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**Changing appearances**  
**A minimalist approach**

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for the degree of Doctor of Philosophy in Philosophy

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## Declaration of authorship

I, Giulia Martina, declare that this thesis is the result of original research carried out during my time as a doctoral candidate at the University of Warwick; that none of this work has previously been submitted for a degree or other qualification at this University or elsewhere; that the work presented herein is entirely my own; that all source materials have been clearly and adequately acknowledged and cited.



## Abstract

In this thesis, I defend a minimalist approach to perceptual appearances. On this approach, we aim at accounting for the ways things appear in perception compatibly with a view on which perceptual experience presents us with objective and perceiver-independent properties. The phenomenon of changing appearances has been taken to show that a minimalist approach is not viable. According to Argument from Changing Appearances, in order to account for the ways things appear to subjects in certain conditions, we need to appeal to special properties in addition to the objective and perceiver-independent properties that we are committed to on independent grounds. I focus on a variety of cases of changing appearances – three visual cases and two olfactory cases – and discuss how the minimalist can resist the Argument. Each case presents a somewhat different challenge, allowing us to explore different strategies that the minimalist can appeal to.

# Chapter 1: Introduction

## 1.1 A starting point

When we see, hear, smell, touch, taste or otherwise perceive, things appear a certain way to us. Lemons look yellow and taste sour, toasted bread can smell slightly burnt and feel crispy, a voice can sound increasingly louder. Everyone who is endowed with well-functioning perceptual capacities in the sensory modalities involved will be familiar with these facts. If there is one thing we can tell, on the basis of seeing, smelling, or hearing, we may think, it is how the things around us look, smell, or sound. We seem to have a pre-theoretical grasp on the notion of a way of appearing or appearance, and we frequently think and talk about appearances in everyday life.

Philosophers have often emphasised two aspects of the notion of an appearance: its subjectivity and its contrast with the notion of reality. The first thought is that appearances are subjective because the notion of an appearance is tied to that of an experience: a lemon's looking yellow is a matter of its looking yellow to someone who sees it – a perceiver, who undergoes a certain visual experience. In ordinary linguistic interactions, we sometimes emphasise that things look a certain way *to us*, or to someone in particular. In doing so, we may want to convey that we are not sure that that is how things are, or even that that is how they look to our interlocutors. For instance, in response to someone's questioning our claim that some lemons look a bit greenish, we may say 'well, they look a bit greenish to me', conceding that we may be wrong, or at least acknowledging that it is not evident to everyone else that the lemons look greenish. In other cases, we may not intend to make a claim about the way things are or may be at all, but rather intend to convey how things strike us, in contrast to how they might strike others, or what kind of experience we are undergoing. Suppose I briefly faint because of low blood pressure; as I regain consciousness, you ask me 'how do you feel?'; 'everything looks a bit blurry', I reply. As the question makes clear, my claim that things look blurry is meant to convey something about how things are with me or about my experience (how I feel), and not about how the objects in the room are or even how I think that they may be, even though I am not sure.

The second thought is that appearances are *mere* appearances, to be contrasted with what is real. Sometimes we intend to contrast the way things appear with the way things are: while something looks F or looks like an F, it is not F. This is especially evident in cases where we are concerned with identifying what kind of object an object is, such as when we say that a bar of soap looks like a piece of candy, but warn our friend that it is not – and so they should not attempt to eat it. But we may care about contrasting appearance and reality also in cases when superficial and harmless properties such as colours are at stake. For instance, in response to a flatmate pointing out, in surprise, that the living room looks pink, I would say ‘it *looks* pink’, and then add, as an explanation ‘it’s this new lampshade’. In the context of this exchange, I can reassure my flatmate that I have not painted the living room walls pink, even though I acknowledge that that is how they look.

While it is not obvious what we can conclude on the basis of these examples, they seem to show that we sometimes talk of the way things look to convey something about the experiences of particular subjects and that we sometimes intend to convey a contrast between how things look and how things are. Both these aspects are plausibly part of the ordinary notion of an appearance. If we look at more examples, however, a more nuanced, if not fundamentally different, picture emerges.

To begin with, we take appearances to play an important epistemic role. Most obviously, we attribute properties such as colours and shapes to the things around us on the basis of how they look – e.g. we can tell that lemons are yellow by their look. But we also rely on the way things look to gain information about the kinds of things they are, what they are made of, whether they are edible or dangerous, and so on.<sup>1</sup> Arguably, our interest in how a lemon looks, for instance, is primarily an interest in whether it is ripe, and thus edible. Many of our reports of the form ‘o looks F’ or ‘o looks like an F’ seem to be used to convey that o is probably F or that, as far as we can tell, o is F. And we can use these reports to share information and knowledge with others. For instance, I can say ‘that looks like a lemon’, to suggest that you buy that fruit if you want to buy lemons; or ‘that one looks greenish’, to suggest that you do not buy it if you want to buy a ripe lemon.

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<sup>1</sup> That appearances play this epistemic role obviously does not mean that the way something looks is always a good, let alone sufficient, ground for concluding that the thing has certain properties, even though it may be in some contexts. For instance, we can tell lemons from limes and oranges in a fruit shop on the basis of how they look, but that look will not be of much help if we are trying to rule out that the objects we are seeing are fake wax lemons.

In talking like this, we normally assume that we will be understood. That is, we normally assume that our interlocutors are familiar with the ways common things in our environment typically look, as well as with the properties that things that look those ways typically have – for instance, they are familiar with the typical appearance of ripe lemons. Relatedly, we expect our interlocutors to agree with us about the way things look. If an agreement cannot be reached, we will sometimes take either us or interlocutor to be wrong. Earlier we mentioned that if our interlocutor challenges our claim that some lemons look greenish, we may retreat to a claim that they look greenish to us. But if after looking more carefully the lemons still look that way to us, we may think that our interlocutor is failing to notice something – perhaps they are distracted, too far from the lemons, or there is something wrong with their eyes.

