**Non-Epistemic Perception as Technology**[[1]](#footnote-1)\*

**Abstract**. Some epistemologists and philosophers of mind hold that the non-epistemic perceptual relation of which feature-seeing and object-seeing are special cases is the foundation of perceptual knowledge. This paper argues that such relations are best understood as having only a technological role in explaining perceptual knowledge. After introducing the opposing view in §1, §2 considers why its defenders deny that some cases in which one has perceptual knowledge without the relevant acquaintance relations are counterexamples, detailing their case for lurking inferential epistemology. §§3-4 suggest that this strategy fails in many other cases. While there is a computational tale that might be deemed ‘inferential’ in these cases, there is no corresponding tale in epistemic structure, not even if one rejects what Siegel (2017) calls the ‘Reckoning Model’ of inference. §5 offers a more fundamental dilemma. §6 concludes that there is only a technological role for non-epistemic perception in grounding perceptual knowledge, but allows that it might play a more-than-technological role elsewhere.

**1. Introduction**

The question ‘How does S know that p?’ admits of different kinds of answers, only some of which illuminate epistemic structure. Less revealing answers include *technological* ones. If I ask how you knew there would be a cardinal in this tree and you say you used your binoculars earlier, you give a technological answer. When epistemologists search for the ways of knowing, the list sought isn’t meant to include the likes of binoculars: they are only auxiliaries for a more fundamental way of knowing (viz., perception). Although we can imagine beings with binoculars integrated into their visual systems, perception remains their way of knowing: it just gets realized differently.

Not all technology is easily detected. Binoculars were easy for two reasons. One reason is that they aren’t integrated into our psychologies. But the possibility of integrated binoculars suggests that this reason is superficial. Hence we must be careful about better-integrated auxiliaries. Some are not misleading. Consider one’s eyes. It isn’t tempting to cite them in answering the question ‘How do you know?’: since one sees through them, one overlooks them, citing the seeing, not the eyeing. But other auxiliaries are more misleading. As I will argue, many forms of perception are only epistemic auxiliaries: indeed, all perception that is not partly constituted by knowing can play only a technological role in explaining perceptual knowledge.

To clarify my thesis and the opposed view, we must get clearer on the relevant contrast to technology. There are several ways to answer the question ‘How does S know that p?’ that reveal epistemic structure. On the more superficial end, one could give an answer invoking a particular modality: S knows that p by hearing that p. Philosophy can further examine modality-specific ways of knowing for their own sake, since they might raise their own puzzles. But if they are ways of knowing, they qualify as such by being special cases of a more fundamental way—viz., perceiving.

All the ways of answering the question ‘How does S know that p?’ that interest me will cite ways of knowing, where the notion of a ‘way of knowing’ is constitutive rather than auxiliary. A way of knowing is a special kind of *ground* of knowing.[[2]](#footnote-2) Note that this constraint isn’t meant to exclude causal theories of knowing. Such theories might be read as proposing that certain forms of causal contact are constitutive ways of knowing, where the basic constitutive way is some general kind of causal contact. The constraint only excludes auxiliariesto knowledge.[[3]](#footnote-3) For another example, consider textbooks. They are only auxiliaries. Here the relevant constitutive way of knowing is testimony-reception. *Reading* counts too, but only by constituting testimony-reception.

The view I oppose denies that perceiving that p (what Dretske (1969) dubbed ‘epistemic perception’) is a ground-floor constitutive way of knowing that p.[[4]](#footnote-4) This view is appealing because there is a natural story to tell about how I can perceive that p citing my perceptual relations to the objects and features that conspire to make <p> true. This story, these theorists suggest, is the deep story about perceptual knowledge. McNeill (2012: 588) puts it nicely in the visual case: ‘[w]e should expect our experiences of objects and their features to help explain which facts we see and know, not the other way around.’ While it sounds commonsensical, I’ll argue that this thought is false if taken to concern epistemic structure. Non-epistemic perception is only technology for knowing.

The view under evaluation has resurged in some British epistemology and philosophy of mind.[[5]](#footnote-5) It is also articulated beautifully by Mark Johnston (2006, 2011). The conception of ways of knowing I invoke is influenced by this tradition, which seeks to understand the kind of perceptual knowledge missing in blindsight cases, the TrueTemp case, and the like. According to these philosophers, consciousness of objects and their qualities grounds such knowledge. Accordingly, the background conception of ways of knowing relevant for understanding these figures will seem narrower to some externalists than, say, the nearby notion of ‘epistemizers’ in Alston (1983) and McGrath (2017).

We need a special term. Adapting a storied word from Cook Wilson (1926), call the knowledge that many perceivers have but blindsighters lack *apprehension*,[[6]](#footnote-6) and call epistemic grounds that are constitutive ways of apprehending truths *apprehensive grounds*. In citing an apprehensive ground as one’s way of knowing, one answers the question of how one knows in a way that resembles giving reasons-for-which to answer the question of why one is acting. The chief difference is that apprehensive grounds are waysof knowing, not (necessarily) reasons. On some theories of reasons, neither the state of feature-seeing nor the feature seen is a reason. But it would still seem an apprehensive ground; consider ‘I see the red of the traffic light’ offered as an answer to the question ‘How do you know the traffic light is red?’. While I reject this answer as fundamental if ‘see the red’ is understood non-epistemically, I think the relevant apprehensive ground is *feature-recognition*, where this state might not function as a reason.[[7]](#footnote-7)

With this idea in hand, we can provisionally characterize the view I oppose thus:

**Non-Epistemic Perception as Apprehensive Ground** (**NEPA**): Perceptual knowledge that p has as its apprehensive ground non-epistemic perceptual awareness of features and objects which are truth-makers of the proposition <p>.[[8]](#footnote-8)

It will help to distinguish weaker and stronger versions of NEPA:

**Strong NEPA**: All perceptual knowledge that p has as its apprehensive ground non-epistemic perceptual awareness of features and objects that are truth-makers of <p>.

**Weak NEPA**: Some perceptual knowledge that p has as its apprehensive ground non-epistemic perceptual awareness of features and objects that are truth-makers of <p>.

I think neither claim is true. There is less dialectical distance between them than one might expect. Note that ways of knowing have a kind of generality. While they might not entail knowledge, they should afford it in the absence of defeaters*.* Hence, it couldn’t be that only some handful of possible cases of perceptual knowledge have non-epistemic awareness as an apprehensive ground. If non-epistemic awareness can do that work in one case, it can do it in many others. We can go farther. If there are cases where something that accompanies non-epistemic perception does the relevant work on its own, we should doubt that non-epistemic perception did the work all along. Hence we might start with an argument against Strong NEPA, but get an argument against Weak NEPA.

