

What's That Smell?
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In philosophical discussions of the secondary qualities, color has taken center stage. Smells, tastes, sounds, and feels have been treated, by and large, as mere accessories to colors. We are, as it is said, visual creatures. This, at least, has been the working assumption in the philosophy of perception and in those metaphysical discussions about the nature of the secondary qualities. The result has been a scarcity of work on the “other” secondary qualities. In this paper, I take smells and place them front and center. I ask: What are smells? For many philosophers, the view that colors can be explained in purely physicalistic terms has seemed very appealing. In the case of smells, this kind of nonrelational view has seemed much less appealing. Philosophers have been drawn to versions of relationalism—the view that the nature of smells must be explained (at least in part) in terms of the effects they have on perceivers. In this paper, I consider a contemporary argument for this view. I argue that nonrelationalist views of smell have little to fear from this argument.

It was the first time Grenouille had ever been in a perfumery, a place in which odors are not accessories but stand unabashedly at the center of interest.... He knew every single odor handled here and had often merged them in his innermost thoughts to create the most splendid perfumes.

- Patrick Süskind, *Perfume*

In philosophical discussions of the secondary qualities, color has taken center stage. Smells, tastes, sounds, and feels have been treated, by and large, as mere accessories to colors. We are, as it is said, visual creatures. This, at least, has been the working assumption in the philosophy of perception and in those metaphysical discussions about the nature of the secondary qualities. The result has been a scarcity of work on the “other” secondary qualities and a lingering assumption that the question of their natures will shake out in much the same way as it will for color.

In this paper, I take smells and place them front and center. Despite what the philosophical literature might indicate, olfaction plays an important role in many facets of our lives. Smells warn us of danger lurking—of things that we should stay away from, such as fire and bad food. Nice smells comfort us, making us feel as though things are clean and all right. It is no wonder that we are avid deodorizers, perfuming ourselves, our homes, our cars, and, sometimes, even our pets. Finally, and perhaps most impressively, olfaction is intimately connected with memory. Smells have the power to stir up powerful memories—of your old room, of Christmas festivities, or of that road trip you once took to Seattle. Far from being disinterested in smell, then, it would seem that we are very much interested in it.

Just as many have asked after the natures of redness and blueness, I ask the same about the lilac smell and the skunk smell. Recently, the color debate has pitted relationalists against nonrelationalists. My question is whether a similar debate is plausible regarding olfactory properties. In particular, I explore whether a certain argument waged by relationalists in the case of color—namely, the argument from perceptual variation—can be similarly employed for the case of the olfactory properties. I argue that, while cases of perceptual variation arise for the olfactory properties, an argument for relationalism that trades on these cases doesn't get off the ground. My evidence is both phenomenological and empirical.

1. Preliminaries

Let me begin by focusing our attention on our subject matter. Although it generally goes unnoticed, we use “smell” and “odor” in both property-talk and object-talk, and interchangeably in each.¹ Just as we speak of apples and bananas as having colors, we speak of ordinary objects as having smells or odors. So, for example, we say that roses and lilac blooms have pleasant odors—nice smells. We say that apples and bananas have colors because they possess, or bear, certain properties—redness or yellowness, for example. There is little reason to think that we mean anything different in the olfactory case. Most people think—at least prior to any philosophical reflection—that olfactory experience attributes properties to ordinary objects like skunks, dogs, and flowers. It is natural, then, that we speak of these objects as having smells or odors. We say that lilacs have an odor, a nice smell, because we take it that what we learn from olfactory experience is that they have a distinctive property—the lilac odor, or the smell of lilac.²

But everyday folk also use “odor” and “smell” to refer to objects. For example, we say that things emit, or give off, odors. Similarly, we say that smells spread through space, that they drift from one region of space to another. The smell of paint might drift through the air, spreading throughout the building. When we say things like this, what we intend to convey is that some entity is moving through the atmosphere, or at least growing within it. It is standard practice among scientists to refer to these emanations as odors.

This talk of objects naturally leads us to the question: What are “olfactory objects,” the items that are in fact lily? As we have seen, our ordinary talk about olfactory experience implicates both ordinary objects and these gaseous emanations. But there is reason to think that roses, skunks, and chunks of bad cheese are not the objects presented in olfactory experiences. 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 at the undifferentiated location of “here,” if olfactory objects are things like piles of garbage my experience must be nonveridical.³ The garbage is not 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.⁴

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 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 the air in the room itself. And this is in keeping with the empirical evidence. Objects that smell, as we say, are those whose molecules are volatile enough to evaporate from their surfaces and enter the air. These molecules enter the air and, when we sniff in their vicinity, they end up in our noses. If everything in the olfactory system is working correctly, then these molecules trigger the olfactory receptors. This fact explains why, at room temperature, we cannot smell iron and steel. At room temperature, their molecules are not volatile. They produce no odor and, as a result, there is nothing there for us to smell.

In what follows, I will use “odor” to refer to olfactory objects—those gaseous emanations that source objects, such as flowers, give off.⁵ I will use “smell” to refer to the alleged properties of odors that are presented in olfactory experience. In this paper, then, it is the nature of smells that I am interested in.⁶

2. Realism or Nonrealism?

Let us take as our model the debate about color. As Byrne and Hilbert (1997) note, the debate about color properties can be broken down into two distinct, but related, questions:

- (1) Do objects like ripe tomatoes and British phone boxes (e.g.) really have the distinctive property that they appear to have—namely, redness?
- (2) What is the nature of redness?

Answers to (1) and (2) split the debate into two camps: the *color realists* and the *color eliminativists*.

Color realists argue that the answer to (1) is “yes.” But there are several versions of color realism depending on the answer one gives to (2): physicalism, dispositionalism, and primitivism.

Physicalism is the view that colors are physical properties—properties that are specifiable without reference to the experiences of perceivers. Physicalists typically argue that colors are one of two kinds of physical property: microphysical surface properties or reflectance properties.⁷ The major rival to physicalism, *dispositionalism*, has it that colors are relational properties—not intrinsic ones, as the physicalist holds. According to the dispositionalist, colors are dispositions to cause experiences in perceivers.⁸ Like physicalists, dispositionalists think that the colors are properties of objects. They depart from physicalists, however, in maintaining that the nature of these properties cannot be specified without reference to experience. Redness, for example, is the disposition to cause a distinctive kind of experience in suitable perceivers. It is this disposition to affect us in a distinctive way that ripe tomatoes and British phone boxes have in common.

Primitivism tries to bridge the gap between physicalism and dispositionalism by arguing, like physicalism, that colors are indeed intrinsic properties of objects but that their nature is closely aligned with how the colors appear to be, as dispositionalism urges.⁹ According to primitivists, colors are not identical to physical properties or dispositions. They are irreducible, *sui generis*, properties. Colors are in reality just as they appear to be; their nature is laid fully bare in color experience. Because it takes the scientific view and places it in the back seat, primitivism has been, in the past, the least popular of the realist views. However, in recent years, primitivism has gained increasing interest and popularity.