These patterns of discourse suggest two observations. First, in these cases, when we discuss how the lemons look, we are not, or at least not primarily, concerned with the experience the subjects are undergoing, how it feels to look at those lemons, or how the subjects are psychologically affected by seeing the lemons. If what was at stake was the experience each of us was undergoing, then it would not be appropriate to take our interlocutor to be wrong or at fault if they disagree with us. We generally do not think that we will be in a better position than our interlocutor with respect to knowing how they feel, or what their experience is like. What we expect our interlocutor to agree on, then, is not what the experience is like for each of us, but something about the lemons themselves. In fact, we may be happy to acknowledge that there are some differences in how each of us feels about the lemons and in how they look to us, but take the fact that the lemons look greenish to be something we would both recognise anyway.

Second, and relatedly, these patterns of discourse can easily be explained if we suppose that we can, and often do, think of the ways the things around us look as objective or at least intersubjectively accessible aspects of the world. In the example above, we take the way the things around us look to be evident to, or at least easily noticeable by, our interlocutor – if they come closer, look more carefully, or possibly put on their glasses, they would certainly see that we are right: those lemons clearly look greenish. More precisely, we take the access our interlocutor has to the way things appear to be a perceptual access – specifically, when we are concerned with how things look, a visual access. For if our interlocutor was wearing a blindfold, was facing in another direction, or suffered from an eyesight condition, we may not expect them to agree with us about the way that the things we are currently presented

with look.<sup>2</sup> While we can sometimes talk about how things look to emphasise a contrast with how things are, or to report our experiences, in many cases talking about the appearances of things is a way of talking about an intersubjectively accessible aspect of our environment.<sup>3</sup>

Our experiential familiarity with perceptual appearances, their epistemic role, and how we take the way things look to be something intersubjectively accessible may suggest a very simple view of perceptual appearances – I will call it the *Simple View*. There is a world, with objects such as lemons, slices of bread, and people with voices, and so on – objects we can perceive with one or more of our senses. These objects appear certain ways. Objects appear those ways, it is natural to think, because of the way they are; and if we take the ways things are to be properties of those things, then the thought is that objects appear as they do because of the properties they have. Not all the properties of an object contribute to explaining how it appears. For instance, lemons look as they do because they are yellow, have a waxy, slightly rough surface, are oval-shaped and hand-sized – by contrast, it may not matter that they are from Spain, nor, one may think, that they are lemons rather than fake lemons. The example suggests that the properties that explain how objects appear are familiar properties that we normally ascribe to the things around us on the basis of our perceptual experiences. Indeed, they are plausibly perceivable properties: properties that we can perceive, or that we can be presented with when we experience the world by means of our senses.<sup>4</sup> Moreover, we usually take these to be properties that things have independently of us and of the experiences we have of them. Focusing on the visual domain, plausible examples are shapes, sizes, colours, and textures. On the Simple View, then, the

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<sup>2</sup> Depending on what we know about our interlocutor, we may still expect them to agree with us about how, in general, things of a certain kind typically look – for instance, that lemons look yellow.

<sup>3</sup> Notice that how we use looks reports in each particular context, or which interest the speakers have, is not obvious from the form of the report or statement. E.g. that a report is explicitly relativized to a subject does not show that it concerns an experience. It may be used to express uncertainty about the way things are, on the basis of their look, or to suggest that, given one's current condition, one really cannot tell how things objectively look. Likewise, a report such as 'the wall looks pink' can be used both to convey that it is not pink and to convey that it looks pink, as opposed to looking white – this being, the speaker may suppose, an evident fact that their interlocutor will agree upon.

<sup>4</sup> Two clarifications about my use of 'perceivable'. First, for the time being, I am taking it as a plausible starting point that the properties that, on the Simple View, explain how things appear are properties that we can perceive. That these properties are perceivable or sensible properties is an assumption that the opponents of the Simple View I will be engaging with also share. However, I will not undertake the difficult project of providing criteria for a property to be perceivable. Second, while I will usually focus on *objects* and their properties, I do not mean to rule out that some of the entities we perceive are not objects but, say, events or stuffs or property instances – I will return to this issue in Chapter 5.

way something appears is explained – indeed, fully explained – by its perceivable properties, where these are some of its objective, perceiver-independent properties.<sup>5</sup>

The Simple View has a number of advantages. First of all, it elegantly and straightforwardly explains why things appear as they do, or why a particular thing appears as it does, i.e. because that is how they are, or how it is.<sup>6</sup> Moreover, the simple view explains why we take appearances to be intersubjectively accessible and to be a reliable ground for attributing various properties to objects: things look as they do because of the perceivable properties they have, and those are properties that everyone with well-functioning perceptual capacities has access to. Moreover, the Simple View explains all this by appealing only to properties that we would appeal to anyway, that is independently of explaining facts about the ways things appear: objective and perceiver-independent properties that we are independently committed to, such as shapes, colours, sizes, textures in the visual case.

If the Simple View is so straightforward and elegant, why has it not been widely endorsed by philosophers? Given our starting point above, one may worry that the Simple View is not compatible with the notion of appearance as contrasting with reality, and with the idea that there is a subjective dimension to appearances. The observation that we sometimes talk of how things appear to emphasise a contrast with how things are can arguably be accommodated within the Simple View. Precisely because we can usually rely on the way things look to gain knowledge about the way they are, we are interested in emphasising occasions where we cannot do so. These may be, for instance, occasions where the way something looks – in virtue of its objective, perceiver-independent properties – mislead us. Admittedly, it would take a bit more work to explain why we sometimes talk of how things appear to convey something about our experiences if the ways things appear are explained by their objective, perceiver-independent properties. One option is that with those uses of appearance reports we simply intend to convey that we are not sure what properties the things we see have, or even that we are not sure how those things look. Another option is

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<sup>5</sup> Statements of views very similar to the Simple View, but formulated in terms of identity, are offered by Levinson: 'Ways of appearing are a subclass of ways of being (...). The way things standardly *appear* are in effect a part of how they *are*. Ways of appearing are roughly equivalent to what others call *manifest* properties' (2005: 217); and Shoemaker: 'A natural thought is that the ways [things look] are simply properties they appear to us to have' and 'it is also a natural thought that the properties are what traditionally have been regarded as "sensible qualities"— in the case of vision, these would include colors and shapes' (2006: 462).