Before further explaining the structure of the paper, more clarifications about NEPA are needed. I’ll focus on the version that strikes me as most promising. It proposes that non-epistemic awareness of either *worldly features* or *worldly objects under some featural mode of presentation* is the relevant apprehensive ground.[[9]](#footnote-9) To use Johnston (2011: 172)’s helpful locution, this is the state we report with ascriptions of *attentive sensory episodes* like ‘Mary tasted the sourness of the lemonade’ and ‘Bill saw the red of the traffic light.’ The rationale for restricting the focus in this way is that it is too obvious that non-epistemic awareness just of particulars—including events—is too coarse-grained. One can see a red object without being able to know it is red perceptually. Similarly for events: one can witness a performance of a play while having no idea this is what is happening. But feature-seeing is different, defenders of NEPA think. The idea is appealing: as McNeill (2012) notes, color-perceivers seem to have an epistemic advantage over achromatopsics vis-à-vis the question of whether the traffic light is red, by seeing the red.

While NEPA is found most clearly in Johnston (2006, 2011), McNeill (2012, 2019), and Campbell (2002, 2011, 2014), it could fit into other prominent views. Note that NEPA doesn’t deny that its chosen apprehensive ground might be further grounded, via a different sort of grounding. Hence NEPA is compatible with views that go a step farther. Some capacity-based views provide illustrations.[[10]](#footnote-10) For Schellenberg (2013), perceptual evidence is grounded in exercises of selective discriminatory capacities, which are low-level capacities to differentiate and single out types of particulars. Exercises of these capacities plausibly metaphysically ground person-level feature-seeing. Hence feature-seeing could remain an intermediate apprehensive ground on this view.

With these clarifications in mind, here is the plan. The paper argues against Strong and Weak NEPA in turn. In §§2-4, I develop the first line of argument, suggesting by counterexample that non-epistemic perception sometimes fails to do the required work. To appreciate the structure of this argument, notice that there are two ways for non-epistemic perception to be an apprehensive ground: by being a non-inferential apprehensive ground or an inferential one. I begin by observing that non-epistemic perception is not a non-inferential apprehensive ground for some perceptual knowledge. I then argue that some cases also cannot be understood via inferential apprehensive grounding: the processing actually leading from sensory input to perceptual output follows rules of organization that are not good rules of inference. One response involves insisting that we see features that might have seemed unlikely candidates for visibility (e.g., *non-Bowiehood*). Hence §5 offers a deeper argument, maintaining that there is no non-epistemic relation that can do the work envisaged by NEPA. All the candidates are either too weak, incapable of a more-than-technological role, or too strong, by being forms of epistemic perception.

**2. NEPA’s Lurking Inferential Epistemology**

If NEPA is true, its truth is not immediately obvious. Not all cases of perceptual knowledge recommend it. But NEPA retains appeal thanks to a certain strategy for diagnosing many of these non-obvious cases. To bring out the less troubling cases, note that sometimes (a) we have phenomenologically spontaneous knowledge that X is F, where (b) it is implausible that we perceive X or its F-ness in the way color-perceivers see colors. Consider:

* Stepping into the kitchen, I saw that my cat—now in the living room—made a terrible mess.
* Walking by his office, Jill saw that Bill forgot to close the door.
* Looking at the mud, you could see that a horse had been here recently.

Defenders of NEPA have a solid response to these cases. They deny that they are cases of non-inferential perceptual knowledge and argue that perceptual knowledge is itself epistemically structured, sometimes proving inferential in a more-than-merely-psychological sense. Defenders of NEPA think there is a natural story to tell along these lines:

**Lurking Inferential Epistemology** (**LIE**): In non-obvious cases, your knowledge that q is lurkingly inferential, by implicitly manifesting your competence with a good inference pattern like:

1. p. (A fact known non-inferentially *per* NEPA.)
2. The fact that p indicates that q.

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1. q.

Since your belief in (3) is not wittingly inferred, it doesn’t feel inferential. But it is epistemically inferential, by manifesting your inferential competence.[[11]](#footnote-11)

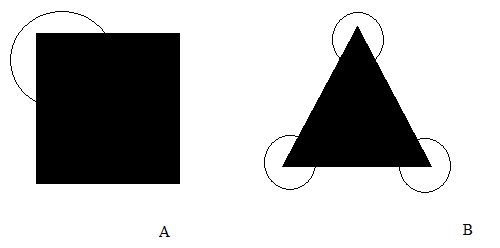
LIE is a natural story about non-obvious cases like the ones above. It is also a natural story about how you can smell that there’s a fire nearby. You acquired the ability to recognize fire by smell from smoky examples, gaining inductive knowledge that this smell means fire. While you now straightaway know there is a fire by smell, your knowledge continues to manifest the inferential competence behind your knowledge that the smell means fire.

As McNeill (2012) notes, LIE is also a natural story about how you can see from the gas gauge that your tank is half-full. Although your knowledge is here phenomenologically immediate too, the inferential story seems compulsory: ‘Given that you could not have knowledge unless you possessed a warranted state that connected the fact you primarily saw with the fact you know, it follows that you do possess such a state. Possession of this state makes your knowledge inferential, in that it inferentially connects what you primarily see with what you only secondarily see.’[[12]](#footnote-12)

I do not, however, think LIE is defensible in all non-obvious cases. Many cases cannot be understood like those above. I’ll defend this claim in two connected ways. In §3, I’ll draw attention to non-obvious cases which cannot be explained in this way without inviting new problems. Specifically, I’ll argue that (a) these cases don’t qualify as epistemically inferential via LIE, and that (b) while there are alternatives to LIE that invoke a weaker conception of epistemic inferentiality, the required weakenings are too weak, misclassifying other cases of perceptual knowledge. In §4, I’ll give a recipe for generating further counterexamples.

**3. Sometimes LIE-ing Is Wrong**

While LIE works in some non-obvious cases, it doesn’t work in all. Borrowing a move from Lyons (2009)’s playbook against ‘sensation experientialism’, we can begin by noting that cases of amodal completion don't happily fit the model. Suppose we have cutouts arranged according to the depictions in A and B. I can see that there is a whole circle behind the square, but its circularity is not wholly visible. I *visually recognize* full instances of circularity in these cases. But visual recognition is epistemic seeing, not the kind of non-epistemic seeing connected with the concept of visibility. It requires seeing, of the feature that is non-epistemically presented, that it is *that* sort.[[13]](#footnote-13) Similarly, I see that there are three whole circular objects underneath a black triangle in Figure B, but the whole instances of circularity aren't visible. I see the whole instances in the sense that I *descry* them from the visible parts.



Yet my knowledge here is not epistemically inferential. My visual system delivers a seeming that there are three complete circles behind a triangle in Case B through a computation that takes as input the visible features of the scene. But *I* don’t do this.

