

Smelling Lessons

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Abstract

Much of the philosophical work on perception has focused on vision. Recently, however, philosophers have begun to correct this ‘tunnel vision’ by considering other modalities. Nevertheless, relatively little has been written about the chemical senses—olfaction and gustation. The focus of this paper is olfaction. In this paper, I consider the question: does human olfactory experience represent objects as thus and so? If we take visual experience as the paradigm of how experience can achieve object representation, we might think that the answer to this question is no. I argue that olfactory experience does indeed represent objects—just not in a way that is easily read from the dominant visual case.

Keywords: Non-visual perception – Olfaction – Representation - Objects of perception

1. Introduction

In the philosophy of perception, discussions of visual experience have been the norm, with those of the other modalities providing a rare exception to the rule.¹ But there’s the scent of change in the air, the beginnings of a movement to correct this ‘tunnel vision’. More and more, philosophers are turning their attention to modalities other than vision.² In this paper, I do just that. I consider olfaction and, in particular, the question of whether human olfactory experience represents objects as thus and so. It is commonplace to hold that visual experience represents objects. After all, visual experience displays a rich form of perceptual organization that allows us to think and speak of individual apples and oranges, particular cats and dogs. Olfactory experience lacks such organization. If we take this organization as necessary for the representation of objects, we are led to the conclusion that olfactory experience does not represent objects. But we need not, and ought not, accept this conclusion. Olfactory experience does indeed represent objects—just not in a way that easily read off the dominant visual case.

2. Visual objects and visual experience

It should come as no real surprise that philosophers have focused so much on vision. The philosopher’s preference reflects human preferences in general. Ask anyone who enjoys the use of all of the five senses which one they would give up if they had to, the answer is rarely, if ever, going to be vision. We are visual creatures, as they say. And there is no doubt that we get a lot of information from vision, including a wealth of information about the properties of apparent three-dimensional objects. Visual experience achieves a rich predicative structure; it is ‘object-rich’. It presents the world, *indeed particular things in it*, as having certain qualities and reports on the arrangement of these things before us. Consider the following example. Recently, while playing Lego with my niece, I took stock of our building supplies and noticed that a blue block had fallen on the floor. Looking at the block, it appeared that there was an object—namely, the block—and that it had certain properties—blueness, rectangularity and so on. It appeared at a certain determinate location before me, against a

¹ See, for example, O’Shaughnessy’s (1957) discussion of touch and Strawson’s (1959) discussion of audition.

² Drawing on Strawson’s famous chapter in his *Individuals* (1959), philosophers have become interested in the question of whether, and to what degree, auditory experience is spatial in nature, as well as in questions concerning the nature of sounds and other auditory objects. See, for example, Casati and Dokic (1994), Nudds (2001) and O’Callaghan (2007, 2008, 2010a, b). Touch has also received recent attention, with similar questions about the spatial nature of tactile experience dominating a major issue of the discussion. See, for example, Martin (1992) and O’Shaughnessy (1989). As we will see, olfaction has been considered by a small number of philosophers and raises equally interesting questions for us to consider.

roughly uniformly colored background, and my experience placed blueness and rectangularity 'on', or 'in', it. After picking up the runaway block and returning to surveying our next choice, my experience presented a multiplicity of objects. That is, it presented individual objects—the blocks—and, in addition to 'holding their own' colors and shapes, they appeared in such a way as to bear spatial relations to one another. There is a way, then, that *things* appeared in my visual experience.