<sup>6</sup> The Simple View is a philosophical view, and is not meant to reflect the explanations that speakers normally give for why things look as they do. Speakers' answers to questions of the form 'why does o look F?' cite all kinds of reasons.

that we may be extending talk of appearances from its primary use to a secondary use, characterising our experiences – perhaps somewhat like when we say that everything looks grey when we are in a bad mood. A further option is that, when we expect that our interlocutors will normally agree with us about how things look, we assume that they will normally have experiences very similar to the experiences we have when we see those things, and so can successfully characterise experiences with reference to the things those experiences are usually experiences of.

But the main problem with the Simple View, and the one that I will be concerned with in this thesis, is that a moment's reflection reveals that it is incompatible with a familiar phenomenon: the same thing can appear different in different conditions, or to different perceivers, even when its objective, perceiver-independent perceivable properties do not differ. For instance, if a white wall is partly in shadow, the shadowed part looks different from the brightly lit one. By hypothesis, the wall is the same colour throughout; so it is not a difference in colour that can explain the difference in visual appearance across the two parts of the wall. Moreover, there do not seem to be other objective, perceiver-independent visible properties that one part of the wall has but the other lacks, and so there do not seem to be differences in objective, perceiver-independent visible properties that could explain the difference in how the two parts of the wall look. Or consider how trees arranged in a row along the street look as we travel by in a car: trees of roughly the same size can look very different when they are at different distances from us. Again, the trees do not change in size, nor presumably in any other objective, perceiver-independent visible property. Other common examples concern variations in how something appears to different perceivers. Consider for instance how printed letters on the pages of a book can look different to an astigmatic person before and after they put their glasses on, or how the letters look to them and to someone with normal vision. The shape of the letters stays constant, but the way the letters look changes across subjects, or across conditions of perception.

In all these cases, we cannot appeal to a variation in the objective, perceiver-independent perceivable properties of the object at stake to explain a variation in how the object appears – those properties do not vary.<sup>7</sup> But the objective, perceiver-independent visible properties of the object whose appearance is at stake are the only explanatory resource available to the

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<sup>7</sup> In adopting this description of the examples I am for the time being assuming, in agreement with the Simple View, that the visible properties that stay constant in the examples – colours, sizes, shapes – are objective and perceiver-independent. As we will soon see, it is possible to question this assumption.

Simple View. We thus have some counter-examples to the Simple View: cases where the View does not seem capable of explaining why something appears as it does. Importantly, these are not merely conceivable cases, or extraordinary cases which can be treated as marginal: our everyday visual experiences offer many similar counter-examples.<sup>8</sup> Moreover, we would not describe these cases as involving some illusion or error. More precisely, we would not describe them as involving colour, size, or shape illusions, respectively. Not only do the colours, sizes, and shapes not change, but they also do not seem to change – on the contrary, they seem to stay the same in spite of the difference in how things look. In the first example, we would not normally be inclined to judge that the shadowed and unshadowed part of the wall are different in colour, as they do not seem to be – the wall looks white. Likewise, we may say that the shadowed part of the white wall looks the same as another grey, unshadowed surface in the room, but we would not be inclined to judge that the two surfaces look the same in colour. It thus seems implausible to say that the perceiver to whom the two parts of the wall look different is suffering a colour illusion: the way the wall looks is not misleading, and it does not seem to one as if the wall is a colour other than it is. As Shoemaker points out, these cases show that we sometimes talk about difference and sameness in how things look without intending to talk about a difference or sameness in visible, objective properties such as colours (2006: 462).<sup>9</sup>

For simplicity, I will call this the *phenomenon of changing appearances*. To prevent misunderstanding, though, some clarifications are needed. First, as you may have realised, not all cases where the way something appears changes across situations are problematic or even challenging cases for the Simple View. Consider again the walls in my living room. If in the morning they look white and in the evening they look pink, this could be because I actually painted the walls pink at some point during the day. The change in the way the walls look is easily explained by a change in the surface of the walls itself: there is now pink paint on it, the walls are now pink, and so they have changed in their objective, perceiver-

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<sup>8</sup> Because there are actual cases that raise a challenge to the Simple View, I will not discuss merely possible or conceivable cases, such as the well-known inverted spectra scenarios. Shoemaker, for instance, used to believe that inverted spectra are the kind of case accounts of perceptual appearances should worry about (e.g. Shoemaker 2000), but, as we will see, he later acknowledged that actual cases like the ones presented here play the same role.

<sup>9</sup> Cf. Shoemaker (2006: 462). For a similar observation concerning the case of the trees seen from different distances, see e.g. Peacocke (1983, Ch. 1): the fact that in order to ‘match’ with our thumb and index finger the trees as they appear in our field of vision we would have to modify the distance between the two fingers may confirm that trees at different distances look different, but not that they look different in size.



independent visible properties, just as the Simple View predicts. Second, some cases where the way something looks changes across different conditions are indeed often described as illusory or as involving a ‘conflicting’ appearances. For instance, it is possible to mistake a shadow for a grey patch on a white wall. In this case, the judgement one would be inclined to make, on the basis of how the wall looks, is false – the appearance of the wall is misleading. The way that part of the wall looks in direct sunlight then can be thought of as conflicting with the way it looks when in shadow: first it looks white, then it looks grey. It has been argued that even cases like this one, where one makes a false judgement on the basis of how things look, do not show that one has, in either condition, an illusion or misperception of the object’s colour (e.g. Kalderon 2011a). But even if these cases did involve some form of illusion, we do not have good reasons to think that the same holds for cases of changing appearances where one is not inclined to make false judgements about the way things are. And the latter are the cases I will be focusing on. Finally, as it should be clear by now, ‘changing appearances’ is really an umbrella term for a wide range of phenomena. Even when we focus only on cases that seem to be counter-examples to the Simple View, it is unclear that these cases are all of the same kind. In fact, there may not be a unified explanation or account for all these cases, and there may not even be good reasons to look for one. In this thesis, I will use the expression ‘changing appearances’ to refer to cases where the way an object appears differs across conditions, that do not plausibly involve illusions, and that are at least prima facie challenging for the Simple View because, at least on the face of it, the objective, perceiver-independent perceivable properties of the object do not change.