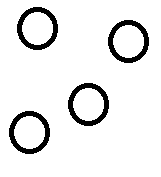
One might reply: ‘But you wouldn’t have reason to think there are three complete circles partially occluded by a triangle unless you had reason to believe certain propositions about the visible features together with justification to believe that the likeliest configuration of occluded objects includes three circles. Hence your knowledge epistemically depends on justification for believing these other propositions, making your belief only inferentially justified.’ Using an idea inspired by McGrath (2017: 10), one might invoke the following criterion for epistemic inferentiality:

**Only Because Criterion** (OBC): If S is justified in believing p *only because* S has available justification for believing q1,..., qn, S's belief that p is epistemically inferential.

But OBC is independently questionable.[[14]](#footnote-14) It overgeneralizes, rendering epistemically inferential knowledge that isn’t. There is a clear way in which you’re justified in thinking there is a plus-shaped figure in the grid below *only because* there exists justification for you to think there is a black square at location 1B, a black square at location 2A, a black square at location 2B, and so on.

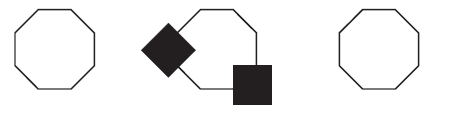


To take an importantly different example that illustrates the same point,[[15]](#footnote-15) consider one's knowledge by subitizing that there are four circles below:



There is again a sense in which one has justification to believe that there are four circles *only because* one has available justification to believe there is this circle, that circle, etc. But one's knowledge is not epistemically inferential.

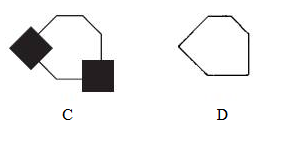
OBC hence shouldn’t be used to deem amodal completion cases epistemically inferential. Moreover, the needed inferential picture sits poorly with the psychology of amodal completion. As Pylyshyn (2003: 67-8) notes, the kind of inferential structure posited by LIE differs importantly from the structure of the visual system’s computations. Consider:



(From Pylyshyn (2003: 68), who borrowed it from Kanizsa (1985))

The middle figure can visually seem to be an irregular polygon partially occluded by black squares. This is not what we would expect if the visual seeming were inferentially derived via statistically confirmed patterns. The principle the visual system follows is a ‘smooth continuity’ principle, continuing the lines in their pre-occlusion trajectories.[[16]](#footnote-16) This principle is not statistically confirmed or a principle of rationality. As Pylyshyn says, ‘the visual system constructs a complex and asymmetrical completed shape rather than the simple octagon, despite the presence of the adjacent examples. In this and very many other such examples…the figure chosen is not the simplest one, but rather one that conforms to some special principle that applies to local regions of the image’ (67).

Yet even in irregular cases of amodal completion, we can gain visual knowledge. Consider seeing C on its own (D is only included for later comparison):



Imagine that S encounters cutouts arranged C-wise (with no other relevant cutouts around). There’s been no funny business: no one arranged the cutouts to trick S, nor does S have reason to be suspicious. Suppose it (correctly) visually seems to S that there is an irregular polygon (one like D) behind the black squares. I think S can have visual knowledge just like in typical cases of amodal completion.

So, while the principles of visual processing are not principles of rationality, we can still make knowledgeable contact with the world with their help. If we were manifesting a person-level inferential disposition to conform to the visual system’s principles, we wouldn’t expect this conclusion, since we would manifest inferential incompetence.[[17]](#footnote-17) There is competence here—just not inferential competence.

This point is not limited to amodal completion. What Pylyshyn calls the ‘natural constraints’ on early visual processing do not generally correspond to inductively confirmable principles about how the world works; instead, ‘[t]hese principles are invariably associated with spatiotemporal and optical properties, rather than with physical properties [and they] do not appear to reflect high-frequency properties of the world’ (121-122). If our inferential dispositions exploited these principles, we’d be thinking in patterns too obviously defeated by statistical evidence to yield inferential knowledge.[[18]](#footnote-18)

It is worth considering some responses. One idea is to invoke a different inferential pattern than LIE’s and suggest that one manifests competence with it *after* the visual system does its ‘smooth continuity’ computation. Here one might invoke what McGrath (2017) calls *public looks*. For A, one might say the relevant pattern is:

1. The occluded shape looks like a circle. [Knowledge grounded *a la* NEPA.]
2. Occluded shapes that look like circles around here probably are.

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1. The occluded shape is a circle.

Now, this is not the picture endorsed by most fans of NEPA.[[19]](#footnote-19) But even setting that fact aside, it confronts problems. The key problem is that it only postpones the objection.[[20]](#footnote-20) By helping itself to the knowledge in (1), this response assumes that NEPA gives an unproblematic story about our knowledge of public looks. But the same problem arises at this level, arguably in a more difficult form. Consider C again. I can have visual knowledge that an occluded figure is a D-like figure rather than an octagon. If this knowledge is inferential, what looks premise do I use? That it has the public look of a D-like figure? It equally has the public look of an octagon. Even if it exclusively had the public look of a D-like figure, how would I know it has that look? As far as non-epistemic acquaintance goes, it is no more plausible to say that I am acquainted with part of a D-like public look than an octagonal one. What is more plausible is that I *recognize*—thanks to a nifty quirk of my visual system—*both* that it isa D-like figure *and* that the way it would look if I removed the occluders is D-like. I simultaneously descry the irregular polygonal *look* and the *shape*.

One other response is worth mentioning. Defenders of NEPA might agree that the features in amodal completion cases are not *fully visible*. But they might insist that there is a richer use of feature-seeing language compatible with the literal truth of related claims. Isn’t it, after all, natural to say that we fully see three instances of circularity, not PacMan shapes, in real-life versions of Case B?

But this response is unhelpful. Again, there is a recognitional reading of feature-seeing talk in which we can truly say that we see the circles in full. This is epistemic seeing. To visually recognize a feature is to know, of the feature one sees, that it is *that* kind of feature. The existence of a true reading of the relevant feature-seeing claim is insufficient to restore NEPA. It rather highlights a deeper problem explored in §5.

**4. A Recipe for Counterexamples**

4.1. *From the Overgeneralization Problem to the Recipe*

The problem from the last section suggests a recipe for counterexamples. Often the processing lying behind one’s seeing that X is F takes as input subpersonal registration of some feature G that may be unavailable to demonstrative thought, let alone *as* an F-indicator. Call such cases *deeply subpersonal*. Although perceptual psychologists in the tradition of Helmholtz (1868/2000) sometimes call this processing ‘inference’, it doesn’t yield epistemically inferential knowledge. Although one’s belief needn’t be consciously inferred to qualify as inferentially justified by a reason r, one must at least be in a position to competently infer from r. More specifically:

**Position to Infer**: For S’s belief that p to be inferentially justified by r, S must be in a position to competently infer p from r.

But this constraint excludes the crucial inputs in deeply subpersonal cases, via the following intermediate premise:

**Constraint on Admissible Premises**: For S to be in a position to competently infer p from r, r must either be (a) a person-level state of S’s, (b) the object of such a state, or (c) available for ‘uptake’ in the form of (a) or (b).[[21]](#footnote-21)

Position to Infer, together with the Constraint on Admissible Premises, implies:

**Person-Level Constraint** (PLC): For S’s belief that p to be inferentially justified by a r, r must be person-level (i.e., be (a), (b), or (c)).