Unlike the realists, *color eliminativists* answer “no” to (1). With respect to (2), the eliminativists go one of two ways: they either (a) declare that the question cannot be answered, given that nothing whatsoever has the property, or (b) argue that redness is a mental property and that something internal to the perceiver (e.g., a sense datum, experience, or portion of the visual field) has that property. Proponents of the (b)-route argue that colors are “projected” onto objects in the external world and their view is typically referred to as *projectivism*. Version (a) is what I will call *eliminativism proper*.¹⁰ Both eliminativism proper and projectivism propose an error theory of color experience. Although ripe tomatoes and British phone boxes appear to be red, they are in fact *not* red. The same goes for bananas being yellow, pumpkins being orange, and so on. Visual experience makes a mistake. In the case of eliminativism proper, it ascribes a property to objects that, in fact, nothing has. In the case of projectivism, color turns out to be a property of something much different from what visual experience would have us believe.

We can ask two similar questions about smells:

- (1') Do lilac odors (e.g.) really have the distinctive property that they appear to have—namely, “lilac-ness”?¹¹
- (2') What is the nature of “lilac-ness”?

Let *smell realism* be the view according to which the answer to (1') is "yes." Like the case of color, there are a number of options for the answer to (2'): *physicalism*, *dispositionalism*, and *primitivism*. In contrast to smell realism, *smell eliminativism* will give (1') a "no." The eliminativist then has the option of *eliminativism proper* or *projectivism*. Again, on either view, olfactory experience is in error.

3. The Argument from Perceptual Variation

The philosophical literature contains a selection of brief remarks about smell, but there is very little sustained discussion. It would misrepresent the literature to say that there has been any debate about the nature of smells. Two philosophers have discussed (1') and (2') explicitly: Thomas Reid ([1764] 2000) and, more recently, Moreland Perkins (1983).¹² Both draw on themes from Locke. In denying what he saw as the prevailing Lockean projectivism,¹³ Reid upheld a realist view about smells. Although many passages in Reid suggest he was a dispositionalist, there are some that make it sound like he could have been a physicalist.¹⁴ Either way, he was most certainly a realist. Perkins, on the other hand, is an eliminativist and, in particular, a projectivist. Although not obviously a sense-datum theorist, Perkins argues that olfactory experiences have intrinsic, qualitative, properties that we must identify with smells. This is not to deny, however, that things outside of us appear to be smelly. In line with the Lockean projectivism that Reid so adamantly denied, Perkins holds that olfactory experience projects these properties onto odors. Perkins, then, is an eliminativist.

The state of the debate so far, then, starts and stops at (1'): realism or eliminativism? Like Reid, I pursue a realist answer to (1'). And in what follows, I take us a step further and consider the answer to (2'). So far, I have set out the division in both the color and smell debates as one between realists and eliminativists. In rejecting eliminativism in favor of pursuing realism, I want to draw attention to a similarly broad division between realists themselves—namely, that between *relationalists* and *nonrelationalists* (about color or smell). In aid of adjudicating between the different realist views, I want to discuss what I take to be the pivotal issue in the debate between them over (2'). This is the phenomenon of perceptual variation.

But first things first: Why favor a realist answer to (1')? Why not eliminativism? The most serious objection to eliminativism lies in the fact that it convicts our olfactory experience of widespread error. We know that olfactory experience reports that odors are, for example, lilacy. If nothing whatsoever is smelly (eliminativism proper), or it is really our experiences that are (projectivism), then olfactory experience consistently fools us. Contrary to what it reports, there is in fact *nothing* out there that is lilacy. This is a position that we should be led to only if the realist alternatives prove implausible. It is the implication of being unable to locate any property out there that "matches" the properties that olfactory experience purportedly presents us with. If there is no match, then the revision is plausible—but only then.

Now to perceptual variation. As I drew attention to in the introduction, the argument from perceptual variation is an argument for *relationalism*. Relationalists hold that colors and smells are constituted by relations between objects and perceivers. The standard relationalist view is that colors and smells are dispositions to cause a certain kind of experience in perceivers. In other words, the standard relationalist view is (color or smell) dispositionalism.¹⁵ An odor is lilacy, for example, because it has the disposition to cause certain distinctive experiences in perceivers. On this view, smells are perceiver- or mind-dependent properties of odors. The relationalist's rival is not physicalism or primitivism per se. It is, rather, another kind of realist view, of which physicalism and primitivism are different versions—namely, *nonrelationalism*. And the phenomenon of perceptual variation is supposed to tell against *any*

nonrelationalist view. Nonrelationalists hold that objects are colored or smelly irrespective of the relations that they bear to perceivers. According to nonrelationalism about smells, the lilac smell is a perceiver-, or mind-, independent property of an odor. Given that odors are olfactory objects, the most natural physicalist view is that smells are molecular properties—specific configurations of types of atoms, say.¹⁶ According to primitivism, smells are sui generis properties of odors.¹⁷

In the case of color, the argument from perceptual variation is well developed. There is wide variation in the perception of color—interspecies, interpersonal, and intrapersonal. Color relationalists argue that nonrelationalists are incapable of explaining this kind of variation. So that we may understand why the trouble arises for nonrelationalism, consider an example of interpersonal variation. Two normal observers might disagree over which of a range of color chips is unique green (i.e., the shade of green that is neither bluish nor yellowish).¹⁸ Chip 1, for instance, might be unique green to Paul while appearing distinctively bluish green to Mary. We must ask, then: *Is the chip unique green or bluish green?*¹⁹

According to the relationalist, the problem arises because there is no exclusive answer to this question. The problem can be laid out as follows.²⁰ We accept

Ground_{col}: the ground for ascribing a certain color to something is the color that it looks to have.

But we must also recognize

Variation_{col}: the color that something looks to have might be highly variable from person to person and/or from circumstance to circumstance.

Paul and Mary constitute an instance of Variation_{col}. Given Ground_{col} and Variation_{col}, we are forced to ask: What color *does* the chip have?

Given that both Paul and Mary are normal observers, and that the illuminant under which they view the chips is the same, there seems to be no nonarbitrary way of choosing whose report is the right one. Mary's claim that the chip is bluish green seems just as eligible to be correct as Paul's does. We might, in an eliminativist mood, claim that neither Paul nor Mary is correct. But, given that interpersonal variation is likely rampant from person to person and from circumstance to circumstance, this has the consequence that no object ever has the colors it looks to have. And, for reasons I laid out earlier, this result is unpalatable. The most plausible way of explaining the scenario, the relationalist claims, is that *both* Paul and Mary are correct.²¹

For the sake of looking deeper at the relationalist's claim, let us for the moment take the dispositionalist as the paradigmatic relationalist.²² Nothing hinges on this. Perceptual variation—at least on the face of it—supports any view according to which the nature of colors is (in part) constituted by the kinds of effects they have on perceivers. And it is to this family of views that I address my response. The dispositionalist, then, argues that her view is well suited to deal with this variation. Remember that, according to the dispositionalist, colors are relational properties—in particular, dispositions to cause certain experiences in certain perceivers in certain conditions. Given this, the dispositionalist is able to argue that, in a single circumstance, the chip has one color for Paul and another color for Mary. Relativized to Paul (or any subpopulation of which he is a representative), chip 1 is unique green; and relativized to Mary (or any subpopulation of which she is a representative), chip 1 is bluish green.