This is not to say that vision is always like this. There are visual experiences that fail to be object-rich. In his *Seeing and Knowing* (1988), Dretske argues that we do not count as seeing an object unless we can distinguish it from its surroundings.³ He does, however, acknowledge that there are cases in which we see *something*, but not in such a way as to distinguish it from its surroundings. He gives the following example:

Touch your nose to a large smooth wall and stare fixedly at the area of the wall in front of you. There is not much doubt about the fact that you see the wall, or at least a portion of it. It is also fairly clear that you do not differentiate it from its immediate surroundings. In this position it has no environment, and so one can hardly be expected to differentiate it from one. I call this a *limiting case* because, normally, we see things in an environment, against a background, or surrounded by other things (which we also see). (1988, 26)

Other examples include the experience of staring at the ceiling while lying in bed or the experience one has when looking up at a cloudless summer sky. In these cases and Dretske's, you are presented with a spatially undifferentiated, uniformly colored expanse. In none of these experiences do we have the kind of spatial presentation we have in the case in which we are looking at a collection of Lego blocks spread across the table. In the sky case, it is unclear that we are presented with anything we would call an object. And, in the wall and ceiling cases, we are not presented with multiple objects, nor are we presented with any single object in such a way as to differentiate it from its immediate surroundings as well as other things. For our purposes, it is enough to note that visual experience *can* individuate objects more finely than this, as in the Lego case. It remains safe to say, however, that many, if not most, of our visual experiences are object-rich. The *typical* visual experience, then, is the kind had in the Lego scenario: one that presents us with relatively bounded particulars and predicates properties of them.

Dretske's condition on seeing is reflected in empirical theories of vision in the form of widely accepted principles of perceptual organization that, in the case of visual experience at least, allow for object individuation and object recognition. Underlying these principles is the idea that mere feature-extraction is not enough for object perception. Object individuation involves *grouping* of perceptual features. This involves parsing the scene before the perceiver, providing information about the *edges* or *boundaries* of sensory individuals. In turn, perceptual grouping allows for *figure-ground segregation* and the ability of a perceiver to distinguish objects not only from each other, but also from their background. Object recognition draws on features of object individuation and involves principles of *tracking*, *persistence* and *amodal completion*. Sensory individuals can be tracked across space and time, survive change to their apparent properties and are perceived to continue uninterrupted behind other occluding objects.

In what follows, I set aside questions of object recognition. I will be concerned with questions of object individuation—in particular, the question of whether human olfactory experience achieves it and what the

³ Dretske is not alone in upholding this kind of view. Shoemaker (1996), for example, claims of perception in general: "[s]ense perception affords 'identification information' about the object of perception. When one perceives, one is able to pick out one object from others, distinguishing it from the others by information, provided by the perception, about both its relational and nonrelational properties" (205). Similarly, Sanford (1970) holds the view that a kind of spatial discrimination is constitutive of seeing objects. He claims: "two balls [, a blue one and a yellow one,] appear to be distinct only if they appear to be in different places" (80), that "although there is a kind of distinction by properties, the difference in properties is relevant only because it marks a difference in place" (79).

answer to this question can tell us about the representation of objects in olfactory experience.⁴ As our Lego example shows, visual experience certainly does. In that case, visual features were packaged in space, and I was able to individuate visual objects due to their spatial characteristics. My experience grouped the colors and shapes presented to me at particular locations in the scene before me and it did so in such a way as to report on the edges and boundaries of the objects to which those properties were predicated. In turn, my experience presented any single block in such a way as to allow me to distinguish it, or pick it out from, an array of other blocks as well as their common background. Unlike this case, Dretske's wall case does not report on the edges or boundaries of the object presented and does not allow for figure-ground segregation. It does not achieve grouping.⁵ No particular thing appears to be before you—although, as Dretske notes, few would deny that something or other does. What we learn from comparing the two cases is that the object individuation of empirical theories provides the basis for demonstrative thought about objects as we normally conceive of them—ordinary objects like apples and oranges, Lego blocks and the like. In presenting sensory individuals as distinct from other sensory individuals as well as a common background, perceptual experiences allow us to think and speak of any of these objects as *this*, or *that*, thing before us.

We can characterize the difference between our experiences in each case as follows. In the Lego case, one's visual experience presents an array of apparent particular objects. In the wall case, no particular object appears to be before you—although it is clear that *something* does. As we will see, olfactory experience is akin to the latter. Let's now turn to olfactory experience.