## 1.2 Minimalism

It seems clear that the Simple View, as stated, is unsatisfactory. It does not account for the phenomenon of changing appearances, and so it does not fully account for the ways things appear.<sup>10</sup> In response to the inadequacy of the Simple View, one approach is to rely on the same fundamental resources of the view – the objective, perceiver-independent properties of the things we perceive – to develop, in each prima facie challenging case of changing

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<sup>10</sup> For now, I leave it open whether the Simple View is sometimes perfectly satisfactory, even though it struggles to explain the way things look in certain cases of changing appearances. For instance, one may think that the view does not account for the way lemons in blue light look or the way lemons look to colour-blind observers, but it accounts for how typical lemons look in standard daylight.

appearances, a richer and more complex response to the question of why something looks as it does. I call this approach *Minimalism*. The minimalist approach aims at addressing the challenge of changing appearances while retaining, as much as possible, the attractive aspects of the Simple View. The explanatory advantages and attractiveness of the Simple View stem from its ability to respect three core commitments – a thesis, and two principles or recommendations:

- 1) *Perceptual Objectivity*: when perceptual experience presents us with properties (visibly, audibly, tactilely, olfactorily or gustatorily perceivable properties), these are objective, do not depend on us for their existence, and do not need to be characterised with reference to us or our experiences.
- 2) *No Error Theories*: an explanation of the available evidence – e.g. phenomenological and linguistic evidence – should avoid, as much as possible, positing widespread error.
- 3) *Metaphysical Parsimony*: when explaining why something appears as it does, we should appeal, as much as possible, only to properties that are objective, independent of perceivers and their experiences, and such that we are independently committed to them, i.e. such that we are committed to them independently of theorising about perceptual appearances. Call these *minimalist properties*.

Adopting a minimalist approach to the phenomenon of changing appearances means striving to answer the question of why something looks as it does while respecting all three commitments 1)-3). The main motivation for doing so is that these commitments are plausible independently of the Simple View, and confer theoretical advantages to a view that respects them.

Commitment 1), Perceptual Objectivity, extends to the perception of properties a thesis that most current theories of perception aim at respecting for the perception of objects: the idea that our perceptual experiences present us with, make us aware of, or put us in a relation to, an objective world, which is, at least to some extent, independent of us and our experiences.<sup>11</sup> Commitment 2), No Error Theories, is also a widely accepted principle, as most theories strive to avoid positing widespread illusion or misperception. But the principle also applies to other evidence, such as the linguistic evidence concerning how we talk about the

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<sup>11</sup> For an overview, see e.g. Crane-French (2017).

ways things look, perceivable properties, and our experiences of them; in this case too, the principle recommends that we avoid treating most or many of our claims as false or misguided. A theory of appearances that respects both 1) and 2) can offer a straightforward explanation of various pieces of phenomenological and linguistic evidence. For instance, many agree that perceptual experiences seem, phenomenologically, to present us with entities distinct from, and apparently independent of, us; this seems plausible both for objects (e.g. the particular cup in front of me) and for their properties (e.g. the shape, smooth texture, bluish colour of the cup). A theory that denies Perceptual Objectivity, then, can be accused of entailing that the way our experiences strike us is systematically erroneous or misleading.<sup>12</sup> Or consider the linguistic evidence suggesting that in many cases we take the way things appear to be intersubjectively accessible aspects of the world around us. A theory that respects 2), on which our judgements are often true or at least not systematically false, will be preferable. Respecting 1) and 2) also endows a theory of appearances with theoretical advantages. A prominent example is the theory's ability to allow that perceptual experiences play an important epistemic role in our acquisition of knowledge about the mind-independent world. For instance, one could argue that perception allows us to gain knowledge about certain properties of the things around us by simply making us aware of those properties.

Commitment 3), Metaphysical Parsimony, is based on a more general principle that is widely acknowledged as a plausible guiding principle in theorising: we should not posit, or appeal to, entities other than those necessary to explain the phenomenon we need to explain.<sup>13</sup> There are no obvious reasons why the general principle should not be applied to our domain. But in addition to recommending that we only appeal to entities that it is necessary to appeal to in order to account for the ways things appear, 3) recommends, more specifically, that we aim at appealing to entities that we are already committed to on independent grounds – and so independently of theorising about appearances, and the phenomenon of changing appearances in particular.

The Simple View respects all three commitments: things appear as they do because of properties they have, where these are properties they have independently of us and our experiences; these are the properties we are aware of when we perceive; and we are already

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<sup>12</sup> An argument for this conclusion is offered by Martin (2006).

<sup>13</sup> For discussion of ontological parsimony principles – of which the famous Occam's Razor is an example –, see Baker (2016).

committed to these properties independently of the phenomenon of changing appearances, because they are needed to make sense of our perception-based judgements about the ways things are – thus qualifying as minimalist properties. The defender of Minimalism acknowledges that the Simple View as stated is inadequate, but thinks that we have good reasons to hold on to its three core commitments. Moreover, the minimalist claims that the phenomenon of changing appearances does not give us good reasons to the abandon these commitments: it does not motivate appealing to entities we would not appeal to otherwise, and more generally does not motivate giving up or modifying what we independently believe is true of perceptual experience and the entities it presents us with.

Minimalism is not a full-blown theory of appearances, and is more helpfully construed as a philosophical stance. A philosophical stance is an attitude or approach including both positive theses about the nature of a certain phenomenon as well as recommendations and commitments (van Fraassen 2004).<sup>14</sup> Adopting a stance in this sense is somewhat like adopting a policy, where agreeing on a policy is compatible with disagreeing about how the policy should be applied in individual cases, and which choices are to be counted as being in accordance with the policy (*ibid.*). Adopting a minimalist approach or stance, then, means accepting certain commitments and principles – 1)-3) above – but leaves it open how exactly one would account for specific cases of changing appearances. As we will see, there is in each case a range of options available, all of which are arguably compatible with the approach.

This thesis explores how we can account for a variety of cases of changing appearances compatibly with the three core commitments shared by both the Simple View and Minimalism. It thus provides a partial defence of Minimalism as a general approach to philosophical theorising about perceptual appearances. Such exploration and defence are needed because Minimalism has so far been a minority approach, and has not been developed in much detail.<sup>15</sup> In the next Section, we will look at why most philosophers think that Minimalism is not an viable response to the shortcomings of the Simple View.

