*:

In all possible worlds *W*, a belief is *prima facie* epistemically warranted in *W* if and only if (to the extent that) the psychological processes that caused or sustained the belief reliably produces true beliefs in *W*.

¹ There is a narrow and a broad use of ‘justification’. In the narrow sense, justification connects to the activity of justifying a belief or an action, to giving reasons in favor of the truth or the belief-worthiness of the belief, or the desirability or permissibility of the action. ‘Justification’ in the broad sense is interchangeable with ‘warrant’, as a normative property of belief that serves as a good route to truth and knowledge. Justification in the narrow sense is often a special case of justification in the broad sense, but justification in the narrow sense is not necessary for warrant, for justification in the broad sense. Perceptual beliefs, the beliefs of pre-linguistic children, and the (possible) beliefs of higher non-human animals are frequently warranted and knowledge without justifications in the narrow sense (Goldman 1979; Burge 2003, 2013, 2020; Graham 2020b, 2024; Kornblith 2008).

² See Goldman 1979; 1986: 103-4; 2011; Greco 2005: 290.

So-called “internalists” disagree. They deny that being a reliable route to truth is necessary for warrant, relying on the “New Evil Demon” scenario to make their case.³ Here’s the standard version:⁴

Norma is an ordinary human adult, with normally functioning perceptual and cognitive capacities, in her normal environment. Walking around the park, she forms reliably true perceptual beliefs about her environment. Perception, in her world, is a reliable route to truth and knowledge.

Vicki is Norma’s psychological duplicate in another possible world. From the inside, as it were, everything looks exactly to Vicki as it does to Norma. But Vicki is not walking around a park. Instead, she is floating in a vat of nutrients, where her sensory systems are hooked up to a massive super-computer. The computer deceives Vicki by inducing type identical perceptual representations to Norma’s. That’s why everything (in perception) looks the same to Vicki as it does to Norma, but nothing in Vicki’s immediate surrounds is as it seems. Vicki, unaware of and unable to detect the deception, forms massively false perceptual beliefs. Perception, in her world, is not a reliable route to truth and knowledge.

Internalists conclude that Vicki’s perceptual beliefs, though massively in error, are nonetheless just as justified— “equally justified”—as Norma’s. Taking perceptual experience at face value, given no reason to suppose it is not a good guide to truth in the circumstances, is just what Vicki is supposed to do. That’s the correct or proper response to her perceptual experiences. If Vicki’s perceptual states justify her perceptual beliefs, simple reliabilism doesn’t stand a chance. That’s why it’s called the *New Evil Demon Problem*.

Internalists John Pollock and Joseph Cruz, citing the demon world case, conclude that:

[R]eliability has nothing to do with epistemic justification... [B]eliefs are justified because the believer is “reasoning correctly” (in a broad sense of “reasoning” [where perceptual experience are reasons in an extended sense and so perceptual belief formation is a kind of reasoning]). If one makes all the right epistemic

³ The other standard counterexample that purports to sever the connection between warrant and reliably getting things right is the clairvoyance (and Truetemp) case. For clairvoyance see Bonjour 1980. For Truetemp see Lehrer 1990. For my take on clairvoyance, see Graham 2012a and 2019. See also Lyons 2009 and Burge 2020. As for the best reply to the generality problem, see Lyons 2019.

⁴ There are at least two other versions (Graham 2012a: 468-469). First: a disembodied spirit exists independently of any relations to a broader physical environment, massively fooled with a mind just like yours or mine, as Descartes imagined. Second: a Boltzmann brain duplicates a human brain, but with no causal or explanatory relations to any human or any broader physical environment. It’s floating in a pool of nutrients on an otherwise barren rock somewhere in the multiverse. If minds supervene narrowly on (temporal stages of) brains, this would also be a massively deceived individual. I doubt disembodied spirits are possible and that minds narrowly supervene on brains. The standard case, however, is a clear possibility.

moves, then one is justified regardless of whether the belief is false, or nature conspires to make such reasoning unreliable. (1999: 113-114).

If justification strongly supervenes on an individual's (nonfactive) mental states and relations, as the internalist supposes, but the reliability of perceptual beliefs is a contingent matter of fact, then justification as such has nothing to do with reliability or truth. Since our first fact is necessarily true, says the internalist, the second fact is irrelevant to epistemic justification. That's the moral, according to the internalist, of the New Evil Demon Problem. No wonder so many internalists so easily dismiss reliabilism with a one-liner.

We owe the New Evil Demon Problem to Stewart Cohen. Cohen discovered the problem while a graduate student at the University of Arizona, at one time the center of the epistemological universe. Cohen first published the problem in a paper co-authored with Keith Lehrer in 1983 (Lehrer and Cohen 1983) and then developed it further in his landmark paper "Justification and Truth" (Cohen 1984; cf. Pollock 1984, Foley 1987). The New Evil Demon Problem is now over forty years old.

Reliabilists remain undeterred. Here are two ways reliabilists have responded.

I call the first, following Ernest Sosa (2003), the "heroic" response. According to the heroic response, internalists are just mistaken that Vicki has justified beliefs. This response starts with the force, role, or job of epistemic warrant: to be a good route to truth and knowledge. That's what makes epistemic justification *epistemic*. Justification as such then strongly supervenes on the reliability of the belief-forming process. But since perception is only contingently reliable (as the demon world case vividly illustrates), perceptual justification does not strongly supervene on an individual's (non-factive) mental states and their relations. Internalists, the idea goes, simply misunderstand the role or force of epistemic justification. Vicki's perceptual beliefs are then obviously not justified, for they don't stand a chance of being true. Philosophers taking this line include Sanford Goldberg (2012a),⁵ Thomas Senor (2013), and Jack Lyons (2013).⁶ I shall call these three philosophers, and their like-minded colleagues, "our heroes."

Our heroes, though they deny that Vicki's beliefs are epistemically justified, usually grant that she is being *rational* in so believing, that her perceptual beliefs are *rationally* held (Meyers 1988; Lyons 2013). That, they think, often explains the internalist's "intuition" that Vicki's perceptual beliefs are just as "justified" as Norma's, for so many internalists tend to use 'justification' and 'rationality' interchangeably (e.g. Cohen 1984: 283; Foley 1987; Huemer 2001: 19; Smithies 2012: 274; Wedgwood 2012: 280; Dogramaci 2015: 777; cp. Siscoe 2021). But once we separate epistemic justification (in the sense of a good route to truth and knowledge) from structural rationality, we should not be so quick to judge that Vicki's beliefs are epistemically justified.⁷

⁵ Goldberg tells me in personal communication he has changed his mind.

⁶ Alvin Goldman has expressed sympathy for the heroic line at various times. See Goldman 1986, n. 32 ch. 5 and his emphasis on "strong" justification in Goldman 1988.

⁷ For a non-reliabilist variant of the idea, see Littlejohn forthcoming and Williamson forthcoming. On their view, only beliefs that are knowledge are justified. Hence no belief in the demon-world is justified. Instead, Vicki's beliefs are blamelessly held; internalists have conflated blamelessness with justification. For criticisms of this variant, see Greco 2021 and Ballarini 2022.

That's the first response. I call the second the "special-circumstances" response. According to this response, Vicki's beliefs *are* epistemically justified, even though her perceptual representations are not de facto—"in situ"—reliable. They are epistemically justified because her perceptual representations (her perceptual belief-forming processes) are reliable in a special set of circumstances. It's because they are reliable in special circumstances, the idea goes, that they continue to contribute to the epistemic warrant for perceptual beliefs even when the individual is not in special circumstances. Because Vicki's perceptual belief-forming processes are reliable in special circumstances, the idea goes, they produce epistemically justified beliefs even while Vicki is floating motionless and massively deceived in a vat of nutrients.

I shall spend most of the paper on this response. For this response to work, it must at least specify "correct" necessary and sufficient conditions for epistemic justification. But it must also specify conditions that are appropriately deep or revelatory. In other words, this response must not only correctly predict that Vicki's perceptual beliefs are justified, but it must also explain why that should be so.

Three of the most influential philosophers of the last fifty-years—Alvin Goldman, Ernest Sosa, and Tyler Burge—have all pursued versions of the special-circumstances response. It's the party line. In the first half of the paper, I will criticize their respective versions of this response. In the second half I will develop my own. The point of the second part is to develop the most plausible reliabilist account of warranted beliefs in demon world scenarios. I shall return to our heroes when concluding.

