PERCEPTION, QUALITIES, AND CONCEPTS

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Abstract
It's widely held that we perceive not only low-level properties, such as colors and shapes, but also high-level properties, such as the property of being a dog or of being a moving train. Debate about which types of property we perceive has recently eclipsed the question of how perceiving itself operates. We focus here on that latter question, proposing an account on which perception of low-level properties occurs by way of mental qualities alone, whereas perception of high-level properties occurs by way of mental qualities together with conceptual content of the type that figures in thinking. It is central to our account that mental qualities have a type of representational character unique to them, so that mental qualities can interact representationally with conceptual content in perceiving. We present a number of advantages of this account, including how it fits with a range of experimental findings, and address several objections to it.

Key words: perception; thought; perceptual content; qualitative character; conceptual content; mental representation

I. Introduction

Any informative and complete theory of perception must explain not only what we perceive, but also how we perceive those things. Regarding the former issue, there is a growing consensus that we perceive two types of property, which many have recently called low-level and high-level properties (Bayne 2009). Low-level properties are exemplified by colors, odors, sounds, shapes, sizes, and locations. It is plain that we do often perceive such properties, which Aristotle (De Anima, II, 6 I, 418a12-19) dubbed the proper and common sensibles, proper when detected by a single sense modality and common when detected by more than one.

But folk psychology also holds, and many theorists agree, that we often perceive many high-level properties, which pertain to the type of thing or relation that is perceived; examples include the properties of being a dog or a moving train (for an overview, see Helton 2016). Common sense holds that we often see dogs *as dogs* or hear trains *as trains*; so being a dog or a train must be part of the content of perception. Such properties are high-level insofar as no sensory modality can by itself perceptually represent a dog or a train as such.

Contemporary discussion about high-level perception has been dominated by debate over which types of high-level properties we perceive. Some urge that in addition to kind properties, such as that of being a dog, we also perceive properties such as causal relations (Siegel 2010), moral features (Cullison 2010), and action properties (Nanay 2011), among many others.

Comparatively less attention, however, has been given in recent discussion to how low- and high-level perceiving work, and to whether perceiving operates in the same way for those two types of property. As an illustration, in her groundbreaking work on high-level perception, Siegel simply takes no position on how we perceive high-level properties (see 2010, p. 113), insisting simply that the perception of high-level properties is in some way different from just having beliefs about them (see 2010, pp. 21-22). Perhaps this is because Siegel and others assume that high-level perception requires no special additional account.

But, as we shall see, such an account is warranted. We thus propose to invert this strategy, focusing primarily on how the perceiving of each type of property operates. In our view, arguments about which types of high-level property we perceive put the cart before the horse: Only when we first understand how high-level perceiving operates can we determine which high-level properties we perceive.

Accordingly, we put forward here a novel version of a traditional theory of perception. In brief, we develop two complementary explanations: we propose that the perceiving of low-level properties operates, as many would agree, by way of mental qualitative properties; the perceiving of high-level properties, by contrast, is due to such mental qualities interacting with the ordinary type of conceptual content that on most accounts figures in thinking, desiring, and related states.

The idea that some perceiving operates by way of a combination of mental qualities and conceptual content is by no means altogether novel. It traces back at least as far as Kant's (1781/1787/1996, A51/B75) well-known appeal to the combination of concepts with what he called intuitions. And others have also offered accounts on which perception involves more than one type of content or representational property (Reid 1764/1997; Sellars 1956/1997; Coates 2007; Hill 2022). The view developed here is a version of the traditional two-factor view of perceptual content.

But our main aim here is to highlight an important way in which our version of this two-factor theory differs from previous versions—in particular, we develop a new explanation of how the two factors interact. This interaction in turn shows how the view avoids well-known difficulties that confront other versions of the traditional picture as well as many one-factor accounts of perceptual content.

Another major way in which our view differs from many current accounts is that we propose that such interactions may take place because mental qualities are themselves representational. Many influential theorists assume that, if mental qualities exist, they do not represent anything at all (Nagel 1974; Peacocke 1992; Levine 2001). It's central to our account, however, that mental qualities represent the low-level

properties they enable us to perceive, though they represent those properties in a way importantly different from the way concepts represent. We have developed this view of mental qualities in detail elsewhere (Rosenthal 2005; 2010; 2012; 2022; Berger 2018).

The view that perception involves conceptual content at all has, however, often been held to face significant objections (for overviews, see Hanna and Chadha 2011). And that has led some theorists to propose instead some single dedicated, sui generis type of representational content that is unique to perceiving and that operates in both low-level and high-level properties (Peacocke 1992; Burge 2022; Block 2023; for a useful overview of such views, see Nes, Sundberg, & Watzl 2021).

With our view in hand, we suggest that such views are unmotivated. As we see it, the main objection to a view such as ours, on which perception involves conceptual content, is that perceiving is not typically affected by belief in the ways that one might expect if it did exhibit conceptual content (Siegel 2010, especially section 4.2; Bayne 2009; Helton 2016, pp. 856-857). We argue, however, that the representational character of mental qualities and their representational interactions with conceptual content not only illuminate how perceiving works, but also explain how our view avoids objections, such as this one, that might otherwise seem to motivate the positing of a dedicated type of perceptual content. The result, we think, is a compelling and novel account of perceptual content generally, which resembles some traditional views in some respects, but differs importantly from each of them.

We emphasize, however, that we regard our aim here to be relatively modest: to show in some detail how this view works. The proposal has several moving parts, some of which we and others have developed elsewhere. So, for considerations of space, we sometimes simply sketch the justification for some of these features. We do often show how this view has advantages over and avoids well-known objections to competing or similar views, and that it fits with many experimental findings. But we cannot compare those virtues to all current alternatives. In these ways, we regard this discussion as proof of concept, and not a decisive demonstration of the view's correctness.