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<sup>14</sup> van Fraassen characterises a philosophical stance as an attitude or approach involving not only assertions or beliefs, but also commitments and intentions. For instance, it may include the ‘rejection of certain theoretical demands, satisfaction or dissatisfaction with responses to such demands’ (2004: 173-178).

<sup>15</sup> Discussions of perceptual appearances that could be interpreted as adopting approaches at least partly aligned with Minimalism include Brewer (2011, 2017), Kalderon (2011), and especially Martin (2010). Martin develops a detailed account of our reports concerning how things look, which primarily aims at respecting Metaphysical Parsimony. My goal in this thesis is different. I will not be defending a particular semantics or pragmatics of our appearance reports, and only consider linguistic evidence as part of the overall evidence a theory of appearances should account for. My focus will be on how

### 1.3 The argument from changing appearances

If one thinks that cases of changing appearances are counter-examples to the Simple View, an alternative approach to the minimalist one is to abandon one or more of the Simple View's core commitments. The rationale for this response is that the Simple View lacks the resources to account for the phenomenon of changing appearances, and that giving up one or more of the Simple View's commitments will make the necessary resources available. Importantly, these are resources that the minimalists cannot help themselves to. Why should we think that those resources are the ones we need to account for changing appearances? And how is the rejection of commitments 1), 2), or 3) connected to the availability of those resources?

#### 1.3.1 Ways→Properties

Let us start with the first question. Here is, roughly, how the anti-minimalist may reason. Consider a case where an object appears different in two different conditions – whether in two different circumstances (different lighting or different position in space, say) or to two different perceivers (a normally-sighted and a short-sighted perceiver, say). Suppose that this is what we called a case of changing appearances, and so a case where the objective, perceiver-independent perceivable properties of the object that we are committed to on independent grounds do not differ and do not seem to differ (e.g. the object's shape, colour, or size do not change and do not seem to change). But then, so the reasoning goes, there must be some other difference between the two conditions that explains the difference in how the object appears. The claim now is that this must be a difference in the properties that the object appears to have. And since there is no difference in the objective, perceiver-independent perceivable properties that the object appears to have across the two conditions, we need to appeal to properties of some other kind. In particular, at least one of the properties that the object appears to have in one condition but not the other, or to one perceiver but not the other, is not an objective, perceiver-independent perceivable property of the object that we are committed to on independent grounds.

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to account for (some of) the phenomena that we may be talking about when using appearance reports.

The key step in this argument is the claim that the difference between the two conditions is a difference in the properties the objects appears to have. This step allows one to move from a difference in how things appear to a metaphysical commitment, and in particular to a commitment to properties that the minimalist is not happy to appeal to. Support for this claim can be found in a principle, most explicitly stated by Shoemaker, who advances an anti-minimalist argument from changing appearances very similar to the one sketched above (2000: 253, 2006: 462-463). On Shoemaker's 'Ways=Properties principle', something's appearing a certain way is always a matter of its appearing to be a certain way, and so of its appearing to have a certain property (2006: 462, 465).<sup>16</sup> For the purposes of this Thesis, I will focus on a similar principle formulated in terms of explanation, call it the *Ways→Properties* principle: something's appearing a certain way is always explained by its appearing to have a certain property.<sup>17</sup> The *Ways→Properties* principle motivates the key step. If the way the object appears in the first condition is explained by the object's appearing to have a certain property, and the way the object appears in the second condition is also explained by the object's appearing to have a certain property, there must be a difference in the properties the object appears to have across the two conditions. In other words, sameness and difference in how an object appears is always explained by sameness and difference in the properties that the object appears to have. In cases of changing appearances, then, the difference in the properties the object appears to have across the two conditions must involve some property other than the object's objective, perceiver-independent perceivable properties that we are committed to independently of the phenomenon of changing appearances.

What does it mean for an object to appear to have a certain property? On a straightforward reading, it means that one would take it to have a certain property, on the basis of how it appears. If we read the *Ways→Properties* principle in this way, there are some cases where it seems very plausible. As the Simple View emphasised, it is natural to think that a lemon's

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<sup>16</sup> See also Shoemaker's earlier discussion of the difference in how two differently illuminated parts of a white wall look, where he says that their looking different (to him) 'consists in there being different properties they appear to have' (2000: 253).

<sup>17</sup> Sometimes Shoemaker presents the principle as a claim about what constitutes something's appearing a certain way; other times, he seems to think of the principle as an identity claim instead, for instance formulating it as the claim that 'the ways things appear are properties they appear to have' (Shoemaker 2006: 479). My suggestion is that Shoemaker's anti-minimalist argument can be motivated by appealing to the principle formulated in terms of explanation, which per se does not commit one to a claim about the metaphysics of ways of appearing. Establishing whether my discussion would also apply to the identity claim is beyond the scope of this thesis.

looking yellow is explained by its being yellow, i.e. by its having a yellow colour. One could then point out that, typically, when a lemon looks yellow to us, it also looks to have a yellow colour: we would be inclined to judge that the lemon is yellow by its look. Being yellow, then, is a property the lemon looks to have, and that explains its looking yellow. However, interpreted this way, the principle would arguably not generalise beyond the lemon example, and so would not even be a *prima facie* plausible principle to adopt in our theorising about perceptual appearances. For the principle to generalise, it would have to be the case that whenever something appears a certain way, there is a property we would be inclined to judge the thing to have on the basis of its appearance. It is not always clear, though, what this property would be. If we move that lemon from bright midday sunlight to the shade, the lemon will look different; however, we would not normally be inclined to think that the properties of the lemon have changed: it *is* the same, but it *looks* different. If we are inclined to make any judgements about the lemon in these conditions, they would usually be judgements about the lemon's colour, shape, size, or texture – in other words, the objective, perceiver-independent properties that we independently take lemons to have. And these properties, do not seem to change across the two conditions.

Proponents of the argument from changing appearances could reply by pointing out that the Ways→Properties principle does not concern what subjects believe or are inclined to judge on the basis of how things appear. We need to distinguish between different senses or uses of 'look' or, more generally, 'appear'.<sup>18</sup> Sometimes in saying that an object looks yellow, we intend to convey that there is visual evidence for the truth of the proposition that the object is yellow. Roughly, if something looks yellow to one in this sense, then on the basis of how things look, one would be inclined to judge that the object is yellow. This is the *evidential* use of 'looks' or 'appears'. When proponents of the anti-minimalist argument from changing appearances are concerned with the way something looks to be or the properties something looks to have, they are not using 'looks' evidentially. How are they using it instead?