Let us make a similar restriction in the case of nonrelationalism and take the physicalist as the paradigmatic nonrelationalist. Again, nothing hinges on this. Although cast in the language of physicalism, the kind of response I will give to the relationalist could be made by the primitivist. Given this, let's

consider the effect perceptual variation has on the physicalist. The physicalist has no way to answer this challenge, according to the dispositionalist. On the physicalist's view, Paul and Mary both cannot be correct. The physical properties of the chip remain the same. If the color of the chip is some physical property of it, then the chip has that property when Mary looks at it, and it has it when Paul looks at it. On the physicalist picture, then, (at least) one of them *must* be misperceiving the chip.²³ But this, the dispositionalist urges, is implausible. Once we grant that one of them must be misperceiving and agree that there is no nonarbitrary way to choose between the conflicting reports, we acknowledge that there is little reason to think that physicalism is the correct theory of the colors.

Now, the physicalist might argue that there is indeed a way to decide between Paul's and Mary's declarations. We go with the majority, she might say. (Suppose, for the sake of argument, that there is a majority.) If the majority of people report that chip 1 is unique green, then we go with Paul. The chip, then, is unique green and, consequently, unique green *is* whatever physical property chip 1 has (e.g., a certain spectral reflectance). If the majority of people go with Mary, then the chip is bluish green. Whatever spectral reflectance the chip has *is* bluish green.

However, as Bennett (1968) argues for the case of taste, even this is arbitrary. He asks us to consider the case of phenol-thio-urea—a substance that tastes bitter to 70 percent of the population and is tasteless to the rest.²⁴ We might go with the majority and claim that phenol is bitter. If we were physicalists, we would say that phenol is bitter because it has a certain molecular property (or set of molecular properties) and bitterness *just is* that molecular property (or set of molecular properties). Because this chemical property remains constant, nontasters misperceive the taste of phenol. Their experiences might attest to its being tasteless, but it is actually bitter. However, as Bennett argues, mass micro-surgery might bring it about that the standards change—after the surgery, phenol is tasteless to almost all of the population while bitter to only a few. In such a case, he argues, there are good grounds for saying that phenol has gone from being bitter to being tasteless.²⁵ But if bitterness just is some physical property, then it has not undergone this change! Rather than settling for this conflicting result, Bennett argues that the way to understand the change that phenol has undergone is as a change with respect to its relational properties. What the phenol argument shows us, Bennett argues, is that taste properties—indeed all of the so-called secondary qualities—are dispositional. He concludes: “We may still call things green or sour or stinking or noisy, but philosophers should bear in mind the essentially relative nature of these adjectives and their like: ‘similar in color’ means ‘looking similar in color to nearly everyone under normal conditions,’ and a careful metaphysic will take note of that fact” (1968, 106).

As it turns out, issues of perceptual variation arise in an equally striking way for the olfactory case. For example, about 30 percent of people report that androstenone has no smell, whereas the other 70 percent report that it has a strong, urinous smell.²⁶ In another case, 36 percent report that isobutyraldehyde has no smell, while the remaining 64 percent claim that it has a malt-like smell.²⁷ Finally, 33 percent of people claim that 1,8-cineole has no smell while the remaining 67 percent report that it has a camphor-like smell.²⁸ Here, then, we have an olfactory analogue of the variation in the color and taste cases. Like the color case, we accept

Ground_{sm}: the ground for ascribing a certain smell to something is the smell that it appears to have.

But we must also recognize

Variation_{sm}: the smell that something appears (smells) to have might be highly variable from person to person.

In each of the three cases I cite above, observers in each group have otherwise normal olfactory acuity.²⁹ Like both the color and taste cases, there seems to be no nonarbitrary means of deciding which group is right and which group is wrong. After all, as Ground_{sm} states, the ground for ascribing a certain smell to something is the smell that it appears to have. Suppose that androstenone has a urinous smell to Bert and no smell at all to Nellie. According to the dispositionalist, Nellie's claim that what she sniffs has no smell is just as eligible for correctness as Bert's claim that it has a urinous smell. However, according to the physicalist, both Nellie and Bert cannot be correct. Since the physical properties of the substance remain the same, then either Nellie or Bert must be wrong. One of them must be misperceiving. But once the physicalist grants that there is no nonarbitrary means of choosing between them, she commits herself to the falsity of her view. Both of them cannot be correct and yet neither of them can be shown to be incorrect. Again, according to the dispositionalist, the most plausible way of explaining the situation is that *both* Bert and Nellie are correct. Relativized to Bert (or the subpopulation of which he is a representative), androstenone is urinous; relativized to Nellie (or the subpopulation of which she is a representative), it has no smell at all. Smells, then, are relational properties.

I must note that the relationalist is not the only one who can exploit the existence of perceptual variation. As I characterize it above, the arena of the argument from perceptual variation is a realist one. As I describe it, it is an argument against one kind of realist view, nonrelationalism, in favor of another, relationalism. But it could equally be used by the nonrealist—the eliminativist proper or the projectivist. It is open to either to argue that, unlike physicalism and like dispositionalism, their view can accommodate the facts about perceptual variation. Remember that, according to the eliminativist proper, nothing whatsoever is colored, tasty, or smelly. Perceptual variation only corroborates this. Rather than multiplying the number of smells and colors beyond belief (e.g., urinous to subpopulation S, or Bert, or Nellie, and so on), we ought to concede that they are just not anywhere to be found. They are illusions, and it is a matter of convention that we think and say that things are smelly and colored.³⁰ As we also know, the projectivist takes a similar stance but claims that mental particulars (sense-data or sensory fields) are colored, smelly, and the like. Perceptual variation is easy to explain, the projectivist claims. In Bert's case, his olfactory field (let's assume) instantiates a certain olfactory property—namely, urinous. Nellie's olfactory field instantiates no olfactory property whatsoever. Neither is mistaken about the smells that things—namely, olfactory fields—have.

With respect to the argument from perceptual variation, then, the dispositionalist is not the physicalist's only opponent. However, like I claimed at the beginning of this section, nonrealist views are plausible only if realist alternatives prove implausible. Given that I will conclude that there is indeed a lively debate amongst realists, I will not consider the nonrealist opponent in what follows.

