

## A Representational Account of Olfactory Experience<sup>1</sup>

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Seattle rain smelled different from New Orleans rain.... New Orleans rain smelled of sulfur and hibiscus, trumpet metal, thunder, and sweat. Seattle rain, the widespread rain of the Great Northwest, smelled of green ice and sumi ink, of geology and silence and minnow breath.

- Tom Robbins, *Jitterbug Perfume*

Much of the philosophical literature on perception has focused on vision. This is not surprising given that vision holds for us a certain prestige. Our visual experience is incredibly rich, offering up a mosaic of apparent three-dimensional objects. For this reason, it is commonplace to suppose that visual experience is *world-directed*, with the view taking its most popular form in the *representational*, or *content*, *view*. World-directed views contrast with what we might call *subjectivist views*—views according to which experiences are raw feels or mere sensations.

Although it rarely gets said explicitly, the content view is one that its proponents take to apply across sensory modalities—not simply to the case of visual experience. The notion of representational content is central to important metaphysical and epistemological projects in the philosophy of mind. Many philosophers of mind believe that a physico-functionalist account of mental representation is in the offing. If we can motivate the view that perceptual experiences have representational content, then we lay the groundwork for a purely naturalistic account of perceptual experience. Although much has been said about visual content, there has been very little discussion of content for the chemical senses—smell and taste. As it turns out, olfaction presents an important challenge for representational views to overcome. This is because, given its phenomenology, it is difficult to see what a representational view of olfactory experience would be like. A subjectivist view of it might seem inevitable. In this paper, I argue for a representational account of olfactory experience that fits its phenomenology.<sup>2</sup>

### I. Representation and Unification

We can characterize the representational content of a perceptual experience as a proposition that specifies the way that the world appears to a subject when she has that experience.<sup>3</sup> If the world is

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<sup>2</sup> Discussion of olfaction in the philosophical literature is scarce. Thomas Reid is one of the very few philosophers who has written extensively about smell. In his *An Inquiry into the Human Mind on the Principles of Common Sense* ([1764] 2000), he devotes an entire chapter to it ('Of Smelling'). Others who have substantial discussions of smell are Bhushan (2004), Lycan (1996, 2000) and Perkins (1983). Also notable are shorter discussions in Matthen (2005, 282-288) and Smith (2002, 138-145).

<sup>3</sup> Notable among those who think that perceptual experiences have representational content are these: Davies (1991, 1992), Evans (1982), Harman (1990), Lycan (1996), McGinn (1996), Peacocke (1983), Searle (1983) and Tye (1992, 1995, 2000).

that way—if the representational content is true—then the experience is *accurate* or *veridical*. Otherwise—if the content is false—it is inaccurate or nonveridical. The content of an experience, then, is assessable for accuracy. For this reason, we can think of the representational content of a perceptual experience as giving that experience's 'accuracy conditions.' Consider the experience you have when you look at a ripe tomato. A plausible candidate for its accuracy conditions is that a red, roundish, bulgy object be before you.<sup>4</sup>

So conceived, the representational view is an intuitive position to uphold. Most of us would agree that, in the visual case at least, experience can misinform us about the way that things are in the world.<sup>5</sup> Consider how your apparently black sock is revealed to be navy once you leave the house and get it out into the daylight. Similarly, we might suppose that, in the tomato case, what you are actually looking at is a cleverly lit albino tomato. Although the albino tomato looks red, roundish and bulgy, it is actually *white*, roundish and bulgy. What you suffer, in each case, is an illusion with respect to an object's color. Your experience misattributes redness to a white object, blackness to a navy one. In both experiences, you succeed in perceiving an object but misperceive one of its properties. This is not the only way that you can misperceive, however. You might hallucinate a ripe tomato before you. Unlike the illusory case, there is no tomato there and you have no perceptual success.

Visual experience, then, supports a representational view. But content theorists have assumed that it isn't alone in this. Implicit in much of the contemporary perceptual literature is what I will call the *Unification Thesis*: the thesis that certain philosophical issues about perception should be settled in the same way for each of the sensory modalities. Recently, many philosophers have assumed the Unification Thesis with respect to representational content. I will take the Unification Thesis as a starting point for my discussion.

But obviously I can't do so without noting two important considerations in favor of the content version of the thesis. First, despite their difference in phenomenology, we still take it that our senses function as informational systems. Using the senses, we are able to gather information about the world. Although we may regard our olfactory capabilities as unremarkable, human olfactory experience still functions to guide behavior and action. The smell of smoke, for example, leads me to get up and flee the building. As guides of behavior and grounds of belief, the experiences of the sense modalities form a common kind. A shared metaphysical nature provides a way of accounting for this commonality. If we can plausibly claim that visual experience is representational, then we ought to account for olfactory experience in the same way.

Secondly, we ought to admit that certain other creatures enjoy olfactory experiences that are world-directed. For example, the shark's sense of smell is remarkable in that it is directional. Like the human sense of hearing, sharks can typically determine the direction that an odorant is coming from. (See, e.g., Hodgson and Mathewson 1971.) Consider the hammerhead shark as an extreme example of

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<sup>4</sup> It is controversial whether visual experience can represent the property of *being a tomato*. Would your experience be inaccurate if the object before you was actually an extremely realistic plastic facsimile? If so, then the accuracy conditions must appeal to tomatoes. If not, then the accuracy conditions can stay as above. I take it that it is less controversial to hold that the accuracy conditions of such an experience concern properties like *redness*, *roundness* and *bulginess* than metaphysically richer properties such as *being a tomato*. For the sake of clarity, I take the less controversial route.

<sup>5</sup> This is not to say that the connection between accuracy conditions and representational content is uncontroversial. For example, Travis (2004) argues that perceptual experience is not representational but is still able to mislead.

the physiology that makes this possible. The distance between the nasal cavities is large in most sharks but it is at its largest with the great hammerhead. An odorant coming from the extreme left of the shark's head will arrive at the left nasal cavity before it does the right. The animal kingdom is rife with olfactory feats like these. But we do not typically count ourselves as remarkable in this way. Still, there is a similarity to be drawn here. Returning to the hammerhead, these animals rely on their 'noses' where we would, typically, use our eyes. We might reasonably say, then, that their olfactory experiences are for them as our visual experiences are for us. If we take it that *our visual* experiences are representational, then we ought to think that *their olfactory* experiences are as well. But, as we noted above, *our olfactory* experiences also serve to guide behavior and action—just perhaps not as exceptionally as they do for the hammerhead. Although our olfactory capabilities might pale in comparison to theirs, then, we can count ourselves as like the hammerhead in terms of the role that our olfactory experiences play for us. Again a shared metaphysical nature provides a way of accounting for this similarity.