In the case of Shoemaker, the answer is to be found in his general theory of perceptual experience. Shoemaker is a representationalist, who thinks that perceptual experiences represent things as being certain ways or as having certain properties.<sup>19</sup> On

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<sup>18</sup> The issue of whether there are different senses of 'appear', which ones these are, and what conclusions we could draw from this has been widely debated. See e.g. Chisholm (1959), Jackson (1977), Martin (2010), Brogaard (2018).

<sup>19</sup> Representationalist is a family of theories of perceptual experience that differ from each other in many respects and my discussion does not generalise to all of them. Not many representationalists

representationalism, when one looks at a lemon in good viewing conditions, one's visual experience will normally represent the lemon as having a certain shape, size, colour and so on. In this sense, the lemon looks to have those properties. Importantly, it looks to have those properties in a sense different from the evidential one, for one's experience may represent the lemon as having those properties independently of what properties one is inclined to judge that things have on visual grounds. Shoemaker seems indeed to formulate the argument from changing appearances with representationalism in mind: the puzzle of an object looking different in different conditions while its objective, perceiver-independent properties do not change becomes for him the puzzle of an object looking different in different conditions while there are no differences in the objective, perceiver-independent properties that one's experiences in those conditions represents the object as having.<sup>20</sup>

Within this representationalist framework, it is clear what role the Ways→Properties principle is meant to play. The principle would say that an object's looking a certain way is always explained by its being represented (by one's experience) as having certain properties. In cases of changing appearances the object's objective, perceiver-independent properties we are committed to on independent grounds do not change and, crucially, do not appear to change; so the perceiver's experience in the first condition represents the object as having the same objective, perceiver-independent properties that the perceiver's experience in the second condition represents it as having. But since the object appears different across the conditions, given the Ways→Properties principle, there must be a difference in the properties that the perceiver's experiences represent the object as having. We can thus reach the anti-minimalist conclusion: we need to appeal to at least one property other than the familiar objective, perceiver-independent ones, for it is the representation of that property that explains how the object appears in one condition but not the other.

The first thing to note is that interpreting the Ways→Properties principle along these lines results in a subtle but important change of focus in the anti-minimalist argument from

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share Shoemaker's specific anti-minimalist view of perceptual appearances nor are representationalists intrinsically anti-minimalist (Cf. e.g. Tye 2000, Byrne 2016).

<sup>20</sup> This is how Shoemaker presents a case of changing appearances: 'it is absolutely commonplace for things to look different (either to the same person or to different persons) (...) without there being any difference in the objective representational content of the experiences of them. Consider a case in which I look at a table surface that is partly in shadow, or on which there is a highlight. Different parts of the surface will look different to me. (...) Supposing that the table surface is in fact uniform in color, and that I am not misperceiving, this is not a case in which the objective representational content of my experience of one part of the surface differs from the objective representational content of my experience of another part of the surface' (Shoemaker 2000: 253).



changing appearances compared to our initial presentation of that argument. Namely, the focus has moved from the issue of what explains how something appears to the issue of what explains how something appears *to a perceiver*: the representing is supposedly done by a perceiver's experience, and what this representing is supposed to account for is how things look to that perceiver. In fact, because this is how the most explicit defender of that argument thinks that his principle should be read, it is natural to think that the way things look to a perceiver was the target of the argument from changing appearances all along. According to proponents of the argument, what the Simple View does not account for is how things look to certain subjects in certain conditions of perception. In other words, the Simple View may at first seem plausible when we think about explaining the way lemons look because it abstracts from these two key factors which are part of our perceptual interactions with the objects in our environment – really, the View needs to explain how things look to a subject who perceives those lemons in certain circumstances.

The second thing to note is that interpreting the Ways→Properties principle along the above lines presupposes a representationalist framework. Within this framework, one can identify a notion of something appearing to be a certain way or appearing to have a certain property (to one), that is distinct from the notion of something evidentially appearing a certain way (to one). But on a theory on which, for instance, perceptual experiences are relations to objects, and do not represent at all,<sup>21</sup> it is difficult to interpret talk of an object appearing to one as having certain properties in a way other than in terms of the properties that one would be inclined to judge the object to have on the basis of how it looks. Plausibly, we should not suppose that a certain controversial theory of the nature of perceptual experience is true when theorising about the way things appear, and especially when formulating an argument for a certain approach to this issue, and I will not do so in this thesis.<sup>22</sup>

However, we can find a more theory-neutral reading of the Ways→Properties principle. On this reading, the Ways→Properties principle says that an object's appearing a certain way

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<sup>21</sup> Such as some relationalist or naïve realist theories of perceptual experience, e.g. Campbell (2002), Martin (2006), Brewer (2011).

<sup>22</sup> Some philosophers argue that reflection on the very idea that things appear certain ways to us in perceptual experience supports representationalism (e.g. Byrne 2001). Others argue instead that reflection on various senses in which things look to us in perceptual experience undermines representationalism (e.g. Travis 2004). For the purposes of this thesis, while I will assume that some form of direct realism is true, I will do my best to remain neutral on the issue of whether perceptual experience has representational content, and what explanatory role this could play.

(to a subject, in certain conditions) is always fully explained by *S*'s experiencing a certain property or apparent property of the object.<sup>23</sup> For the purposes of our discussion, the principle so formulated is sufficiently similar, if not equivalent, to the one formulated in representationalist terms. The new principle plays the same role as the previous one: it brings out how the argument from changing appearances is concerned with the way things look to subjects, and it establishes the needed connection between a variation in how things look (to one) and the commitment to properties that the minimalist is not happy to appeal to. My suggestion is that proponents of an anti-minimalist approach to perceptual appearances that subscribe to a version of the argument from changing appearances are, explicitly or implicitly, committed to the Ways→Properties principle so formulated – or a principle very similar to this one. For if they were not, the argument from changing appearances would not yield the conclusion they need to support their views.