II. The Nature of Low-Level Perception

Perceiving invariably operates by discerning qualitative properties in one's environment such as colors and sounds. According to a commonly held view, which we endorse, this discerning of qualitative environmental properties takes place by perceptual states that themselves exhibit qualitative mental properties (Peacocke 1992; Block 1995; Levine 2001).

It's accordingly important to distinguish, as many others also do, those qualitative mental properties from the perceptible qualities of physical objects (Rosenthal 1991; Peacocke 1992; Clark 1993; Levine 2001). We shall call the former mental qualities and the latter perceptible properties. A visual perception of a brown dog exhibits the

mental quality brown, which is distinct from perceptible brown, a property of the dog itself.

It's sometimes held that physical objects do not exhibit perceptible properties such as colors and sounds, so that colors and sounds occur only as mental qualities (Hardin 1993). Such views often hold that properties such as colors and sounds are so-called secondary qualities, or properties of objects only insofar as they are nonqualitative dispositions to cause the relevant mental qualities. Similarly, some contemporary theorists defend "Fregean" accounts of perception, on which mental qualities are modes of presentation or ways of representing certain properties (e.g., Chalmers 2010).

But that rejection of our commonsense conception of objects as themselves having properties such as colors and sounds is unnecessary, as several so-called color physicalists have offered reasonable accounts of such perceptible qualities in terms of properties that physics accommodates (Byrne & Hilbert 2003; Rosenthal 2005, chs. 6 and 7). Our view thus differs from secondary-quality and Fregean views in two ways. For one thing, we maintain that both so-called primary qualities, such as shapes and sizes, as well as properties such as colors and sounds are genuine physical properties of objects. Second, we maintain that there are corresponding mental qualities of both types of physical properties as well.

Mental qualities are also regarded by many as mysterious occurrences that defy informative explanation. Many claim that the only way we can we know about the nature of qualitative mental properties is from first-person conscious access, that is, from what it's like for one to be in states that exhibit those qualitative properties. If so, such first-person knowledge would always override whatever we might know in a third-person way (Nagel 1974; Block 1995; Levine 2001).

Mental qualities so construed are sometimes referred to as qualia, and typically characterized as in some way "raw." That characterization might seem to imply that mental qualities cannot have representational character, and indeed that we cannot give any informative account at all of their nature. As Block puts it, "The best you can do is use words to point to a phenomenon that the reader has to experience from the first-person point of view" (2015, p. 47). What such pointing could amount to is, however, altogether unclear.

Apart from whatever tie may hold between mental qualities and consciousness, there is another type of connection that mental qualities undeniably exhibit, and which is pivotal to their nature, namely, their role in perceptual discrimination (Rosenthal 1991; 2010; Berger 2018). All perceiving consists in distinguishing one property, object, or event from others. The perceiving of low-level properties accordingly consists in the perceptual discrimination of those properties. In the perceiving of colors, for example, we visually discriminate red from yellow and other colors, and each shade of red from all the other shades.

The tie mental qualities have to perceptual discrimination is arguably at least as firmly rooted in our commonsense conception of perceiving as any tie that mental qualities may have with consciousness. Indeed, there is reason to question whether common sense does actually support the claim that we know about experience primarily in a first-person way (Rosenthal 2010; Sytsma & Fischer forthcoming).

Common sense does hold that mental qualities are necessary for the conscious discrimination of low-level properties. This holds for colors in respect of hue, saturation, and brightness, as well as the visible spatial boundaries of colors that enable us visually to perceive physical shapes, size, and location. And it holds for sounds in respect of loudness, timbre, and apparent spatial origin, as well as for odors, tastes, and the perceptible pressures and textures of tactile stimuli.

We have argued elsewhere, as have others, that all this can be described in terms of quality spaces (Clark 1993; 2000; Rosenthal 1991; 2005; 2010; 2022). We can represent the stimulus properties an individual can discriminate in terms of relative locations in a space of such properties. Such spaces will have dimensions that capture all the ways in which we can discriminate among those stimulus properties accessible by a particular sensory modality. The space of perceptible color stimuli, for example, would have dimensions for hue, saturation, and brightness. Likewise, the space of perceptible sounds would be characterized by the dimensions of pitch, timbre, loudness, and perhaps others.

But to be able to discriminate stimulus properties requires being in distinct mental states, each corresponding to one of the perceptible properties being discriminated. And these states must differ among themselves in respect of mental properties of some type. When the discrimination is conscious, it's plain that the operative mental properties are the conscious mental qualities.

The role in discrimination thus provides a richly informative theory of what the mental qualities are (Rosenthal 1991; 2005; 2010; 2022; Berger 2018; see also Clark 1993 and 2000, though Clark 2000 denies that mental qualities figure in the discrimination of spatial properties, such as shape, size, and location). Mental qualities are the mental properties in virtue of which we can discriminate among various perceptible stimuli. And being able in this way to characterize and individuate the mental qualities dispels the sense of mystery that results from holding that we know about them mainly or exclusively by way of first-person access.

Since discriminating any stimulus property from its neighbors requires a mental quality that corresponds to that stimulus property, we can fix each mental quality as having a relative location in a space of mental qualities that corresponds to the relative location of the stimulus property in its quality space. Just as there is a space of perceptible physical colors, there is a corresponding space of mental colors, which mirrors the discriminability relations among the properties in the space of perceptible physical colors.

Because each mental quality is fixed by the stimulus property it enables us to discriminate, it is natural to regard each mental quality as representing that stimulus property. A mental quality of a particular shade of red, for example, is that mental property in virtue of which one can discriminate that shade of red from all other color stimuli. So that mental quality also represents that perceptible stimulus property. And the stimulus properties that mental qualities enable us to discriminate are just the low-level perceptible properties.