3. Olfactory Objects in Olfactory Experience?

Let me begin with an important point about strategy. First, what I will say in this section regarding olfactory phenomenology (e.g., issues of apparent property location and object presentation) obviously applies to non-representational, yet world-directed, views. I will, however, restrict my attention to constructing a representational view of olfactory experience. Although the representational model of experience is not one that is universally held, it is certainly widespread. For this reason, then, I will not consider arguments against representational views in general or for their world-directed counterparts. That said, although I will not discuss other world-directed views, I take it that my conclusions regarding olfactory content could be appropriately translated for other world-directed views and, if were so translated, would preserve the contrast I make below with visual-based object perception.

We can think of the representational content of an experience as the way the world appears to a perceiver when she has that experience. If the world is that way—if the representational content matches the world, we might say—then the experience is *accurate* or *veridical*. Otherwise—if the content doesn't match the world—it is *inaccurate* or *non-veridical*. It is commonplace to suppose that visual experience is world-directed and, in particular, that it has representational content. Given our earlier observations about visual phenomenology, visual content is perhaps better characterized as the way that *things* appear to a perceiver when she undergoes a visual experience. In what follows, I will uphold this way of talking about content—as constituting (at least in part) the way that objects appear to a perceiver when she undergoes a perceptual experience.

We have, then, two questions before us:

- (1) Does olfactory experience achieve the kind of object individuation capable of visual experience?

⁴ In what follows I will drop 'human' from 'olfactory experience'. The reader should understand that, unless otherwise noted, 'olfactory experience' refers to human olfactory experience.

⁵ Due to the apparent uniformity of the colored expanse, one might characterize your experience in terms a very weak notion of grouping. But such a weak notion does not imply the robust form of object individuation that, as our Lego case shows, other visual experiences can achieve.

(2) Does olfactory experience represent objects?

Restricting ourselves to the typical visual experience (as I have called it), we know that visual counterparts of these questions each get a 'yes'. The typical visual experience is, after all, object-rich; it allows us to pick out particular objects in our environments. But this is not the case for olfactory experience. So (1) gets a 'no'. Still, as I will argue, this does not commit us to answering (2) with a 'no' as well. Although olfactory experience does not achieve the kind of object individuation capable of visual experience, this does not mean that olfactory experience fails to represent objects as thus and so.

The notion of representational content I introduced above is a phenomenological notion of content. Although the phenomenological notion of content is not the only notion of content at work in the philosophical literature on perception, it is arguably the most common—and the kind of content involved in the view of olfactory experience that I will construct. Given that the representational content of an experience is the way the world appears to a perceiver when she undergoes that experience, a characterization of olfactory content should honor the phenomenology of olfactory experience—that is, what olfactory experience is like. That is to say, there is a phenomenological constraint on an assignment of content of this kind. I will turn briefly to another available notion of content below; unless otherwise noted, however, all references to content will be to phenomenological content.

What, then, is olfactory experience like? As we have seen, the typical visual experience has a rich predicative structure. It presents the world, *indeed particular things in it*, as having certain qualities. Olfactory experience, on the other hand, seems disengaged from any particular object. Consider the following example. You walk into the kitchen and are met with a smell that you have never encountered before. It stops you dead in your tracks. The smell is extremely pungent and extremely unpleasant. Unbeknownst to you at that moment, a durian fruit has just been sliced open. (Someone thought it might be 'interesting' to try.) It is only once you have been told what is responsible for the horrendous smell that you are able to attribute that property to any ordinary object around you.⁶ This fact alone puts pressure on the view that olfactory experience represents ordinary objects. But there is another option. We might think that your olfactory experience *does* provide the basis for beliefs or claims about the properties of an object in the air—an emanation of molecules from the durian or a durian odor, as I will call it. After all, anyone who has plugged her nose when met with a nasty smell is aware that the smell is somehow carried in the air. Unlike the ordinary objects case, then, we might think that there is an initial, phenomenological reason in favor of this second proposal. But if we consider it more closely, we see that this proposal also falls short. The olfactory property distinctive of that odor is not packaged in space in such a way as to allow you to determine where it is and where it is not. If the odor did not cover the whole room, for example, you would not be able to tell. The durian smell simply pervades. Now, this is not to say that we might be able to move around the room and determine where the smell is instantiated and where it is not. But, taken minimally, olfactory experience only ever allows you to smell that the durian smell is instantiated—perhaps at the undifferentiated location of 'here' but not by what in particular.⁷