4. Nonrelationalism Refuted?

Before moving on to assess the argument from perceptual variation for the case of olfaction, it is important to say something about the difference between the shifted spectra case (i.e., the color case) and the phenol/androstenone cases. To be sure, both are cases of perceptual variation. But they differ in the threats that they pose to nonrelationalism. In the case of shifted spectra, the differences in subjective response are minor. To repeat my earlier example, chip 1 is *unique green* to Paul and *bluish green* to Mary. As Byrne and Hilbert (2003) note, these minor differences are of no ecological significance. They are simply the result of pushing our color vision to the limits of its resolution. When it is so pushed, we should expect that the

system will make minor mistakes. Given this, the argument from shifted spectra poses little threat to nonrelationalism.³¹ Unlike what the relationalist urges, it certainly is plausible that one of Paul and Mary is wrong (or indeed that they are both wrong).³²

The same kind of response is not available in the phenol or androstenone cases. It is not that Bert's and Nellie's respective experiences differ in slight ways—for example, that, on the basis of their respective experiences, they disagree over just what floral scent an odorant has. In such a case, the response would be available. I will say more about cases of this kind in section 5. Unlike these cases of shifted “*fragra*,” Bert's and Nellie's subjective responses (as well as those of the populations they represent) are radically different from one another. Their difference is not one of a minor mistake in resolution; rather, the mistake is a major one. And it is simply not plausible to respond to such a divergence by claiming that large portions of the population have wildly unreliable olfactory systems, that such a large portion of people are simply mistaken about the smell of a particular substance. The analogue in the visual case would be a situation in which a large portion of the population has achromatic vision. Clearly this would not be a case in which the visual system is pushed to the limits with the result that one subpopulation is simply mistaken. Like its analogue, then, it is equally implausible that the same is true for the androstenone case. We need some other way to explain the conflict. As we know, the relationalist resolves the conflict by arguing that both groups are right. This is the most plausible explanation of the facts, the relationalist urges, and one that is unavailable to the nonrelationalist.

But now let's put our nonrelationalist hats on. Has the relationalist shown that our view is false? We know that we cannot defuse the situation by simply appealing to the larger subpopulation—the majority 64 percent in the case of isobutyraldehyde, the 67 percent in the case of 1,8-cineole, or the 70 percent in the case of androstenone. Instead, let's take a closer look at the examples of variation themselves. In order for these examples to work in favor of the view that smells are relational properties, and against the view that they are nonrelational properties, these cases must exhibit *the right kind* of variation. The relationalist tells us that, to Nellie, androstenone has no smell. There are two circumstances that “has no smell” might denote. The nonrelationalist is in trouble only if Nellie's circumstance is one of these. On one reading, “androstenone has no smell” might denote a situation in which Nellie's experience reports the absence of a certain kind of property. It is the olfactory version of perceiving nothingness, an experience that reports “no urinous smell here/now”. This situation is to be distinguished from another—namely, that of Nellie's failing to have an experience of a smell, of failing to detect a property in her vicinity. On this second reading, then, “androstenone has no smell” might denote a situation in which Nellie's experience has nothing to report about the androstenone smell of things. It neither asserts the presence of a property nor the absence of one. Her experience is simply silent.³³

For the relationalist's argument to work, it must be the case that Nellie has an experience of the first kind. The relationalist takes herself to be explaining a phenomenon the nonrelationalist cannot. Remember that the problem arises for the nonrelationalist because of tension between $\text{Ground}_{\text{sm}}$ and $\text{Variation}_{\text{sm}}$. Bert and Nellie are supposedly instances of $\text{Variation}_{\text{sm}}$. But take a closer look at what $\text{Variation}_{\text{sm}}$ demands. It requires that there be two (or more) conflicting olfactory experiences. That is to say, it requires that there be two (or more) olfactory experiences each making different assertions about how things are olfactorily (and, of course, each of which seem intuitively correct). If Nellie's experience makes no such assertion, then there is no conflict between her and Bert. And if there is no conflict between Bert and Nellie, then there is no problem to solve. Consider an analogy. There is conflict between the theist and the atheist—both make assertions about the existence of God. But there is no such conflict between the theist and the agnostic. The

agnostic makes no claim whatsoever about the existence of God; she neither says that God exists nor that he doesn't. If Nellie's olfactory experience is similarly agnostic about the presence of a certain smell, then there is no conflict between Nellie's and Bert's respective reports. As a result, there is no problem to solve and the nonrelationalist need not worry.

Notice that, for the relationalist's argument to go through, there had better be a distinction between perceiving an absence and failing to perceive a presence. Clearly, we can make sense of failing to perceive something, or some property. I can fail to see a bug camouflaged on the leaf of a plant. I can fail to see a gorilla walking through a group of people tossing a basketball.³⁴ Or if I am color blind, I can fail to see the color red. It is the other half of the distinction that is in need of defense, then. It is obviously not enough to say that we perceive absences by failing to perceive presences. It is true, I take it, that we sometimes use reporting-an-absence talk when what's really going on is the nonreporting of a presence. But if this is all that is going on at the level of experience, then there is no problem for the nonrelationalist. If we perceive absences by failing to perceive presences, then there is no real distinction between the two—just a verbal one—and the argument from perceptual variation fails to go through. If the argument from perceptual variation is to go through, then perceiving an absence must involve more than merely failing to perceive a presence. Rather, it must involve a positive contribution to the phenomenology of olfactory experience, just like the presence of androstenone would in Bert's case.³⁵ It must be a detecting of sorts—a “detectable nondetecting.”

For the sake of argument, let's assume that there is a distinction. The question for the nonrelationalist to ask is: What is the right way to describe Nellie's experience? Obviously we are not Nellie and cannot occupy her point of view on the world. But there are considerations in favor of the view that Nellie's experience is of the agnostic kind. The considerations are both empirical and phenomenological.

Nellie's condition, where except for an insensitivity to a specific odorant (or family of odorants) she enjoys normal olfactory perception, is known as a specific anosmia. It is generally thought that there are upward of 70 specific anosmias.³⁶ It is well known to scientists that there are significant differences in the detection thresholds of human perceivers.³⁷ At its lowest extreme, a subject simply has no experience of a smell even when the odorant taken in is presented in relatively high concentrations.³⁸ Those in Nellie's situation fall within this group; Bert does not. Originally, it was thought that the existence of specific anosmias provided a clue to how odor stimuli are coded by the olfactory system. In particular, it was thought that their existence indicated a family of designated receptors each sensitive to a select compound—for example, androstenone. Using color blindness as a model, Amoore (e.g., 1970, 1977) suggested that these specific deficits could help us determine the “primary odors.” As a first stab at explaining Nellie's situation, researchers proposed that those in Nellie's group must have a genetic mutation that prevented the development of the receptor for androstenone. Nellie's group, it was thought, simply lacked that type of olfactory neuron. This was supported by the fact that many cases of androstenone insensitivity seem to be hereditary, suggesting that it is determined, in part at least, genetically.