This sketch of the nature of mental qualities is plainly at odds with currently popular views that mental qualities, if they exist at all, are not representational and so cannot be informatively explained. But though currently widely held, there are concerns about such views that make them questionable at best.

For one thing, support for such views is typically said to rest on allegedly pretheoretic intuitions. One alleged intuition holds that undetectable quality inversion is possible, so that the perceptual states of two people might represent the same perceptible property and yet involve distinct mental qualities (Peacocke 1992; Levine 2001). And then the mental qualities couldn't be doing any representing.

One could resist that conclusion by suggesting that the mental qualities do represent, but that they can shift their reference from one individual to another, in the way a particular shade of paint could be used to represent different colors on distinct paintings (Block 1995). Similarly, one might hold that mental qualities represent particular physical properties insofar as mental qualities are in actuality systematically associated with those physical properties, though the mental qualities in principle could be keyed to other physical properties.

But even if mental qualities were so related to particular physical properties, so long as those relationships are merely contingent, we would need to individuate the mental qualities independently of those relationships. And though we can identify paint independently of any representational role, there seems to be no effective way to individuate a mental quality apart from the perceptible property it's associated with. First-person access to mental qualities provides at best an extremely rough guide to individuation, and likely relies tacitly on role in discrimination.

In any case, such intuitions are highly unreliable. There is, for example, no serious reason to think that undetectable inversion of mental qualities ever occurs, or even could occur (Clark 1985; Rosenthal 2010). Indeed, the idea that it could itself rests on the unsupported idea, mentioned earlier, that we can individuate and taxonomize mental qualities only by way of consciousness. That view effectively cuts conscious mental qualities loose from any discriminative role. But inversion of mental qualities would not be undetectable if perceptual discrimination figures as at least part of the way we individuate mental qualities.

Could mental qualities be representational if they were necessarily conscious? Arguably not. If mental qualities were necessarily conscious, we would almost certainly individuate them exclusively by what it's like for one to be in one or another qualitative

mental state. And since role in discrimination would not then figure in individuating the mental qualities, mental qualities would be undetectably invertible, thereby breaking any representational tie to specific stimulus properties. For this reason, most who maintain that mental qualities are invariably conscious frequently also deny that they are representational.

But as many have argued, the assumption that mental qualities are only known by way of consciousness is doubtful. Such an intuition would itself be based on first-person access. But since first-person access is perforce unable access any mental qualities that occur unconsciously, it cannot sustain the claim that there aren't any.

And there are highly compelling reasons to think mental qualities can and often do occur outside of consciousness, as we have argued along with many others (Rosenthal 1991; 2005; 2010; 2022; Marvan & Polák 2017; Coleman 2022). Since perceptual discrimination not only occurs consciously, but also subliminally, as in cases of masked priming or blindsight, and since we characterize mental qualities in the conscious case by way of their role in perceptual discrimination, we can do the same for perceptual discrimination that occurs without consciousness.

Some empirical findings are difficult to interpret otherwise. For example, a conscious color sensation is primed only if it matches the unconscious prime in surface color, showing that the unconscious prime must exhibit the relevant mental color quality (Norman et al. 2014). It's beyond the scope of this discussion to develop this view, however, or what consciousness, independent of mental quality, might consist in.

Once we drop the assumption that mental qualities are only accessible by way of consciousness, construing mental qualities as representational is both natural from a commonsense point of view and theoretically available.

One might still contend that mental qualities are not genuinely representational because they do not involve genuine semantic features, such as the capacity to be accurate or inaccurate. Thus Burge (2022, pp. 21ff) urges that we must distinguish genuine mental representations, which include perceptual states, from states of mere sensory information registration, such as the states that occur in a creature's retina. And one might argue that visual mental qualities, for example, are accordingly more akin to retinal states than to genuinely perceptual states.

That would be a mistake. Mental qualities can indeed be accurate or inaccurate: a particular mental quality of red is accurate if, but only if. it results from a corresponding instance of perceptible red. And, as we argue in §IV, the representational features of mental qualities explain how and why they often connected to other mental states in ways that resemble ordinary conceptual inference.

Still, it is crucial to stress that, on the view we propose, the way mental qualities represent corresponding stimulus properties is significantly different from the way conceptual content represents (Rosenthal 2012, p. 23; Berger 2018). We say more about this in §IV.

It's important to distinguish the present view from standard accounts of so-called nonconceptual content, which are thought of as representational properties that are distinct from conceptual contents but nonetheless figure in perceiving (see the essays in Gunther 2003). Those who appeal to nonconceptual content characterize it in various ways (see Heck 2000; Byrne 2005). Some accounts actually deny the occurrence of mental qualities altogether (Dretske 1995), maintaining that the only qualities that figure in perceiving are qualitative properties of the objects we perceive. Other accounts acknowledge the occurrence of mental qualities but insist that they are wholly nonrepresentational and so distinct from nonconceptual contents (Peacocke 1992). But if as we argue mental qualities are representational, then either mental qualities are (or have) nonconceptual contents, insofar as they are any, or there is in any case no need whatsoever also to posit nonconceptual contents as well.

This appeal to representational mental qualities also contrasts with views that explicitly avoid countenancing mental qualities altogether. One example would be so-called naïve realism or relationalism, which holds that perceiving consists simply in a relation that a perceiver bears to the objects perceived (Campbell 2002; Martin 2004). Another example would be versions of conceptualism or conceptualist representationalism, on which all perceptual representation is conceptual (Armstrong 1968; Harman 1990). On such views, there simply are no mental qualities and no qualitative aspect to any mental occurrences. The only qualities that figure in perceiving are then the perceived properties of objects.