⁶ In what follows, I will use 'smell' in its nominal position to refer to an olfactory property, or a property presented in olfactory experience. In everyday usage, 'odor' is also used to denote such a property. I will, however, restrict my use of 'odor' to denote a kind of object—in particular, those gaseous emanations that ordinary objects like roses give off.

⁷ This is not to say that humans are never capable of minimal olfactory experience with more organization. We are; but only ever in the highly controlled circumstances of the laboratory and when fitted with the appropriate apparatus on our noses. In those circumstances, humans are able to determine the direction that an odorant is coming from. See, for example, Porter et al. (2005) and von Békésy (1994). Because my interest is the kind of olfactory experience we have day to day, I will not consider these rare circumstances.

Nor does olfactory experience display any more organization in circumstances where more than one smell is instantiated. To see that this is so, consider two circumstances⁸:

Full Cover: You try to mask the lingering smell of durian by spraying some lemon air freshener over the room. You succeed in covering the whole room but, as is often the case with stubborn lingering smells, you still smell the durian. It now smells like lemon; but it also still smells like durian.

Miss-a-Spot: You try to mask the lingering smell of durian by spraying some lemon air freshener over the room. You do not succeed in covering the whole room; you miss a spot by the sink. It now smells like lemon; but it also still smells like durian.

Here we have two situations in which the properties of odors are, *in fact*, arranged in different ways in the space before you. But, if you were to find your self in each of these situations, would it *appear* as though the circumstances were different? It would not. Standing in the kitchen and taking a sniff, you wouldn't be able to tell whether you were in *Full Cover* or *Miss-a-Spot*. In each case it now smells lemony. And it also still smells pungent. But your experience does not report that the smells are arranged in any particular way. So, if, after a brief exit from the room, you went from being in *Miss-a-Spot* to being in *Full Cover* you would not notice the difference. Unlike our visual example, your olfactory experience would not account for the difference with a change in predication—or, to put it in a weaker way, with a change in where it places the features in question. In both *Full Cover* and *Miss-a-Spot*, your experience reports 'pungent and lemony here', but nothing more.

What this further case illustrates is that olfaction cannot solve the Many Properties Problem—namely the problem of distinguishing between circumstances in which the same properties are instantiated but in different arrangements. Vision can solve this problem. So, for example, visual experience can distinguish between the circumstance in which you are presented with a green circle to the left of a red triangle and the circumstance in which you are presented with a red circle to the left of a green triangle. It does so by parsing the scene before your eyes, grouping visual features together in particular objects. But as our consideration of *Full Cover* and *Miss-a-Spot* has shown us, olfactory experience cannot achieve the same. Not only, then, does olfactory experience fail to group properties when there is a single odor on the vicinity; it also fails to do so when there are multiple odors around. This failure results in the additional failure to distinguish between *Full Cover* and *Miss-a-Spot*. To be sure, in each case you are able to distinguish the durian smell and the freshener smell; but your experience does not allow you to discriminate the particular objects that bear these properties.^{9,10}

Where are we, then? Earlier I introduced us to the notion object individuation. Drawing from the visual case, object individuation is achieved by an experience insofar as it *groups* perceptual features and in such a way as to represent the *edges* or *boundaries* of groupings and a *distinction between figure and ground*. As we have seen visual experience is capable of such individuation and its being so allows for a rich spatial representation in which properties are predicated of individual things at determinate locations in the visual field. But, as our olfactory examples have shown us, olfactory experience does not achieve object individuation. In the single-smell case (just the durian smell), we saw that, although we can distinguish that the durian smell is present, our olfactory experiences do not report on the edges or boundaries of that instantiated property, nor do we get any information about figure and ground. Similarly, in each of the two-smell cases, *Full Cover* and *Miss-a-Spot*, although we can distinguish both the durian and lemon smells, our olfactory experiences do not group these properties together in such a way as to allow us to distinguish between the two circumstances. In neither case do

⁸ I use this form of example in other papers, including Batty (2010) and Batty (forthcoming). As I take it to be a particularly striking one, I rely on it again here.