PLC doesn’t imply that the subject must know she is in the relevant person-level state, that the state meets some other introspectability requirement, or that any reckoning-requirement obtains. Such requirements follow only from stronger accessibility requirements. Consider implicit attitudes. They are states of yours, not of subpersons. You lack reliable introspective access to them. But they are person-level states. By contrast, consider the chicken-sexer of reliabilist lore. He has a psychological mechanism that picks up on some reliable indicator of chicks’ sex. Suppose it is the presence or absence of shape property S. While the chicken-sexer may implicitly believe the chick is *male* when his mechanism picks up on S, it is implausible that he implicitly believes that *S is present*.

Given these ideas, we can argue as follows:

i. If deeply subpersonal cases where registration of r explains how one sees that X is F were relevantly inferential, S would be in a position to competently infer p from r. (By Position to Infer)

ii. By the Constraint on Admissible Premises, deeply subpersonal cases are cases in which the consequent of (i) is false.

iii. So, deeply subpersonal cases are not cases of inferential knowledge from r.

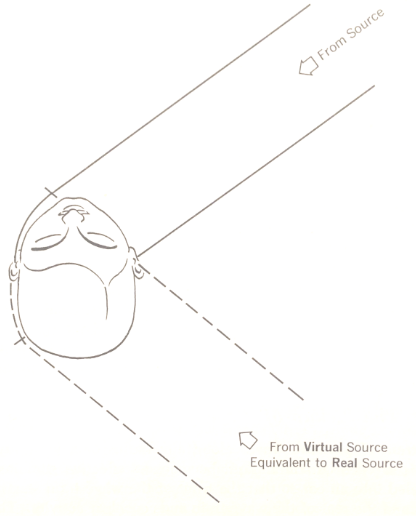
(iv) alone isn’t inconsistent with NEPA. It also must be true that deeply subpersonal cases are not cases that yield non-epistemic awareness of F. But this is plausible in deeply subpersonal cases. At any rate, we must deny we have the relevant non-epistemic awareness of F if this awareness has the significance NEPA ascribes to it. Remember that McNeill thinks it clear that achromatopsics are not non-epistemically aware of colors: that’s why they are colorblind. And remember that Johnston takes acquaintance to be the key to answering the question of why our enjoyment of the ‘sensory light show’ makes us epistemically better off than zombies. The trouble is that in deeply subpersonal cases, the non-epistemic registration helps to explain our knowledge is not the kind that distinguishes color-perceivers from achromatopsics. Hence, while there may be a hard-line externalist story (see Lyons (2009)) about how perceptual knowledge emerges from non-epistemic registrations, it is not apprehensively grounded in them.

But now the floodgates open to counterexamples. I suspect many cases in which we see that people have emotions are counterexamples: while we are non-epistemically aware of people’s faces, the fact that we cannot normally demonstratively refer to the fine-grained features of people’s faces to which our mind-reading module is sensitive precludes them from being relevantly available to competent inference. But since McNeill thinks we are non-epistemically aware of emotional states, other examples are worth considering:

* **Not Bowie**: To Bowie-fanatics like me, it is immediately clear that the picture on the top left is not of his real face. But it is hard to pinpoint a clinching reason. While it looks somewhat fake or unhuman, Bowie often donned related looks (top right and bottom left). Is it the eyelashes? I can’t spot why, given the bottom right.



* **Learning the Location of a Sound without Learning the Cue**: You’re at the center of a room. A sound is generated that would have the same binaural timing and intensity differences from sources at the left front and back corners. You turn your head left, thereby breaking the binaural symmetry between the candidate sources and hearing that the sound is coming from front left.



(From Gibson 1966: 85)

* **Feeling You’ve Moved 90˚**: Sitting blindfolded, you’re turned 90˚ and feel you've moved that much, thanks to your vestibular system.
* **Animacy**: Watching the movement of distant, point-like objects, you can tell whether they are animate (i.e., generating their own motion) or inanimate.

In each case, your perceptual system processes a cue and yielding a percept, but the exact cue isn’t one you could reliably ostend. Our earlier constraints imply that your perceptual knowledge is not inferential knowledge from the operative cue.

This conclusion alone is not strictly inconsistent with NEPA. One might imagine a defender of NEPA insisting that you’re non-epistemically aware of F, and hence that these cases are consistent with NEPA. But here a twofold response is available. Firstly, this suggestion is implausible in some cases. It is hard to believe you’re non-epistemically aware of non-Bowiehood. It is not implausible that you are aware of animacy. But that is only because this claim ascribes feature-recognition, which is epistemic. We can perceptually recognize features of which we’re non-epistemically unaware. All the examples that defenders of NEPA insist are cases of non-basic perceptual knowledge are illustrations. There is not a principled epistemic difference between Animacy and recognizing fire by smell. If the defender of NEPA thinks we are relevantly aware of animacy, he has no basis for his earlier non-inferential/inferential division of cases of perceptual knowledge. This point suggests a second: if it is plausible that we are aware of the relevant features, that awareness is not prior to visual knowledge, but rather a manifestation of visual knowledge.

4.2. *Two Kinds of Counterexamples*

The examples from the last subsection don’t undermine NEPA for the same reason. In some cases, the cue that triggers your visual system to yield the seeming that X is F (e.g., the auditory case) is only registered subpersonally. In others, you’re non-epistemically aware of the cue (e.g., the animacy case). In the first kind of case, cue-registering state is subpersonal. In the second, only the *process* leading from cue to percept is subpersonal.

Both cases undermine NEPA. But the problem is overdetermined in the first kind of case. It is no option there to claim that you reason from the cue. I hence emphasize such cases as more important. One might insist that the other cases should seem inferential if we reject overintellectualized models of inference like the reckoning model Siegel (2017) targets (though I’ll challenge this strategy). But the first would remain problematic.

4.3. *Too Much Non-Inferential Knowledge? The Criteria for Epistemic Inferentiality*

One might object that if we follow my lead, we get the opposite problem: too much counts as epistemically non-inferential. I don’t think so, but it is worth explaining why.

What we mustn’t say is that when you see the tank is half-full from the gas gauge, you have non-inferential knowledge. But nothing I’ve said implies this claim. Here are the sufficient conditions for non-inferential basing on a cue C that I’ve exploited:

**SC1**: If the input C to the visual processing behind your seeing that p is neither (the content of) a person-level state nor available for uptake by such a state, your visual knowledge that p is not inferentially epistemically based on C.

**SC2**: If the processing that leads from C to your seeing that p is not attributable to your inferential competence but only to subpersons, your visual knowledge that p is not inferentially epistemically based on C.