The Unification Thesis, then, tells us how we ought to proceed. But what we ought to do does not always align with what we are able to do. And, as I indicated in the introduction, olfaction presents a special challenge to content theorists who accept such a thesis. Olfaction is one of our senses, yet it seems initially questionable whether the phenomenology of our olfactory experience can support a representational view. We have seen that an assignment of content to a perceptual experience should be compatible with the way that things appear to a perceiver when she enjoys that experience.<sup>6</sup> In the case of visual experience, it should be compatible with the way that things (e.g., tomatoes) look to that perceiver; in the case of olfactory experience, it should be compatible with the 'way that things smell.' Part of addressing the question of whether olfactory experience is representational, then, involves considering whether things are ever presented in olfactory experience. That is, answering the question involves considering whether olfactory experience can support a view according to which it is predicative in nature.<sup>7</sup>

## II. Does Olfactory Experience Present Objects?

We can start on this question by contrasting olfactory experience with the experiences of other modalities. Human visual experience easily supports a 'predicative view'.<sup>8</sup> Visual experience presents a world inhabited by individual objects such as tomatoes, and 'on' or 'in' those objects it places properties like redness or roundness. For the most part these objects appear at determinate, and distinct, locations before you. Looking at the dinner ingredients on the counter, you might see a green pepper on a certain part of the counter, to the left of your tomato. You are able to distinguish them both, sitting there side

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<sup>6</sup> Due to the intuitiveness of this constraint, we find representational content also referred to as 'phenomenological content' (McGinn 1996, 52). And such a constraint is widely accepted. For example, it is put to serious work in the various debates about color and color experience. In those, we see various views accepted or rejected on the basis of how well they respect the phenomenology of color experience. Still, there are other notions of content — ones free of such a phenomenological constraint. See, e.g., Dretske's (1986, 1988a, 1988b, 1991, 1995) and Millikan's (1984, 1989a, 1989b, 1990, 1991, 1993) teleological accounts of content.

<sup>7</sup> By an 'olfactory experience,' I mean (among other things) a mental event that has phenomenal character.

<sup>8</sup> Many take the feature-placing view of visual experience to be an alternative view to what I have called the predicative view. Clark (2000), for example, argues that the structure of visual experience is such that the properties presented in visual experience occupy places in the visual field. I will return to Clark's view in sec. IV.

by side on the counter.

With that said, we must recognize that there are some visual experiences in which it does not seem to you as though you are presented with any particular thing—such as the experience of looking at a cloudless sky or some other undifferentiated colored expanse. This kind of case will be very important later in the paper. But, for now, it is enough to note that visual experience is able to achieve the kind of object differentiation illustrated in our vegetable examples, that what we might happily call the *typical* visual experience presents us with relatively bounded particulars and attributes properties to them. It can present us with, we might say, an extremely intricate geometry.

Audition and touch are like vision in significant ways. There is a spatial element to many auditory experiences. We hear sounds as coming from certain directions, as presented in relatively determinate locations in space external to us. We can also hear multiple sounds at different locations. I might hear a bird chirping on the window ledge to my left at the same time as I hear the coffee grinder in the kitchen to my right. Not all auditory experiences are directional or determinately spatial—for example, consider the familiar experience of hearing a cell phone ringing when you have no idea where the cell phone is. But, for purposes of drawing the comparison with olfactory experience, it is enough to see that some are. In touch, like vision, the surfaces of objects are presented as being external to the perceiver and we locate these surfaces relative to our bodies. Objects literally come into contact with the skin and exert pressure on our bodies. Any smoothness or roughness one feels, for example, appears to qualify those objects. Moreover, like vision and audition, it is possible to perceive multiple objects by touch. Consider a situation in which you hold a small object in each clenched hand. Like its visual counterpart, tactile experience can also present multiple objects in spatial relations to one another. Right now, I am touching the chair I sit in, the wall under my desk with my foot and the keyboard with my hands.<sup>9</sup>

Unlike vision and touch, it is questionable whether auditory experience ever presents us with objects like birds and dogs. To be sure, we say that we hear the bird when it chirps, or the dog when it barks. But we only ever hear the bird, or the dog, by hearing the sound that it produces. Consider a novel noise, one that you have no reason to suppose has been made by one object as opposed to another. It is only once we know what the source of the sound is that we are able to make remarks such as ‘I hear the dog.’<sup>10</sup> It is questionable, then, whether auditory experiences present ordinary objects. Instead, they plausibly present other kinds of objects or particulars, namely, *events*—auditory happenings or occurrences.<sup>11</sup> These events are presented as being located—as when I hear the bird chirping somewhere on my left. Visual and tactile experiences can also present us with events as well as with birds and dogs. But, on the face of it, auditory experience only presents perceivers with events.<sup>12</sup>

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<sup>9</sup> One important, and interesting, difference between visual and tactile experience is that, although tactile experience presents objects as separate from our bodies, the distance at which we can feel them to be is constrained by the body’s limits. Visual presentation of distance is not constrained in this way, although it is constrained by the physiology of the sense organ.

<sup>10</sup> We can read Berkeley’s famous ([1713] 1996) passage about the perception of a coach’s sound as making the same point.

<sup>11</sup> O’Callaghan (2007, 2009b) argues that sounds are events and, thus, that auditory experience represents events. This view also appears to be what Urmson (1968) is suggesting when he claims that sounds are not physical objects but that “like physical objects, sounds are individuals and may be counted” (119).

<sup>12</sup> There is a debate over spatial audition beginning with O’Shaughnessy (1957) and Strawson (1959). For more recent work on this issue, see Casati and Dokic (1994, 2005), Nudds (2001), and O’Callaghan (2007, 2008,

We have seen, then, that visual, auditory and tactile experiences are predicative in nature. Each presents us with particulars and attributes properties to them. We might also say that each is representational in nature, as illusions are possible in all three of these modalities. As we have also seen, examples of illusory experiences are not hard to come by for vision. Although not as common, auditory and tactile illusions can, and do, occur.<sup>13</sup> Still, the kinds of illusions that there are suggest a representational account for the experiences of each.