2. Goldman: Reliability in the Actual World, Reliability in Normal Worlds

Over a thirty-three-year period (1979-2012), Alvin Goldman published several different responses to the New Evil Demon Problem. I've spelled them all out elsewhere (Graham 2017), and so I won't do so again here. Instead, I will focus on two of his versions of special circumstances reliabilism:

Actual world reliabilism. In all worlds *W*, a belief *B* is prima facie justified in *W* iff formed or sustained on a process that is reliable in the actual world. This prevents demon-world cases, for perception is reliable in the actual world. (1979; 1999/2002; 2011/2012).

Normal worlds reliabilism. In all worlds *W*, a belief *B* is prima facie justified in *W* iff formed or sustained on a process that is reliable in normal worlds. Normal worlds are worlds that share the general characteristics we believe true of the actual world. This rules out wishful thinking and clairvoyance counterexamples (they are not reliable in normal worlds) and the demon-world case (they are paradigm cases of non-normal worlds). (1986: 107, 113)

Neither of these views work. I begin with normal worlds reliabilism. First—it cannot be emphasized enough—Goldman abandoned the view two years after publishing the view (1988). Here are three of his reasons:

- (i) Which general beliefs count for determining normal worlds? There seem to be too many choices.
- (ii) Whichever ones we select, it looks like dramatically different worlds might fall in the class of normal worlds. Does justification turn on reliability in all of these worlds?
- (iii) Who is the “we”? All humans ever? Only contemporary English-speaking epistemologists? Does the referent change over time?

Here is a reason against the view from Pollock & Cruz (1999):

- (iv) The theory puts no constraints on how we get our general beliefs. What if the beliefs are unjustified? Should justification turn on crazy or wild beliefs? Do normal worlds involve wizards and witchcraft?

Here is a reason that occurred to me:

- (v) What if the beliefs include (hidden, unnoticed) contradictions? Surely everything we’ve ever believed about the general features of the actual world can’t be consistent. Does that mean there are no normal worlds? Does that mean no belief is ever epistemically justified?

Here is the “realist” sentiment against the theory:

- (vi) Should epistemic justification turn on our beliefs at all? Why relativize justification to what “we” believe? Isn’t that too subjective, too non-realist, to fall within the spirit of reliabilism? Would animals lack knowledge altogether if we never came onto the scene?

And the theory faces a counter example:

- (vii) ALIEN. “Consider a possible non-normal world W, significantly different from ours. In W people commonly form beliefs by a process that has a very high truth-ratio in W, but would not have a high truth-ratio in normal worlds. Couldn’t the beliefs formed by the process in W count as justified? To be concrete, let the process be that of forming beliefs in accord with feelings of clairvoyance. Such a process presumably does not have a high truth ratio in the actual world; nor would it have a high truth ratio in normal worlds. But suppose W contains clairvoyance waves analogous to sound or light waves. By means of clairvoyance waves people in W accurately detect features of their environments just as we detect features of our environment by light and sound. Surely, the clairvoyance belief-forming processes of people in W *can* yield justified beliefs.” (Goldman 1988: 62)

Perhaps it should come as no surprise that Goldman credits Stewart Cohen for imagining this example. After offering this case, Goldman concluded that “it seems wise to abandon the normal-worlds version of reliabilism” (Goldman 1988: 62).

What about actual world reliabilism? Does it avoid the demon world case? Extensionally it does, on the assumption that the actual world is not a demon world. But even so, like the normal-worlds theory, it won't do. For ALIEN shows it can't be right either. For the clairvoyance of these alien creatures does not exist in the actual world, and if it were it to exist in the actual world (per impossible), it would not be reliable. Surely there are possible warrant conferring processes that are not reliable in the actual world: possibility transcends actuality. Since there are possible belief-forming processes that render beliefs warranted and knowledge even when those processes are not (and would not be) reliable in the actual world, it seems just as wise to abandon the actual-world reliability theory as it is to abandon the normal-worlds theory. Neither theory states correct necessary and sufficient conditions.⁸

3. Sosa: Indexical Reliabilism

Goldman's two versions of special circumstances reliabilism don't work. What about Sosa's? In his 2001 paper "Goldman's Reliabilism and Virtue Epistemology," and in his 2003 debate with Laurence Bonjour, Sosa distinguished between two "senses" or "sorts" of justification: apt-justification and adroit-justification.

J-APT (For all w) B is apt-justified in w (if and) only if B is acquired in w through the exercise of one or more intellectual virtues that *in that world* w virtuously would produce a high ratio of true beliefs.

J-ADROIT (For all w) (B, in w , is adroit-justified in w (if and) only if B derives in w through the exercise of one or more intellectual virtues that *in our actual world* virtuously would produce a high ratio of true beliefs.

Vicki's beliefs then enjoy adroit justification:

"If one *were* a demon's victim, one's intellectual performance might still be adroit (adroit-justified). That is to say, in a world w in which one was a victim, one's beliefs acquired through our normal perceptual faculties *would* come out of processes that in our actual world are reliable, and hence those beliefs of ours in that world *would* be adroit (adroit-justified)." (2003: 161, emphasis added)

⁸ Goldman (1979) offered another version of special circumstances reliabilism: justification strongly supervenes on reliability in non-manipulated environments. Does this work? Though initially it might seem to avoid the demon world problem, the theory can't be right. For couldn't we have epistemically justified beliefs even if our beliefs were reliable due to manipulation of our environment? What if God exists and is the benevolent designer and sustainer of the Universe? Then the reliability of human perception is due to God's benevolent manipulation. Surely, we wouldn't want to deny that we knew anything at all on the grounds that we have an intelligent, benevolent designer. One would have thought, along with Descartes, that the conclusion should go the other way. More mundanely, most creatures—especially humans—continually modify their environments: niche construction is a familiar fact in evolutionary explanations. By turning on the lights, do we lose all justification for our perceptual beliefs at night?

What we've learned from the New Evil Demon Problem, Sosa concluded, is that we should "...distinguish between two sorts of justification: aptness and adroitness" (2004: 284; see also Comesaña 2002, 2010; cp. Ball and Blome-Tillman 2013). Adroit-justification is the sort of justification, "within truth-connected epistemology," that one "might still have even if unlucky circumstances make your [belief-forming] mechanisms unreliable" (2003: 161). He concludes that his "two sorts of justification" strategy is "secure against the new evil demon problem" (2003: 158).

J-ADROIT uses the phrase 'in our actual world.' For Sosa it functions as an indexical. 'Our actual world' refers to the world where the phrase is uttered (or where the corresponding thought is thought). In any world where 'the actual world' or 'our actual world' is uttered (or the corresponding thought is thought), it refers to the world where the phrase is uttered (or thought), just as 'here' which (qualifications aside) refers to the location where the phrase is uttered (or thought) (2003: 157). Whether a belief is justified (adroit-justified) is then relative to the world of the attributor. When we say (or think) 'Vicki's beliefs are justified', we express a thought that is true if and only if Vicki's perceptual beliefs are formed by processes that are reliable in *our* actual world. And since those processes are reliable in our actual world, what we say is true, as already noted.

That was Sosa's treatment of the problem prior to the development of his now well-known "AAA" virtue epistemology (2007, 2009, 2011, 2015, 2017, 2021). In his AAA virtue epistemology, Sosa sees the epistemic evaluation of beliefs as an instance of the more general normative evaluation of exercises of skills or competencies, of performances.

Sosa defines skills or competences as dispositions to achieve a desired (or desirable) or valued (or valuable) effect. A competence is not just a disposition to produce an effect (that's why sugar does not have the *competence* to dissolve in water) but rather a disposition to produce an effect "aimed" at. A skilled archer is not only disposed to hit the target when she shoots, but she (literally) *aims* at hitting the target. She desires or values hitting the target. That's why her disposition to hit the target is a competence.

Skills or competencies can then be evaluated along (at least) three dimensions: accuracy, adroitness, and aptness. Consider still the archer:

Accuracy. An archer's shot is accurate iff it hits the target.

Adroitness. An archer's shot is adroit iff it derives from a skill that is reliable (enough).

Aptness. An archer's shot is apt iff its accuracy manifests adroitness (iff the shot is accurate *because* adroit).

Sosa then applies this "AAA" structure to evaluations of beliefs. A believer's belief is accurate iff it is true (for belief [or the believer, or the belief-forming competence] aims at [or functions to produce] true belief). A believer's belief is adroit iff it derives from a belief-forming process (or virtue or skill or competence) that is reliable (enough). A believer's belief is apt iff it is true because adroit, only if its accuracy manifests adroitness (2009: 37).