One might try to extract a more general picture of the distinction between epistemically inferential and non-inferential basing on C from these constraints:

**Epistemically Inferential**: A person-level state S is inferentially epistemically based on C iff (i) C is (the object of) a person-level state of yours, (ii) the efficient causing or sustaining of S by C is attributable to you (not just to a subperson), and (iii) this causation manifests your competence with some inferential pattern.

By this criterion, seeing that the tank is empty from the reading is inferential. The causation of the output epistemic seeing by the input seeing of the tank manifests your competence with a sensible inferential rule (viz., if a reliable device indicates that p, then probably p).

We can now identify a problem in McNeill (2012)’s argument for an inferential construal of cases where you perceptually know that X is F despite non-epistemically unaware of F. Dubbing such cases ‘secondary seeing’ cases and the cases deemed foundational by NEPA ‘primary seeing’ cases, McNeill suggests that ‘[s]econdary seeing…is dependent on possession of some state that can connect the fact primarily seen with the fact secondarily seen…in a way that secures knowledge of that second fact’ (581). McNeill assumes, however, that this ‘connecting’ state is a person-level state. This assumption would be reasonable if all secondary seeing cases resembled gas gauge cases. But not all do. Hence this assumption invites the wrong story about many cases that are not *epistemically* secondary. A connecting state is needed, but if it is only a state of your visual system, the case is not epistemically secondary.

4.4. *Overgeneralization in the Other Direction?*

One might worry that Epistemically Inferential overgeneralizes from cases of system-2 reasoning, or at least what Boghossian (2014) calls ‘system-1.5’ reasoning. Such reasoning is, as Boghossian says, ‘person-level, conscious, and voluntary’ (3). But one might think much good reasoning that yields inferential knowledge lacks this character.

Let’s first address a version of this worry inspired by Siegel (2017)'s rejection of the ‘Reckoning Model’ of inference. My proposed account of epistemic inferentiality requires that the input to the inference be registered by a person-level state. It doesn’t require any person-level state that represents the contents of the input-states as supporting the conclusion. All that’s required is manifestation of person-level inferential competence. This requirement accommodates intuitions about the cases that undermine the Reckoning Model, like ones where you infer that someone is considerate from hard-to-articulate cues. Our model doesn't require the articulability of the cues, but just that they are registered by person-level (perhaps implicit) attitudes and that the conclusion manifests person-level inferential competence.

Other examples might leave residual worries. An attraction of Siegel's view is that it vindicates as genuine reasoning certain transitions that psychologists call ‘reasoning’ but traditional epistemologists don’t. Consider expectations that reflect folk mechanics, which even five-month-old infants have. Suppose that after being habituated to the screen’s smooth 180˚ drawbridge motion, an object intervenes and the infant is surprised to see the motion complete:



(From Baillargeon 1987)

After the screen rotates 110˚ or so, the infant expects it to stop. Hence its surprise. One might insist that this expectation is epistemically inferential.

The fact that the expectation isn’t consciously formed doesn't render this case epistemically non-inferential. But note that the immediate source of the expectation—arguably the mechanics module Leslie (1994) calls ‘ToBy’—is not a person-level state. Besides being domain-specific, the source of such expectations is cognitively impenetrable, as Spelke (1987: 228) notes. Hence, it is implausible the infant’s expectation manifests person-level inferential competence.

If this case involved epistemically inferential knowledge, we would have reason to reject Epistemically Inferential. But here it is more reasonable to *tollens* where the objector would *ponens*. If the supposed inferences are not attributable to person-level inferential competence, we should treat them like the earlier perceptual cases.[[22]](#footnote-22)

**5. A Dilemma and the Priority of Epistemic Perception**

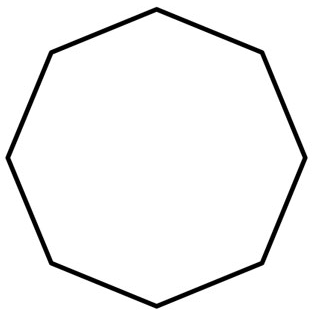
I turn to a more fundamental problem for NEPA. It is reminiscent of dilemmas posed by Sosa (2003) against classical foundationalism and Lyons (2009) against ‘experientialism’. But while the spirit is familiar, the problem is far broader than is commonly appreciated. It is not just a problem for internalist views, evidentialist views, views that put phenomenal consciousness first, relationalist views, or views that explain knowledge in terms of reasons. It is a problem for any view that tries to give an epistemic rather than psychological explanation of perceptual knowledge by invoking non-epistemic forms of perceptual contact. Such views might seem like plain common sense: surely, one might think, the non-color-blind have some automatic epistemic advantage over the color-blind.

The problem is inspired by points from Sosa (2003), but it has important differences. Recall Sosa's argument against BonJour (2001)’s classical foundationalism. It started by noting there are two ways that such awareness could be understood, which create different problems. In one sense of ‘aware’, one is aware of having an experience with certain features simply by having it. Sosa (2015) calls this ‘constitutive’ awareness. In another sense, one is aware of having an experience with certain features only if one *notices* the features, where this is an epistemic notion. Sosa then argued as follows:

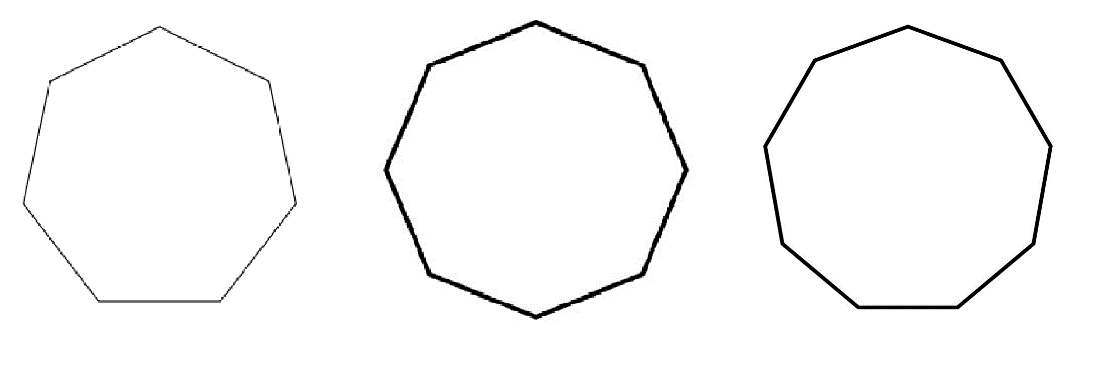
1. If one’s knowledge of the features of experience is epistemically founded on awareness of experience, it is either constitutive or noticing awareness.
2. This knowledge cannot generally be epistemically founded on constitutive awareness: when one sees a 48-speckled hen, one is constitutively aware of having an experience with this feature, but is in no position to know foundationally that one has an experience with this feature.
3. But it also cannot be properly epistemically founded on noticing awareness, since noticing awareness is epistemic, calling for similar explanation.
4. So, one’s knowledge of the properties of experience is not epistemically founded on awareness of experience.