Can the experiences of the chemical senses follow suit? I leave discussion of gustatory experience to another paper and focus on olfactory experience alone. Like auditory experience, olfactory experience does not seem to present us with ordinary objects. But, unlike the auditory case, when I sniff around the brewing coffee, the smell does not even seem to occupy more or less determinate locations before me. Rather, the smell is simply present. And this, it would seem, applies to any typical human olfactory experience. There is some evidence that humans can localize odor sources in highly controlled circumstances (Porter et al. 2005; von Békésy 1964). But, unlike those of the hammerhead shark, these circumstances are the exception, not the rule, and do not represent the typical experiences of human subjects in their environment. For this reason, I will not consider them here.

Moreover, the notion of an olfactory illusion is just not something that resonates with us. As we have seen, it makes sense to speak of accuracy conditions in the case of visual, auditory and tactile experiences. In the case of the typical visual experience and in the case of all tactile experiences, we can ask of the object of experience, *o*:

For any property *F* that *o* appears to have, does *o* really have *F*?

And in the case of those auditory experiences that are directional, we can ask of a certain event, *e*:

For any auditory property *F* that *e* appears to have, does *e* really have *F*?

If there were an olfactory analogue of these questions, we could ask of an object of olfactory experience, *x*:

For any olfactory property *F* that *x* appears to have, does *x* really have *F*?

But, unlike the experiences of these other modalities, the properties presented in olfactory experience seem disengaged from any particular object. It is tempting, then, to conclude that olfactory experience isn't in the business of predication. This would explain why we are reluctant to speak of olfactory illusions. The idea that a smell is misattributed to something has no obvious purchase—unlike the case of visual, auditory and tactile experience.<sup>14</sup>

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2009a, 2009b, 2010). In his (2001), Nudds argues that audition differs from vision in that it does not present empty places. Martin (1992) has argued for a similar thesis for the case of touch.

<sup>13</sup> In the auditory domain, there is the Deutsch Octave Illusion. See, e.g., Deutsch (1974, 1981) and Deutsch and Roll (1976). Tactile illusions appear to be less common than auditory ones. But an example is the Velvet Hand Illusion. See, e.g., Mochiyama et al. (2005).

<sup>14</sup> It is interesting to note that we have little trouble with the notion of an olfactory hallucination—i.e., with the idea that we might have an olfactory experience without an external stimulus as opposed to an experience in which an olfactory property is misattributed. In another paper (Batty, 2010b), I argue that, in the olfactory case, the traditional distinction between illusory and hallucinatory experience does not apply. Rather, the most we get in the olfactory domain is a kind of property hallucination. Much of my argument relies on conclusions made in the current paper.

Compared to visual, auditory and tactile experience, then, it might seem overly ambitious to ask how *things* appear in olfactory experience—i.e., how *things* smell. To put it figuratively: compared to the intricately detailed scenes presented by visual experiences especially, olfactory experiences are mere smudges on our consciousness.

### III. Are Olfactory Experiences Purely Sensational?

Given the smudginess of olfactory experience, it might very well seem that the answer to this question is ‘yes.’ It is hard not to feel drawn to the view that olfactory experience has no objective purport, that it is not world-directed. This places olfactory experience in contrast to visual experience, where such views are taken as an affront to its phenomenology.

Christopher Peacocke (1983) suggests that olfactory experiences are not world-directed. In the opening chapter of *Sense and Content*, he 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” (5). Peacocke says no more about olfactory experience, but William Lycan agrees. He claims: “Phenomenally 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). Although Lycan goes on to argue that olfactory experience is representational after all, he thinks that there is an initial, phenomenological, motivation for thinking that it is not.

Peacocke’s view, and the view that Lycan finds *prima facie* plausible, are what we might call Reidian views of olfactory experience. The backbone of Thomas Reid’s discussion of perception is his distinction between sensation and perception. According to Reid ([1764] 2000), “Sensation, and the perception of external objects by the senses, though very different in their nature, have commonly been considered as one and the same thing” (167). Setting out the distinction in his *Essays on the Intellectual Powers of Man* ([1785] 2002), Reid claims:

Sensation, by itself, implies neither the conception nor belief in something external. It supposes a sentient being and a certain manner in which that being is affected; but it supposes no more. Perception implies a conviction and belief of something external—something different from both the mind that perceives and the act of perception. (199)

Although sensation does not imply “the conception...[or] belief in something external”, a given sensation does give rise to “an immediate conviction and belief of something external” ([1785] 2002, 199)—that is, to a perception. According to Reid, then, perception is the formation of non-inferential beliefs about the instantiation of external qualities.

In the case of olfaction, Reid ([1764] 2000) tells us that sensations are caused by the “effluvia” of “animal and vegetable bodies” (25). Consider the act of sniffing a rose. According to Reid, effluvia given off by the rose cause a certain sensation in you. Let’s call it the *rose sensation*. The rose sensation, Reid tells us, gives rise to the immediate and irresistible belief in the existence of an external quality—a quality of the rose or of the effluvia proceeding from the rose. This perception, this belief, has an intentional object—namely, the rose or the effluvium. The rose sensation, on the other hand, does not.

Let's call the view that olfactory experiences are Reidian sensations the *sensational view*. Both Peacocke's and Lycan's remarks suggest the sensational view. According to the Reidian picture of olfaction, rose sensations do not represent anything. They are, as Reid put it, 'mere affectations.' Still, although Reid holds that sensations are not world-directed themselves, they cause other states — namely, beliefs about the instantiation of certain properties — that are. If we take it that Reidian sensations are one and the same as what we now think of as *experiences*, then Reid himself also held that olfactory experiences are purely sensational.

Now, as I noted above, the sensational view may seem inevitable. It certainly seems to make *prima facie* sense. But it is not inevitable. To see why not, let's now turn to a discussion of representational content.

#### 4. Are Olfactory Experiences Representational?

Most discussion of representational content centers on visual experience. As we saw in section II, the default view is that the properties presented in visual experience are properties of ordinary objects—'medium-sized dry goods,' as some might put it. This view, it would seem, is grounded in the phenomenology of visual experience. There is significant disagreement, however, about *how* visual experience represents objects.