### 1.3.2 Anti-minimalist views

The conclusion of the argument from changing appearances that the Ways→Properties principle supports entails that the minimalist approach is inadequate: we need to appeal to explanatory resources unavailable to the minimalist, i.e. to properties other than the objective, perceiver-independent properties that we take the objects around us to have on visual grounds, independently of issues concerning changing appearances. We can now understand why the anti-minimalist approach requires rejecting one or more of the core commitments 1)-3) of the Simple View. The idea is that minimalists cannot help themselves to those resources because they want to respect the commitments 1)-3). However, by giving up one or more of those commitments, the needed resources become available. The anti-minimalist is then presented with a choice, as there are different views that one can take, if one thinks the conclusion of the argument from changing appearances is true, each of which requires giving up different commitments.<sup>24</sup>

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<sup>23</sup> Talk of apparent properties here is meant to allow that the properties may appear to belong to the object even though they actually do not.

<sup>24</sup> Some philosophers who take the phenomenon of changing appearances to show that the Simple View is false reject not only the minimalist commitments 1)-3), but also a version of Perceptual Objectivity as applied to objects, i.e. the idea that perceptual experience presents us with mind-independent objects. Most notably, this idea is rejected by some sense-data theorists. According to them, the objects we are immediately aware of in perceptual experience are not ordinary material objects which exist in our environment: they are mind-dependent objects or sense-data; ordinary

On some views, the argument shows that we need to adopt a somewhat revisionary metaphysics of those perceivable properties that, on the Simple View, we were supposing to be objective and perceiver-independent, or alternatively a revisionary view of our perceptual experiences of those properties. Proponents of these views emphasise the extent of the variation in how an object with certain objective, perceiver-independent properties can appear to different perceivers and in different conditions. At the same time, we have no good reasons to take some of these ways of appearing and not others to be the ways the object in fact appears, or in other words we have no good reasons to take some of the experiences those perceivers have and not others as genuine or not illusory. We can avoid these unjustified asymmetric attributions of perceptual error, so the thought goes, if we suppose that none of our perceptual experiences present us with objective and perceiver-independent perceivable properties of things.<sup>25</sup>

Projectivism is a prominent example of this approach. On this view, in accordance with Ways→Properties, the way things appear to us in experience is explained by properties that we experience, such as colours, shapes, sizes and other perceivable properties. However, at least some of these properties are either properties of our experiences or of our perceptual systems, or properties that nothing ever instantiates.<sup>26</sup> To be sure, these properties do not seem to us to be properties of our perceptual systems, or of our experiences, and they seem to belong to the objects in our environment. This is however, an illusory ‘projection’. Projectivism has the advantage of providing a straightforward and unified account of cases

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objects are at most perceived indirectly, with the mediation of a related sense-datum (e.g. Robinson 1994). Much like the Simple View, sense-data theories have a good answer to the question of why things appear as they do, or why a particular thing appears as it does. As usually conceived, sense-data have all the properties that perceptually appear to us in experience, so it is simply the properties things have, or the having of those properties, that explain how they appear – where ‘things’ here refers not to ordinary objects, but to distinct mind-dependent entities. Because sense-data theories reject so many of our independently plausible commitments, I take them to be at a disadvantage over the theories presented in this section, and so I will not discuss them further in this thesis.

<sup>25</sup> For a similar argument, see e.g. Cohen (2009), who however applies it to colour perception only, and Egan (2010).

<sup>26</sup> This short presentation of the basic idea behind projectivism is meant to highlight the relation of this idea to the core commitments of the Simple View, but does not do justice to the complexity of some projectivist accounts. Defenders of projectivism include, for instance, Boghossian-Velleman (1989), Averill (2005), Chalmers (2006), Egan (2010). These philosophers disagree over the metaphysics of ‘projected’ perceivable properties, and over which sensible properties should be given a projectivist account – many projectivists focus on colour only. Moreover, not all projectivists motivate their views on the basis of an argument from changing appearances. My conclusion here is only that that kind of argument does not seem to sufficiently motivate a projectivist view of perceptual appearances.

of changing appearances: they are cases where the object does not change but, in different conditions, due to environmental factors or features of our own perceptual system, we experience different perceivable properties that we mistakenly attribute to it but that the object does not instantiate. However, this account is only available by paying a high price, i.e. by giving up at least commitments 1) and 2).<sup>27</sup> Projectivism does not respect Perceptual Objectivity because it claims that we are never or rarely perceptually aware of objective and perceiver-independent properties of the objects around us. While Projectivism allows that we reliably have experiences with a certain phenomenology in response to causally interacting with certain mind-independent properties of the objects around us, these are not the properties we experience. Moreover, it does not respect No Error Theories because, while it avoids unjustified asymmetric attributions of perceptual error, it results in positing a form of error concerning perceivable properties across the board. Either we systematically experience properties that are never instantiated by anything in the world, resulting in widespread perceptual illusion. Or we systematically mistake properties of our experiences – which, in some sense, we experience – for properties of the objects around us. Because it abandons at least two of the core commitments of the Simple View, which as we argued are independently plausible, Projectivism is at a disadvantage over alternative accounts of appearances. Finally, we can point out that cases of changing appearances that motivate Projectivism over alternative accounts are those where different perceivers, or a single perceiver at different times, experience *incompatible* properties as belonging to the same object but there is no ground for establishing who is misperceiving (e.g. Egan 2010). But many cases of changing appearances are such that there is no prima facie incompatibility between the different ways an object appears in different conditions, such that one of the experiences of the object should be illusory.<sup>28</sup>

Many philosophers think, against Projectivism, that we should avoid positing systematic perceptual illusions or errors concerning the attribution of perceivable properties, thus respecting No Error Theories. Relationalism about perceivable properties combines the

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<sup>27</sup> Arguably, versions of Projectivism which appeal to qualitative properties of experiences fail to respect commitment 3), Metaphysical Parsimony, as well, because we are not committed to those properties independently of the challenge of accounting for how things look to subjects.