Although a full discussion of views that deny the existence of mental qualities is beyond the scope of this paper, there are serious objections that such accounts are often thought to face. Relationalism requires gerrymandering of the perceptual relata when what we perceive isn't there to bear a relation to, and it's unclear that this can be done successfully (Pautz 2021). And it is unclear that conceptualism can informatively explain the difference between perceiving something and merely having a thought about it (for discussion, see Nes, Sundberg, & Watzl 2021).

Objections to relationalism and conceptualism aside, a major appeal of such views is its avoidance of mental qualities. But we should seek to avoid mental qualities only if they are genuinely problematic and mysterious, and they will seem so only if one holds that we know about them solely by way of consciousness. If there were no other ways to know about mental qualities, they would lack ties to anything else, which as noted above would prevent any informative description of what mental qualities are.

Our account of the perceiving of low-level properties, then, is that we perceive them by way of mental qualities that exclusively represent those low-level properties. No other mental or psychological content properties figure in such low-level perceiving. So much for our explanation of how low-level perceiving works. What about high-level perceiving?

III. High-Level Perceiving

Mental qualities alone plainly won't do for the perceiving of high-level properties. But, as we shall see, the only other options to explain high-level perception appeal either wholly to conceptual representation or to a dedicated type of nonconceptual representation. We have already noted that we find the former view problematic—and will argue shortly that the latter is questionable as well.

We propose instead that high-level perceiving requires both mental qualities and conceptual content. Take one's seeing a dog, that is, seeing it as a dog, as that type of object. On our view, such perceiving involves various visual mental qualities corresponding to visible stimulus properties of the dog together with one's conceptualizing what one sees as a dog. We see a dog, as such, in virtue of mental qualities corresponding to particular colors, shape, and size along with suitable conceptual content, such as the content that there's a dog in front of one.

This conceptual content, we argue, is the very same property that we ascribe to thoughts, beliefs, and other so-called propositional attitudes in respect of which they differ in content. There is much controversy about the nature of conceptual content, and about whether and how it might differ from other sorts of nonconceptual representational mental properties (for overviews, see Gunther 2003; Byrne 2005). But the conceptual content we posit to explain high-level perceiving is neutral among almost all current accounts of conceptual content. So, our account accommodates, for example, any theory of conceptual content that a conceptualist representationalist about perception might adopt.

We note that some urge that conceptual states, such as beliefs, also have a proprietary phenomenal character, often referred to as 'cognitive phenomenology' (Bayne & Montague 2011; for a critical take, see Bayne & McClelland 2016). If so, then there is a way in which conceptual states exhibit something like mental qualities. But the phenomenological properties that would figure in such cognitive phenomenology are arguably different in nature from the qualitative character that distinguishes the various forms of nonconceptual sensing. We use the term 'mental quality' to apply only to the latter.

Setting aside cognitive phenomenology, others urge that when conceptual content of the type that figures in ordinary thinking does occur in connection with perceiving, that conceptual content is not part of the perception itself, but rather an aspect of downstream thought occasioned by perceptual input (Dretske 1995; Hill 2022). On that view, we do not strictly speaking perceive high-level properties at all. Rather, we appear to do so because perception is often accompanied by distinct downstream thoughts that represent those properties. That view is often adopted by vision scientists, who often cast seeing as involving only access to low-level visual properties, so that 'vision', 'perception', and related expressions refer in that usage only to the qualitative, apart from any conceptual contents (Pylyshyn 2003; Lande 2023).

This narrow construal of perceiving may be useful for specific explanatory purposes, but we think it is unmotivated as an understanding of what falls under the ordinary conception of perceiving. Again, on that conception, we do see dogs as dogs and hear trains as trains, thereby perceptually representing a wide range of high-level properties. And since conceptualist representationalism is at least coherent—that is, it is open to think that perceptual content is wholly conceptual—it is not required to deny that perception at least involves conceptual content.

It is worth stressing that our explanation of high-level perceiving by appeal to both mental qualities and conceptual content has no bearing on issues about whether perceiving is cognitively penetrable. Jerry Fodor (1983) famously argued that the qualitative character of perceptual states is informationally encapsulated in that it cannot be altered by the conceptual content of accompanying states. Our account takes no stand on this issue, but simply posits that perceptual content in the perceiving of high-level properties involves both mental qualitative character and conceptual content of the sort characteristic of thoughts and desires. And as we emphasize in §IV, in the perceiving of high-level properties it is the qualitative character that must influence the relevant conceptual content of the perceptual state.

While our view holds that mental qualities on their own are responsible for the perceiving of low-level properties, it is likely that some conceptualization occurs almost always even when we just perceive low-level properties. Even when one sees a red patch on its own, one typically conceptualizes what one sees as a red patch. Indeed, such conceptualizing occurs relatively automatically except in degraded cases of perceiving, such as when one is half asleep or in some way significantly distracted or disoriented. But although we do typically conceptualize what we perceive even when perceiving only low-level properties, such conceptualization is not required for low-level perceiving. What's necessary is simply the occurrence of the relevant mental qualities.

That is to say, one could simply see a red patch solely by way of a mental quality, thereby visually representing only the physical color red. But in most cases, one will see a red patch via both the mental quality and relevant perceptual conceptualization, thereby seeing not only physical redness, but in addition seeing that redness as a red patch, red object, or something else like that.

The way mental qualities figure in the perceiving of low-level nonetheless differs significantly from the way they figure in the perceiving of high-level properties. If one perceives a particular perceptible physical color, a mental quality corresponding to that color must figure in the perceiving. But if one perceives a dog, there is a great deal of flexibility as to which mental qualities can figure in that perception. There are limits; one couldn't perceive a dog as a dog by way of a mental quality that represented what's being perceived as having the shape of a bolt of lightning. But there is a very wide range of mental qualities that can readily figure in perceiving a dog.