One view is that visual content is *abstract*, or *existentially quantified* (Davies 1991, 1992, 1996; McGinn 1996; Tye 1995, 2000). This is the view that your experience of the ripe tomato has the following sort of content:

(*Abs.*)     There is an object *x* at location *L*, and *x* is red, and round....

The motivation behind this view is the possibility that experiences of two qualitatively identical, yet distinct, tomatoes might be phenomenologically indistinguishable. Moreover, a perceiver might hallucinate a tomato before her and yet be unable to distinguish this hallucinatory experience from a corresponding veridical experience. All of these are visual experiences *as of a red, round object at a certain location L*. To preserve their indistinguishability, the abstract content theorist proposes that the content of each is content into which no particular tomato enters. Both a veridical experience of a red, round object at *L* and the hallucination of a red, round object at *L* have (*Abs.*).

Opponents of this view claim that the abstract content view ignores the particularity of experience (McDowell 1993, 1994).<sup>15</sup> According to the *object-involving* account of content, we cannot ignore this crucial phenomenological fact. Adapting an example from Martin (2003), when I look at the tomato placed before me on the cutting board, I am not presented with *some* tomato or other. I am presented with *this* tomato.<sup>16</sup> According to the proponent of the object-involving account, the tomato

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<sup>15</sup> There are others who, while not proponents of the object-involving view of content per se, draw attention to the same considerations in forming views similar in spirit to the object-involving account. For example, Burge (1991) and Bach (2007) argue for the view that content is 'gappy' in structure; it has the form of an open sentence. When one sees an object, the particular object perceived occupies the gap at subject position. Similarly, although not content theorists at all, both Campbell (2002, Chap. 6) and Martin (2003) argue that visual experience is constituted, in part, by a relation to particular things in the world.

<sup>16</sup> Martin states: "When I look at a duck in front of me, I am not merely presented with the fact that there is at least one duck in the area, rather I seem to be presented with *this* thing (as one might put it from my perspective) in front of me, which looks to me to be a duck" (2003, 173).

itself is a constituent of the content of my experience. So, where *t* is the actual tomato before me on the cutting board, my experience has the following sort of content:

(*Obj.*) *t* is red, round...and at L.

The object-involving account allows that visual experience can be the basis of demonstrative thought about objects. It does so because particular objects are a part of the content of experience. The view, however, does this at the expense of providing a common account of hallucination and veridical visual experience. As we know, in the hallucinatory case there is no tomato before you. And so no particular tomato can enter into the content of experience.<sup>17</sup>

There are many interesting questions about how we might go about upholding either the object-involving or abstract account. It would seem that either view must give up one of two attractive claims about the nature of visual experience: (a) that there is a common element to hallucination and veridical visual experience and (b) that there is a particularity about visual experience that allows for the possibility of demonstrative thought about objects. Recently, the debate about disjunctivism has featured attempts by the proponents of each to deal with this—in the form of both rejection and reconciliation. Disjunctivists reject (a) while upholding an object-involving account of content. At the same time, Byrne and Logue (2008) have argued for a moderate view according to which veridical and hallucinatory experiences share a common abstract content. The view leaves open, however, the possibility that veridical experience might have an additional object-involving nature. Their view, then, is an attempt to reconcile (a) and (b).<sup>18</sup>

It is a good question whether this kind of conflict arises also for olfactory experience. As we shall see shortly, it is not saddled with it. But, before that, we must look more closely at our discriminatory abilities in the olfactory domain.

### 1. *How Discriminating is Olfactory Experience?*

As I said earlier in section II, the properties presented in olfactory experience seem to be mere smudges on our consciousness. This is why the Reidian sensational view makes *prima facie* sense. So that we can understand this smudge point further, compare again olfactory experience with visual experience. In *Seeing and Knowing* (1988b), Fred Dretske argues for a view according to which we do not see an object unless we can differentiate it from its environment.<sup>19</sup> I count as seeing the tomato on the table if I can differentiate it from the table, the wall behind the table and the other vegetables placed next to it. In the case of olfaction, we do not achieve this kind of differentiation. When I plug in the fancy air freshener and its smell drifts over to where I am sitting, I am simply presented with a distinctive property. I do not distinguish the place in the scene before my nose at which the property is

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<sup>17</sup> I take it that the sense-datum view is suitably unattractive these days to admit that what enters into the content of experience in both the veridical and hallucinatory cases is a tomato sense-datum. As a result, I will not consider it as an option for dealing with this problem.

<sup>18</sup> There is not the only way to preserve both (a) and (b). Others who have mechanisms in place for reconciling (a) and (b) are Bach (1997), Burge (1991) and Matthen (2005). I mention Byrne and Logue (2008) here only because they engage with the disjunctivism debate directly.

<sup>19</sup> Shoemaker (1996b) makes a similar claim, but states it in terms 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 its nonrelational properties” (205).



instantiated from the place at which it is not. I simply smell that it is instantiated. And the circumstance is no different if I am up close to a source object, where the smell is likely to be the most intense. My experience does not, in such a circumstance, report that the source object is before me. I still merely smell that a property is instantiated—albeit in particularly large quantities. After all, if we had on hand enough of the odorant the object produces, it would be possible to replicate the same experience with no source object present at all. Why suppose that only the former presents objects? I will go on to argue that a lack of spatial differentiation is not limited to a circumstance in which merely a single olfactory property is presented.<sup>20</sup> Cases where, for example, the air freshener does not succeed in masking another (unpleasant) smell are equally lacking in spatial differentiation.

