The geometry problem for naïve realism

Naïve realism has become one of the dominant theories of perception. And it is often said, by way of motivation, that the naïve realist can offer an especially satisfying explanation for our ability to *acquire new concepts* on the basis of perception. However, I believe that when it comes to certain geometrical concepts, the naïve realist cannot offer *any* satisfactory explanation for our ability to acquire them on the basis of perception. But an adequate theory of perception must be able to explain this. Thus, I believe that naïve realism is false.

The remainder of this paper develops this line of thought. In particular, after characterizing the naïve realist view and the two most influential motivations for it (§1), I will point out that we are able to form certain geometrical concepts directly on the basis of our perceptual experiences (§2). I will then argue that naïve realism has great difficulties when it comes to explaining this datum (§3-§7). By contrast, there are several other well-known theories that do not face any such difficulties (§8). From this, I will conclude that we should not accept naïve realism – at least, not until the naïve realist produces an adequate explanation of the datum (§9).

1. Naïve realism and its core motivations

I will understand *naïve realism* as having two defining commitments. First, that any perception is a relation of direct, non-representational awareness to certain particulars and their properties. Second, that in any typical case of perception, the subject is only directly aware of ordinary particulars and their properties. The subject is not directly aware of any strange particulars, nor is she directly aware of any properties besides ones that are instantiated by ordinary particulars.

Before I explain what all of this means, I should mention that it is also common for naïve realists to adopt some further commitments. For example, naïve realists almost universally say that perception is a *primitive* relation, and also that the naïve realist view tells us what perception is like *fundamentally.*[1] Moreover, many naïve realists like to add certain claims about the *phenomenal character* of perception.[2] However, none of these further naïve realist commitments will be relevant to my argument. Thus I have opted to use the more streamlined definition of naïve realism given above.

This definition requires some unpacking.

"Perception." Perceptions are genuine instances of seeing, touching, tasting, etc. Perceptions are to be contrasted with hallucinations. It is a matter of some dispute among naïve realists whether illusions are always, sometimes, or never cases of perception.[3]

"Ordinary." Naïve realists say that in any typical case, perception involves direct, non-representational awareness of – and only of – ordinary particulars and their properties. (This is, by the way, the naïve realist commitment that will be most crucial for my argument below.) The idea is that when I see a tree, the only particulars that I am directly aware of are ordinary ones – the tree itself, its bark, its leaves. I am not aware of any strange particulars like sense-data or neural states. Nor am I aware of any properties except for the ones that are instantiated in the tree, its leaves, etc.

But notice something. Yes, the naïve realist says that in any typical case of perception, the only properties that we are directly aware of are properties of ordinary particulars. But it does not follow that these properties are themselves ordinary. They might be – they might be

---

[1] Both of these commitments are adopted by all of the naïve realists cited in the penultimate paragraph of this section.
[2] See for example Martin (1997, pp. 3-4); Campbell (2002, p. 116).
[3] For an overview of the dispute, see Byrne and Logue (2008). Detailed naïve realist treatments of illusion can be found in Fish (2009, ch. 6); Brewer (2011, ch. 5); Genone (2014).

properties like redness and roundness. But, for all naïve realism says, some or all of these properties might instead be extraordinary properties of some sort – appearance properties or viewpoint-dependent properties, for example.[4]

I should mention that by defining naïve realism in this way, I have already bent the rules a little bit. For some naïve realists seem to think that perception only involves direct awareness of particulars; it does not involve direct awareness of *any properties at all*, ordinary or otherwise.[5] However, I am going to pretend that naïve realists all think that perception does involve direct awareness of some properties. For that will only make it easier for them to resist my argument. It should be obvious how my argument would extend to naïve realists who think that perception does not involve direct awareness of any properties whatsoever.

"Direct." But what is *direct* awareness, anyway? To be aware of something *directly* is to be aware of it, and not in virtue of being aware of anything wholly distinct from it. It is not easy to spell out the meaning of the expression "wholly distinct from," but one important stipulation is that a particular and its properties are not wholly distinct from each other.

"Non-representational." Moreover, naïve realists hold that perception involves *non-representational* awareness. The idea is this. *Representations* are the kinds of things that can go right or wrong. Beliefs are representations that can go right by being true, and can go wrong by being false. Maps are representations that can go right by being accurate, and can go wrong by being inaccurate. By contrast, naïve realists say that perception is non-representational in that *it cannot go wrong*. Perception is, by its nature, a success state.

Summary. Let us pull all of this together with a simple example. Suppose that I see a large watermelon. The naïve realist will analyze this case as follows. To begin with, I am directly aware

---

[4] See for example Genone (2014, e.g., p. 362).
[5] See for example Brewer (2011, pp. 93 and 96).

of the watermelon and some of its properties. These might include ordinary properties (such as roundness and green-stripy-ness), or strange properties, or both. But I am not directly aware of any strange particulars such as sense-data or neural states. Nor – assuming that the watermelon fills my visual field – am I directly aware of any properties apart from the ones instantiated by the watermelon. And finally, all of this awareness is *non-representational*: it is a kind of awareness that, unlike belief, does not have a failure condition.