One can see something as being square, for example, not only by way of a square mental quality, but also by way of a trapezoidal mental quality if one sees the object at an angle. And that might seem at first sight to undermine the claim that the

mental quality responsible for low-level perception must always match the character of the perceived stimulus. But seeing something as being square, whether straight on or at an angle, is a case of high-level perceiving, not low level. It is seeing something as being of a particular type, and that requires conceptualization. When one simply sees a trapezoidal shape in low-level perceiving, that is due to a trapezoidal mental quality, and that shape is not conceptualized as the shape of an object.

There is striking experimental support for distinguishing between perceiving a perceptible property, such as a color, on its own, which on our view proceeds by mental qualities alone, and perceiving it as belonging to some object, which we maintain involves both mental qualities and conceptual content. For one thing, subjects are significantly more accurate and more rapid in assessing color constancy when queried about the color of a piece of paper than when queried only about the color on its own (Arend & Reeves 1986).

But if, as we've argued, each concept corresponds to a roughly circumscribable range of perceptible qualities, might it be that one perceives those high-level properties simply by way of those clusters of mental qualities on their own, for example, as Burnston (2023) has recently urged?

It is unlikely that this proposal can work. For one thing, there's plainly a difference between perceiving that there's a dog and perceiving that there's a collection of qualities that could be associated with a dog's being present, such as when one is presented with a dog mannequin. The former would license the thought that there's a mammal present, whereas the latter would not. It is unclear how a view that appeals to clusters of mental qualities could explain that difference; the present account readily does so.

In addition, on the assumption that there is some type of distinctively high-level perception, the clusters of mental qualities that occur in connection with the perceiving of any particular high-level property will typically be far too varied. Conceptualization is often needed to zero in on just the right high-level property. Likewise, if one sees something in a high-level way, for example, as a train, one will expect under many conditions also to hear it as a train. And it's doubtful that there are cross-modal connections that could explain that regularity if high-level perceiving were simply a matter of complex clusters of mental qualities. Of course, the proponent of this type of cluster-type view might simply deny that we perceive natural-kind properties at all, maintaining instead that the only high-level properties perceived are properties such as 'perceptual gestalts', or collections of low-level properties. But, as we've argued, that is a high price to pay for holding a cluster view, since we see dogs and hear trains as such. So, the cluster view is unmotivated in evaluating the present proposal.

The view that perception involves conceptual content at all is nonetheless sometimes thought to face dispositive objections. In the next section, we turn to what we regard as some of the most pressing of these. For now, we note that many of these objections either simply do not apply to our view or have readily been met.

Consider the argument that we can explain how perceiving differs from nonperceptual thinking only if perception exhibits a type of dedicated content unique to perception (Hanna and Chadha 2011, p. 4, argument #IV). This argument targets only a view on which perceiving exclusively involves conceptual content. On our account, perceiving always also involves mental qualities, and thinking, as on most views, does not. We do count low-level and high-level perceiving as together constituting a single type of psychological occurrence, but that doesn't require that the two subtypes operate in exactly the same way. On our account they belong to a single type because they have something in common, namely, the pivotal role of mental qualities used in perceptual discrimination.

Our view has many resources for distinguishing the conceptual content that figures in perceiving from the type that figures in nonperceptual states such as belief. For one thing, the conceptual content of perception is typically caused directly by mental qualities and typically would not occur without them, whereas belief content need not be so caused. Similarly, the concepts that figure in perception conceptualize what is currently perceived, that is, what is also the cause of one's mental qualities, whereas belief contents are not so constrained.

Our account stresses the difference between perceiving a red patch by way of a mental quality alone and perceiving it by way of a mental quality together with a perceptual conceptualization of it. But might the latter be explained instead by perceiving the patch by way of a mental quality together with a downstream nonperceptual belief about the red patch? The conceptualization we posit of the red patch is indeed belief-like. But, we urge, it is more closely integrated into the overall perception than a downstream belief would be. In particular, the content of the conceptualization that we posit is tightly determined by the representational character of the relevant mental quality, whereas this need not be so for an independent downstream belief.

Another argument against conceptual content in perception maintains that we can perceive items of vastly more types than we have concepts for (Evans 1982, p. 229; Peacocke 1992, p. 68; Hanna and Chadha 2011, p. 4, argument #I). This argument from perceptual fineness of grain often appeals to the case of colors, urging that we perceive far more colors than we can conceptualize. The same seems likely not only for other low-level properties, such as types of odors, but also for some high-level properties, perhaps such as types of trees.

But this argument leaves our account untouched. There are mental qualities for every type of low-level property that we can perceive. So, the objection in effect only addresses views on which conceptual content is the sole representational aspect of perception.

Moreover, the argument fails even to undermine the idea that we can conceptualize every high-level property we perceive. It's true that we don't have a distinct concept for each property we perceive, whether shades of color or species of tree. But we can still capture these fine-grained differences conceptually, using

comparative concepts (Rosenthal 2005, pp. 188-189). Consider colors. Despite not having individual concepts for each distinguishable shade of red, we have concepts for brightness, closeness to adjacent colors, closeness to colors of familiar physical objects, and so forth. Recruiting such comparative concepts enables us to individuate conceptually any shade, and indeed any high-level property as well, no matter how fine grained.

There are, of course, many other arguments against conceptual content in perception, which conceptualists have previously addressed compellingly. For example, infants and nonhuman animals perceive things, though there may be questions about whether they possess concepts of the things they perceive, suggesting we need to posit some type of dedicated perceptual content (Dretske 1995; Hanna and Chadha 2011, p. 4, argument #III).