Dretske acknowledges that there are cases in which this differentiation does not occur in visual experience and yet we still want to count a subject as seeing some object—the sky or the colored expanse of a wall up close.<sup>21</sup> But he stresses that these are limiting cases. In the case of olfactory experience, the analogue of this circumstance is not the limiting case. It is the *norm*. The point is that it is always like this in olfactory experience; we never, on the basis of olfactory experience alone, differentiate where a certain olfactory property is instantiated and where it is not.<sup>22</sup> Doing so involves the contribution of movement and, quite possibly, input from the other sensory modalities. For example, a sighted person will rely on visual experience to trace where the source of the smell is, to determine where the smell is strongest, weakest and where it simply is not. This kind of investigation occurs through time. We get up, move around, sniff, foot by foot, room by room. We navigate the olfactory terrain; we actively engage in figuring out where the smells are located in the space around us. If we bracket information gained from movement and any other sensory modality, and consider olfactory experience at-a-time, then we see that any locatedness of these properties—other than simply 'here'—goes as well.<sup>23</sup> In this way, olfactory experience distinguishes itself from vision. Even at-a-time, visual experience achieves a

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<sup>20</sup> It is interesting to note that these cases are rarer than we might think. Most researchers hold that olfactory experience is largely synthetic—that is to say, the various properties of the presented olfactory object form an irreducible experience, one in which the relevant properties of the stimulus are not so distinguishable. (If we had a wholly analytic sense of smell, we would be capable of distinguishing the individual properties of the presented olfactory object.) Much of what we encounter with our noses are chemical mixtures. For example, although chocolate and lavender are experienced as irreducible olfactory objects, they are both composed of a variety of volatile molecules. Each type of molecule bears properties to which the olfactory receptors are sensitive. (It is controversial just what these properties are.) As we know, sniffing the lavender provides us with a unique kind of olfactory experience but not one where we can discriminate the individual component molecules. The same goes with chocolate. Similarly, even when odorants such as lavender and chocolate are combined with other such mixtures (cheese, e.g.) into complex mixtures, subjects are able to identify two components of the mixtures on 15% of occasions, three on 5% of occasions and four on 3% of occasions (Wilson and Stevenson 2003).

<sup>21</sup> Dretske claims:

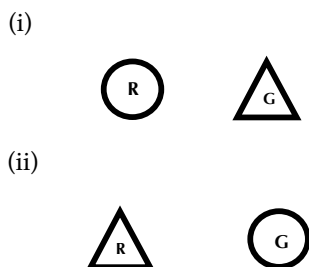
Touch your nose to a large smooth wall and stare fixedly at the area of the wall in front of you. There is not much doubt about the fact that you see the wall, or at least a portion of it. It is also fairly clear that you do not differentiate it from its immediate surroundings. In this position it has 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). (1988b, 26)

<sup>22</sup> It is always like this outside of the laboratory. Those experiences in the laboratory that I referred to in sec. I might be more similar to the typical visual experience.

<sup>23</sup> I adopt the use of 'here' from Matthen (2005). He states: "[smells] have, at best, a primitive—that is, an undifferentiating—feature-location structure—every smell of which I am aware is simply here." (284) In other papers, e.g., Batty (2010a), I use the expressions 'around me' or 'out there' to denote the relevant location in the olfactory case. For reasons set out in Batty (2010b), I now reject each of these ways of speaking about that location.

robust form of differentiation that allows the presentation of properties at determinate locations in the scene before your eyes. The spatial presentation of olfactory experience at-a-time remains wholly undifferentiated.<sup>24</sup>

What this suggests is that olfactory experience cannot solve the Many Properties Problem—namely, the problem of differentiating between scenes in which the same properties are instantiated although in different configurations.<sup>25</sup> Vision can solve this problem. Consider the difference between (i) the experience of looking at a red circle to the left of a green triangle and (ii) that of looking at red triangle to the left of a green circle. To illustrate:



If visual experience simply reported on the properties instantiated (e.g., that green is instantiated, circularity is instantiated, etc.), it would be unable to distinguish between experiences of type (i) and type (ii). But it clearly can, and it does so by reporting on the arrangement of these properties. In particular, the visual system predicates properties to objects. On a representational view, experiences of type (i) and (ii) represent that redness, greenness, circularity and triangularity are instantiated. The difference between them is that each experience attributes the properties in question to different objects at different locations in one's visual field.

As the air freshener example on the previous page suggests, olfactory experience does not present properties at determinate locations in our surroundings. Because of this, olfaction cannot solve the Many Properties Problem. When I spray lavender air freshener to try and mask the smell of cigarette smoke, I do not experience the lavender smell at one location and the smoke smell at another—for example, in the circumstance in which the locations are the same, as the lavender smell being right 'on top of' the smoke smell. Nor does it seem plausible to suggest that there might be a different circumstance in which my olfactory experience reports that the air freshener smell is on top of some of the smoke smell but that I missed a spot. As I sit in the room, I am unable to tell the difference between a circumstance in which I cover the whole room and a circumstance in which I miss a spot.<sup>26</sup> Each experience reports that the smoke smell and the air freshener smell are instantiated.<sup>27</sup> But each experience is silent on where before me these properties are instantiated. Because of this, the experiences are equally silent on what object instantiates which property. If olfactory experience reports nothing more than 'these properties instantiated here' then we are forced to conclude that olfactory

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<sup>24</sup> In addition to my use of 'here' to denote the relevant location in the olfactory case, I also adopt 'undifferentiated' from Matthen (2005).

<sup>25</sup> Jackson (1977) was the first to cite this problem in a criticism of adverbialism.

<sup>26</sup> In a footnote, Clark (2000, 79) suggests that the Many Properties Problem does not arise for olfactory experience. Smith (2002, 138) also appears to raise the same point.

<sup>27</sup> To be sure, there might be a difference in the perceived intensity of the lavender smell in each case. But that would not amount to a difference in the experienced location of that smell.

experience gives us only diminished object perception. This is what appears to be behind the following remark from Chalmers (1996): “Smell has little in the way of apparent structure and often floats free of any apparent object, remaining a primitive presence in our sensory manifold” (8).

Now, one might object that this is the wrong conclusion to take from this case. Olfactory experience may have limited spatial differentiation, but why suppose olfactory object perception presupposes spatial differentiation? Perhaps, that is, there are other dimensions along which property binding occurs and, as a result, along which objects are presented. To take another example, I might simultaneously bask in the smell of the coffee brewing and in the sweet smell of the lilies on the table before me. Some coffee smells are described as acidic; the lily smell is sweet. We might think of acidity and sweetness as further dimensions of those smells—and, in turn, dimensions that indicate certain non-spatial ways of olfactory feature binding. On this proposal, then, coffeeness and acidity combine together and lilyness and sweetness do the same to form two distinguishable odor objects.

But this proposal doesn't seem right. This is not to deny that olfactory properties can be acidic or sweet. What is questionable, though, is whether olfactory experience achieves a kind of property binding when such properties are presented. And there are reasons to think that it does not.