If Nellie's group lacks the receptor necessary for the detection of androstenone, this fact alone would alleviate any concern for the nonrelationalist. In order to see why, consider how such a case would differ from another. Suppose you have a security alarm in your home and, in particular, a motion detector on each window and door. Your alarm is enabled and is working properly. A control center displays a green light when the alarm is enabled and its motion detectors are not triggered. No green light, no intruder. Nellie's proposed situation is not the same. Nellie, we are supposing, *lacks* the receptor necessary for the detection of androstenone. She is, as a result, unable to detect the compound. Unlike your house

alarm, then, it would seem that we have little reason to think that her olfactory system delivers the message “no urinous smell here/now.” Rather, we have every reason to think that her olfactory experience simply has nothing to say about the androstenone smell of things. If this is the case, then there is no conflict between Bert and Nellie and the argument from perceptual variation fails to go through.

But this conclusion has been complicated by recent psychophysical research. The conclusion depends on Nellie’s lacking the receptor necessary for androstenone detection and recent studies have suggested that a certain form of insensitivity—in particular, insensitivity to androstenone—is in fact a potentially transitory condition. Wysocki, Dorries, and Beauchamp (1989) report that they were able to induce sensitivity to androstenone in half of a group of initially insensitive subjects. For six weeks, a group of 20 subjects were exposed to a consistent concentration of androstenone as well as a control odorant (in this case, amyl acetate). Each subject smelled each individually, three times a day, for the duration of the study. At the end of the study, 10 of the subjects reported that they now experienced a characteristic smell upon exposure to androstenone. Wysocki et al. argue that the newly sensitive subjects have always possessed olfactory neurons with the receptors for androstenone. The receptors are not missing or defective; they are simply *unexpressed*. They give the immune system as an analogy. Specific immune responses might occur only after exposure (in some cases, repeated exposure) to a certain antigen. It is not that the immune system lacked the capacity for response at the start. It is just that it had to be “kicked into action.” According to Wysocki et al., the same goes for the olfactory system in some cases. Repeated exposure to androstenone at a relatively high concentration might initiate receptor response and, thus, conscious experience, through a currently unknown mechanism. Similar sensitivity shifts have been observed with repeated exposure to citralva and isoborneol.³⁹

Perhaps, then, Nellie is more like our house alarm than we originally thought. If Nellie is one of these transitory folks, then, like the no-receptor scenario, there is something amiss with her olfactory system. Her androstenone receptor remains unexpressed. Still, she *does have* the appropriate receptors. And, like the house alarm, we might think that their being there and yet sending no signal constitutes information that Nellie’s olfactory system can use—that is, “no urinous smell here/now.” This proposal may sound strange, but compare Nellie’s proposed scenario with an unreliable house alarm. Suppose you have a squirrel’s nest in your attic. When the family of squirrels is home and asleep in their nest at night, their weight is enough to stress the wire connected to your motion detector and cause it to disengage. The green light, however, stays on. When there is no such stress, the motion detector remains engaged and the green light is properly connected to the system. If an intruder enters your home, sirens will blare. The result is that the green light is properly connected during the day and improperly so at night. (The light is “kicked into action” during the day and inhibited from being so at night.)

Now suppose that there is someone lurking in your hallway one night. What message does your alarm system send you? We know that the light is on at night—whether there is an intruder in your home or not. But does this mean that it doesn’t provide you any information? No. Your alarm system tells you that there is no intruder in the house. In the case of the reliable alarm system, optimal conditions obtain and there is causal covariation between the light’s signaling and the absence of an intruder. Although your alarm is unreliable, it is of the same kind as my reliable one. From time to time, optimal conditions simply do not obtain and your system can misrepresent that there is no intruder. Although it is false information, it is information nonetheless.

If Nellie is like your unreliable alarm, and the failure of a receptor to fire can result in information in and of itself, then the nonrelationalist’s dissolution of the argument does not work. If Nellie is like your

unreliable alarm, then the relationalist does have a case for her view of the smells. But remember that if the argument from perceptual variation is to go through, then perceiving an absence must involve more than merely failing to perceive a presence. Like your (albeit faulty) alarm's green light, Nellie's perceiving an absence must involve a positive contribution to the phenomenology of olfactory experience—a "detectable nondetecting." If Nellie is analogous to your alarm, she must be subject to an active olfactory state capable of misrepresenting the absence of androstenone. If she is not, then Nellie's perceptual situation is no different than the failing-to-report case. And we know that, if the argument from perceptual variation is to go through, her situation must be different than that.

There are several considerations that we can raise against this kind of move—both phenomenological and empirical. We know that the nonrelationalist is in trouble if Nellie's olfactory experience reports that there is no urinous smell here/now. She is not in trouble if Nellie is simply smell-blind to androstenone. Visually blind people do not get any information regarding the chromaticity of things (or about specific chromatic values of things). Similarly, "olfactory-blind" people do not get any information about the smell of things (or any information about particular smells). Indeed, there are people whose situation is more severe than Nellie's. Some people lose their sense of smell entirely due to various illnesses and medical conditions. The olfactory receptors remain intact; it is just that something else prevents the receptors from firing in the presence of the relevant stimulus. Some of these people regain their olfactory abilities; all remember what it was like to smell. Although most olfactory researchers do not recognize the distinction between a failure to smell presences and smelling absences, personal reports testify to the fact that what these people experience is in fact smell-blindness.

Consider, for example, the following testimony in Sacks (1985):

"Sense of smell?" he says. "I never gave it a thought. You don't normally give it a thought. But when I lost it—it was like being struck blind. Life lost a good deal of its savour—one doesn't realize how much 'savour' is smell.... My whole world was suddenly radically poorer...." (159)

To be sure, we have to be careful in interpreting personal reports such as this. For example, although Sacks's subject describes his situation as "like being struck blind," he does immediately follow with: "[l]ife lost a good deal of its savour." This latter claim could mean one of (at least) two things. First, it might mean that the smells of things are simply muted—less vivid or intense—or that *some* information about them is still coming in—as in the extreme case in which his experience reports that there are no smells. If this is the case, then the nonrelationalist is in obvious trouble. The nonrelationalist's response to the argument from perceptual variation relies on this not being Nellie's situation. The worry is, then: is it?