But, as conceptualists have urged, doubts about whether nonhuman animals and human infants or toddlers possess concepts typically rely on unreasonably demanding notions of concept possession, which require conceptual states to meet strong conditions of rationality and reasoning (Evans 1982; Schmidt 2015). Some, relying on such strong conditions, even contend that linguistic abilities are necessary for concept possession (McDowell 1994).

Such demands overshoot. Conceptual thought is hardly always rational and hardly always lends itself to correct reasoning. Accordingly, less demanding conceptions of concept possession are available and independently compelling. For the purposes of this discussion, we remain neutral about such alternative accounts. By way of illustration, however, one available view holds that, since conceptual states enter into characteristic inferences and can arguably be individuated, at least in part, by their roles in inferences, the capacity for inferring from one thought to another is on its own sufficient for the possession of concepts (Peacocke 1992). Any evidence that a nonlinguistic animal or an infant is capable of passing inferentially from one cognitive state to another would thus be evidence of conceptual content, enabling the conceptualization of high-level perceptual properties. And independently of that, there is rapidly growing evidence that human infants and many nonhuman animals, such as some species of birds, are capable of statistical and other type of inferential reasoning (see respectively Bohus et al. 2023 and Bastos & Taylor 2020).

Issues about concept possession aside, there may seem to be other reasons to hold that perception involves some type of dedicated perceptual content. Block (2023, pp. 278ff) has recently appealed to empirical findings that infants can distinguish colors, but fail on many tasks that would seem to require concepts of those colors. Children under the age of three have difficulty learning color words, for example, and are unable to track objects in respect of their colors when those objects travel temporarily out of sight. Block concludes that perception must have dedicated nonconceptual content.

But this argument does not affect our view. When infants simply distinguish stimuli in respect of their colors, that's low-level perceiving, which on our view takes place by way of mental qualities that represent the colors of those stimuli independently

of any conceptualization. In addition, Block's argument is open to serious challenge. The failure of infants to track objects in respect of their colors may well be due not to a lack of conceptual ability, but instead to limitations in the perceptual processing that enables tracking. It may be, for example, that infants simply lack the attentional resources needed to follow changes in colors. That processing limitation would not by itself speak to whether infants can conceptualize colors, perhaps in relatively rudimentary ways.

Importantly, our account has several explanatory advantages over views that posit sui generis types of perceptual content such as Block's. As noted in §I, theorists who favor dedicated contents rarely give complete accounts of them (Siegel 2010). But when they do give such accounts, it is unlikely that they are workable.

Consider Burge's (2022; see also his 2010) widely discussed proposal that perception represents objects and their properties, including some high-level features such as kind properties, by way of what he calls perceptual referential applications and perceptual schemas. Burge takes these schemas to refer in a way akin to demonstratives to objects, as well as perceptual attributives that characterize those objects in respect of what kind they are. But he denies that any of these perceptual elements are conceptual, and maintains that the perceptual content they involve cannot enter into propositional inference (2022, p. 45).

Burge's main argument that such perceptual content is not conceptual is that simple organisms, from many types of fish to jumping spiders, likely don't possess concepts, but do nonetheless seem to track objects in their environment and to exhibit perceptual constancies, which he sees as the mark of perception (2022, pp. 57ff).

There is a question about whether we can in the end understand the perceptual attributives Burge posits except by appeal to conceptualization. But that difficult question aside, the constancies Burge appeals to can likely be explained as due simply to representational operation of mental qualities. The perceptual tracking of objects need not be a function of the type of object being tracked, but can instead be due to clusters of mental qualities that represent clusters of low-level properties of objects, as Hill in effect argues (2022, pp. 111-113). And it's plain that the creatures Burge appeals to do exhibit mental qualities construed in the representational way we describe.

Burge, along with some others including Block (2023; see also Fodor 2007; Hill 2022), claims that perceptual states lack conceptual content because they have an iconic format, which is taken to differ from the discursive or digital format characteristic of thoughts, desires, and other purely conceptual states. Such an iconic format is often posited to explain a range of experimental data, such as differences in reaction time for tasks such as mental rotation (Shepard & Metzler 1971; see Burge 2022, chapter 9).

This notion of mental format may seem inviting because of an analogy of iconic format to pictures and of discursive format to sentences. And the analogy of conceptual content with sentences is straightforward enough. But it's unclear how to discharge the analogy of mental states to pictures in a way that is explanatory serious. Without that,

the appeal to iconic format is a largely uninformative label, with little explicit, clear theoretical value.

Indeed, it is unclear there is any stable or generally accepted notion of iconicity. Iconic format is often held to lack the compositional structure thought to be typical of conceptual or discursive representations (Fodor 2007). But Burge (2022, especially chapter 9) urges that perceptual icons exhibit a map-like structure that can canonically decompose into collections of perceptual attributives. So, it remains far from obvious how an appeal to iconic format should be understood.

By contrast, our account explains the difference that a distinction between iconic and discursive format appears to be after, but it does so informatively and without impressionistic analogies. Mental qualities represent the stimulus properties they enable us to discriminate, which include the spatial properties of size, shape, and spatial location. So, we can explain whatever analogy might seems to hold between mental qualities and pictures by appeal to the role that mental qualities play in enabling us to discriminate among those spatial properties. And our view in turn helps explain the relevant experimental data. Differences in reaction times in mental rotation tasks, for example, are arguably due to imagined rotation of mental qualities.

These considerations are not by themselves decisive. But putting aside difficulties that face specific types of dedicated perceptual content that have been advanced, there are independent problems for any such proposal. As noted, thoughts and perceptual states both categorize high-level properties in similar ways, so that high-level perceiving can operate in a way similar to inferences among thoughts. A view such as ours on which perceiving and thinking both exhibit conceptual content readily explains such similarities. By contrast, a dedicated view, whether Burge's or any other, cannot by itself explain those connections, which must then be independently stipulated. Moreover, our view does all the explanatory work an appeal to dedicated content can likely do, and does so by positing only the ordinary conceptual contents that on most accounts of thinking and related states we must countenance in any case. So, appeal to dedicated content is best avoided.