We might come to believe that what we have around us are two objects—one that has an acidic coffee smell and another that has a sweet lily smell. That much is uncontroversial. But is there anything in the experience itself that suggests this is the case? There are two reasons to think not. First, we must accept that coffeeness, acidity, lilyness and sweetness are all separate olfactory elements. If they were, it would be possible for sweetness and acidity to combine to form one smell, leaving coffeeness and lilyness to combine to form another. While we may not have trouble envisioning the latter<sup>28</sup>, the former is extremely counter-intuitive. It is the olfactory analogue of the claim that the brightness and saturation of a given shade of blue might combine to form a further color property. If it isn't an analogue, and acidity and sweetness are a kind of olfactory element that cannot bind with each other, then the proponent of this kind of view owes us an account of the various kinds of olfactory elements. That such an explanation is not forthcoming is indicated by olfactory psychophysical research. Although much work has been done towards mapping the olfactory quality space, there is very little consensus on the dimensions we need to accomplish such a task. Not only do the proposed dimensions differ in kind, the number of them varies from case to case. As Clark (1993) notes, many systems are seven-dimensional, but there are others that are four-, twelve-, and eighteen-dimensional.<sup>29</sup> What many have taken this to indicate is that olfactory properties (what I have also been referring to as smells) do not have the kind of relational structure enjoyed by the colors.

A better explanation of our tendency to believe that we are in the midst of two odor objects is not that something in the experience itself 'tells' us so, but because we have had previous experiences of things smelling so. To take our first example, I have awoken on many mornings and had the delicious coffee smell experience—and without having the lily smell one. Similarly, I have encountered the smell of lilies in the florist's without being subject to the coffee smell. This is to say, on the basis of experiences like these, I have the knowledge that the one smell can exist without the other. On the basis

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<sup>28</sup> As I drew attention to in n. 20, these cases are rarer than we might think.

<sup>29</sup> Clark (1993) has a condensed discussion of the various systems that have been proposed. For a more thorough discussion, see Harper et al. (1968).

of my knowledge of these modal facts, I ‘bundle’ the properties into two ‘packages’ and come to believe that I have two odor objects before me. But, unlike the visual case, nothing about the experience itself dictates that I do so. Spatial representation helps vision achieve this; but other than a very weak form of spatial representation (i.e., ‘here’) olfaction lacks the spatial differentiation that vision has been awarded.

In line with the Unification Thesis, then, the challenge is to provide a plausible view of how olfactory experience represents olfactory objects given this diminished perception. I turn now to this question. I argue that the right view of the content of olfactory experience is one according to which it has a very weak kind of abstract, or existentially quantified, content.

## 2. *How Do Olfactory Experiences Represent?*

We have seen that olfactory experience gives us the ability to distinguish that properties are located at the undifferentiated location of ‘here,’ but that it does not allow us to refer to the particular objects that instantiate them. Our results at this point are suggestive of Austen Clark’s (2000) account of the content of visual experience. According to Clark, visual experience represents that properties are instantiated at place-times.<sup>30</sup> As Siegel (2002) observes, there are two ways that we might interpret Clark’s claim that visual experience has this kind of structure.<sup>31</sup> The second of these interpretations directs our attention to the right view about how olfactory experience represents.

The first interpretation of Clark is that he holds that visual experience attributes properties *to* places. Siegel notes that Clark tells us this on more than one occasion.<sup>32</sup> But, as a view about how things visually appear, it doesn’t seem right. Intuitively, colors and shapes look to be properties of objects like tomatoes. As I look at the tomato before me on the table, my experience does not report that redness and roundness is instantiated by a certain location L. It reports that some object at L—namely, the tomato—is red and round. Another interpretation of Clark is that he takes it that visual experience has a certain kind of abstract content: that *something or other* that is present at a certain location L is red and round. The experience does not attribute redness and roundness to a place, and neither does it attribute redness and roundness to a particular object.

Whether this is indeed Clark’s view is not important for present purposes.<sup>33</sup> What is important is what consideration of Clark has to tell us about the nature of olfactory experience. As I remarked in section IV, the abstract view for visual experience is controversial. Those in favor of an object-involving account argue that an abstract account cannot account for the particularity of visual experience and, as a result, ought to be rejected. But an analogous argument is not available in the case of olfactory experience. As it turns out, the abstract view is a remarkably good fit in the case of olfactory experience. As with visual experience, it is implausible to suppose that olfactory experience attributes properties to places. Although olfactory experience reports that properties are instantiated ‘here,’ there is no obvious

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<sup>30</sup> To be sure, Clark’s view of visual experience has it that properties are presented at much more determinate locations than simply ‘here’ and so, in this way, must be understood to depart from our results.

<sup>31</sup> For simplicity, I set aside Clark’s comparison of his account with Strawson’s (1959) notion of feature-placing. According to Strawson, feature-placing languages fall short of predication. As we shall see momentarily, Clark does not seem to deny that visual experience is predicative.

<sup>32</sup> For example, see Clark (2000, 77, & 147).

<sup>33</sup> In a later paper, Clark (2004) argues, in response to commentators, that his view is closer to Siegel’s first interpretation.

reason to take it to report that these properties are instantiated by *places*. As we have seen, olfactory experience never reports that properties are instantiated by particular objects. Although we may commonly talk about that smell and appear to make demonstrative reference to the things that bear these properties, we have seen that there is nothing in the experience itself that allows us to do so. As a result of previous experience we make these claims, but nothing about our olfactory experience justifies them. For this reason, an object-involving account would not work for olfactory experience. But with the notion of abstract content, we can construct a view according to which olfactory experience reports that properties are instantiated by objects—albeit, not particular ones. Given that olfaction cannot solve the Many Properties Problem, it is a view according to which these properties are instantiated by *some* object—and just one such ‘some.’

Why objects at all? Because the alternative picture of olfactory experience is implausible. As I suggested at the beginning, we think of the senses as informational systems. And, if we grant that visual experience is representational on these grounds, we ought to grant that olfactory experience is representational as well. But if olfactory experience does not present objects, then there we are left with two possible representational views to choose from: (1) olfactory experience represents bare properties, detached from an object or (2) it represents properties but remains agnostic about whether those properties are attached or detached from an object. Neither (1) nor (2) is plausible, however. They both would have us accept that natural selection preserved a sensory system that gives us no information about the states of objects in our environment. This is, at best, extremely hard to swallow. The plausible view, then, is one according to which olfactory experience predicates properties to objects. I turn now to what I call the *abstract view* of olfactory experience.