Sosa thereby repurposed his words. *Apt* now entails *adroit*, for an apt belief just is a true belief that manifests adroitness. Pre-2007 for Sosa, "apt" did not entail "adroit." Before, a belief that was apt-justified need not be adroit-justified, for a belief-forming process might be reliable in the world of *its* use without being reliable in *our* actual world. Post-2007, there is no such thing as an apt belief (in Sosa's jargon) that isn't also adroit. For Sosa post-2007, epistemic justification is adroit-justification, as defined. Despite this

and many other developments (see note 24), Sosa’s “indexicalist” answer to the Demon World Problem from 2001 to 2021 fundamentally remains unchanged (see Sosa 2021: 198).

Sosa thereby advances a version of “actual-world reliabilism” to solve the demon world problem. I just criticized Goldman’s actual world reliabilism on the grounds that it can’t handle the ALIEN example. Does Sosa have a way out? Prima facie he does. For on Sosa’s view, when one of the aliens says (or thinks) ‘my clairvoyance beliefs are (mostly) justified’ what they say (or think) will be true. For, according to Sosa’s proposal, the thought the alien expresses will be true if and only if their clairvoyance beliefs are reliably true in *their* actual world. And since *ex hypothesi* they are reliably true in their world, they are justified. Counterexample diffused.

But Sosa’s “indexicalism” comes at a price. For consider what *we* express when *we* say (or think) ‘their clairvoyance beliefs are epistemically justified’. On Sosa’s view, we express a thought that is true if and only if their clairvoyance beliefs are reliably formed in *our* actual world. But since, *ex hypothesi*, their clairvoyance beliefs are not reliably formed in *our* actual world, the thought *we* express is *false*. So on Sosa’s view when *they* say ‘our beliefs are justified’ the thought *they* express is *true*, but when *we* say ‘their beliefs are justified’ the thought *we* express is *false*. Does that sound right to you? I think when we say (or think) ‘the alien’s clairvoyance beliefs are justified’ we express something *true*, not false. I think Sosa’s view makes the wrong prediction about the truth value for *our* talk and thought about the aliens, even if Sosa’s view makes the *right* prediction about the truth value of *their* talk and thought about themselves.⁹

Or consider the thought that Vicki would express on Sosa’s view if Vicki were to say (or think) ‘my perceptual beliefs are justified.’ On Sosa’s view, when Vicki says ‘my perceptual beliefs are justified’ the thought *she* expresses is *false*, for Vicki is in a demon world, and perceptual beliefs are not reliably formed in *her* actual world, the world where she actually is. Does that sound right to you? It does not sound right to me, nor to other (non-heroic) reliabilists like Goldman or Burge. I think when Vicki says (or thinks) ‘my perceptual beliefs are justified’ she expresses something *true*, not false, even if Sosa’s view makes the *right* prediction of the truth value of *our* talk and thought about Vicki’s perceptual beliefs.¹⁰

Even though, in one way, Sosa gets the right results about the demon world case and the alien case, in another way he gets the wrong results in both cases. Out of the frying pan and into the fire, as the saying goes.

⁹ Sosa used to be able to reply to this by saying the alien’s beliefs are apt-justified, even though not adroit-justified (cp. Comesaña 2002, 2010). I don’t find that move compelling. For consider an envatted alien. This envatted alien has neither adroit- nor apt-justified beliefs. But I think our intuitions would parallel our intuitions of Vicki’s beliefs. So, Sosa’s “two sorts of justification” response fails to capture positive intuitions about the beliefs of an envatted alien.

¹⁰ I first put my finger on this problem in Graham 2016: 97. See also Comesaña 2002 and Bergmann 2006. I discuss Sosa’s treatment of the New Evil Demon Problem over the last twenty years at greater length in Graham 2023a.

4. Burge: Reliability in Normal Circumstances

I now turn to Tyler Burge's treatment of the problem from his paper "Perceptual Entitlement" (2003), a treatment he returns to in "Entitlement: The Basis of Empirical Epistemic Warrant" (2020). Burge's view involves a switch from reliability in the actual world (as in Goldman and Sosa) to reliability in normal conditions.

What do we all already know about normal circumstances? Intuitively, normal circumstances for our perceptual capacities are just a fraction of the actual world; not all actual circumstances are normal circumstances. For the actual world is a vast Universe or even a Multiverse, possibly infinite in space and time. So just because you are in your *actual world*, it does not follow that you are in *normal circumstances*. Relatedly, normal circumstances for our perceptual capacities transcend the actual world. A human being could then, as it were, be in normal circumstances for perception even if she were not in our actual world but in some other possible world. Normal circumstances are both less than and more than actual circumstances. Reliability in normal conditions is not the same thing as reliability in the actual world.

Burge has a theory about what makes circumstances normal for our perceptual states and perceptual systems. On his view, normal conditions for our perceptual states are those conditions in explanations for how our perceptual state types acquired their representational contents (Burge 1993, 2010). According to his perceptual anti-individualism, a fundamental way perceptual systems acquired their representational states was in virtue of patterns of causal interaction between the perceptual system (partly through its influence on the individual's behavior), on the one hand, with instances of the properties and relations that the perceptual state types of the perceptual system represent, on the other, interactions that help explain how the individual successfully navigates its broader environment. For Burge, normal conditions for our perceptual systems are then those conditions, and conditions of a similar type, that enter explanations for how perceptual systems acquired their perceptual state types and so their capacities to represent various properties and relations in the broader physical environment. Normal conditions are formative conditions.¹¹

¹¹ Burge's account of normal conditions for perceptual states as formative conditions is roughly the same answer you'll hear from other semantic externalists, including Fred Dretske (1986, 1988), Ruth Millikan (1984a, 1989), David Papineau (1993), and Nicholas Shea (2018) among many others (though Burge eschews the reductionist aspirations of many of these authors).

For Burge, perceptual anti-individualism does not entail that all perceptual state types are reliably accurate in normal conditions. A rabbit's capacity to perceptually represent as of danger, Burge notes, might be largely inaccurate when exercised in normal conditions. Various trade-offs for speed over accuracy or the costs of false negatives over false positives can explain why this might be so. This is a well-known point. Burge argues that no perceptual state type is necessarily reliable in normal conditions, even when it is reliable in normal conditions. See Burge 2020 and Graham 2020a: appendix. Do states that are not in fact reliable in their normal conditions contribute to warrant? Do the rabbit's danger representations contribute to warrant? No, given the reliability condition on warrant. The rabbit might be *practically* warranted in believing danger is present, as it were, without its danger representation contributing to an epistemic warrant for belief (Burge 2003). A consequence of this point--the point that not every perceptual state type is reliably accurate in normal conditions--is that not every *instance* of even a *reliably accurate* perceptual state type need be accurate *in normal conditions*. Reliability in normal conditions, in other words,

I now turn to Burge's account of perceptual warrant. Here, and to a first approximation, is Burge's account. Let's call it **normal circumstances reliabilism**:

In all possible circumstances, a normally formed perceptual state token contributes to a prima facie epistemic warrant to a perceptual belief appropriately derived from that token perceptual state if and only if the normally formed token is of a type that is reliably accurate in normal circumstances.

Normal circumstances reliabilism marks an advance over the accounts offered by Goldman and Sosa. Consider the demon world case. Norma's perceptual states are reliable in normal conditions. Hence, normal circumstances reliabilism deems that they contribute to a prima facie warrant for her perceptual beliefs appropriately derived from those states. Vicki's perceptual states are also reliable in normal conditions, even though she is, unbeknownst to her and undetectably so, no longer in normal conditions. Even so, normal circumstances reliabilism deems that her current perceptual state tokens contribute a prima facie warrant for her current perceptual beliefs. So normal circumstances reliabilism gets the right result for the demon world (Burge 2003: 507, 509, n. 6). And since what counts as normal conditions for a perceptual system does not shift as the circumstances of assessment shift, this view avoids exactly what seems to be problematic about Sosa's view.

Consider next the aliens. These possible beings possess a psychological capacity of clairvoyance that we assume to be reliable in its normal circumstances and they currently reside in such conditions. Normal circumstances reliabilism deems their beliefs so formed prima facie warranted. We can even imagine one of these aliens whisked away to non-normal conditions--possibly by a deceptive scientist or an evil demon--where the alien would have no idea, and could not detect, that they were no longer in normal conditions. Normal circumstances reliabilism deems their beliefs in abnormal conditions--just like Vicki's perceptual beliefs--prima facie warranted as well. Again, this view avoids what seemed problematic about Sosa's view of our assessment of their beliefs, whether in their normal conditions or transplanted into abnormal conditions. Goldman and Sosa get the extension wrong; normal circumstances reliabilism gets it right. If we had to choose between the responses from Goldman, Sosa and Burge, Burge's view has the upper hand.¹²

5. The Explanatory Challenge

But we are not done yet. Even if reliability in normal circumstances is the right kind of reliability to get the *extension* of warrant right across possible cases (stating correct

does not entail infallibility in normal conditions: not every perceptual representational error arises from the failure of the individual to be in normal conditions, even when the perceptual system is working or operating well as well as it can. There are perceptual errors even in normal conditions when the perceptual system is functioning normally.