⁹ There might also be a difference in the perceived intensity of the lemony smell in each case—given that, in *Miss-a-Spot*, there more of the lemony odor around. But, again, that would not amount to a difference in terms of the organization of the properties involved.

¹⁰ In a footnote, Clark (2000, p. 79) also suggests that olfactory experience cannot solve the Many Properties Problem. Smith (2002, p. 138) also makes the same point—although he does not refer to the problem as such.

we get information about the edges or boundaries of the instantiated properties, nor do we get any information about figure and ground. To question (1) of earlier, then, we get the answer 'no'. As a result, unlike the typical visual case, olfactory properties are not predicated of individual things at determinate locations before you. Olfactory experience seems to tell us merely that certain olfactory properties are instantiated at the undifferentiated location of 'here'.¹¹

Given its failure to make the achievements of vision, we must now consider (b). That is, we must consider whether olfactory experience also fails to represent objects. Philosophers have been of three minds about the answer to (b). There are:

- (i) those who have suggested that olfactory experience is merely sensational (Peacocke);
- (ii) those who have argued that a sensational view of olfactory experience is the *prima facie* view but that it is, in fact, represents objects (Lycan);
- (iii) those who have argued that that a representational view of olfactory experience is the *prima facie* view and it, in fact, represents objects (Perkins).

Although discussions of olfaction in the philosophical literature have been few, the suggestion that olfactory experience seems merely sensational is made on more than occasion. In the opening chapter of his *Sense and Content* (1983), Peacocke suggests that "a sensation of [smell] may have no representational content of any sort, though of course the sensation will be of a distinctive kind" (3). Similarly, Lycan claims that "phenomenologically speaking, a smell is just a modification of our consciousness, a qualitative condition or event in us" (2000, 281), "lingering uselessly in the mind without representing anything" (1996, 145). I take it that is safe to interpret Lycan as drawing on the same considerations of perceptual organization that our durian examples helped unearth. Smells seem disengaged from any particular object and so, we might think, linger uselessly in the mind without representing anything. Similarly, it is relatively safe to interpret Peacocke's suggestion as drawing on similar, if not the same, considerations. Still, even if these considerations are not behind their respective remarks, they remain understandable given what olfactory experience is like.

Now, it's important to note Lycan does go on to argue that olfactory experience is indeed representational, but the notion of representation he employs is not our phenomenological notion. According to Lycan, olfactory experience represents both odors and ordinary objects but at differing levels of representation. At an initial level of representation, olfactory experience represents odors; at a second level, it represents ordinary objects. Insofar as we might think that there is something both correct and incorrect about a situation in which a rose odor is present but no rose, this view respects our judgments. On one level, the associated experience is veridical; on another, it is non-veridical. But Lycan indicates that the notion of content at work here is a teleological one. He claims: "smells represent adaptively significant environmental entities, and they also represent odors. In fact they represent the environmental entities *by* representing odors" (1996, 147). This teleological notion of content supports the idea that olfactory experience represents things like roses and rose odors, and seemingly *as such*; but it is not the notion of content under consideration.¹²

Unlike Peacocke and Lycan, Perkins (1983) claims that the *prima facie* view of olfactory experience is one according to which smells are attributed to objects. In an explicit application of the phenomenological constraint

¹¹ I adopt the use of 'undifferentiated' here from Matthen (2005, p. 284).