Let me draw attention to the abstract view by again comparing olfactory experience to visual experience. Despite what I say above, assume that visual experience has abstract content. This is an innocuous assumption, intended for drawing the comparison with olfactory experience, which (in the human case, at least) can only have such content. The Many Properties Problem shows us that, for some visual experiences, we need more than one quantifier to capture their contents. Consider the following case: upon arriving home from the farmer’s market, I set my groceries down on the counter. The bag tips and some of my bounty escapes and rolls onto the counter—in particular, a tomato (ripe, of course) and a Granny Smith apple. I turn around and see the bag’s contents lying on the counter. Suppose that  $L_1$  and  $L_2$  are distinct locations in my visual field. Suppose also, for the sake of simplicity, that shape properties and color properties exhaust the visually salient properties. (So, although the objects on the counter will bear certain relations to one another such as relative size, I leave out any reference to them in setting out the content of my experience.) According to the view that visual content is abstract, the content of the visual experience I have when I look down at the produce on the counter is:

$$\exists x (x \text{ is red, round \& at } L_1) \& \exists y (y \text{ is green, round \& at } L_2).$$

My visual experience presents redness and roundness at one location of the visual field, namely  $L_1$ , and presents greenness and roundness at another,  $L_2$ . Consideration of the Many Properties Problem has shown us that two things are presented. One, namely the tomato, binds redness and roundness while another, the apple, binds greenness and roundness. For this reason, a characterization of the content of my experience requires two quantifiers.

This is not to say that characterizations of all visual experiences will require more than one quantifier. To take a previous example, the visual experience you have when you look at a single ripe tomato will require only one quantifier to characterize it. Similarly, returning to an example of section II, the experience I have when I look at the expanse of a cloudless sky will require only one quantifier and no reference to a determinate location within the visual field. Defining the whole of the visual field as the location  $L_v$ , the content of such an experience would be:

$$\exists x (x \text{ is blue \& at } L_v).$$

As I suggested earlier in my discussion of Dretske, it is this kind of visual experience that provides us with a model for olfactory experience and informs us of the inapplicability of the Many Properties Problem to it. It is the visual analogue of what it is always like in olfactory experience.

Consider again the lavender smell/smoke smell example. As in the visual case above, we can define the whole of the olfactory field—i.e., the undifferentiated location ‘here’—as the location  $L_o$ . Because olfactory experience cannot solve the Many Properties Problem, we know that a characterization of the content of my experience will require only one quantifier and no reference to determinate location—only a reference to  $L_o$ . Similar in form to the visual case above, it reads:

$$\exists x (x \text{ is smoky, lavendery \& at } L_o).$$

Again, the need for only one quantifier and no reference to a location other than  $L_o$  arises from the fact that olfactory experience does not place properties at determinate locations. All olfactory properties are presented at a single undifferentiated location—namely, at  $L_o$ . Given this, we see that there is no need to index for any location other than  $L_o$ .

Now, someone might be tempted to object to the abstract view by drawing attention to the existence of ‘expert smellers.’ It has long been thought that olfactory discrimination can improve with practice—consider, for example, the perfumer. Psychophysical research suggests that, below a certain threshold, so-called expert smellers are far better than normal smellers at analyzing odorant stimuli into their individual ‘components’ (Lawless 1997; Wilson and Stevenson 2006). Talk of individual components naturally leads to thought of parts; in turn, thought of parts naturally leads to the thought of spatial relations between particulars. Doesn’t the existence of expert smellers show us that olfactory experience can be more spatially discriminating than the abstract view allows?

Although this objection draws attention to an interesting feature of human olfactory discrimination, it does not show that there is anything amiss with the abstract view. The abstract view does not place any constraints on the number of property-types that a perceiver can distinguish in a given olfactory experience.<sup>34</sup> Rather, what it does constrain is the determinacy of the location at which these properties can appear to be instantiated. According to the abstract view, the only location at which properties appear is the location that consists of the entirety of the olfactory field. Although research suggests that expert smellers have enhanced property discrimination, it does not suggest that they are capable of placing these properties at more determinate locations than normal smellers. But this kind of spatial discrimination is what the experts would have to be able to accomplish in order for

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<sup>34</sup> As I drew attention to in n. 20, olfactory experience itself might place such constraints.

their expertise to threaten the abstract view. For this reason, talk of 'components' should be taken loosely. It does not indicate that expert smellers enjoy added spatial discrimination.

If humans were like other animals, then perhaps characterizations of olfactory content would require multiple quantifiers and reference to determinate locations within the olfactory field. Indeed, if we were like other animals, the idea of an olfactory *field* would be something we could get a firmer grip on by thinking about the phenomenology of our own experience. As it stands, it is a fuzzy notion. As should be clear by now, this is symptomatic of the fact that, unlike visual experience, olfactory experience fails to present properties at determinate locations.

### 3. *Olfactory Objects: What Are They?*

Olfactory experience, I have argued, represents that *something or other* 'here' is, for example, smoky and lavender. But what are 'olfactory objects,' the items that are smoky and lavender? Up until this point, I have said nothing about this question. As I mentioned at the beginning of section IV, it just seems obvious that the properties presented in a typical visual experience are properties of dogs and cats, tables and chairs, and so on—ordinary objects, that is. In the case of olfactory experience, it is not as obvious what olfactory properties are in fact properties of.