A second thing that "[l]ife lost a good deal of its savour" might mean is that, in becoming smell-blind, one's total perceptual situation is simply less interesting. And this, I think, is what Sacks's patient is reporting. Many people who lose their sense of smell report that they did not appreciate the sense until it was gone. Another sufferer reports: "[w]e take it for granted and are unaware that *everything* smells: people, the air, my house, my skin" (Ackerman 1990, 42). It is well documented that loss of smell often leads to depression (consider how the sense of smell is connected to memory).⁴⁰ Subjects feel as though an integral aspect of their take on the world is missing. Although I have not found it stated outright, no one speaks of olfactory loss as a change from the world of smells to a world in which we are told that nothing smells. It is not, then, that an aspect of olfactory awareness has changed, as in the first interpretation above. There *is no* olfactory awareness. Indeed, those who unexpectedly regain their sense of smell speak of "suddenly [becoming] aware of odors [smells]" (Ackerman 1990, 41) much like someone who has a restored sense of

vision might speak of suddenly becoming aware of colors again. Blindness, then, is a running theme throughout personal reports of smell loss.⁴¹

And there are further empirical considerations that undermine the relationalist's response. If the response is to go through, Nellie's androstenone receptors must, at all times, be sending either an "androstenone here/now" signal or a "no androstenone here/now" one. Remember that the success of the response hinges on there being a difference between Nellie's experience reporting an absence and its merely failing to report a presence ("silence" about androstenone). Unless Nellie's olfactory system is sending these constant signals, there is no way for androstenone absence to effect phenomenology in a way that is different from receptor silence. And if there is no such way, then we have little reason to think that there is a difference between her experience reporting absences and its failing to report presences. How does this idea fare, then? Quite simply, it is a strange one. There is no empirical support for the idea that Nellie's (and indeed anyone's) olfactory receptors each have these two discrete signals that differ from their silent state. It is not a hypothesis that researchers even consider. The idea that evolution would waste resources by having receptors sending signals when they are not latching onto any property in the world strains credulity at best. Such a revision to our notion of a sensory system answers the nonrelationalist only by rendering the architecture of the system spooky. As it stands, then, it is a response with very little, or no, motivation.

Where, then, have we come? Remember that, when she sniffs a sample of androstenone, Nellie has no experience of its smell. Empirical research suggests that she is a member of one of two groups. She might (a) be a member of those with missing androstenone receptors. Or she might (b) be a member of those who have unexpressed androstenone receptors. We know that if she is a member of group (a) then the nonrelationalist need not worry. But we have now seen that the same applies if she is a member of group (b). According to the reports of those who have lost their sense of smell (and whose receptors have remained intact), Nellie's olfactory system remains silent about the androstenone smell of things. Moreover, the relationalist is saddled with the burden of motivating a view with scarce empirical motivation. Rather than accept a position that compromises itself in this way, we must conclude that Nellie is not a member of group (b). Nellie, then, is smell-blind whether she is a member of group (a) or a member of group (b). In each case, her situation is one of *failure* and not one in which her experience positively reports the absence of a property. The argument from perceptual variation, then, fails.

5. Further Questions, Future Directions

Where does this leave us? Although this smell/can't smell version of the argument from perceptual variation is no worry for the nonrelationalist, further work needs to be done to complete her picture. The nonrelationalist needs to consider other cases of olfactory perceptual variation—for example, "shifted fragra" or mass differences in perceived smell. I take it that, in the case of olfactory "shifted fragra," the same response would be available for the olfactory case as it is for the color one. That is, when the olfactory system is pushed to its limits, we should expect that it will make minor mistakes. With respect to major variation (i.e., "mass shifts" in perceived quality), empirical research suggests that these kinds of major differences exist but that they amount to a large population of perceivers with diminished or lack of sensitivity to odorant stimuli (hyposmia and anosmia, respectively).⁴² Research does not suggest the existence of major differences in perceived quality. Still, even if there *were* such differences, we must consider that we are quite humble about our olfactory abilities. We take it that we are much less

accomplished at detecting smells, that we may easily be mistaken about how things are “olfactorially.” Given this, it wouldn’t be an affront to beliefs about our own olfactory abilities to claim that a large number of people are mistaken about the smell of things. And this is a good start—enough, at this stage, to keep the mere possibility of such a major variation from posing much of a threat to nonrelationalism.⁴³

Moreover, another important question needs to be settled before we can even understand what other cases of variation—“shifted fragra” or mass variation in perceived smell—might be like. In talking about the olfactory properties throughout this paper, I have helped myself to properties like urinous, malt-like, lavendery, and lilacy. But pressing questions remain about what smells there are and, more importantly for the possibility of further cases of variation, what relations they bear to one another. In the case of color, we have a well-structured quality space with three primaries spanning a three-dimensional space—hue, saturation, and brightness. In the case of smell, we have no structured quality space as of yet. Many systems have been proposed—for example, Linnaeus’s (1765) system that grouped smells into seven categories, Henning’s (1916) smell prism with three dimensions and six primaries, and Crocker and Henderson’s (1927) four-dimensional space with four primaries. No system has been found satisfactory.⁴⁴ Given the breadth of our olfactory discrimination, each system has been accused of oversimplifying olfactory experience. Obviously some sort of consensus needs to be reached before the nonrelationalist can secure her position. Still, as I stressed above, the mere possibility of further kinds of perceptual variation poses little threat, and the nonrelationalist can focus her attention on these further interesting issues.

Notes

¹ Perkins (1983) draws attention to this fact. The considerations he gives are much the same as mine, and so I will not repeat them here. I will, however, return to a different thread in Perkins later in the paper.

² We typically name the olfactory properties in terms of what we deem their typical, or most natural, source. So, we have the smell of lilacs, or the lilac odor.

³ I argue for this view of olfactory content in Batty Forthcoming, ms.(a) and ms.(b).

⁴ To be sure, we *say* that the garbage smells (stinks, likely), as if the smell is a property of the garbage itself. But we must make a distinction between what is presented in the perceptual experience and what that experience justifies us in believing. The stinky smell certainly gives us evidence, justifies us in believing, that there is, or has been, garbage around. This is an inference we make on the basis of olfactory experience. But for the reasons I discuss above, the odor emitted by the garbage is the object of your experience.

⁵ Odors are certainly not paradigmatic material objects like apples and bananas. As Hacker (1982) claims, things like “clouds” and “puffs of smoke” are on the “borderline of material objecthood,” “partly because of their amorphousness, partly because of their mere relative solidity” (1). As a result, there are interesting questions to ask about the nature of odors. For example, what are the boundaries of an odor? What are the identity conditions for an odor? Because molecules outlast odor-particulars, it is an interesting question of when, and how, a particular odor ceases to be. This raises the question of whether odors have to be present in certain concentrations and configurations and, if so, what the constraints on these are. Similarly, what are we to say about the situation in which two collections mix? Suppose that I spray lavender air freshener over a cloud of cigarette smoke. This is a case in which the lavender odor mixes with the cigarette odor. After I spray the air freshener, do we have a single odor with a complex property or two odors in the same approximate location? These are all interesting questions. They are not, however, ones that I will deal with in this paper.

⁶ It is a well-known fact that there is an intimate relationship between taste and smell. Get a stuffed up nose, for example, and you are unable to taste your dinner. For the purposes of this paper, however, I set aside questions about this relationship. I take it that the proper venue for dealing with these questions is a discussion of taste and, in particular, a discussion of the nature of its perceived qualities. Nevertheless, I recognize that my conclusions here will no doubt impact such a discussion.