¹² Others who have advanced a version of normal circumstances reliabilism about justification include Michael Bergmann (2004), Kenneth Boyce and Andrew Moon (2016), Alvin Plantinga (1993), Mona Simion (2018), Chris Kelp (2019), and myself (2010, 2011, 2012a, 2012b, 2014a, 2016, 2017, 2019, 2023b). Compare Jarrett Leplin (2009). What's distinctive of Burge's view is his appeal to perceptual anti-individualism to account for normal conditions, as well as his non-reductionist stance towards both representational contents and representational functions.

necessary and sufficient conditions), we still face Goldman's *explanatory* challenge. Even if we know *that* a normally functioning perceptual competence contributes to prima facie perceptual warrant in all possible circumstances if it is reliable in normal conditions, we can still ask *why* this should be so. For, provided we conceive of warrant *as a good and so reliable route to truth and knowledge*, we might naturally ask why *any* perceptual belief should be warranted *at all* in demon world scenarios. After all, in a demon world, the individual's perceptual states are systematically inaccurate and so the individual's perceptual beliefs are systematically false. How could an individual's perceptual states serve as *good routes to truth and knowledge* while the individual is massively deceived, floating in a vat of nutrients and hooked up to a massive supercomputer? Why shouldn't we conclude with our heroes (that because perception is not a good route to truth and knowledge in the vat) that the "inhabitants of the demon world are *unwarranted* in most of their beliefs"? If our heroes are mistaken, if perceptual warrant persists in demon worlds because the perceptual states are reliable in normal conditions, we should want to know *why* this is so. Why does reliability *in* normal conditions *explain* why warrant persists *outside* of normal conditions?

Burge is aware of this challenge. Here is how he puts it:

One can ask why should reliable success in . . . [the] normal environment bear on the contribution of perceptual states to entitlement in abnormal environments that the individual may have landed in . . . [for] it is the individual at a given time for which warrant is supposed to provide a route to truth . . . *In many such environments, a perceptual state or competence . . . would not be a good guide to veridicality or truth . . . Why does [the contribution of the normal environment] carry over to other environments that the individual might form perceptual beliefs within?* (Burge 2003: 533, emphasis added)

In the rest of this section, I shall discuss two answers to this question that I find inadequate before developing my own. The first I've heard many times in conversation and can be found in print (e.g., Sosa 2015: 103; the first quote from Sosa in section three; and Gerken 2018: 116, 119). The second answer is from Burge (2003, 2020).

Here is the first: the reason why a perceptual state contributes to warrant in the demon world, when the perceptual state type is reliable in normal circumstances, is because *if* the perceptual state *were* in normal conditions, then the perceptual state *would* be a good, reliable route to truth--the perceptual state would then and there objectively raise the probability of the truth of the belief appropriately derived from the perceptual state. In short, perception contributes to warrant in the demon world because perception, if it *were* in normal circumstances, *would* be reliable. Perception contributes to warrant *here* (in the demon world) because it *would* be reliable *there* (in normal circumstances).

I don't find this answer satisfying. I have a variety of bills in my wallet. Some are from the United States. Some are from my last trip to Glasgow. And some are from South Korea from my time teaching there. If we were in Scotland, I could buy you coffee with my RBS notes. But here I am in New Jersey, where the cafes won't take them as legal tender. (I'm told taxi drivers won't take them in England either.) Does the fact that I could buy you coffee in the Dear Green Place make my notes valuable in the Garden State? I don't see how. Or suppose the notes in my wallet were in a currency that no longer existed,

and there were no collectors who would buy them from me in a currency that I could use. Do those notes have monetary value, just because, if I *were* to travel back in time, I *could* use them to buy lunch? Hardly. Being valuable *elsewhere* doesn't suffice to explain why they should be valuable *here*. So, I don't see why the fact that if a belief-forming process were in circumstances where it would be reliable explains why it contributes to justification in the world where it is, especially when the process is not reliable where it is. I don't see *why* reliability in normal circumstances *explains* why warrant persists *in demon worlds*. How is this first answer supposed to answer our question? Indeed, according to our heroes, all this move amounts to is that our beliefs would be justified if we were in normal conditions, not that they are justified outside of normal conditions. More needs to be said to make the appeal to normal circumstances work.

I now turn to Burge's answer (2003, 2020).¹³ Burge tries to say more. Boiled down to essentials, his answer goes like this:

- (1) The reliability of the perceptual state is necessary to contribute to warrant for a perceptual belief. Reliability is necessary for warrant.
- (2) Perceptual states are not necessarily reliable, reliable in all possible worlds. Only a certain kind of reliability is necessary for warrant.
- (3) The type of reliability that explains warrant must be non-accidental. It must be reliability that is explanatorily relevant to the natures of the perceptual states.¹⁴

¹³ In his 2020 paper, Burge gives a quick argument for the conclusion that warrant persists. It is not his main consideration, which I discuss next in the text. Perhaps he did not mean this as an argument, but I will treat it as one in this note (it looks like one). Here is the passage, with my numbering inserted: “[1] One could wander unawares into a natural situation in which illusions naturally and reliably occur. [2] In such a situation, one would be reliably mistaken. [3] One does not lose warrant simply by wondering in such a situation. [4] So one can be epistemically warranted in situations in which one's beliefs are reliably mistaken” (Burge 2020: 85). In the first two sentences, Burge has in mind cases like wandering into an environment where there is a fine dust that undetectably distorts the light so that the perceptual system misrepresents shapes or location or distance or even color or fails to discriminate relevant alternatives, or environments where there are undetectable mirrors or colored lights (Burge 2003: 539; 2013: 260). These would be, for Burge, abnormal conditions. The perceptual system would then be accidentally unreliable in those conditions. [3] asserts that the normal formation of perceptual states in those circumstances would still contribute to perceptual warrant; warrant is not lost when an individual with a perceptual system that is reliable in normal conditions wanders unawares and undetectably into abnormal conditions. But since the brain-in-a-vat scenario is just a more systematic case of accidental unreliability, of unreliability in abnormal circumstances--there's no important difference between situations involving undetectable distortions in the light or other distortions and the brain-in-a-vat scenario (Burge 2003: 539), [4] implies that one does not lose warrant when one is a massively deceived brain-in-a-vat. I don't here object to the move from [3] to [4]. But notice that [3] is just what is at issue. Indeed, it is because of how close the move from [3] to [4] is that it should be obvious that asserting [3] just is to assert that warrant persists in demon worlds, an extreme case of non-normal conditions. [1] and [2] do not explain why [3] should be true. This argument--if it is an argument--doesn't provide an answer to our question. It doesn't explain why warrant should persist in demon worlds. It just asserts in [3] that it does.

¹⁴ Some of our heroes might deny this step.

- (4) The only type of reliability that is non-accidental, explanatory relevant to the natures of the perceptual states, is reliability in normal conditions. Warrant then entails reliability in normal circumstances.¹⁵
- (5) Thus, the normal environment is privileged in the explanation of perceptual warrant.

In “Perceptual Entitlement” he says:

This privilege entails the irrelevance to [perceptual warrant] of reliability and unreliability in other conditions. So it extends to indiscernible abnormal environments that the individual might contingently find himself in. (Burge 2003: 536)

And immediately after giving this argument in his 2020 paper, Burge concludes:

The application of these ideas to [demon world] scenarios is straightforward. Individuals who are moved unawares from normal environments to matrix-type situations [still have warranted] perceptual beliefs, even though they are reliably mistaken in their new environment. Being moved from one situation to another does not in itself alter epistemic warrant. (Burge 2020: 87)

That’s Burge’s answer to our question, why should warrant persist in demon worlds?

Unfortunately, this conclusion based on (1)-(5) strikes me as a complete non-sequitur. I just don’t see it. Because warrant *requires* reliability in normal circumstances, warrant *persists even outside* of normal circumstances where reliability *lapses*? Why does that follow?

Imagine two interlocutors for Burge. The first internalist interlocutor denies that reliability in *any* conditions matters to warrant. Truth and reliability, this philosopher thinks, has nothing to do with warrant. (Recall Pollock and Cruz.) The demon world case shows there are circumstances where reliability does not matter to warrant, so this philosopher concludes that reliability does not matter to warrant in any circumstance.