That is the naïve realist view. But why accept it? There are two arguments for naïve realism that have been especially influential.[6]

The first argument, which has been articulated by William Alston, Michael Martin, and several others, is simply that naïve realism best reflects how perceptions seem to be from the first-personal perspective. Any typical perception first-personally appears to be a relation of direct, non-representational awareness to ordinary particulars and their properties, and to nothing else. The naïve realist simply takes this first-personal appearance at face value, and that is supposed to be a great advantage of her theory.[7]

A second influential argument for naïve realism, which has been carefully developed by John Campbell, focuses on certain of our perceptually-based capacities. Suppose that I see a tree. My perceptual experience will ground three closely related conceptual capacities: first, the capacity to know what I am talking about when I demonstratively refer to the tree; second, the capacity to conceive of the tree as mind-independent; and finally, the capacity to conceive of the

---

[6] As with any major philosophical theory, we will also find many further arguments for it that are off the beaten path. See for example Soteriou (2010); Logue (2012).

[7] See Alston (1999, p. 182); Martin (2002, p. 413); Fish (2009, pp. 18-23); Kennedy (2009, §1.3); Brewer (2011, p. 2). The relevant first-personal appearance is also discussed by many theorists who are not naïve realists, including Broad (1952, p. 6); Sturgeon (2000, p. 9); Levine (2006, p. 179); Millar (2014, pp. 239-242).

categorical character of the tree.[8] Campbell suggests that only the naïve realist can explain all of this. Briefly put, the explanation is that any typical perceptual experience involves direct, non-representational awareness of ordinary particulars and their properties. These particulars are in fact mind-independent and have a categorical nature, and so such experiences ground the relevant conceptual capacities.[9]

On the basis of such arguments, the naïve realist theory has enjoyed a surge of support.[10] Its advocates include Michael Martin (1997), (2002), (2004), (2006); John Campbell (2002); Tim Crane (2006); Matthew Nudds (2009); William Fish (2009); Matthew Soteriou (2010); Bill Brewer (2011); Heather Logue (2012); Matthew Kennedy (2009), (2013); James Genone (2014); Ori Beck (2018); Craig French and Anil Gomes (forthcoming); and many others.

Despite its rising popularity, however, I think that naïve realism is false.

2. Perception and the acquisition of geometrical concepts

It is a manifest fact that perception sometimes gives us the ability to *acquire new concepts*. One way – indeed, the typical way – to acquire the concept of redness or the concept of an elephant is to see a red thing or an elephant. And any adequate theory of perception must be able to explain how perception makes this possible.

The naïve realist has a standard explanation for this ability, which runs as follows. First, it is a posit of her theory that any typical perception is relation of direct, non-representational awareness to ordinary particulars and their properties. So when a child first sees a red thing or an elephant, she is directly, non-representationally aware of redness or of the elephant. And – if

---

[8] For overviews of these three capacities, see respectively pp. 7-9, pp. 120-123, and pp. 138-139 of Campbell (2002).
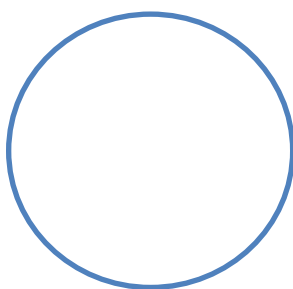[9] See, e.g., Campbell (2002, pp. 138-139).
[10] Again, there are also plenty of non-standard arguments for naïve realism. See fn. 6.

she has the requisite conceptual sophistication – that will let her form the corresponding concepts. Indeed, naïve realists often think that it is a great advantage of their theory that it can offer an especially satisfying explanation of concept acquisition on the basis of perception.

However, I think that in certain special cases, naïve realists cannot explain why certain perceptual experiences make it possible for us to acquire concepts. That will be the core premise in my argument against naïve realism.

Consider the following case, which is intended to be of an utterly mundane sort. There is a young child, Moni, does not possess the concept of a circle. But then she opens a coloring book and sees the following figure:

Let us name this figure *Hoop*. Directly on the basis of her visual experience of Hoop, Moni forms the concept of a circle. How is Moni able to acquire this concept?

The naïve realist seems to have a simple answer: it is because when Moni sees Hoop, she becomes directly, non-representationally aware of that particular and its property of being a circle. Thus, if Moni has the requisite conceptual sophistication, then her perception will give her the ability to form the concept of a circle.

However, there is a version of this case – a version that is still utterly mundane – for which this simple answer just cannot be right. In particular, let us suppose that Moni takes Hoop

to be a *perfect* circle. She looks very closely at Hoop and cannot detect the slightest ding or dent. And let us correspondingly suppose that the concept Moni forms is the concept of a perfect circle.

The key point is that Hoop is not actually a perfect circle. Indeed, *no* ordinary particular is a perfect circle! Any apparently circular ordinary particular, including Hoop, contains microscopic imperfections that prevent it from being a *perfect* circle. Of course, when it comes to Hoop, Moni has not *noticed* its imperfections, and we can even suppose that the imperfections are so small that they cannot be detected by the naked human eye. But the imperfections are still there, so Hoop does not instantiate the property of being a perfect circle.

And, again, the naïve realist's simple answer was this: Moni forms the concept of a perfect circle by becoming directly, non-representationally aware of Hoop and its property of being a perfect circle. This answer presupposes that Hoop *has* the property of being a perfect circle. But this presupposition is false, and so the simple answer must be wrong.