⁷ For proponents of the former view, see Armstrong (1968), Jackson (1996), Jackson and Pargetter (1987), Smart (1975). For proponents of the latter, see Armstrong (1999), Byrne and Hilbert (1997, 2003), Dretske (1995), Hilbert (1987), Matthen (1988), and Tye (1995, 2000).

⁸ Many credit Locke with this view. For contemporary proponents of dispositionalism, see Averill (1985), Johnston (1992), McGinn (1983, 1996), and Peacocke (1984).

⁹ Proponents of this view are Campbell (1993), Hacker (1987), Johnston (ms), Stroud (2000), Watkins (2002, 2005), Westphal (1987, 2005), and Yablo (1995).

¹⁰ Proponents of eliminativism proper are Hardin (1993) and Mackie (1976). Those of projectivism are Boghossian and Velleman (1989, 1991) and Jackson (1977).

¹¹ Elsewhere (Batty Forthcoming, ms.(a) and ms.(b)), I argue that while olfactory experience predicates properties of objects, it is otherwise silent on the nature of these olfactory objects. That is, interrogating olfactory experience will not tell us what olfactory objects are; other considerations, such as the garbage case I discuss in section 1, suggest that they are odors. In stating (2'), then, I do not assume that lilac odors appear *as such*. Rather, something appears to us, and this something is in fact an odor.

¹² Others who have substantial discussions of olfaction (but not necessarily the nature of smells) are Bhushan (ms.) and Lycan (1996, 2000). Notable shorter discussions appear in Matthen (2005, 282-88) and Smith (2002, 138-45). Johansen (1996) has argued that Aristotle's discussion of smell represents an early incarnation of the problem of distinguishing the senses. For contemporary discussions of this problem, see Grice 1967, Keeley 2002, Nelkin 1990, Nudds 2003, and Roxbee-Cox 1977.

¹³ Consider this remark in Reid's *Essays* ([1785] 2002): “I might mention several paradoxes, which Mr. LOCKE, though by no means fond of paradoxes, was led into by his theories of ideas.... [s]uch as, that the secondary qualities of body are no qualities of body at all, but sensations of the mind....” (186). Earlier, in the *Inquiry* ([1764] 2000), Reid attributes paradoxes like this to Locke's resemblance thesis. He claims that “the dissimilitude between the sensations of our minds, and the qualities or attributes of an insentient, inert substance... hath been unhappily united to the ancient hypothesis [the theory of ideas]: and from this inauspicious match of opinions... have arisen those monsters of paradox and skepticism with which the modern philosophy is too justly chargeable” (92).

¹⁴ For example, Reid ([1785] 2002) also claims that a smell is “the unknown quality or modification, which is the cause or occasion of a sensation which [we] know well” (202). Again, “though common sense says nothing of the nature of these qualities, it plainly dictates the existence of them” ([1764] 2000, 54). It is

consistent with what Reid says here that smells are whatever external properties play a certain role—that is, the role of causing distinctive sensations in us.

¹⁵ As Cohen (2004) rightly points out, there are nondispositional relationalist views. For example, McGinn (1996) holds that colors are not identical with dispositions of objects but, rather, supervene on these dispositions. McGinn calls this the *supervenience dispositional theory*. This view, he tells us, avoids certain problems with dispositionalism (e.g., the worry that dispositionalism misrepresents the phenomenology of color experience or concerns about the appearance of “red” in “the disposition to look red”) while retaining “the strong dependence of color on sensory response..., though not so directly as before” (545). Another relationalist account is *functionalism* about color. It is defended by Cohen (2003), Jackson (1996, 1998), Jackson and Pargetter (1987), and McLaughlin (2003). According to functionalists, colors are second-order properties—in particular, properties of having some other physical property that is disposed to cause a certain kind of experience in us. Finally, there is Thompson’s (1995) *ecological view*. Thompson tells us that colors “correspond to surface spectral reflectance[s] as visually perceived by the animal” (245). The details of Thompson’s view are not entirely clear. But, given that it is inspired by Gibson (1983), it is safe to say that he thinks that, in specifying the nature of color (red, e.g.), it is not enough to provide the microphysical details of the object perceived. One must also take into account the perceiver, the viewing conditions *and* what the perceived property means to the animal (e.g., ripe, edible, etc.). As Thompson tells us, “colours... are tied to affordances and effectivities: they indicate what the environment affords for the animal and what the animal can effect in its environment” (244).

¹⁶ In some cases, the configuration of the atoms is crucial. For example, carvone has the chemical formula $C_{10}H_{14}O$. It, however, has two isomers—“chemical anagrams” that have the same chemical formula and the same bonds between atoms, but in which the atoms are arranged differently. Each isomer smells differently. D-carvone smells of caraway while L-carvone smells of spearmint. What this shows is that, in some cases, small changes in molecular structure will lead to drastic changes in perceived smell.

¹⁷ As Cohen (2004) notes, nonrelationalists need not be realists. Projectivism is a form of nonrelationalism. Given that we have rejected eliminativism in favor of realism, I do not include projectivism with the nonrelational views.

¹⁸ This is well documented. In the philosophical literature, see Hardin 1993. For the scientific data see, e.g., Hurvich, Jameson, and Cohen 1968. For a recent philosophical discussion of shifted spectra, see Byrne and Hilbert 2007; Cohen, Hardin and McLaughlin 2006, 2007; Triplett 2007; and Tye 2006a, 2006b, 2007. This recent discussion deals with both issues I will discuss here as well as some that I will not.

¹⁹ I focus on a case of *interpersonal* variation of apparent color because it has an analogue in the olfactory case.

²⁰ Here, I draw on the set up of the problem in Jackson and Pargetter 1987.

²¹ Note that if Mary saw the chip as red, we wouldn’t hesitate in proclaiming her experience a misperception (i.e., an illusion) and this question would not arise. Other than being a color itself, red isn’t even remotely similar to the range of colored chips laid before her and Paul. It is the more subtle cases of variation that the relationalist’s argument trades on.

²² For the most part, dispositionalists have waged the argument from perceptual variation.

²³ I say “at least” in parentheses because, on the physicalist’s picture, *both* Mary and Paul could be misperceiving the chip. When discussing physicalism I will, for the sake of simplicity, assume that one of them is successful and that the other misperceives.

²⁴ From here on, I will just use “phenol.”

²⁵ Bennett’s argument relies on our sharing his intuitions. But some might not and, thus, might be tempted to deny this crucial premise. In what follows, I will assume that this premise is intuitive and plausible.

²⁶ Androstenone was the first mammalian pheromone to be identified. It is an organic compound that occurs in high concentrations in the saliva of sexually mature male boars and in the sweat of humans.