The second interlocutor agrees with Burge that reliability is not just necessary for warrant but reliability in normal conditions is required for warrant. This interlocutor agrees that normal circumstances are privileged in the explanation of perceptual warrant. But this interlocutor takes the heroic line and denies that warrant persists in demon worlds. Perceptual warrant, this interlocutor thinks, is then “bounded” or “restricted” to normal conditions. Outside of normal conditions, this interlocutor says, warrant lapses. Outside of normal conditions, perceptual states are not a good route to truth and knowledge, and so cannot contribute to warrant. That’s the idea.

Does the explanation just offered by Burge answer this second philosopher? I don’t see how. That’s why I say his reasoning strikes me as a complete non-sequitur.

Burge’s reasoning makes more sense to me as a reply to the internalist’s denial of the relevance of reliability. “Look,” they say, “here in the demon world there is warrant but

¹⁵ I agree with Burge that warrant entails non-accidental reliability, and so reliability in normal conditions. I disagree with Burge’s assertion that the only way to ground non-accidental reliability is through perceptual anti-individualism. This disagreement shall emerge later in the text.

no reliability. Hence reliability is irrelevant to warrant in any circumstance.” “No,” Burge replies, “all you have pointed out is that a process that warrants belief need not (or even cannot be) reliable in all possible circumstances, especially abnormal circumstances. That does nothing to show that reliability in some circumstances--especially normal circumstances--is not necessary for warrant.” There’s clear textual evidence that Burge has this first interlocutor in mind when giving his answer to our question. Just before his answer he writes that “[a] motive for...[specifying] what...normal situations are...was to answer the claim that...[demon] scenarios [refute] the [claim] that reliability [is] a necessary condition on epistemic warrant” (Burge 2020: 85). And then just afterwards he concludes that “[demon world] scenarios should not distract one from the consideration that shows reliability to be constitutively necessary for empirical epistemic warrant” (Burge 2020: 87).

But this first “internalist” interlocutor is not the second “reliabilist” interlocutor. The second agrees that the first is mistaken. The second agrees that some kind of reliability is a necessary condition for warrant. But because reliability is necessary for warrant, the second interlocutor disagrees with the first *and* with Burge that warrant persists in demon worlds. Burge, as far as I can tell, hasn’t explained to the satisfaction of this second philosopher why, even though reliability lapses, warrant should persist in demon worlds. Though Burge has asked the right question, he has not given the right answer. Can we do better?¹⁶

6. Etiological Functions and Their Sources

In a 2019 paper I coined the term ‘teleoepistemics’ on analogy with ‘teleosemantics’ (Graham 2019). Just as teleosemantics seeks to ground *mental representation* in etiological functions, teleoepistemics grounds *epistemic warrant* in etiological functions. The account of warrant I prefer is a teleoepistemic account. To understand the account, you’ll need to know a bit about etiological functions and their sources. In this section and the next I will discuss etiological functions. In the two sections following, I will rely on some of the features of etiological functions to give my account of warrant and its grades before saying why I think warrant should persist in demon worlds, before I give my answer to the explanatory challenge.

Our current understanding of natural functions owes a great deal to Larry Wright’s classic paper ‘Functions’ (1973). Wright was impressed by two features of function statements in ordinary and scientific discourse. The first is that function statements draw a sharp contrast between functional and nonfunctional, accidental side-effects. The function of the heart is to pump blood, not to make a rhythmic noise. The function of the nose is to keep incoming air warm and moist, not to hold rings in place.

The second is that function statements explain. Wright considers three questions (1973: 155):

1. What is the function of X? What is the function of the heart?

¹⁶ There are other replies to the New Evil Demon Problem from reliabilists in the literature. I have discussed David Henderson and Terry Horgan’s “transglobal reliabilism” in Graham 2014c and Jack Lyons’ anchored “inferential reliabilism” (2009, 2013) in Graham 2011c, 2014d, 2017. Other recent replies to the problem include Miracchi 2015, forthcoming; Baysan 2017; and Kelp 2019.

2. Why do Ss have Xs? Why do humans have hearts?
3. Why do Xs do Y? Why do hearts beat?

“To pump blood” answers all three. The second and third are then undisguised requests for an explanation. The first, since it asks the same thing, given that it has the same answer, is then a disguised request for the same explanation: functions ascriptions are disguised explanations. That’s why function statements explain.

Wright then gives an account of functions that simultaneously accommodates both features, for his account distinguishes between functions and accidents in terms of the explanation—the etiology—for why the function bearer exists or does what it does: function statements are explanations that simultaneously sort functions from accidents. Abbreviating, here is his account:

A function of X is F iff X exists because X does F.

Why is the heart there? The heart is there because it pumps blood, not because it makes noise. That’s why its function is to pump blood. Why is the nose there? The nose is there because it keeps air warm and moist, not because it holds up rings. That’s why its function is to keep incoming air warm and moist.

Wright’s account has its admirers. But many think it needs refinement. One reason involves malfunction. A heart that cannot pump blood does not exist because it pumps blood, for it can’t. Here’s how we could revise Wright’s account to accommodate malfunction. Suppose past tokens (or earlier stages) produce an effect. Suppose there is a mechanism that takes these tokens (or stages) as input and then makes new tokens (or stages) as output because of that effect (and not because of other effects). Then new tokens (or later stages) exist because past tokens (or stages) produced that effect. We can then incorporate this history explicitly into Wright’s theory:

A function of this X is F iff this X exists (partly) because past Xs did F.

We can then avoid the malfunction objection (and arguably other objections), for this malformed heart exists because *past* hearts pumped blood, not because *it* pumps blood. Pumping blood can still be its function, even if it can’t.

There are at least two mechanisms that can pull this off: selection and self-maintenance.¹⁷

¹⁷ Selection (either over generations or within a generation) and self-maintenance are typically offered in the literature as competitors for the one and only mechanism that generates etiological functions. There may be a truth in this. For advocates of selection-based views, see Buller 1998; Garson 2019a, 2019b; Godfrey-Smith 1993, 1994; Millikan 1984a, 1989; and Neander 1991. For advocates of organizational views, see McLaughlin 2001, 2002, 2009; Moreno & Mossio 2009; Mossio, Saborido & Moreno 2009; Schlosser 1998; Saborido & Mossio 2015; Saborido, Mossio & Moreno 2011. Despite the apparent conflict, I take an ecumenical, pluralist approach, for both accounts fall under Wright’s umbrella. For all I say here, both types of mechanisms generate etiological functions. Shea (2018) similarly takes a pluralist line for teleosemantics. For an argument that all theories of natural functions invoke history, even “forward-looking” theories (e.g. Bigelow & Pargetter 1987; Boorse 2002), see Garson 2019b.

Differential reproduction is one form of selection. If green beetles had more viable offspring than brown beetles because being green provided better camouflage than being brown, then the etiological function of green coloration is to provide camouflage. Current traits are there in the population because past traits contributed to selection of individuals that bore those traits, because of an effect of those traits.

Justin Garson (2019a) discusses various selective mechanisms beyond differential reproduction that he thinks should play a role in generating functions: anti-body selection, neural selection, and trial-and error learning (Frieman 2002). These forms of selection, however, do not (necessarily) lead to differential copying (reproduction—new tokens) but instead to differential *persistence*. Garson thinks if differential reproduction generates functions, so does differential persistence. I agree. If selection generates etiological functions, differential reproduction is not the only selective mechanism that does the job. In other words, you don't need ancestors to have functions from differential selection. You just need earlier stages, as it were, of the token.

Contributions to self-maintenance also ground functions. All living organisms display complex self-organization that they maintain through self-organizing activities. Their self-organization is grounded in two key relations: part-whole causation and the inside-outside relation (Nicholson, 2014).

Part-whole causation means that the whole organism sustains the whole by the activities of the parts and the continued existence of the whole helps sustain the continued existence of its parts. Through metabolic activity the parts produce the whole, and through metabolic activity the whole replenishes the parts (through cell replacement and cell-repair). By pumping blood, our heart helps assemble our living form. By staying alive, the whole then reassembles the heart. Your heart has been reassembled many times through cell division and cell-repair over time—its current stage descends from earlier stages. Even single-celled organisms are complex structures that persists through part-whole causation. Living beings are self-organizing in that their parts have effects that contribute to the reciprocal production of one another in accord with the organization of the whole.

The inside-outside relation means that organisms distinguish their insides from their outsides. Single-celled organisms build membranes. Larger organisms often build skin. Given membranes or skin, the organism then creates an internal environment by which it maintains itself far-from equilibrium in the face of challenges from the external environment. Through these two relations organisms display self-organizing activity by which they maintain and self-maintain their self-organization. Through capturing and metabolizing free energy, self-organizing activity maintains self-organization. That's how organisms remain far-from-equilibrium—how they stay alive—despite the second law of thermodynamics.