¹² Matthen (2005) draws attention to another notion of content that is free of ties to phenomenology. He cites research that supports the idea that the visual system consists of at least two sub-systems each of which provides information for the perceiver to use. These are, as he puts it, the motion-guiding system and the descriptive system. The former guides agent motion and action while the latter provides information concerning the descriptive features of objects that is employed largely for epistemic purposes. Among the differences between these two systems, Matthen urges, is that the motion-guiding system operates at a largely unconscious level. The descriptive system, on the other hand, delivers up conscious states of visual awareness. The notion of content that goes with the latter, then, is one that is tied to phenomenology. The one that goes with the former is not. More importantly, we can make sense of the idea that a perceiver is subject to states with both of these kinds of content—without conflict.

on content, Perkins claims of the experience one has in the presence of an odor: “[o]lfactory perception itself, imagined as articulating its immediate content, declares the sensuous, olfactory quality—which is how the odor smells to us—to *be* the character of the odorous effluvium” (67). Perkins is a projectivist, and error theorist, about olfactory qualities; they are in fact properties of one’s experience. Still, as he tells us, these properties are attributed in experience to the particular odors in our environment. Like Lycan, then, Perkins claims that odors figure into a characterization of the content of olfactory experience. He differs from Lycan, however, in suggesting that the phenomenology of olfactory experience supports such a view.

As we have seen, however, olfactory phenomenology does not support this view. We need only revisit our durian case too remind ourselves of why. Although we can distinguish that the durian smell is present, olfactory experience does not achieve what is necessary for the representation of particular objects. How Perkins goes astray, it would seem, is by supposing that olfactory experience is analogous to its visual counterpart. Peacocke and Lycan do not; but I suspect that they have more in common with Perkins than we might initially think—that is in holding up the dominant visual case as paradigmatic. For, if we think that the representation of objects requires the kind of perceptual organization present in our Lego case, we are bound to suggest that olfactory experience fails to be representational—that is, that it is merely sensational.¹³ The question is: is this right? I don’t think it is. A representational view is appropriate for olfactory experience.

My own view adopts considerations in favor of both Lycan’s (ii) and Perkins’ (iii), but remains distinct from each. That is, I agree with Lycan that the phenomenology of olfactory experience is in some sense impoverished when compared to visual experience. Where I depart from Lycan is in my claim that this does not preclude its supporting the view that it has content. In this way I agree with Perkins. Where I depart from Perkins, however, is in my claim about how the objects of olfactory experience are represented. Perkins holds that olfactory experience represents particular objects and, for that reason, his view supports an object-involving view of its content. According to object-involving views of content, the very object before you enters into the content of your experience. (Call this object *o*.) On object-involving views, content has the following form: *o* at location *L* is *F*, *G*, and so on.¹⁴ The idea is that object-involving views preserve the particularity of perceptual experience. These views are contrasted with abstract, or existentially quantified, views. According to abstract views, no particular object enters into the content of experience. On abstract views, content has the following form: there is some object *x* at location *L* and *x* is *F*, *G*, and so on. I have argued that, contra Perkins, olfactory content cannot support an object-involving view. As I will go on to show momentarily, olfactory content is abstract.¹⁵

Before we consider this view, we need to settle a preliminary question: why not simply go for a view according to which olfactory experience is merely sensational? That is, why not simply go with Peacocke’s (i)?

¹³ As we now know, similar considerations ought to rule out counting Dretke’s limiting visual experience as representational.

¹⁴ Here I consider a simple case in which a single object is before you.

¹⁵ The abstract view is defended by Davies (1991; 1992; 1996) and McGinn (1982). A version of the object-involving view is defended by McDowell (1993, 1994). The considerations brought in favor of each of these views in the visual case are as follows. Consider the visual experience you have when you look at an orange on the counter. According to abstract theorists, it is possible that experiences of two qualitatively identical, yet distinct, oranges might be phenomenally indistinguishable. Indeed, a perceiver might hallucinate an orange before her and yet have that experience be phenomenally indistinguishable from a veridical experience of an orange. To preserve this possibility, the abstract theorist proposes that the content of each is content into which no particular object enters. The object-involving theorist, on the other hand, claims that such a view ignores the particularity of visual experience. It’s not that *some* object appears to be orange, oval, and so on. *This one* does! The very orange before you, then, must be a part of the content of your experience. While not proponents of the object-involving view of content per se, others argue against the abstract view by similarly directing our attention to the particularity of visual experience. Burge (1991) and Bach (1997), for example, argue for a view according to which visual content has a similar structure to an open sentence. A gap at subject position gets ‘filled’ by the particular objects perceived. And, although not content theorists of any stripe, Campbell (2002, ch. 6) and Martin (2003) argue that visual experience is constituted, in part, by a relation to particular things in the world. As I indicate in this paragraph, this debate between abstract and object-involving accounts simply does not arise for olfactory experience.