Now, NEPA is not classical foundationalism. It is more plausible. But it is more plausible, we will see, only by either being what Parfit (2011) calls a ‘concealed tautology’ or conflating epistemic and psychological priority.

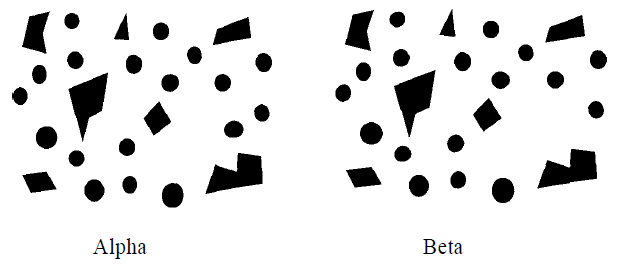
The most plausible version of NEPA invokes *feature-seeing* as the apprehensive ground of visual knowledge. Feature-seeing can be understood in several ways. Consider an example inspired by Sosa (2003: 129). Suppose you see this octagon before realizing it is one:



Do you see the figure’s octagonality straightaway? There are different compelling answers, reflecting different conceptions of feature-seeing. One might say you don’t, since you don’t visually recognize that it’s an octagon. If feature-seeing is understood in this way—call this *recognitional feature-seeing* or *feature-seeingr*—it is an unsuitable apprehensive ground for epistemic seeing, since it is epistemic seeing. On the other hand, one might say that you do see the octagonality by appealing to an importantly different idea. One might say that although you may not recognize its octagonality straightaway, you do see octagonality *rather than septagonality or nonagonality*. After all, you can see the difference between such shapes, as comparison suggests:



The middle shape is clearly different, which suggests I did see a feature that distinguishes it from the others. Call such feature-seeing *feature-seeingd*, with ‘d’ for ‘difference’: it requires having the low-level ability to discriminate between objects with and without the feature. In this sense, you see the same features of the image in Dretske (1993: 273)’s Alpha and Beta below before having the difference pointed out.[[23]](#footnote-23)



Unfortunately, feature-seeingd is an unsuitable apprehensive ground. Going back to the single octagon, one does seed its octagonal shape. But one doesn’t know by looking that it is octagonal or even that it has *that* shape, where one knows without side-by-side visual comparison that *that* shape isn’t *those other shapes* (septagonality and nonagonality). I can make this out only mediately: by counting sides, tilting my head and realizing it has the same shape as a stop-sign, or comparing it with other shapes and seeing that it differs.[[24]](#footnote-24)

We can now mount an argument akin to Sosa’s, but with important differences:

1. If seeing that X is F is epistemically founded on seeing X’s F-ness, this seeing is either seeingr or seeingd.

2. Epistemic seeing cannot be properly epistemically founded on seeingd X’s F-ness: just by seeingd the octagonality (or that-shapedness) of a figure, one is not in a position to see that it is octagonal (or *that* shape *rather than* visually absent alternatives).

3. But it also cannot be properly epistemically founded on the seeingr X’s F-ness: that is itself epistemic seeing that X is F.

4. So, epistemic seeing that X is F isn’t epistemically founded on seeing X’s F-ness.

Besides having a different target from Sosa’s argument, the key contrast relation for seeingr is far more demanding than constitutive awareness: the extra demands just don’t go far enough.

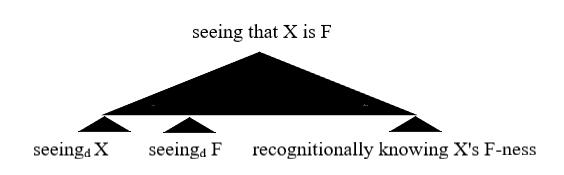
Let me consider a possible response. One might think there is a relation between seeingr and seeingr X’s F-ness which doesn’t entail epistemic seeing but was also missing when I saw the tilted octagon. Consider *X’s* *being visually presented to one as F*. A figure can be presented to one as octagonal even if one doesn’t believe it is, just as a stick can be presented as bent even if one doesn’t think it is. This relation goes beyond seeingd: while I sawd the octagonal shape, it was not presented as octagonal.

This response fails to undermine (1). It doesn’t suggest there is a non-recognitional form of feature-seeing stronger than seeingd. For there is something one recognizes even in illusions. Concerning the presented feature, one recognizes it’s *that* sort(…what call ‘F-ness’, not ‘G-ness’ or ‘H-ness’…). Without that recognition, I don’t see how the figure could be presented as having that feature.[[25]](#footnote-25) More officially:

* If the feature O is presented to S as having is *that sort* (…the one we call ‘F’, not ‘G’ or ‘H’…), then S recognizes, of presented feature, that it’s that sort.

The consequent doesn’t imply that S knows that *O* is F or that the feature is *F* (deploying the concept of F-ness). But it does imply that S’s seeing is epistemic. This epistemic seeing is not apprehensively grounded in further feature-seeing: seeingd cannot do the job, and we already considered the supposed intermediate option.

A final objection must be considered. One might insist that even though this argument shows that seeing X’s F-ness cannot be the *sole* apprehensive ground of seeing that X is F, it is *among* the apprehensive grounds, as follows:



The objector might say: ‘If the fact that seeingd X’s F-ness is insufficient for the relevant knowledge implies that it is not an apprehensive ground, the same applies to recognitionally knowing X’s F-ness.’

But this response is unpersuasive. Although the other conditions seem necessary, it doesn’t follow that they play the same role as the rightmost, or that the role is epistemic. I think they play the role of enabling conditions, not apprehensive grounds. I mean *technological* enabling conditions, not the *transcendental* enabling conditions exemplified by Kant’s Categories. This point needs, however, more explanation.

Throughout I’ve discussed apprehensive grounds. They are constitutiveways of apprehending truths and are deployed in giving a special kind of answer to the question of how one knows. Now, ways of apprehending are determinates of a determinable: they are ways of apprehending just as different shades of red are waysof being red. Just as determinate colors are of a kind with determinable colors (color), so determinate ways of apprehending are of a kind with determinable ways of apprehending.[[26]](#footnote-26) The highest relevant kind is the relation-kind *apprehension*. Hence apprehensive grounds are apprehension-relations. The same doesn’t go for seeingd. Seeingd is not an apprehension-relation. Recognizing X’s F-nessis an apprehension-relation. So it can play the role of apprehensive ground.

It remains to be shown what role seeingd plays. Here it is useful to consider the asymmetry lurking behind Kant’s dictum that intuitions without concepts are blind and concepts without intuitions are empty. Sensibility and understanding for Kant have fundamentally different roles: sensibility supplies *matter* and understanding *form*. While we need both for *a posteriori* knowledge, understanding is on a mental par with knowledge. This asymmetry makes Kant’s epistemology more rationalist than empiricist. Although matter and form need each other, they are not explanatory equals: form has primacy. My arguments recommend a parallel view, but it isn’t rationalist. My dictum is that sensibility without recognition is inapprehensive, though worldly apprehension without sensibility is technologically impossible.