Plugging in Wright's definition, functions of traits can then be generated by effects that help explain how the trait helps maintain the self-organization of the whole system of which they are a part, where the self-organizing activity of the whole in turn helped explain the persistence--the later stages--of the trait, and so why the trait exists now. Self-reproduction then also generates etiological functions.¹⁸

¹⁸ I have tabled an important feature of functions in the text: functions are means to ends of the system, viz. functions are grounded in contributions to the good of the system. This is often taken for granted without explicit mention: survival and self-maintenance are obviously good for the individual, and survival and reproduction are obviously good for the lineage. See Bedau 1991,

Very many philosophers tend to think there are only two plausible sources of functions: conscious design and evolution by natural selection. When it comes to the function of the heart or the function of our perceptual systems, that means only God or Mother Nature can explain their functions. But it should be evident by now that this is not so. Besides Mother Nature--evolution by natural selection--neural selection, operant conditioning (learning), and contributions to self-re-production can also ground those functions, and many more. You don't need parents--either our Heavenly Father or Mom and Dad--to have etiological functions. Even Swampman (Millikan 1984a, Davidson 1987) can quickly acquire etiological functions.¹⁹

7. The Logic of Etiological Functions

Items with etiological functions have several general or “logical” consequences that will prove important.

First, for any item with an etiological function, we can define normal operating and normal circumstances. Normal operating is the way the item operated or worked when it acquired its function. Normal conditions are those conditions, when working that way, where the item acquired its function. Normal functioning is formative functioning. Normal conditions are formative conditions. Just as Burge defined normal conditions as formative conditions for perceptual content, we can define normal functioning and normal conditions for the whole category of items with etiological functions.

Second, if an item had not fulfilled its etiological function in the past in normal circumstances while operating normally, then the item would not have acquired that effect as its etiological function (Millikan 1984a). Hence, etiological functions presuppose a background of successful functioning (of function fulfillment) in formative circumstances. Past effects (that become the function) fix (current) functions; no (past) success, no (current) functions. The good case (function fulfillment) metaphysically explains the bad case (function failure).

Third, it then follows that normal operating and normal circumstances are *constitutively understood* in terms of function fulfillment. Normal circumstances *just are* those kinds of circumstances where the item worked or operated so as to produce the effect that became the item's function. Normal operating *just is* working or operating the way the item worked in those circumstances so as to produce the effect that became the item's function. The notions etiological function, normal operating, and normal circumstances are *holistically interrelated*; we understand one in terms of the others.

Fourth, for items with etiological functions, we can then define normal versus deviant or accidental success. Success through normal operating in normal conditions is success through normal formative pathways, though the normal route. Normal success runs

McLaughlin 2001, and Graham 2014a: 19-20. Wright himself came to see this point (Wright 2012). This feature of functions is also obviously relevant to the normativity of functions and subsequent functional norms.

¹⁹ Have you been thinking “What about Swampman?” (e.g. Sosa 2011: 134; Goldberg 2012b: 116-117; Schellenberg 2018: 203; Tolly 2018). I won't include a section on Swampman here. For discussion, see my papers “Warrant, Functions, History” (Graham 2014a) and “Proper Functionalism and the Organizational Theory of Functions” (Graham 2023b).

on the normal route. Success through other pathways is non-normal, deviant or accidental. Deviant success runs on deviant routes.

Fifth, given the “logic” of etiological functions, it is a priori necessary that if an item has an etiological function, then *ceteris paribus* it will fulfill its function often enough in normal circumstances when operating normally. Though items with etiological functions will fulfill their functions through the normal route, it is not a part of their logic that they do so very often. Normal routes are not necessarily infallible, let alone highly reliable. Items with etiological functions need only succeed *often enough* in normal circumstances.

How often is often enough? For some functional structures that means nearly every time: the heart must pump blood all the time, not just once in a while. But matters differ for other functional items. Of the millions of sperm that successfully swim the fallopian tubes to an egg, only one has to do its job. In fact, only one gets to do its job. Often enough for normally operating sperm in normal circumstances is not very often indeed.

Sixth, when the contributory effect that becomes the function involves a high ratio of success over failure, as in the pumping of blood by the heart, I include “reliable” in the description of the function (Graham 2012a). Call such functions R-functions (van Elswyk 2023). Some items with etiological functions have R-functions.

Seventh, when reliability is then a part of the nature of an etiological function, normal operating is then constitutively understood in terms of reliable success, for normal operating is constitutively understood in terms of function fulfillment, as we just saw. Normal operating for items with R-functions “encodes” reliability. For though normal functioning is only a part of the normal route to reliable success, what *makes* such functioning *normal* supervenes on the entire route to reliable success. For items with R-functions, normal functioning is constitutively understood in terms of reliable success.

8. Grades of Warrant

Let us assume, which anyway I think is true and known to be true, that human perceptual systems and the transition to perceptual belief have the etiological function of forming reliably true perceptual beliefs.²⁰ Let us assume that producing reliably true beliefs is an R-function of human perception.²¹ It then follows that human perception, when functioning normally in normal conditions, will reliably produce true beliefs. Normal functioning in normal conditions is then a reliable route to truth. Human perception will form reliably true beliefs on the normal route. Most beliefs so formed, given the satisfaction of other conditions, will be knowledge. All of this follows from the logic of etiological functions and our assumption that our perceptual belief-forming capacity has the etiological function to reliably form true beliefs. But then if normal functioning in normal conditions for our perceptual belief-forming capacity is the normal route to reliable truth, then haven’t we identified the ground for perceptual warrant? I think the answer is very definitely yes.

²⁰ I am aware that perceptual states (and so perceptual beliefs) are often only approximately accurate.

²¹ In a fuller account I would significantly qualify this claim about perception. Human perception is not just one thing, but many different things, some with R-functions to reliably represent and some without (like the rabbit-danger case), and then some that possibly even have misrepresentation as a function (see Graham 2019). I’m overgeneralizing here to simplify for the purpose of illustrating the account of warrant.

Perceptual warrant for humans is grounded in our perceptual capacities' etiological function to produce and sustain reliably true perceptual beliefs (Graham 2012a, 2014a, 2017, 2019).

If we think of perceptual warrant as a good path to truth and knowledge, and the good route as laid down by perception's etiological function to produce reliably true perceptual beliefs so that the *good* route to truth is the *normal route to reliable truth*, we can distinguish grades of warrant, where the higher grades entail the lower grades.

Here, to a first approximation, is the first grade:

A perceptual belief B has (prima facie) warrant-grade-one iff

- (1) B is based on a (normally acquired) normally functioning transition from a normally formed perceptual state through the normal functioning of the perceptual system, where the system has forming true perceptual beliefs reliably as a function.²²

This first grade does not require that the subject is in normal conditions, and so does not lapse when the subject is in a demon world scenario.²³

Here, to a first approximation, is the second grade:

A perceptual belief B has (prima facie) warrant-grade-two iff it has grade-one and

- (2) The individual, and so the perceptual system, is in normal conditions, and B is formed through the normal functioning of the perceptual system in normal conditions.

This second grade requires that the subject is in normal conditions, and so does not persist when the subject is in a demon world scenario. This second grade requires that, as a matter of fact, the warranted (warranted-grade-two) belief is objectively highly likely to be true. But it does not require that the belief is true. Warrant-grade-two is not infallible in normal conditions. Though infrequent, there are warranted-grade-two false beliefs. Warrant-grade-two entails warrant-grade-one. Is this grade of warrant that heroes like Lyons and Senor would clearly see as absent in demon world scenarios.

Here, to a first approximation, is the third grade:

²² Why the parenthetical "normally acquired"? That's to exclude "Truetemp" and related types of cases. "Normally acquired" means the belief-forming process must be acquired through a process that generates functions for the individual. If Lehrer's tempucomp is grafted on to your brain (Lehrer 1990), though it may have been designed to detect the temperature, if you did not acquire it in a way that generates functions for you, it does not contribute to warrants for your so-caused beliefs (pace Lyons 2009: 127-128). Or if an alien's organs are grafted onto your brain, though the alien's organs may have the function to reliably form true beliefs, if you did not acquire the organ in such a way that it has a function for you, then it doesn't contribute warrants for you (Graham 2012a: 478; Millikan 1984b: appendix). Though not accidental *for the alien*, the structure is (relevantly) accidental *for you*. Lucky (non-functional) accidents that produce reliably true beliefs do not generate warrants.

²³ This grade of warrant approximates what Michael Bergman (2004) calls "justification" and what I called "entitlement" in many of my earlier papers (e.g. Graham 2010, 2012a, 2016; cf. Graham 2020b for Burge's use of 'entitlement').