Thus the problem remains: we still need to explain how Moni manages to acquire the concept of a perfect circle. I will call this the *geometry problem.*

How might the naïve realist try to solve this problem? Well, the datum to be explained is that Moni has a certain *perceptual experience,* and on that basis forms a certain *concept.* Thus I find it natural to divide naïve realist proposals into three broad categories: (i) proposals that appeal to facts about perceptual experience, (ii) proposals that appeal to facts about concepts, and (iii) proposals that do not appeal to facts about personal-level psychology at all. I will examine these in reverse order, so as to sweep some obviously unpromising ideas out of the way before we settle down to examine the more appealing options.

3. Proposals that do not appeal to facts about personal-level psychology

The naïve realist might propose that there is no explanation, *at the personal level*, for why Moni's perceptual experience puts her in a position to form the concept of a perfect circle. Instead, the correct explanation can only be given *at the subpersonal level*, e.g., in terms of neurology or chemistry. But from the personal-level perspective, there is no intelligible connection between Moni's seeing Hoop and her acquiring the concept of a circle. All that is happening at the personal-level is that Moni's perception brutely causes her to form a concept which happens to refer to perfect circles.

I think that this view is just obviously false. The point can be made briskly. Imagine another child, Joshua, who acquires the concept of a perfect circle in a different way: he receives an electric shock that just so happens, as a brute matter of fact, to produce in him the concept of a perfect circle. Or imagine a child, Sara, who sees a red triangle, and whose experience just so happens, as a brute matter of fact, to produce in her the concept of a perfect circle. The current naïve realist explanation is like these explanations: it says that Moni's experience of Hoop produces in her the concept of a perfect circle in a way that is, from the personal-level perspective, entirely inexplicable. But that is obviously wrong. It is perfectly obvious that there is an intelligible connection between Moni's perceiving Hoop and her acquiring the concept of a perfect circle. Look at Hoop again and you will see what I mean.

So let us discard this proposal and proceed to some more appealing ones.

4. Proposals that appeal to facts about concepts

A more promising way for the naïve realist to try to solve the geometry problem is by appealing to facts about concepts, including facts about how concepts are formed and facts about how

concepts lock onto their referents. There are a number of strategies of this sort that are worth considering.

I should mention straightaway that in our case, Moni's concept of a perfect circle is not a deferential concept. We can suppose that she has never hear the word "circle" and has no idea that anyone else has ever conceived of such a shape; she just sees Hoop and forms the concept of a perfect circle. Thus we will not need to worry about the phenomenon of deference.

Idealization. Here is a proposal that initially looks very promising. True, Moni does not see a perfect circle. But she does see a shape that is very close to – indeed, a shape that is perceptually indiscriminable from – a perfect circle. So she is able to form the concept of a perfect circle by *idealizing*: by thinking of a shape that is approximated by the shape that she actually sees.

But how, precisely, does this process of idealization occur? There are two importantly different ways of answering this question. Here is the first way:

> Step 1. Moni sees an approximate circle; she is directly, non-representationally aware of the property of being an approximate circle.
>
> Step 2. On the basis of this awareness, Moni forms the concept of an approximate circle.
>
> Step 3. By idealizing from the concept of an approximate circle, Moni forms the concept of a perfect circle.

No doubt it is possible to form the concept of a perfect circle in this way. However, it is also clearly possible – and, I imagine, much more typical – to form the concept of a perfect circle in a simpler way, without taking the intermediate step of forming the concept of an approximate circle. It is also possible to form the concept *directly, just by attending to something that appears to be*

a perfect circle. And this is the way that I am stipulatively understanding Moni's situation: she sees Hoop, it looks to her exactly the way that a perfect circle would look to her, and directly on that basis she forms the concept of a perfect circle. It is this direct form of concept-acquisition that I believe the naïve realist cannot explain.
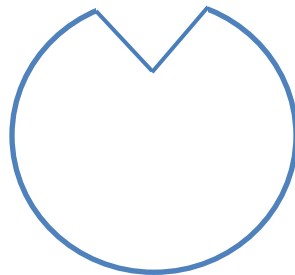
However, the naïve realist might instead try to explain the direct form of concept acquisition by positing a more streamlined process, like so:

Step 1. Moni sees an approximate circle; she is directly, non-representationally aware of Hoop and some of its geometrical properties.

Step 2. Directly on the basis of this awareness, Moni forms the concept of a perfect circle.

But now there is a new problem. For the sake of concreteness, let us say that Hoop is in fact a *dented circle*, somewhat like this figure:

But let us suppose that the dent in Hoop is microscopic – it cannot be detected by the naked eye. And let us use the name *D* to refer to the maximally determinate geometrical property instantiated by Hoop. (*D* stands for both "determinate" and "dented.")

Now recall that, on the naïve realist view, Moni is only directly aware of geometrical properties *that Hoop actually instantiates.* There are two relevant properties of this sort. The first is the property *D*, which is obviously quite different from the property of being a perfect circle. And the second is the property of being an approximate circle. This property is also quite different from the property of being a perfect circle, for it is instantiated even by the broken circle below on the left and the squashed circle below on the right:

So, again, the naïve realist is now proposing that Moni acquires the concept of a perfect circle *just* on the basis of being directly aware of property *D*, or the property of being an approximate circle – properties that are very different from the property of being a perfect circle.

I confess that I find this proposal utterly mysterious. An analogy may help you to appreciate my mystification.