Not all enabling conditions are technological, to be sure. Thinking about Kant helps again. The Categories are more than the broad enabling conditions Cassam (2007: 17) discusses: he doesn’t exclude *a posteriori* necessary enablers, includes background conditions *a la* Burge (1993), and includes conditions having the role imagination plays vis-à-vis armchair knowledge. The Categories are not merely supposed to make empirical knowledge metaphysically or psychologically possible, or non-evidentially license certain transitions. They are meant to enable empirical knowledge with *a priori* necessity. Unlike Kant, however, I allow that we might know truths about things-in-themselves. Like him, I foresee no completely Kantian account of this possibility. But I think that is fine: it is enough for empirical knowledge to be enabled with *a posteriori* necessity.

Still, while perceptual knowledge cannot be wholly understood from the armchair, some truths about it can be, including the apprehensive grounding role of recognition. They might also include facts about transcendental enabling conditions, which would be *a priori* necessary truths about conditions for feature/object-recognition that are not apprehensive grounds. But I cannot see that person-level seeingd plays this transcendental role.

Whether the technological role of perceivingd is *a posteriori* necessary is something I cannot settle from the armchair. Perhaps a more externalist story holds for some perceivers, omitting perceivingd, with all non-epistemic registration being subpersonal; for them, all person-level perception is epistemic. The empirical possibility of superblindsight might support this claim. But I leave open whether the technological role of perceivingd is *a posteriori* necessary. The conceptualpossibility of superblindsight does strike me as establishing that perceivingd is not a transcendental enabling condition, however.

I’ll make a final clarification about the limits of my argument. The notion of technological ground is relative. My thesis is that non-epistemic perception is technology vis-à-vis perceptual knowledge. It is compatible with this thesis that it has a more-than-technological role elsewhere, and indeed vis-à-vis something broadly epistemic. Hence, it is compatible with my conclusions that non-epistemic perception might have a more-than-technological role to play vis-à-vis non-apprehensive categories like *epistemic entitlement*. So I don’t rule out Gupta (2019)’s view, which explicitly doesn’t concern knowledge.[[27]](#footnote-27)

**6. Conclusion**

Let’s take stock. I gave two arguments against NEPA. The first opposed Strong NEPA, suggesting that it wrongly forces classifying as inferential some cases of perceptual knowledge that aren’t. The best response involves insisting that we can non-epistemically see features that are intuitively non-visible (e.g., non-Bowiehood). This insistence isn’t uniformly plausible. But defenders of NEPA already make surprising claims about what can be non-epistemically seen (e.g., emotions). They might happily go farther.

Hence I gave the second argument, which also targets Weak NEPA. While feature-seeing talk might be used to claim that we see non-Bowiehood, we must distinguish different uses of the talk. NEPA’s defender mustn't invoke recognitional feature-seeing, since this is epistemic. But the best alternative—feature-seeingd—yields insufficient foundations, requiring a fallback to LIE.

What role is left for feature-perceivingd? I cannot see a more-than-technological role vis-à-vis perceptual knowledge. This role is more limited than what Cassam (2007) and Roessler (2009, 2011) intend by ‘enabling conditions’. Feature-perceivingd is not an *a priori* constituent of an apprehensive ground, as Roessler (2011) has in mind. It is also not an *a priori* constituent of any fundamental way of knowing, if the latter is *constitutive* rather than *auxiliary*. Whether it is an *a posteriori* constituent of a fundamental way of visual knowledge remains open, depending on the (unclear) empirical possibility of superblindsight. I think the best hypothesis is that it is an *a posteriori* constituent of the human realization of coming to know perceptually—hence, that it is epistemic technology.

This conclusion is limited. I suspect my arguments also undermine NEPA-like views about perceptual justification and demonstrative thought. I don’t know if they undermine a theory of entitlements for perceptual transitioning like Gupta 2019’s. My concluding suggestion is that it may be worthwhile for the epistemology of perception to undertake something parallel to Friedman (forthcoming)’s ‘zetetic turn’. Shifting focus to the process-type of coming to know perceptually rather than the state-type of knowing perceptually may provide a better umbrella for the armchair study of the role perceivingd. The analysis of knowledge-acquisition deserves equality with the analysis of knowledge-constitution.

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1. \* This paper was conceived in discussions with my colleague Will McNeill, and initially developed through workshops we co-organized at the University of Southampton in 2016 and 2017. Early versions of the paper benefited from in-person feedback from participants in those workshops, including Dan Cavedon-Taylor, Imogen Dickie, Clayton Littlejohn, Lisa Miracchi, Johannes Roessler, Susanna Schellenberg, Charles Travis, and Daniel Whiting. The present edition benefited from extensive written comments from Matt McGrath. [↑](#footnote-ref-1)
2. I don’t assume that constitutive ways of knowing always yield knowledge, but just in the absence of defeaters; I don’t think this qualification helps the view I oppose, however, since I don’t think defeat explains why non-epistemic perception isn’t a constitutive way of knowing. My conception of ways of knowing is hence weaker than the entailment view critiqued by Cassam (2007), but stronger than the minimalist view he also rejects. Our conceptions are close but distinct. He defends a non-reductionist conception because he denies that something qualifies as a way of knowing by satisfying a general condition on knowledge. I may sound reductionist, since I regard all ways of knowing as (special) cases of basic ways of knowing. But I’m not a reductionist in Cassam’s sense: I don’t think non-basic ways of knowing qualify as special cases of basic ways by satisfying a general condition on knowledge from some traditional analysis. (As French (2014) notes, Cassam also sometimes discusses ways of *coming* *to know* rather than of *knowing*. I don’t discuss those.) [↑](#footnote-ref-2)
3. Note that auxiliaries needn’t be mere means: partly because they can be integrated into one’s psychology, they needn’t have a ‘thing-like’ status in the Kantian sense. [↑](#footnote-ref-3)
4. I’ll keep using the term ‘epistemic perception’, but I don’t assume that perceiving that p entails knowing that p, only that it is a cognitive feat deploying recognitional capacities meriting the title ‘epistemic’. Hence I don't beg the question against McDowell and Pritchard (2012), who deny that perceiving that p entails knowing that p. [↑](#footnote-ref-4)
5. See especially McNeill (2012, 2019) and Campbell (2002, 2011, 2014); cf. Ayers (1991: 123), though in (2019: ch. 4) he has a more knowledge-first view exploiting *knowledge of objects and features*.