The natural impulse is to say that the qualities of which we are aware are qualities of regular old objects—roses, skunks and chunks of bad cheese—and that these are the external things that are represented in olfactory experience. I remove the lid from the container and it is the cheese that appears to have a bad smell. We certainly think of roses, skunks and bad cheese as the sources of smells. But we also think of them as having a good, or bad, smell—as bearing properties that we 'get at' through olfaction.<sup>35</sup>

However, the view that olfactory objects are source objects isn't very plausible. Consider how we can have an olfactory experience—the experience of the smell of rotting garbage, say—even though the object that we think of as responsible for the smell is far away. In the summer heat with windows open wide, I might smell the garbage outside from my second floor apartment. Given that my olfactory experience represents that properties are instantiated by something or other 'here,' if olfactory objects are things like piles of garbage my experience must be nonveridical. The garbage is not even around me; it is downstairs and outside. As we know, this kind of circumstance is not rare. Given this, the view that olfactory objects are ordinary objects makes for an implausible amount of olfactory misperception.<sup>36</sup>

What the garbage case suggests is that olfactory experience presents us with properties of something in the atmosphere—something *in the air*. The stinky garbage is merely the source of an

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<sup>35</sup> This impulse is not restricted to the everyday folk. For example, in aid of making a similar point, Matthen (2005) draws attention to Shoemaker's (1996a) claim that secondary qualities are perceived as "belonging to objects in our external environment—the apple is experienced as red, the rose as fragrant, the lemon as sour" (97).

<sup>36</sup> One might worry that this commits me to the view that certain cases of perceiving objects at a distance are also, implausibly, cases of non-veridical experience. For example, for our distant vantage point on earth, we often have experiences as of stars that have long since exploded and gone out of existence, the light from that event not yet having reached Earth. Does this mean that our visual experience of the star is non-veridical? I am happy to say 'yes.' It may seem to us as if we see a star. But we do not; the star is not there. It is the realization that our experience is non-veridical that I take as behind our surprise when we discover the facts about the distance that light must travel to meet the Earth. Thanks to Jason Decker for drawing attention to this point.

olfactory object, not the olfactory object itself. Although we might say that the room now smells because of the garbage, the distinctive garbage smell property (or set of properties) is more plausibly a feature (or are features) of something in the air of the room.<sup>37</sup>

Here I am agreeing with Tye (2000, 2002), who tells us that olfactory experiences present us with the qualities of *odors*—those gaseous emanations given off by objects. What we call smelly objects are those whose molecules are volatile enough to evaporate from their surfaces and enter the air. (This explains why, at room temperature, we cannot smell iron and steel. At room temperature, their molecules are not volatile.) Reid made a related observation. Remember that, according to Reid, “all bodies are smelled by means of the effluvia they emit” ([1764] 2000, 25). These effluvia are the “volatile parts” of odorous bodies ([1764] 2000, 25). Odors themselves are clouds of Reidian effluvia, or modern-day airborne molecules. Odors are particulars, then. Odor clouds can be more or less concentrated, depending on the rate of evaporation and the stillness of the air. Similarly, odor clouds can mix with one another. In any case, odorant molecules enter the nose when we sniff and ultimately trigger the olfactory receptors.

Olfactory experience predicates properties of objects, but olfactory experience itself is otherwise silent on the nature of these olfactory objects. Interrogating olfactory experience will not tell us what olfactory objects are; other considerations suggest that they are odors.

In one way, olfactory experience seems very much like auditory experience. As I drew attention to in section II, we are able to say things like ‘I hear the bird’ because we hear the sound that the bird makes. As the garbage case has shown us, we are able to say things like ‘I smell the garbage’ because we smell the odor that it gives off. But, as we saw earlier, there is an important difference between the two types of experience. In the case of audition, experience can present us with a particular thing—namely, an auditory event—that we can single out and think about—like a bird’s chirp or a clap of thunder. Visual and tactile experiences also allow us to single out particular things. But olfactory experiences never do. Although they attribute olfactory properties to things that are, in fact, odors, they never present us with the particular odors themselves.

## V. Further Questions, Future Directions

Where does this leave us, then? I have argued that olfactory experience can take its place as representational and that, as a result, the sensational view is mistaken. But this doesn’t represent the end of interesting questions to ask about smell. Much of the discussion of content has focused on the content of an experience at a certain time  $t$ —on the ‘snapshot’ of our perceptual situation at  $t$ . And, as I have argued here with the case of olfaction, there is a lot to be said about the similarities and differences between the senses when we consider content-at-a-time. But, recently, philosophers have begun to address the fact that sensory perception occurs, and evolves, over time. Olfaction seems especially relevant to exploring what we might call *content-over-time*. As I mentioned earlier, a lot of our sensory

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<sup>37</sup> This example is adapted from Smith (2002). His example:

If a particularly malodorous cheese is carried through the room, the smell remains. If we attribute the smell to any physical object, it will be to the room: the room smells, we say. But really, of course, it is the air in the room that smells....Hence, we speak of foul air, and the fragrance of the air. If I put a rose to my nose, I am coming into proximity with the *source* of the smell; and even then, I appreciate the smell only by drawing the odour into my nostrils—that is, the air that has been sweetened by the immediate presence of the rose. (143)



experience occurs when we are engaging with the world, when we are walking around and doing things. This seems especially evident in the case of olfaction. And olfactory perception seems, in a distinctive way, to be investigative. We search for the source of a smell. When I suddenly smell a flowery scent, I have to find whatever is responsible for it. This might involve turning my head and looking, or getting up and moving about. Unlike content-at-a-time, content-over-time characterizes the way that the world appears to a subject from  $t_1$  to  $t_n$ . The obvious next step is to explore this notion of content-over-time as it applies to olfactory experience

This is related to another interesting issue that the case of olfaction serves to highlight. Philosophers of perception have typically talked about the experiences of the different modalities as if they occur in isolation from other, concurrent, sensory experiences. As I have argued in this paper, there are many questions, and things to say, about sensory experiences considered in this way. But, as I noted earlier, in the case of olfaction, we often rely on other modalities in determining odor sources, direction and location. We get up and trace the boundaries of an odor and we typically look for its source. Olfactory experience works in conjunction with movement and experiences of other modalities in providing information and grounding beliefs about our environment. Recently, it has been suggested that there is such a thing as the *overall experience* of one's environment at a time  $t$  or between  $t_1$  and  $t_n$ .<sup>38</sup> This is the view that the experiences of the sense modalities combine in some sense to form an overall representation of the world, the content of which cannot simply be taken to be the 'sum' of the modality-individuated components. If there is such a thing, we must account for the ways in which, and the degrees to which, the experiences of the different modalities contribute to the content of overall experience in certain circumstances. What we have learned from the olfactory case is that these are particularly interesting, if not pressing, questions to ask.

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<sup>38</sup> See, e.g., Siegel (2005).

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