Imagine that Ethan is trekking in the far north. He sees an animal, call him *Mush,* who happens to be visually indiscriminable from a wolf. But Mush is not a wolf; he is a dog, and in particular a Siberian husky. Suppose further that Ethan has never seen either dogs or wolves before. So, *directly* on the basis of seeing Mush, he forms the concept of *that kind of animal.* Now, I can see how Ethan's concept might be the concept of a Siberian husky, or the concept of a dog, or the concept of a wolf-looking creature, or the concept of a canine. (Note for non-biologists:

dogs and wolves are both canines.) After all, Mush would fall under all of those concepts. But I just cannot see how Ethan's concept, formed directly on the basis of seeing Mush, could possibly be the concept of a *wolf.* For Mush is just not a wolf.

The naïve realist is currently making a structurally identical proposal about Moni's case. The naïve realist is suggesting that Moni sees something that is not a perfect circle, is aware of some properties that are not the property of a perfect circle, and *just on that basis* forms the concept of a perfect circle. And I do not see how that could be.

Thus I believe that the naïve realist cannot solve the geometry problem by appealing to idealization.

Donnellan's theory of reference. The naïve realist might next seek aid from the resources offered by Keith Donnellan. Donnellan gives us the example of someone who sees a man drinking a clear liquid and asks, "Who is the man drinking a martini?" In fact, the liquid in the glass is just water. Donnellan's point is that this individual still manages to refer to the man under observation even though that man is not drinking a martini.[11]

Now, the naïve realist might want to say that Moni's case involves a *demonstration* of a particular shape: perhaps Moni mentally demonstrates Hoop and forms a demonstrative concept of *that shape.* And such a naïve realist might take heart from the fact that Donnellan's point applies just as well to demonstrative concepts. For example, the speaker in Donnellan's case could just as well have referred to *that martini-drinker* – the speaker would thereby have managed to refer to a water-drinker. Does this solve the naïve realist's problem?

Surely not; if anything, Donnellan-style examples reinforce the case against the naïve realist. For Donnellan's point is that the actual nature of the thing that the speaker is related to can override her descriptions in determining the referent of a term. And what is the actual nature

---

[11] See Donnellan (1966, p. 287).

of Hoop? It has shape *D,* and it is an approximate circle, but what it certainly is *not* is a perfect circle. So the resources of Donnellan's theory do not help the naïve realist to solve the geometry problem.

Lewis's theory of reference. David Lewis offers a proposal that is meant to address, *inter alia,* the problem that most concepts seem to have too many candidates for their referents – too many candidate referents that do an excellent job of matching all facts about the actual usage of the term. We can illustrate the problem by returning to our example of Mush, the Siberian husky. Recall that Ethan, upon seeing Mush, conceives of him as *that kind of animal.*

Suppose that, for whatever reason, Ethan's concept in fact refers to dogs. Now consider all of the different things to which Ethan ever applies his concept *that kind of animal* over the course of his actual lifetime, and consider further all of the things to which Ethan is *disposed* to apply that concept, both in this world and in nearby possible worlds. The problem is that there are arbitrarily many properties instantiated by (most of) those things. For example, (most of) those things instantiate the property of *either being a dog or being fitted with a laser that produces a perfect multi-sensory hallucination of a dog.* But Ethan's concept does not refer to such things; it refers to dogs. What makes that the case?

Lewis's idea is to posit *naturalness,* understood as a primitive gradable property that tracks the extent to which something carves nature at the joints, so to speak. Lewis then suggests that the more natural something is, the more eligible it is as a referent. And that is why Ethan's concept *that kind of animal* refers to *dogs* and not to *things that either are dogs or are fitted with a laser that produces a perfect multi-sensory hallucination of a dog.* As a matter of mind-independent, metaphysical fact, the former referent is just much more natural than the latter.[12]

---

[12] See Lewis (1983, pp. 370-373).

The naïve realist might hope to use Lewis's proposal to solve the geometry problem. For recall that the naïve realist describes Moni's case as follows: Moni sees something that is not a perfect circle, is aware of some properties that are distinct from the property of a perfect circle, and *just on that basis* forms the concept of a perfect circle. And the naïve realist might now add that Moni's concept refers to the property of being a perfect circle because that property is highly natural.

However, I think that Lewis's proposal is no good for helping the naïve realist to solve the geometry problem.

We can see why not by considering more carefully how Lewis's proposal works. Suppose that we want to know the referent of an arbitrary concept. Then Lewis instruct us to start by looking at the things that the subject actually applies the concept to, and perhaps also to the things that the subject is disposed to apply the concept to in nearby possible worlds. Then we make an initial list of candidate referents, referents that fit this pattern of application reasonably well. Finally, we use naturalness to *prune* our initial list of candidate referents.

But this method does not help the naïve realist with Moni's case. For there are no perfect (macroscopic) circles in the actual world, nor are there any perfect circles in nearby possible worlds. So when we look at actual worlds and at nearby possible worlds, we find that Moni *never* applies her geometrical concepts to any perfect circles. Thus the property of being a perfect circle will not even make it onto the *initial* list of eligible referents; *a fortiori* it will not remain on the list once the unnatural referents have been pruned away.

So I do not see how a Lewisian theory of reference would help the naïve realist. Nor can I think of any other theory of concepts that would help her.

More importantly, even if there were some such theory, a deeper problem would remain. The problem is that Moni forms her concept of a perfect circle *directly on the basis of her experience,*

in an intelligible way. She does so just by attending to the shape that seems to be presented to her. And a theory of reference, no matter how sophisticated, cannot by itself help the naïve realist to explain how that is possible.