   Related views appeared in a forgotten literature from the 1960s and 1970s; see especially Collins (1967: 446), though he admits that *feature-seeing* talk is epistemic (p.454). I also take Roessler (2009, 2011) to hold a qualified version of this view. He denies that epistemic grounds are always *reasons*, and hence calls perception an ‘enabling condition’. But this terminology is misleading. He is discussing enablers of a transcendental kind, which some Kantians call grounds (cf. Stang (2019)). ‘Ground’ is a more perspicuous label. ‘Enabling condition’ suggests something peripheral (see Cassam (2007: 17)), but perception has explanatory primacy for Roessler. It is not like a normative enabler *a la* Dancy (2004), or the enablers in some pictures of causation (e.g. Lombard (1990)’s). [↑](#footnote-ref-5)
6. Perhaps all knowledge is apprehension; see my (2018, MS). But I set this issue aside and focus on the kind of perceptual knowledge that evidently is apprehension. [↑](#footnote-ref-6)
7. Hence the topic differs from the debate between conceptualists like McDowell (1995) and non-conceptualist opponents like Heck (2000), as well as debates about the contents of perception. I don’t assume that perception must give reasons in order to ground knowledge, that knowledge-yielding perception is conceptualin McDowell’s sense, or even that knowledge is a propositional attitude (cf. Vendler (1972), Hossack (2007),and Hyman (2015)). I argue elsewhere (Sylvan (2018)) that the faculty of knowledge is prior to the faculty of reason and that knowledge does not entail belief. [↑](#footnote-ref-7)
8. Note that NEPA as stated only covers views that ground perceptual knowledge in awareness of the constituents of the relevanttruth-making states of affairs; this is clear in Johnston, but also holds for McNeill and Campbell. A different view would appeal to non-epistemic awareness of something more superficial—*looks*, which are not truth-makers of the non-inferentially known external-world propositions. McNeill (2019) rejects this view, raising a problem like the one I raise for his view. It is also not Campbell’s view: he thinks perceiving a room reveals ‘the actual layout of the room itself: which particular objects are, their *intrinsic* *properties*, such as colour and shape, and how they are arranged in relation to one another and to you’ (116; italics mine). But there are naïve realists who invoke looks, like Martin (2010: 198). I’ll consider later whether this view helps. Logue (2012) also argues that this is a better version of naïve realism. But she has a more externalist story than NEPA: her (2019) suggests that perceptual acquaintance matters because it affords an *infallible* epistemic position. [↑](#footnote-ref-8)
9. I add ‘worldly’ because there is an old-fashioned internalist antecedent of NEPA defended by Russell (1912), Fumerton (1995) and BonJour (2001). NEPA’s problems resemble this view’s problems. Compare Siegel (2019), who targets a wider program than NEPA, including Brewer (2011) and McDowell (2013)’s views. [↑](#footnote-ref-9)
10. Some reliabilist views may count. Goldman (2011: 273-275) gives a process reliabilist account of visual justification on which the crucial process takes the seeing of shapes as input and produces a belief about the kind of object perceived as output, following Biederman (1987, 1990)’s account of object-recognition. [↑](#footnote-ref-10)
11. See especially McNeill (2012). Note that it is not enough for one’s knowledge to be inferential on LIE that there merely *be available* some good inference. You must actually manifest competence with it in knowing. [↑](#footnote-ref-11)
12. McNeill (2012: 8). [↑](#footnote-ref-12)
13. A similar point appears in Sibley (1971). The thought isn’t that basic perceptual content involves demonstrative concepts. It is weaker: all feature-seeing that affords knowledge is recognitional, where recognition may not be conceptual. Indeed, the point may have nothing to do with *contents* rather than *objects* (cf. Crane (2013)) if knowledge is not a relation to a proposition. [↑](#footnote-ref-13)
14. See Shieber (2017) for other arguments. McGrath only uses the principle as a test, it is worth noting. I am noting other cases where the test fails. They do reveal, I think, a wider concern about the inference to the explanatory claim. It may extend to McGrath’s argument, but that is not my target. McGrath doesn’t accept NEPA. As I read McGrath (2018: 131), he doesn’t rule out an entitlement-based story about basic knowledge of looks, on which such knowledge lacks an apprehensive ground. [↑](#footnote-ref-14)
15. One might insist there is a different way in which the justification in the previous case is inferential: it rests on one's knowledge that things that look thus-and-so are crosses, and that this thing looks thus-and-so. But as Pylyshyn (2007) and Trick and Pylyshyn (1994) observe, no such pattern-matching explanation of recognition of cardinality by subitizing works generally. A broader problem for looks-based views may lurk here. [↑](#footnote-ref-15)
16. For further principles of completion that are not principles of rationality, see Kanizsa (1982, 1985). [↑](#footnote-ref-16)
17. Pylyshyn (2003: 121-122). [↑](#footnote-ref-17)
18. A similar point holds for Bayesian models of perception. Although Bayes’s rule is good, the priors needed to generate the results would be unacceptable at the person level. [↑](#footnote-ref-18)
19. McNeill (2019) argues against a looks-based account of knowledge of others’ emotions, keeping the simpler form of NEPA. Campbell (2002) doesn’t introduce intervening looks. Johnston (2011: 178) does allow that public looks are a common factor between good and bad cases, but denies that they intervene *per* Martin’s appearance-based naïve realism: ‘You can attend to the smell of the rose or you can attend to the smell that you smell in smelling the rose. However, contrary to the general suggestion of Michael Martin…the smelling of the smell that is the smell of the rose does not automatically “screen off” smelling the rose….’ Hence Johnston permits non-inferential knowledge of both looks and non-looks. [↑](#footnote-ref-19)
20. Another problem is that it is vulnerable to empirical challenge as a general view about recognitional knowledge of non-looks properties; see n.14. [↑](#footnote-ref-20)
21. I state the constraint disjunctively to remain neutral on the ontology of reasons. [↑](#footnote-ref-21)
22. Spelke (1987: 229) agrees: ‘If perception can be distinguished from thought, I suggest it is because human perceptual and cognitive systems take different kinds of input and bring different kinds of sense and order to experience.’ [↑](#footnote-ref-22)
23. Hence the point here about the epistemic inadequacy of feature-seeingd differs from the point normally made with the speckled hen: it is implausible that for sufficiently large n, you seed the hen’s n-speckledness. [↑](#footnote-ref-23)
24. There could be individual differences here.  *I* would not have that demonstrative knowledge without the help of comparison. My seeingd might be an enabling ground for comparative knowledge, from which the demonstrative knowledge that it has *that* shape is then derived. But unless my seeingd for me *becomes* seeingr, it is not a direct apprehensive ground of that demonstrative knowledge. [↑](#footnote-ref-24)
25. Cf. Warnock (1955: 211-212): ‘Consider…seeing the colour of Lloyd George’s tie. It is clear that one could not rightly say that one saw the colour of his tie, if one did not get to know at the time what color it was.’ [↑](#footnote-ref-25)
26. See Sylvan (2018: 201 and n.20) for a defense of this argument form. [↑](#footnote-ref-26)
27. See Gupta (2019: xv). [↑](#footnote-ref-27)