A perceptual belief B has (prima facie) warrant-grade-three iff it has grade-two and (3) B, so formed through the normal functioning of the perceptual system and the transition to perceptual belief through normal conditions, is (reliably) true.

This grade of warrant is factive--at least “weakly” so (Dretske 1969, 1971; Graham and Pedersen 2020)--in requiring that the belief so formed is true. But not merely true. The truth must manifest the reliability of the belief forming process in normal conditions: the truth must be the result of traveling the normal route to reliable truth; deviant routes won’t do. This grade of warrant corresponds to Sosa’s notion of apt belief, where apt belief, for Sosa, is sufficient for a kind of knowledge that he calls *animal knowledge*.²⁴ It also comes close to Plantinga’s analysis of warrant in his book, *Warrant and Proper Function* (1995).

Here, to a first approximation, is the fourth grade:

A perceptual belief B has (prima facie) warrant-grade-four iff it has grade-three and (4) The individual, in so forming a (reliably) true belief, would not easily form a false belief.

The fourth condition is a safety condition (Sosa 1999, Pritchard 2005). As stated, I intend (4) to be neutral as between a “safe grounds” and a “safe method” interpretation, though my instincts lean towards the latter. (4) goes beyond (3), for there are true beliefs that manifest normal functioning in normal conditions that are not safe. (One might substitute some other subjunctive conditional for the fourth grade.)

²⁴ Sosa further refined his AAA virtue epistemology by distinguishing three dimensions of skills: seat, shape, and situation (Sosa 2010, 2017: 214, 2020: 198). The *situation* is the circumstances “outside” of the subject. The *shape* involves the occurrent state of the subject—the circumstances “inside” the agent. An awake, alert and healthy agent is in good shape. The *seat* of the archer’s skill is the neural and bodily basis—the configuration of neurons and their connections (and so forth)—that underwrites skillful performance in normal situations (circumstances) while in normal shape (when functioning normally). In normal shape in in a normal situation, the skillful archer is likely to hit the target. The seat is a skill because “it *would* combine with appropriate shape and situation so as to dispose the archer to succeed reliably enough if she tried to hit the target” (2015: 103, emphasis added) (recall our first answer to the explanatory challenge). With this three-way distinction in place, Sosa distinguishes three grades or degrees of competent performance. A performance in normal shape and normal situation—a normally functioning exercise of a competence in normal conditions—that hits the target displays full competence. Apt performances are *fully* competent. This corresponds to warrant grade-three. An adroit shot is still a competent shot, even if it misses the target due to poor situation, though not a fully competent shot. This corresponds to warrant-grade one. And a performance of a skill even in bad shape and bad situation can still be a competent performance. Call this warrant grade-zero. Despite this more elaborate picture that mirrors the account I have presented in the main text, the difficulty I raised for Sosa’s view remains. The “competence” of the shot--and so analogously whether a belief is justified--is a function of reliable success in the assessor’s world. These distinctions are not a substitute for “J-ADROIT” as his answer to the New Evil Demon Problem. Normal conditions are *actually* normal conditions, a subset of the actual world. So Vicki, relative to our assessment has partially competent and so justified beliefs, but relative to her assessment does not have partially competent and so justified beliefs. For further discussion, see Graham 2023a.

This grade of warrant corresponds to Alvin Plantinga’s final analysis of warrant, where warrant is that property of belief, a degree of which, suffices for knowledge. Since Plantinga thinks environmental luck cases (nearby fakes) undermine knowledge, Plantinga came to see that his 1993 account of warrant did not suffice (Plantinga 1996, 1997). He then added what he calls a “resolution” condition on warrant, a condition that comes very close to, if not simply, a safety condition.

This grade of warrant is not metaphysically infallible. It requires that the belief is true and that in all nearby worlds where the individual relies on normally functioning perception in the relevant way that the individual forms a true belief. But it does not require that the individual, on the “grounds” or “method,” so form a true belief, when so forming beliefs, in all possible worlds. Warrant-grade-four is circumstantially but not metaphysically factive (Graham and Pedersen 2020a; cf. Dretske 1971).

One might think knowledge--or at least perceptual knowledge--requires an even higher grade of warrant. One might think that if you have perceptual knowledge, then you cannot be wrong in the sense that your perceptual belief, so formed, cannot be falsely formed in any possible world. One might think that perceptual knowledge requires super warrants of the quality of our warrants for cogito-thoughts and some other thoughts. Philosophers who seem to think that object-dependent individuation of perceptual states is necessary (and given certain qualifications sufficient) for perceptual knowledge seem to have this idea in mind. Here, to a first approximation, would be, in my view, a *fifth* grade of warrant that would correspond, if not precisely capture, this idea:

A perceptual belief B has (prima facie) warrant-grade-five iff it has grade-three and (4*) The individual, in so forming a (reliably) true belief, would not so form a false belief in any possible world.

Warrant-grade-five is metaphysically factive, metaphysically infallible. Grade five warrants are super warrants.

Traveling on grade-one puts you on the right path to truth and knowledge. Traveling on grade-two gets you very close to your destination. Traveling on grade-three gets you there--or at least to the truth. Traveling on grade-four gets you there safely. And traveling on grade-five metaphysically guarantees that you reach your destination.

As used by epistemologists ‘epistemic warrant’ and ‘epistemic justification’ are understood as denoting a property of belief that plays a very important role in contributing to and conducing towards truth and knowledge. My view is that we can, as it were, break that property into steps, parts, levels, or grades. The fact that some epistemologists use ‘warrant’ or ‘justification’ for one of the grades I have identified, and that other epistemologists use one or the other term for another grade, suggests that these are all *grades* of one thing—the normal route to reliable truth and knowledge.²⁵

²⁵ This also suggests that one philosopher might slide in their thinking from one grade to the other in different contexts without acknowledging the slide. It’s a possibility. And though I have distinguished these grades, that does not mean I have committed to them all as genuine. For the purposes of this paper, what matters are the first two. I hold both are genuine grades of warrant. I simply illustrate the possibility of the other grades here.

9. Answering the Explanatory Challenge

Why, then, does warrant persist in demon worlds? Because normal functioning—warrant grade-one—persists in demon worlds. That’s why, on a broadly reliabilist view of warrant, Vicki’s beliefs are “justified,” even though her perceptual beliefs, so formed in the circumstances she is in, are entirely false, and so not, in the circumstances that she is in, reliably true. The trick to explaining why warrant should persist in demon worlds is to distinguish between (at least two) grades of warrant.

In the past I’ve used two analogies to get this idea across (Graham 2012a). Imagine a car up the lift for inspection. Up the lift it can’t take you where you want to go—it can’t fulfill its function—but everything may be working just fine, exactly the way it is supposed to. Or imagine a heart removed from someone’s chest and placed in a sterile dish in a futuristic surgery so as to make room for repair of the surrounding tissues. In a sterile dish, the heart may be stimulated by wires to beat normally, but outside of the chest no blood is pumping through. Perhaps orange juice is pumping through for a vitamin C flush. Even so the heart may be beating normally, just as it should. In the vat, Vicki is like the car up the lift or the heart in the dish. Functioning normally, even though massively deceived, her beliefs are still on the normal route to reliable truth, and so warranted grade-one.

Why *should* warrant grade-one be a grade of *warrant*? Without an answer to this question, we haven’t really explained why warrant should persist in demon worlds, and so we really haven’t engaged our heroes. I will give four reasons, from the weakest to the strongest.

First, warrant grade-one is a part of the path. Insofar as one’s perceptual system and the transition to perceptual belief is functioning normally, when one’s perceptual capacities have the etiological function of forming true beliefs reliably, then one is forming beliefs on the good route to truth and knowledge, even though one is, so to speak, only on the first half of the journey.

Second, warrant grade-one is not just accidentally a part of a path to truth and knowledge, but *explanatorily* so. That’s what makes normal functioning a part of the *normal* route to reliable truth.

Third, when forming true beliefs reliably is the etiological function of the perceptual system and the transition to perceptual belief, normal functioning is not just a part of the normal route to reliable truth, but what counts as *normal* functioning is *constitutively explained* and so *metaphysically individuated* in terms of getting things reliably right in normal circumstances. In other words, given this etiological function, normal functioning is a part of the normal route to *reliable* truth and knowledge *by its very nature*. It wouldn’t be *normal* functioning unless it reliably contributed to forming true beliefs in normal conditions. That was just what I meant by saying that normal functioning “encodes” reliability when the capacity has forming true beliefs reliably as an etiological function. The point here is *not* just the point that the capacity *would* contribute to reliably true beliefs *were* it in normal conditions. Rather the point is that, because it *did* produce reliably true beliefs in formative conditions, *what it is* to function *normally* is constitutively understood in terms of reliably getting things right.