Although this view might seem initially tempting, we ought to avoid it for additional, non-phenomenological, reasons. Although it differs from visual experience in terms of the organization it is capable of exhibiting, there is no doubt that the olfactory system acts as a means of gathering information about the world. We use information about the instantiation of smells to inform the decisions we make and the actions we take. Only this afternoon I was faced with an example of just this. Upon opening the fridge to look for something to eat for lunch, I was met with a very bad smell. I immediately looked for what had gone bad in order to throw it away. The instantiation of a certain smell, then, informed my decision to avoid ingesting a certain food, to avoid it infecting other things in the fridge, and to move to get it away from myself and the other food. Although olfactory experience does not present us with particular objects, olfaction clearly constitutes an informational system. Olfaction has this in common with vision as well as the other sense modalities. As guides of behavior and grounds of belief, the experiences of the sense modalities form a common kind. A shared representational nature provides a way of accounting for this commonality.

This is made even clearer if we consider our olfactory experiences along with those of other animals. The hammerhead shark, for example, enjoys a sense of smell that is directional. Given its extremely wide head, a stimulus coming from the extreme left of the hammerhead's head will arrive at the left nasal cavity before it does the right. If the stimulus is blood, the hammerhead's response is instantaneous—it turns in the direction of its source. We are quite happy to admit that the hammerhead represents the location of a food source; that its olfactory system functions in such a way as to provide it with those representations. To be sure, we cannot match the hammerhead's feats. Still, there is no doubt that our olfactory experiences function like theirs to guide behavior and action. It would be strange, then, to conclude that the hammerhead's olfactory experiences are representational while ours are not. The more plausible view is one according to which our olfactory experiences differ from theirs in degree and not in kind.

We have good reason, then, to think that olfactory experience is representational. Although the considerations we have relied on in coming to this conclusion do not hinge on the phenomenology of experience, this should not lead us to abandon the phenomenological constraint on content. Other considerations have led us independently to the conclusion *that* olfactory experience has content. But, we are still left with the question of *what* content it has. And this is where the phenomenological constraint can go to work. In introducing the notion of phenomenological content, I drew attention to a neutral formulation of the constraint: the content of olfactory experience must respect what olfactory experience is like. Although olfactory experience does not 'pin' properties onto any particular thing, it certainly seems as though we are coming into contact with something external to us. As I indicated earlier, the simple, and spontaneous act of plugging your nose when in the midst of an unpleasant smell is evidence that you, previous to doing plugging, experienced the smell as not only something external to you but also as something that gets carried into you on your breath. To be sure, we rarely notice our breath and, as a result, might worry that it might seem phenomenologically incorrect to say that we experience breathing as a way of literally taking in portions of the world. But an exception is the smelly case—and in particular, the unpleasant smelly case. What this latter shows is that olfactory experience in general involves our being directed towards the world in a significant way—even if we are not directed towards any particular object in it. We just aren't as resistant to the experience when the properties presented to us are ones that we find pleasant. Although not as rich as the typical visual case, then, there is something for the phenomenological constraint to work with in the olfactory one.