The problem is that the naïve realist is currently conceding that the only shape that Moni experiences is a shape that is *not* a perfect circle. Now, perhaps an experience of something that is not a perfect circle could explain how Moni might intelligibly acquire the concept of a perfect circle in some *indirect* way, by first forming the concept of an approximate circle. And perhaps such an experience could explain how Moni might directly acquire the concept of a perfect circle in a way that is *brute,* a way that has no personal-level explanation. But what such an experience cannot do is explain how Moni manages to acquire the concept of a perfect circle in a way that is *both* intelligible *and* direct.

Once we appreciate this point, we are led to the naïve realist's last and most promising option: to appeal to facts about Moni's perceptual experience. In particular, the idea is to say that – somehow! – Moni *experiences* the property of being a perfect circle. And the naïve realist has two competing ways to develop this idea. First, the naïve realist might say that Moni perceives a particular that actually instantiates the property of being a perfect circle, and so Moni is perceptually related to that property. (As we will see, the naïve realist might try to say this by adopting an anti-physicalist theory.) Alternatively, the naïve realist might propose that that Moni is merely hallucinating the property of being a perfect circle.

Let us examine these options in turn.

5. Proposals that appeal to facts about perceptual experience: veridical perception

The naïve realist's first option is to say that Moni veridically perceives a particular that actually instantiates the property of being a perfect circle, and so Moni veridically perceives that property. Of course, it is clear that nothing in Moni's environment instantiates the *physical* property of being a perfect circle. But it is possible for the naïve realist to adopt anti-physicalism, as, for example, William Alston has.[13] The idea would be that perception involves entities that are something over and above the physical – entities that are neither reducible to nor fully grounded in physical entities. And if the naïve realist adopts this anti-physicalist idea, then perhaps she can say that Moni perceives something that instantiates the *non-physical* property of being a perfect circle.

Let us examine this suggestion more closely. Notice first that it is a defining commitment of naïve realism that in any typical case of perception – including Moni's case – the subject is only directly perceptually aware of *ordinary* particulars. But non-physical perfect circles are strange particulars. So it follows that Moni is not directly perceptually aware of any such things. Thus, even the anti-physicalist naïve realist should concede that the only relevant particular that Moni is directly perceptually aware of is Hoop.

Still, even if the naïve realist cannot appeal to non-physical particulars, there are still three different forms of anti-physicalism that are available to her. First, she might adopt anti-physicalism only about the *relation of perception* – she might say that this relation is non-physical. Second, the naïve realist might adopt anti-physicalism only about some of the *properties* that

---

[13] Alston states: "[My version of naïve realism] is incompatible with materialism …. Since materialism holds no attraction for me, I can cheerfully accept that" (1999, p. 196).

subjects perceive. She might say, for example, that perceived color properties are non-physical.[14]

And, finally, she might adopt anti-physicalism *both* about the perceptual relation *and* about some of the properties that subjects perceive.[15]

For our purposes, we can focus on this final, most thoroughgoing form of anti-physicalism. For if it does not solve the problem, then the milder forms of anti-physicalism will also fail to solve the problem.

The most natural way to spell out this thoroughgoing anti-physicalist view is this. When I see a red tomato, the physical processes that occur in my brain and in the world do not by themselves amount to a perception. Rather, there are metaphysically contingent laws of nature connecting certain physical states to the non-physical relation of perception. Moreover, the tomato that I see has the property of being red. The tomato's being red is something over and above its having the physical properties that it does. Again, there is a metaphysically contingent law of nature connecting certain physical properties to the non-physical property of being red. So, because these metaphysically contingent laws of nature are in place, when certain physical processes occur I end up bearing the non-physical relation of perceiving to the physical tomato and its non-physical property of being red.

Of course, it is costly in and of itself to adopt such a strongly anti-physicalist view. But what is more important is that, as far as I can tell, even this strongly anti-physicalist form of naïve realism does not solve the geometry problem.

My thinking is this. As we have just observed, it is a defining commitment of naïve realism that in any typical case, the subject is not directly perceptually aware of any non-physical

---

[14] Note that Campbell's "simple view" of color is not a form of anti-physicalism. For Campbell (1993, esp. p. 262) seems to think that colors are irreducible to, but fully grounded in, physical entities.

[15] In principle, the naïve realist might also hold that the *subject* is non-physical. But I cannot see how that posit would help with the geometry problem, so I will ignore it.

particulars. Thus, any naïve realist at all – even a thoroughly anti-physicalist one – should concede that when Moni sees Hoop, Moni is not directly perceptually aware of any strange non-physical particulars; for example, she is not directly perceptually aware of a perfectly circular sense-datum. The only relevant particular that Moni stands in a non-physical perceptual relation is Hoop itself. *But it is plain that Hoop is not a perfect circle.* Thus, even an anti-physicalist form of naïve realism cannot explain how Moni is able to acquire the concept of a perfect circle just by seeing Hoop.

You might protest that things are not so clear-cut. Yes, Hoop does not instantiate the *physical* property of being a perfect circle. But might it not still instantiate the *non-physical* property of being a perfect circle?

Well, say that it does. Even so, I think that it is clear that Moni does not *perceive* that non-physical property. Here is my thinking.