The fourth reason deepens the third. Recall from the beginning that warrant is a normative property. Warrant is normative for warrant consists in meeting evaluative

norms. Why, on the account of warrant I have developed so far, does warrant--especially grade-one--meet evaluative norms?

The answer is straightforward. When there are functions, there are evaluative norms. There are at least three. The first is function fulfillment. The second is normal functioning. The third is function fulfillment through normal functioning--success through the normal route. These norms are standards or levels of adequacy in contributing to the fulfillment of the relevant function. For any item with a function, we can ask how well it is doing in furthering its function. Is it fulfilling its function? That's the first norm, the first standard or level of adequacy. Is it functioning normally, operating as it should? That's the second norm, the second standard. Is it fulfilling its function through the normal route? That's the third norm.²⁶ Thus, when forming reliably true beliefs is an etiological function of a belief-forming capacity, there are at least three evaluative norms. First, forming reliably true beliefs, conducing towards truth and knowledge in the particular case. Second, functioning normally. Third, forming reliably true beliefs through normal functioning. Since these norms are grounded in the etiological function to reliably get things right, the activities that count as meeting the norms are all holistically understood in terms of each other.

The fourth reason then is this: when perception functions normally--even in a demon world--the system and the transition to perceptual belief is meeting an evaluative norm constitutively understood in terms of reliable truth and knowledge. Warrant grade-one is normative for it fulfills a norm constitutively understood in terms of producing reliably true beliefs. Normal functioning for a capacity that has forming true beliefs reliably as a function then meets a norm constitutively understood in terms of reliably getting things right, an epistemic norm. Grades of warrant involve meeting evaluative norms constitutively associated with reliable true belief and knowledge.

The machinery of etiological functions applied to our perceptual belief-forming processes then gives us four interrelated reasons for supposing that warrant grade-one, even on a reliabilist view of warrant, is a grade of warrant. Since grade-one can persist in demon-worlds and other abnormal conditions, we have then explained why warrant should persist in demon-worlds, on reliabilist terms. We've answered the explanatory challenge for special circumstances reliabilism. Our heroes are right that warrant grades two and higher lapse in demon worlds. They are wrong to think that warrant grade one—an epistemic achievement beyond rational belief—lapses as well.

10. The Truth in Heroism

Our story is not over. Recall our two facts. Fact one was that perceptual beliefs are defeasibly justified. Fact two was that perception is a reliable belief-forming process. The reliabilist says the second helps explain the first. The internalist says the first fact is a necessary truth; there is something about perceptual experiences such that, necessarily, they contribute to perceptual justification. Since the reliability of perception is only contingent, the reliability of perception cannot be what explains this necessary truth: reliability in any conditions is thus irrelevant to justification.

²⁶ For a comparison of this view of norms from functions with Burge's view (2003, 2010), see Graham 2019.

Call the internalist doctrine that perceptual experiences necessarily contribute to perceptual justification “Necessity.” Call the reliabilist doctrine that justification, necessarily, is a reliable route to truth and knowledge “Reliability.” On the assumption that perception is only contingently reliable, these two doctrines are incompatible. You are forced to choose.

The tradition was able to accept both Necessity and Reliability, for the tradition (at least since Descartes, if not since the Stoics) held that perception is necessarily reliable. This idea is easy to see in Meditation V in Descartes. Descartes argues that certain patterns of perceptual experiences that come to us independently of our will, where we have no ability to tell if they are misleading, must be reliable guides to external reality, otherwise God would be a deceiver. Since God is not a deceiver, and God exists in all possible worlds, certain patterns of perceptual experiences are necessarily reliable, reliable in all possible worlds. At least when it comes to epistemic evil—radical deception by a malicious demon—God would not allow it to occur. Similar ideas are worked out, though in different ways, by Leibniz and Malebranche, both influenced by Descartes.

Berkeley and Kant eliminated the need for God as the cosmic policemen by abandoning realism. Berkeley’s subjective idealism collapses certain patterns of perceptual experiences with the reality they purport to represent. As a result, certain perceptual experiences are not just necessarily good routes to truth and knowledge but essentially so. Kant’s transcendental idealism also constructs the subject-matter of perceptual experience out of perceptual experience, thereby also guaranteeing the essential reliability of various patterns of perceptual experiences. We find similarly motivated efforts to metaphysically insure the reliability of perceptual experience in phenomenism, neo-Kantianism, and the linguistic conventionalism of logical positivism.

This tradition finally died out for the most part by the second half of the twentieth century. Idealism had fallen out of favor. Phenomenism just didn’t work. Logical positivism did not survive assaults from Quine and others. Though some epistemologists still try to find a priori guarantees of the reliability of perception through introspection and a priori reasoning, it is widely held that no such attempt will ever succeed.

One clear reason for believing that the traditional attempt to secure the metaphysical reliability of perception would never succeed comes not simply from the intuitive plausibility of massively deceived brains in vats and from the known fact that we can unknowingly stumble into abnormal conditions, but from reflection on the logic of natural selection (Burge 2020). Natural selection as such is neutral on whether perceptual representations reliably represent their subject-matters in normal conditions. Depending on the costs and benefits, the nature of the environment, and other considerations, Mother Nature may build representations that are reliable in their normal environments, or she may not (Stephens 2001; Nanay 2023; see note 11). When she does, it’s a contingent matter of fact. When it comes to our perceptual systems, Mother Nature selected for reliability (Graham 2014a; cf. Stephens 2001, Nanay 2023). Though evolution might debunk morality or religion, it does not necessarily debunk perceptual epistemology. But even though we are among the lucky ones, there are possible duplicate perceptual systems that, given the costs and benefits in their normal environments, fail to be reliable. In other words, given what we have learned since Darwin, perceptual systems are not necessarily reliable, even in normal conditions.

Thus, the tradition's commitment to both doctrines—Necessity and Reliability—cannot be sustained. As I said, one must make a choice: either Necessity (internalism) or Reliability (reliabilism) (or the “end of epistemology” as in Quine or Rorty). If one had these ideas clearly in mind in the mid-1960s, then one could predict the emergence of internalists who advanced Necessity but (should have) dropped Reliability and reliabilists who advanced Reliability but (should have) dropped Necessity. Such internalist positions quickly emerged (e.g. Pollock 1971, Quinton 1973). Reliabilism emerged later (e.g. Goldman 1979, Sosa 1980). Given the forced choice, the emergence of the New Evil Demon Problem should come as no surprise, as it vividly illustrates the incompatibility, given the contingency of the reliability of perception, between Necessity and Reliability. But given reliabilist's attempts to “solve” the New Evil Demon Problem—a problem which argues for Necessity—many reliabilists tried to maintain some version of Necessity, so that certain patterns of perceptual experiences, given that they are reliable in a special set of circumstances, contribute to warrant in all possible worlds.

But that kind of Necessity is at best an ersatz version of the doctrine. For what we learned from Darwin is that there could be duplicate perceptual systems that are not reliable in *their* special circumstances. The internalist would insist that, even so, the perceptual states of those perceptual systems contribute to perceptual warrant. And this is exactly what the reliabilist *must* deny. No reliability in *special* circumstances, no warrant in *any* circumstances. So if our world, as it were, turned out to a demon world, then even our perceptual experiences would fail to contribute to warrant for perceptual beliefs. In the end our heroes are surely right that Necessity cannot be true, that unless normally formed perceptual experiences prove to be reliable guides to truth in their *normal* circumstances, it is just an illusion to suppose that they justify perceptual beliefs in *any* circumstances, let alone *all* circumstances. That's the truth in heroism.²⁷

²⁷ I presented earlier versions of this paper at the Rutgers Epistemology Conference in April 2022, the Yonsei Frontier Lab Lecture Series in Seoul in July 2022, the Midwest Epistemology Workshop at the University of Iowa in September 2022, and the Pilot Workshop of the Methods: Epistemology Beyond Belief project at the University of Barcelona, May 2023 (Sven Rosenkranz, PI). I am grateful to all three audiences for discussion that led to improvements. I am especially grateful to comments from Michael Bergmann, Richard Fumerton, Pamela Heironymi, Maria Lasonen-Aarnio, Jack Lyons, Matthew McGrath, Ram Neta, and Nikolaj Pedersenπ. The research for this article was supported by a prize from the Humboldt Foundation and a fellowship from the Leverhulme Trust. This research also received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme; grant agreement No 948356, 'KnowledgeLab: Knowledge-First Social Epistemology' project, PI Mona Simion.

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