²⁷ Isobutyraldehyde is a compound used as a chemical intermediate in the manufacturing of, among other things, solvents, plasticizers, flavor and fragrance chemicals, insecticides, hydraulic fluids, and lubricants.

²⁸ Also called eucalyptol, 1,8-cineole is a compound found in eucalyptus leaves, bay leaves, and other aromatic plant foliage. It is found in camphor-scented essential oils.

²⁹ The olfactory analogue of illumination conditions is something like “atmospheric conditions.” The combination of different odorants in the air can affect *whether* an observer can detect a certain odorant or *how* that odorant is perceived to be—e.g., how intense of a smell an odorant is perceived to have. In each of the cases I cite above, results were gathered in highly controlled laboratory settings, in which the air inhaled was free of other “contaminant” odors.

³⁰ Hardin (1993) argues in this way for the case of color. Although he does not use perceptual variation as a central argument for his eliminativism, Hardin does argue that his view is better at explaining it than relationalism. In particular, see his chapter 2.

³¹ Byrne and Hilbert (2003) continue: “[Relationalism] makes color illusions very rare (just how rare will depend on the details...). The near-infallibility of color vision is a result to be avoided, not embraced” (57).

³² This is not the only way for the nonrelationalist to respond to the shifted spectra version of the argument from perceptual variation. Color pluralism is consistent with both primitivism and physicalism. According to the color pluralist, both Paul and Mary are correct. This is because the chip is multiply colored; indeed, the chip is both “nonrelationally” unique green and “nonrelationally” bluish green. According to the color pluralist, the relationalist conflates the conditions for the perception of a color with the color itself. Kalderon 2007 contains an excellent discussion of this kind of response. See also Harman 2001. Note that this kind of response is implausible for Bennett’s phenol case in which the taste of a substance varies between bitterness and no taste. A pluralist take on this would render the substance both bitter and tasteless.

³³ Perhaps the best-known source of the distinction between perceiving an absence and the absence of perceiving is Armstrong’s (1987) discussion of the Headless Woman Illusion. Drawing attention to the magician’s famous illusion, Armstrong highlights how the failure to perceive the head of the woman gives the false impression of perceiving the absence of her head. (I take it that, by “impression,” Armstrong means belief.) Similarly, Armstrong argues, the failure to perceive the disjunctivity of a property might give rise to the false impression of the perception of the absence of disjunctivity. In addition to Armstrong’s well-known discussion, Martin (1992) and Nudds (2001) make use of this distinction for touch and audition respectively.

³⁴ In a phenomenon known as inattentional blindness, subjects fail to notice the appearance of an object in a visual scene. Perhaps one of the most striking, and comical, examples of inattentional blindness is Simons and Chabris’s “gorilla experiment” (1999). Subjects are asked to observe two teams of people tossing a basketball and to count the passes between members of one of the teams. Simons and Chabris report that 50 percent of subjects failed to notice a woman dressed in a gorilla suit walking through the scene. What’s even more remarkable about this is that she remains on camera for 9 seconds, stopping in the middle of the group to face the camera and thump her chest. The video is available for individual viewing at <http://viscog.beckman.illinois.edu/flashmovie/15.php>. In another closely related phenomenon known as change blindness, subjects fail to notice that an object has radically changed or disappeared. See, e.g., Levin and Simons 1997; Simons 2000; and Simons, Franconeri, and Reimer 2000.

³⁵ In stating that perceiving an absence must make a positive contribution to the phenomenology of olfactory experience, I wish to remain neutral on whether olfactory experience is analytic or synthetic (or both). If we had an analytic sense of smell, we would be capable of distinguishing the individual properties of the presented olfactory object. If we had a synthetic one, the various properties of the presented olfactory object would form an irreducible experience, one in which the relevant properties of the stimulus are not so distinguishable. On either view of the nature of olfactory experience, properties make a contribution to the phenomenology. In line with my remaining neutral on the analytic/synthetic question, I impose no requirement on a successful relationalist response that this contribution be analytic or synthetic.

Still, I will note that most researchers hold that olfactory experience is largely synthetic. 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. But most strikingly, when single chemical odorants that are identifiable in isolation are combined with other such odorants to form complex mixtures, subjects are able to identify two odorants on 12 percent of occasions, three on 5 percent of occasions, four on 3 percent of occasions, and five on none (Laing and Francis 1989). Many researchers have concluded that these results support the view that olfactory experience is largely synthetic.

³⁶ See, e.g., Amoore 1975. The better-known specific anosmias are those to androstenone, isobutyraldehyde, 1,8-cineole, 1-pyrroline, pentadecalactone, L-carvone, trimethylamine, and isovaleric acid. See also Wysocki and Bartoshuk 1991.

³⁷ The olfactory detection threshold is the lowest concentration of an odorant required for detection against an odorless background. The fact that these thresholds vary in perceivers should not surprise the person on the street. We happily acknowledge our olfactory system’s limitations when compared to the capabilities of other animals. Dogs, for example, can achieve olfactory feats that we cannot. Empirical research has uncovered that the average dog has 220 million olfactory receptors compared to our 5 million. As a result, dogs are able to detect odorants at extremely low concentrations. For us, such a concentration would be undetectable. Dogs themselves differ with respect to their olfactory acuity. Why not us as well?

³⁸ Here I try to describe Nellie’s perceptual situation as neutrally as possible—and this seems to be the best way to do so. Had I said that Nellie is *unable to smell* anything, I would beg the question in favor of the view that Nellie receives deficient information about the smell of things. That is, I would beg the question in favor of nonrelationalism. Had I said that Nellie *smells nothing*, I would beg the question in favor of the

view that Nellie perceives the absence of a property. That is, I would beg the question in favor of relationalism. And, as I stated earlier, saying that androstenone has no smell to Nellie is too suggestive of either of these two situations.

³⁹ See Dalton and Wysocki 1996. To those that can detect it, citralva has a powerful lemony smell and isoborneol has a musty, camphoraceous one.

⁴⁰ For one study of the psychological effects of smell loss, see Van Toller 1999.

⁴¹ There is a growing online dialogue between those who have lost, or who have never had, a sense of smell. You can find their personal accounts posted on various web discussion boards. See, e.g., <http://health.groups.yahoo.com/group/anosmia/> and <http://health.groups.yahoo.com/group/dysosmia/>.

⁴² See, e.g., Cowart et al. 1997 and Lawless 1997.

⁴³ I recognize that the nonrelationalist would have to find some motivated way of deciding between differing populations—e.g., some physiologically realized olfactory disorder on the part of those who are mistaken. Given that this case of perceptual variation represents a mere possibility, and not a pressing issue for the nonrelationalist, I set this issue aside.

⁴⁴ Clark 1993 has a condensed discussion of the various systems that have been proposed. For a more thorough discussion, see Harper, Bate-Smith, and Lad 1968.

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