Suppose, for the sake of reductio, that Moni does perceive this non-physical property. Then consider what will happen if Moni looks at Hoop with a magnifying glass and notices the tiny *physical* dent that it has. Now, it is not as though the magnifying glass should *interfere* with Moni's ability to see non-physical shapes. So she should either just continue to perceive the non-physical property of being a perfect circle (if she perceives only non-physical geometrical properties) or she should perceive *both* the physical property of being an imperfect circle *and* the non-physical property of being a perfect circle (if she perceives both physical and non-physical geometrical properties). But, obviously, neither of these events will occur. She will just see a single shape, the shape of an imperfect circle. We have reached a contradiction, so we must reject our supposition: we must conclude that *even if Hoop instantiates the non-physical property of being a perfect circle,* Moni still does not perceive that property.

Of course, the naïve realist makes no explanatory progress by appealing to a non-physical geometrical property that Moni fails to perceive. And so – surprisingly – even a thoroughgoing anti-physicalism does not help the naïve realist to solve the geometry problem.

6. Proposals that appeal to facts about perceptual experience: hallucination

So let us discard the idea that Moni is having a veridical perception; let us return to the more standard view that Moni is having an illusory experience. Now, some naïve realists think that at least some illusions are just cases of genuine perception in which the subject misclassifies what she sees. But this view is obviously of no use in solving the geometry problem – the problem *just is* to explain how Moni could acquire the concept of a perfect circle without seeing one. However, other naïve realists think that at least some illusions are simply partial hallucinations.[16] The idea would be that Moni is really seeing Hoop, but she is merely hallucinating the property of being a perfect circle. Might that yield a satisfying explanation of how she comes to acquire the concept of a perfect circle?

I do not believe so. To be sure, naïve realists have proposed a dizzying range of views of hallucination, including indiscriminability views, imagination views, and even representationalist views.[17] However, I will raise some very general worries for any naïve realist who wishes to appeal to hallucinations, regardless of which theory of hallucinations she has in mind.

The first point to notice is that in *every* reasonably determinate perceptual experience of a shape, that shape ends up looking at least slightly more perfect than it actually is. And that

---

[16] See for example Brewer (2011, p. 115).
[17] For indiscriminability views, see Martin (2004), (2006); Nudds (2009, p. 339); Brewer (2011, p. 109). For an imagination view, see Allen (2014). For a representationalist view, see Logue (2012).

does not occur merely because we are perceiving the somewhat indeterminate shapes that things actually have. No, whenever we see a book, table, or chair, its edges seem to be determinately straighter than they actually are; whenever we see a bowl or a cup, its rim seems to be determinately more perfectly rounded than it actually is. We never perceive all of the microscopic dings and dents that there are.

What is more, *every* reasonably determinate perceptual experience of a shape – the shape of a book, table, or chair, say – puts the subject in a position to acquire the concept of a corresponding three-dimensional shape. She might already have the relevant geometrical concept, so the ability might be superfluous. But the experience still grounds the ability: if the subject had somehow lost the relevant geometrical concept, she would be able to form it again on the basis of her experience. And, again, this concept is the concept of a shape that is more perfect than any shape instantiated by the ordinary particulars in the subject's environment.

In short, *every* reasonably determinate perceptual experience of a shape is relevantly similar to Moni's case: every such experience will put the subject in a position to form the concept of a shape that is more perfect than any shape instantiated by any ordinary particular. And in Moni's case, the naïve realist is currently proposing that the subject is really perceiving an ordinary particular while also merely hallucinating its geometrical properties. So the naïve realist should say the same thing about every reasonably determinate perceptual experience of a shape.

And that commits the naïve realist to a further claim. After all, every ordinary visual experience is an experience of a reasonably determinate shape. To be sure, there are some visual experiences that are not experiences of any reasonably determinate shapes: thoroughly blurry experiences and experiences in near-darkness, for example. But these are unusual cases. In any paradigmatic case of vision, the subject will get a reasonably detailed sense of the shape of

something. So the naïve realist must also say that every ordinary visual experience is a partial hallucination.

So the naïve realist view under consideration has two important consequences. First, that no ordinary human being ever stands in a genuine perceptual relation to any reasonably determinate geometrical property. Second, that every ordinary visual experience is a partial hallucination. These are radical consequences, and they speak strongly against the view.

But things get even worse for the naïve realist. For if these consequences are correct, then the naïve realist must give up *both* of the central motivations for her view, at least insofar as they pertain to shape perception.

Let us start with the first core motivation for naïve realism. As you will recall from §1, the idea is that when we perceive the world, it first-personally seems that we are just directly, non-representationally aware of ordinary particulars and their properties. The naïve realist's view is then supposed to have the great advantage of validating this first-personal appearance.

But now the naïve realist is entirely relinquishing this advantage when it comes to shape perception. She is proposing that we do not after all have such relations to the (reasonably determinate) shapes of things; she is proposing that we just hallucinate shapes. And once that advantage has been relinquished with respect to such a central part of our perceptual lives, the appeal of naïve realism is drastically diminished.

Now turn to the second core motivation for the naïve realist view. The idea was that only the naïve realist could explain how perception puts us in a position to: (i) know what we are talking about when we demonstratively refer to perceived particulars and properties; (ii) think of perceived particulars and properties as mind-independent; and (iii) conceive of the categorical character of perceived particulars and properties. The naïve realist's explanation is that in

perception, we stand in a direct, non-representational relation of awareness to particulars and their properties which are in fact mind-independent and categorical.