There nonetheless remains one major reason that some have urged shows that perception cannot involve the same kind of ordinary conceptual content that figures in thought, to which we now turn.

IV. The Interaction of Conceptual Content and Mental Qualities

Mental states interact in a multitude of ways. If one initially believes that p but then learns from some reputable source that not-p, one typically not only comes to believe that not-p, but also adjusts one's other beliefs accordingly. By contrast, the contents of one's perceptual states typically remain unaffected in that way by changing one's beliefs. It may visually seem to one that the pile of laundry in the corner is a horse even if one has the background belief that there couldn't be a horse in one's room and,

indeed, even if one actually has an occurrent belief that there is no horse there. The perceptual state typically persists despite those beliefs. But if thoughts and beliefs readily interact with and get adjusted in the light of others but perceptual states do not interact with conceptual states in that way, it may seem that perceptual content cannot be conceptual after all.

This consideration is sometimes presented as an objection to views on which we perceive high-level properties by way of the conceptual content of associated intentional states, such as beliefs, which result from perceptions (Siegel 2010, especially section 4.2; Helton 2016, pp. 856-857). But it might seem to apply no less to a view such as ours, on which the conceptual content that figures in the perceiving of high-level properties is a property of perceptual states themselves.

This objection is sometimes cast in terms of exotic phenomena, such as the Müller-Lyer illusion or other visual illusions, and holograms. But as our example of seeming to see a horse illustrates, the issue arises for wholly ordinary perceptual states.

But while perceptions are often unaffected by beliefs, that is by no means always the case. To adapt a hypothetical example from Siegel (2012, p. 202), if Jack puts his wallet and cell phone down on the table, and then sees Jill take a phone call, he may upon looking at his wallet momentarily see it as his cell phone. In such a case, Jack's occurrent thought about phones might cause him to see the wallet as having the high-level property of being a cell phone. Though the content of perceptions does often stubbornly resist being affected by beliefs, high-level perceptual content is indeed sometimes altered by the conceptual content of thoughts and beliefs.

Occurrent conceptual states may occasionally even affect the low-level content of our perceptions as well, though such cases are somewhat controversial and would be relatively rare. Rossel and colleagues (2022), for example, used a matching task to demonstrate that when subjects were led to form an expectation about what objects they would be shown images of and then presented with slightly blurred images of those objects, they assessed those images as being sharper than they actually were. So, even expectations might influence even what low-level properties one perceives. Whether this ever happens is subject to debate.

But our view provides a novel explanation of why high-level perceptual content is often especially resistant to revision, and of why we adjust the content of our perceptions in the light of contrary beliefs far less often than we adjust beliefs in the light of one another. As others have observed, we can and often simply tolerate the presence of conceptual states that are contradictory or, at least, pull in different directions (Armstrong 1968; Mandelbaum 2018). But that aside, our view holds that high-level perceptions not only involve conceptual content, but also relevant mental qualities, which are themselves representational. And the representational character of those mental qualities exerts an additional pull against any adjustment in the light of contrary beliefs.

As noted in §II, representation by mental qualities differs from conceptual representation in important ways. For one thing, representation by mental qualities relies on the discriminability of closed families of stimulus properties, where such discrimination is itself constrained by the sense organs and cortical processing. By contrast, representation by concepts not only doesn't require any such closed family, but is typically open-ended, underwriting a vastly richer range of representational relations than mental qualities exhibit. In addition, conceptual representation can operate in full sentential units, underwriting and reflecting inferential relations among truth-evaluable thoughts and statements. By contrast, the representational properties of mental qualities operate only at a term-sized level, and cannot be a part of sentence-sized representational units.

Consequently, there is a stubborn persistence to mental qualities that stems from their heavy reliance on processing by the senses. Returning to our example involving the pile of laundry, if a cluster of mental qualities accompanies conceptualizing what one sees as a horse, the difficulty in disregarding that cluster of mental qualities will make it accordingly difficult to dismiss that conceptual content, despite one's having contrary background beliefs.

It is in any case plain that nonperceptual conceptual states do sometimes affect high-level perceptual content in just the way that nonperceptual conceptual states affect one another. That is exactly what our view predicts. Because both mental qualities and conceptual states have representational properties, one could expect on our view that nonperceptual conceptual states might even occasionally influence low-level perceptual content. But one would also expect that it would be relatively rare, since the representational properties of mental qualities differ in type from conceptual representational properties. By contrast, one would expect that conceptual states would affect high-level perceptual content somewhat more often, since high-level perceiving is itself a matter of conceptual content. Our account explains in a natural and convincing way how perceptual states do interact with nonperceptual states that have conceptual content. No other account does.

Despite the difference between the representational natures of conceptual contents and mental qualities, mental qualities can and do influence the conceptual content of beliefs and desires in a way akin to inference, an observation that has also been made in connection with so-called nonconceptual content (Heck 2000, pp. 504-506; Schmidt 2015). Indeed, the representational properties of mental qualities must affect the conceptual contents of beliefs and desires if we are to explain how a mental quality of a red patch reliably leads one to conceptualize in perceiving a red object or to think that there's something red in front of one, or how a mental quality of a suitable red and round shape reliably leads one to conceptualize in perception or think there's a tomato in front of one. Let us call such relations quasi-inferential relations. When one tokens a mental quality of red in perceiving a red object, one is disposed to form the conceptual content that something red is present. And if the mental quality is of a suitable shade and shape one will be disposed to form the conceptual content that a tomato is present.