Nevertheless, although it would seem that olfactory experience directs us towards the world, we might still wonder whether it presents objects in it. For example, we might think that it is simply the *world* that appears to be thus and so—and not any object in it. Here Dretske's limiting visual case (i.e., the 'wall case') proves

instructive. In this visual case, where it seems as if no particular thing is visually presented, we do not conclude that your visual experience fails to attribute properties to objects. It does, just not in a way that allows you to pick out the particular object presented. As I put it above, your experience reports that *something* before you is colored. Why suppose that it is any different in the olfactory case? Our consideration of *Full Cover* and *Miss-a-Spot* has shown us that olfactory experience fails to exhibit the kind of perceptual organization present in the typical visual case. But it has also shown us that the typical olfactory experience is akin to the limiting visual one. Both are present an undifferentiated expanse of properties (a single property, in the visual case). If we have reason to suppose that the limiting visual experience attributes properties to objects, as I have argued we do, then we have equal reason to think that the typical olfactory experience does as well. Claiming that each gives us no information about the layout of objects around us is one, fairly obvious, thing. It is another thing entirely to claim that neither gives us *any* information about objects.

The plausible view, then, is one according to which olfactory experience in some sense predicates properties to objects. But in *what* sense? Not in the way that visual experience can and does. Here another point of earlier discussion is instructive: the debate about abstract versus object-involving contents. We know that, in Dretske's limiting case, there is little doubt that something appears before you—even if that thing is not presented in any way that allows you to pick it out from its immediate surroundings. If we consider this claim against the background of the debate between abstract and object-involving content, it is clear that this limiting case is one for which the notion of object-involving content is unsuitable. Although either the object-involving or abstract accounts are an option in the typical visual experience, only one allows for the failure of perceptual organization and, as a result, lack of a particular apparent object in the limiting visual case.¹⁶ That view is the abstract view. In the wall case, then, the content of your visual experience is unquestionably abstract: *there is something or other before you that is colored*. Similarly, an object-involving account of olfactory content is unsuitable. Olfactory experience fails to attribute smells to particular objects for the very same reasons that Dretske's limiting visual experience also fails to do so. But, as we just saw above, this is not to say that it fails to attribute smells to objects full stop. Just as an abstract account of Dretske's limiting visual experience is a natural fit, an abstract account of olfactory content is equally so. A version of it can respect that smells are attributed objects but in no way that allows us to pick out the individual objects that instantiate them. According to what I call the *abstract view of olfactory content*, although potentially rich in terms of the properties it represents as present in your environment (as rich as the situation we are in and our discriminatory abilities allow), olfactory experience only ever predicates properties to just one object—and not in any way that enables us to pick that object out. That is to say, olfactory experience predicates properties to 'something we know not what' at the undifferentiated location of 'here'. On the abstract view, then, olfactory experience represents that there is something or other here with certain properties. Your experiences in *Full Cover* and *Miss-a-Spot*, then, both have the following content: *there is something or other here that is pungent and lemony*. And that seems just right.¹⁷

4. Conclusion

In much of the philosophical literature on perception, there is the implicit assumption that vision is the paradigmatic sense modality, that the visual case provides a basis for conclusions about the other modalities. As

¹⁶ Although it does not allow for particular objects to enter into the content, the abstract view might account for the richness of perceptual organization exhibited by visual experience with the use of multiple quantifiers and references to more determinate locations than simply 'before you'. Whether this is *enough* is the main question on which the debate between abstract and object-involving theorists pivots. For our purposes it is enough to note that there is at least a prima facie way for the abstract theorist to explain the phenomenological facts and, moreover, that the tools they utilize allow them to explain the absence of such organization in way that the object-involving theorist is unable to.

¹⁷ I develop the abstract view more fully in Batty (forthcoming).

it turns out, however, we ought to be wary of making quick generalizations from vision. Still, we should not scold ourselves too harshly because, as we have seen, the visual case remains both informative and instructive—by way of contrast *and* comparison. We have seen not only that olfactory experience fails to live up to the perceptual organization capable of vision but also that the answer to our question about the content of olfactory experience lay right in front of our eyes—in a debate about content that has, until now, gone on exclusively in the visual domain. Such is the excitement of recent philosophical discussions of ‘the other modalities’. As we are beginning to see more and more, the truly interesting revelations about perception occur when we consider how the experiences of the different modalities are both similar and distinct. That is, to put simply, where the good stuff happens.

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