This motivation, too, will be lost when it comes to geometrical properties. For on the current naïve realist proposal, we *never* stand in a direct, non-representational relation of awareness to any reasonably determinate geometrical property. So, regarding geometrical properties, the naïve realist cannot explain how it is that we have the second and third of the conceptual abilities described above. For example, she cannot explain how Moni can think of the property of a circle as being *mind-independent* and *categorical.*

It is worth noting that John Campbell, the naïve realist who provides the seminal expression of this second core motivation, takes geometrical properties to be paradigms of the categorical properties revealed to us in perception. Campbell states:

> "We would ordinarily regard shape properties as the *paradigmatic* categorical properties of objects …. It is experience of the shape that confronts us with the categorical property, and thereby explains our grasp of the concept of shape as categorical." (2002, p. 139, emphasis mine)

And Campbell is surely right about this much. After all, Moni is not merely in a position to know that a perfect circle is the kind of thing that would be disposed to (e.g.) roll well; she is also in a position to know what a perfect circle is like, categorically. A similar point would apply to Moni's appreciation of the fact that the property of being a perfect circle is mind-independent.

But, as I have been arguing, if the naïve realist says that Moni is just hallucinating the property of being a perfect circle, then the naïve realist cannot explain *this* knowledge of categoricity and mind-independence. For, on this view, Moni does *not* stand in a direct, non-

representational relation of awareness to the property of being a perfect circle. So the naïve realist is now failing to provide an explanation for what is, by her own lights, a paradigm case.

And the problem is even more severe than this: we can now see that the second motivation will be undercut *even when it comes to non-geometric properties.* For Campbell's claim is that *only* the naïve realist can explain why perception allows us to conceive of the categorical and mind-independent natures of things. However, the naïve realist must now concede that we can conceive of the categorical, mind-independent natures of certain shapes without standing in a direct, non-representational relation to those shapes. So, *contra* Campbell, there simply must be some other explanation for how perceptual experience allows us to conceive of the categorical natures of things. And this explanation might then carry over to other cases – it might explain how we can conceive of the categorical, mind-independent natures of colors, textures, and so on.

Summary. It is tempting for the naïve realist to say that Moni really sees Hoop but simply hallucinates the property of being a perfect circle. However, this strategy commits the naïve realist to saying that (i) there are no genuine perceptions of any reasonably determinate shapes, and (ii) every ordinary visual experience is a partial hallucination. These consequences are very unattractive. And, what is worse, this naïve realist strategy would undercut *both* of the core motivations for naïve realism in all cases of reasonably determinate shape perception; the second motivation might even be undercut across the board.

I conclude that this naïve realist strategy is not a good one.

7. Taking stock

At this point, we have exhausted all of the promising options that I can find for the naïve realist. In particular, we have considered explanations in terms of subpersonal facts, explanations in terms of personal-level facts about concepts, and explanations in terms of personal-level facts

about Moni's perceptual experience. But none of these proposals has yielded a satisfactory solution to the geometry problem.

Moreover, it should now be clear *why* it is so hard for the naïve realist to solve the problem. The reason is this. By the naïve realist's lights, *all* that Moni is directly perceptually aware of are ordinary particulars and their properties. And no ordinary particular that Moni perceives has the property of being a perfect circle. But still – somehow! – Moni's perceptual experience makes her directly aware of that geometrical property.

Thus, both on the basis of a thorough search and on the basis of a general principle, I believe that the naïve realist simply cannot solve the geometry problem.

8. Is this everyone's problem?

Still, the naïve realist might hope that everyone else has an equally hard time solving the geometry problem. If so, then the geometry problem would not support an argument against naïve realism in particular; it would just be a general problem for every theorist of perception.

But, as I will argue in this section, at least some other theorists can easily solve the geometry problem. I will make this point with respect to two alternative theories: the sense-datum theory and the representationalist theory.

The sense-datum theory. I will understand the *sense-datum theory* as the view that any perceptual experience is a relation of direct, non-representational awareness to a private mental entity – a *sense-datum* – and its properties. Like naïve realism, the sense-datum theory says that perception is a relation of direct, non-representational awareness. But unlike naïve realism, the sense-datum theory has it that perception is not (or at least not only) a direct relation to ordinary particulars; it is a direct relation to strange particulars, namely sense-data.

Whatever other problems that the sense-datum theory might have, it should be immediately obvious that it does not have any special difficulty in explaining how Moni manages to acquire the concept of a perfect circle. The sense-datum theorist can simply say that Moni is perceptually related to a sense-datum that *really is* perfectly circular. That is what grounds her ability to form the concept.

Still, it is usually thought that the sense-datum theory faces severe problems on other fronts. So let us consider a theory, or more accurately a broad class of theories, that is presently more popular.

Representationalism. I will understand *representationalism* as the view that any perceptual experience (and *a fortiori* any perception) is a special kind of representation, typically of the external world. A *representation*, recall, is the kind of thing that can go right *or wrong*. Beliefs are representations that can be true or false; maps are representations that can be accurate or inaccurate. And it is precisely because representationalists think that perceptual experiences can go wrong that they can explain what is happening in Moni's case. Indeed, this commitment gives representationalists a number of good options for explaining the datum.

For example, some representationalists, such as Adam Pautz, hold that certain neural states represent certain properties *just as a matter of brute fact*.[18] And if we adopt this theory then it becomes effortless to explain the datum. The idea would be that when Moni looks at Hoop, she enters into a neural state that, as a brute matter of fact, represents the property of being a perfect circle. Again, this representationalist theory might face plenty of other problems, but it does not face the geometry problem.