We describe dispositions of this sort as quasi-inferential, because like inferences they take one reasonably reliably from a mental state of one type to a mental state of another. But the dispositions are quasi-inferential, because the state that prompts the disposition is qualitative, and has no conceptual content, whereas both states in a proper inference are conceptual. Still, the resemblance of these dispositional connections to inference, strictly speaking, is strong because it is the representational aspect of the mental qualities that determines which conceptual content is disposed to result. Such quasi-inferential connections go from mental qualities to the conceptualization of what is perceived. And that can involve low-level properties or high-level properties or both.

Some have denied that there can be representational content that is not conceptual on the ground that, if there were such content, it would not be able to stand in inferential or rational relations to conceptual states (McDowell 1994). But once we take into account that mental qualities represent in a way different from conceptual content, and so stand in a different type of representational relation to such content, that objection evaporates.

This account of how mental qualities and conceptual content interact representationally has many other explanatory benefits as well. Block (2023, pp. 179ff), for example, holds that if perceptual content were conceptual one would expect it at least sometimes to exhibit truth-functional compound structures, such as negation, disjunction, conjunction, and conditional. But, Block observes, perceptual content doesn't ever seem to exhibit any of those compound structures (see also Burge 2022, pp. 190ff). One cannot, he urges, perceive something as having the conditional property of being round if red. Block concludes that perception does not exhibit conceptual content.

But perceiving could readily exhibit conceptual content even if it doesn't exhibit all the features that conceptual content exhibits in thinking. And our account readily explains why the conceptual content that does figure in perceiving would likely not exhibit truth-functional structures, as Block notes. The representational character of mental qualities doesn't accommodate any such compound truth-functional structures. Mental red, for example, represents perceptible red, but it does not represent sententially. So, it cannot represent that perceptible green is not present. And though the conceptual content of high-level perceiving is sentential, its interactions with mental qualities, which represent in a way that is not sentential, prevents perceiving from having conceptual contents that reflect compound sentential structures.

One might worry that the quasi-inferential connections we have described are too loose. For any given dog or horse or tree or other object of any type, it may seem that there will simply be too many clusters of mental qualities that would dispose one to conceptualize what one perceives as a specific type of object. If so, the relation between clusters of mental qualities and conceptualizations in respect of types of object or high-level property would be too underspecified to be workable.

There are two distinct issues here. One is whether we can, in a neat and exhaustive way, specify the clusters of mental qualities that quasi-inferentially imply conceptualization in respect of a particular high-level property. Obviously we cannot. But that is not what matters here. What matters is there is compelling reason to hold that there are clusters of mental qualities that do dispositionally result in particular types of conceptualization, and so as we are putting things quasi-inferentially imply those conceptualizations. And it is undeniable that clusters if mental qualities do dispositionally result in such conceptualizations, even though we often can't specify those connections in anything like a precise way.

Indeed, there must be. The only way we have to tell that there is, for example, a dog or a tree in front of one is by being presented with a suitable cluster of visual low-level properties. Environmental factors often also contribute to how we conceptualize something given a particular cluster of low-level stimulus properties. An object seen at a distance as presenting a particular cluster may well be conceptualized differently if it's in a farmer's field or a busy city street.

There are those who seek to explain how high-level representations operate not by appeal to the interaction of representational mental qualities and conceptual content, but by invoking other mental factors (for an overview, see Nes, Sundberg, & Watzl 2021). Some, for example, hold that the conceptual contents of perception and thought occur in different locations in some posited mental architecture (Mandelbaum 2018). Such architectural considerations wouldn't preclude the interaction of conceptual content with mental qualities that we posit. But without that interaction or some equivalent mechanism, it is altogether unclear how any such architectural considerations is more than a label for the difference between perceiving and thinking, lacking in explanatory power. We conclude that no other account explains in an informative and natural way how perceptual states not only differ from nonperceptual states, but also interact with them.

Conclusions

We have developed and defended an account of perception that appeals to two independent but interacting types of mental representations. Our aim has not been to demonstrate decisively that this view correct, but to argue that it is a reasonable contender, and that it can withstand a wide range of potential objections.

We noted at the outset that the question of how high-level and low-level perceiving operates has largely been displaced by a focus on the question of which high-level properties we do or even can perceive. What, then, does our view tell us about that second question? As we have argued, we typically perceive things in respect of at least some high-level property, howsoever minimal. But we couldn't ever perceive things in respect of all their high-level properties. If one's best friend is a chef, one might typically see the friend as a person, or as a friend, and perhaps even sometimes as a chef. Our view readily explains when and how one perceives various high-level

properties. We do so when we conceptualize what we perceive in respect of those properties.

One might balk at the claim that high-level perceiving is a matter of how we conceptualize what we perceive, since we can conceptualize anything we perceive in seemingly endless ways. But given the great variety of properties that have been regarded as figuring in high-level perceiving, it's not unreasonable to see high-level perceiving as relatively unbounded in this way.

And our view not only captures that relatively unbounded character, but also holds that there are constraints that tie the conceptualizing in high-level perceiving to the perceptible properties represented by mental qualities. Suppose one sees something as being a desk that belonged to a particular person; that's how one conceptualizes what is seen. Conceptualizing it as a desk must answer to the perceptible properties of what one sees, but its previous ownership is also an aspect of how one sees the object, and hence an aspect of one's high-level perceiving. Some conceptualizing in high-level perceiving must answer to constraints imposed by mental qualities, but not all.

Our view accordingly explains not only how one perceives particular high-level properties, but also which properties and why. All perceiving involves mental qualitative character construed as representational, and high-level perceiving always also involves conceptual content, at least some of which richly interact with the relevant qualitative character.

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