Now, I suspect – but will not argue here – that some representationalist views *cannot* solve the geometry problem. But that does not matter for our purposes. All that matters is that

---

[18] See Pautz (forthcoming).

there exist some representationalist views that *can* solve the geometry problem. And, taking a step back, it is easy to see why representationalism permits for a satisfying solution. The reason is that according to the representationalist, perceptual experiences can go wrong, and so it is possible to perceptually experience a property that is not instantiated in any ordinary particular. Thus it is possible for Moni to perceptually experience the property of being a perfect circle *even though* Hoop does not instantiate that property.

Thus there are a number of theories of perception that have no trouble explaining how Moni forms the concept of a perfect circle. And so the naïve realist cannot say that the geometry problem is a problem for everyone.

9. Conclusion

Just on the basis of her perceptual experience, Moni can form the concept of a perfect circle. How is this possible? After all, she is not directly perceptually aware of any ordinary particular that is in fact perfectly circular. That is the geometry problem.

The sense-datum theorist can solve the problem by saying that Moni is directly perceptually aware of a strange particular, namely a sense-datum, that really does instantiate the property of being a perfect circle. The representationalist can solve the problem by saying that Moni is directly perceptually aware of the uninstantiated property of being a perfect circle. But the naïve realist does not want to appeal to strange particulars, nor to uninstantiated properties. And so these solutions are not available to her. Nor can I find another one.

I leave an open invitation to my opponent to show us a way out of the problem. But, at present, I cannot see how there *could* be a way out. And so, at present, I cannot see how naïve realism could possibly be true.

REFERENCES

Allen, K. (2014). "Hallucination and imagination." *Australasian Journal of Philosophy* 93 (2): 287-302.

Alston, W. (1999). "Back to the theory of appearing." *Philosophical Perspectives* 13: 181-203.

Beck, O. (2018). "Rethinking naïve realism." *Philosophical Studies* (online): 1-27.

Brewer, B. (2011). *Perception and Its Objects*. Oxford: Oxford University Press.

Broad, C. (1952). "Some elementary reflexions on sense-perception." *Philosophy* 27: 3-17.

Byrne, A. and Logue, H. (2008). "Either/or." In *Disjunctivism: Perception, Action, Knowledge*, eds. Adrian Haddock and Fiona Macpherson (New York: Oxford University Press), pp. 57-94.

Campbell, J. (1993). "A simple view of colour." In *Reality: Representation and Projection*, eds. J. Haldane and C. Wright (Oxford: Oxford University Press), pp. 257-268.

Crane, T. (2006). "Is there a perceptual relation?" In *Perceptual Experience*, eds. T. Gendler and J. Hawthorne (Oxford University Press), pp. 126-146.

DeRosset, L. (2013). "Grounding explanations." *Philosophers' Imprint* 13 (7): 1-26.

Donnellan, K. (1966). "Reference and definite descriptions." *Philosophical Review* 75 (3): 281-304.

Fish, W. (2009). *Perception, Hallucination, and Illusion*. Oxford: Oxford University Press.

French, C. and Gomes, A. (forthcoming). "How naïve realism can explain both the particularity and the generality of experience." *Philosophical Quarterly*.

Genone, J. (2014). "Appearance and illusion." *Mind* 123 (490): 339-376.

Kennedy, M. (2009). "Heirs of nothing: the implications of transparency." *Philosophy and Phenomenological Research* 79 (3):574-604.

Kennedy, M. (2013). "Explanation in good and bad experiential cases." In *Hallucination: Philosophy and Psychology*, eds. F. Macpherson and D. Platchias (Cambridge, MA: MIT Press), pp. 221-254.

Levine, J. (2006). "Conscious awareness and self-representation." In *Self-Representational Approaches to Consciousness*, eds. U. Kriegel and K. Williford (Cambridge, MA: MIT Press).

Lewis, D. (1983). "New work for a theory of universals." *Australasian Journal of Philosophy* 61 (4): 343-377.

Logue, H. (2012). "What should the naïve realist say about total hallucinations?" *Philosophical Perspectives* 26: 173-199.

Martin, M. (1997). "The reality of appearances." In *Thought and Ontology*, ed. M. Sainsbury, Franco Angeli.

Martin, M. (2002). "The transparency of experience." *Mind and Language* 17 (4): 376-425.

Martin, M. (2004). "The limits of self-awareness." *Philosophical Studies* 120: 37-89.

Martin, M. (2006). "On being alienated." In *Perceptual Experience*, eds. T. Gendler and J. Hawthorne (Oxford University Press), pp. 354-410.

Millar, B. (2014). "The phenomenological directness of perceptual experience." *Philosophical Studies* 170: 235-253.

Nudds, M. (2009). "Recent work in perception: Naïve realism and its opponents." *Analysis Reviews* 69 (2): 334-346.

Pautz, A. (forthcoming). "Representationalism about consciousness." In *The Oxford Handbook of the Philosophy of Consciousness*, ed. U. Kriegel (Oxford: Oxford University Press).

Schellenberg, S. (2018). *The Unity of Perception: Content, Consciousness, Evidence*. Oxford: Oxford University Press.

Soteriou, M. (2010). "Perceiving events." *Philosophical Explorations* 13 (3): 223-241.

Sturgeon, S. (2000). *Matters of Mind*. New York, NY: Routledge.