<sup>28</sup> This may explain why some projectivists who subscribe to similar arguments focus on colour as a target for their view. On the face of it, projectivism may be more plausible for a case where, say, a subject takes an object to be green and another one takes the same object to be blue, both on the basis of how the object looks to them, as the object cannot be, or appear to be, both blue and green at one and the same time.

thesis that most of our perceptual experiences are not illusory with a revisionary metaphysics of perceivable properties, where these are the properties the experience of which accounts for the ways things look to subjects.<sup>29</sup> On Cohen's relational view of colour (2009), for example, colour properties are relations to perceivers and possibly also circumstances of perception: things are not blue simpliciter, but blue-for-perceiver of kind K-in conditions C (e.g. Cohen 2009). As a result, all different colour experiences of an object by different perceivers can be genuine or non-illusory: the object really has all the colours different perceivers experience. Of course, relationalists achieve this result by construing perceivable properties as perceiver-dependent, and so abandon commitment 1), Perceptual Objectivity. And because they appeal to a multitude of colour properties we do not ordinarily take the objects around us to have, they also fail to respect commitment 3), Metaphysical Parsimony.

Views such as Projectivism and Relationalism abandon at least two out of the three core commitments of the Simple View, which Minimalism intends to respect. This puts the views at a disadvantage over other anti-minimalist views that aim at retaining more of the core commitments. I leave it open whether further considerations may motivate these projectivist or relationalist theories in specific cases of changing appearances – for example, cases involving intersubjective variations in colour experience. However, for the purposes of this thesis, I will mainly engage with other alternatives to a minimalist approach to changing appearances.

Some philosophers are moved by the argument from changing appearances, but wish to preserve as many of the core commitments of the Simple View as possible. For them, the argument from changing appearances does not put into question the fully objective nature of familiar perceivable properties, and it does not show that our perceptual experiences of these properties are illusory. It shows instead that the explanatory resources needed to account for changing appearances are properties *over and above* the familiar perceivable ones. I will call these properties *appearance properties*. The idea is that the objects around us have not only familiar properties such as colours, shapes, and sizes, but also appearance properties, for which we have no names. In accordance with the Ways→Properties principle,

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<sup>29</sup> Other views that reject the same core commitments as Relationalism are eliminativist views (e.g. Maund (2006), or views on which colours are 'appearance properties' (Levine 2006) – we will talk about the notion of appearance properties below.

our experience of these properties explains, or partly explains – together with experience of the familiar perceivable properties – how things appear to one in certain conditions. In fact, because normally objects have the appearance properties we experience, and so normally we genuinely *perceive* those properties, we can treat the principle as stating that the way an object looks to one is always explained by one's perception of a certain property of the object. Given this revision of the Ways→Properties principle, we can formulate the argument from changing appearances along these lines:

- 1) object o appears way W1 to subject s in condition C1 and it appears way W2 to s in condition C2, where  $W1 \neq W2$ ;
- 2) s perceives the same objective, perceiver-independent properties of o that we are independently committed to in both C1 and C2;
- 3) o's appearing a certain way W (to s in C) is explained by s's perceiving a certain property of o in C; (Ways→Properties)
- 4) s perceives different properties of o in C1 and C2; (given 1, 3)
- C) in at least one of C1 and C2 at least one of the properties of o that s perceives is not an objective, perceiver-independent property that we are independently committed to. (given 2, 4)

The argument focuses on a case of changing appearances where something appears two different ways to the same subject in different conditions – as described in 1). Premise 2) is meant to be an independently plausible claim about this kind of case. On the face of it, the objective, perceiver-independent properties of the object itself do not change across the two conditions. Moreover, as we have argued above, the subject does not suffer an illusion, and so does not misperceive any objective, perceiver-independent properties. We can then argue that the subject perceives the same objective, perceiver-independent properties of the object in both conditions, at least if we suppose that C1 and C2 are both conditions where normally the subject would perceive the objective and perceiver-independent properties of the object. This supposition is meant to rule out that C2 is such that the subject simply stops perceiving an objective, perceiver-independent property of o that they perceived in C1, or that they come to perceive an objective, perceiver-independent property of o that they failed to perceive in C1. Focusing on visual cases, this could happen, for instance, if the light goes so dim in one of the two conditions that one cannot see the colour of the object, or the object is moved so far away from one as to become invisible, or if in one condition the

perceiver is unable to see at all – for example their eyes are closed or they suffer a sudden injury.<sup>30</sup>

According to Appearance Properties views, the relevant property mentioned in the conclusion of the argument is an appearance property of the object. The argument does not establish whether or not one of the two ways *o* appears to one can be fully accounted for in terms of one's perception of the objective, perceiver-independent properties of the object.<sup>31</sup> In some cases of changing appearances the proponent of the argument can argue that, to avoid arbitrariness, if one way *o* appears is explained by one's perception of an appearance property, the other way should also be explained by one's perception of an appearance property. In those cases, there would be at least two such appearance properties that *o* has, one that it has in condition C1 and one that it has in condition C2. In cases of changing appearances, there is no difference in the familiar objective, perceiver-independent perceivable properties of an object that one perceives in different conditions – the object's colour, shape, or size, for instance. However, there is a difference in the appearance properties one perceives; and this difference explains the difference in how the object appears to one across the different conditions. The argument can also be applied to a case of changing appearances involving two different subjects S1 and S2 perceiving the same object in the same conditions, where the object appears one way to S1 and a different way to S2. In that case, we would invoke at least one appearance property that one of the two subjects perceives, and which explains how the object looks to them.

Appealing to appearance properties has some advantages over other anti-minimalist options. First, it allows one to hold that the perceivable properties of objects, such as colours, shapes, and sizes in the visual domain, are fully objective and independent of perceivers, and thus respect Perceptual Objectivity.<sup>32</sup> Second, since the things around us normally really have the appearance properties we experience when we perceive those things, most of our perceptual experiences are not illusory, respecting No Error Theories. Because Appearance Properties theories respect these commitments, I take them to be the best representatives of an anti-minimalist approach motivated by the argument from changing appearances. Consequently, the above version of the argument, relying on the Ways→Properties principle

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<sup>30</sup> Arguably, these cases can easily be explained by Minimalism. On this issue, see Ch. 3., Sec. 3.1.

<sup>31</sup> In the course of this thesis, we will encounter both kinds of case.

<sup>32</sup> At least on the face of it. As we will see especially in Ch. 2 of this thesis, some Appearance Properties views may struggle to fully vindicate Perceptual Objectivity.

formulated in terms of perceived properties, is the one I will be mostly engaging with in this thesis.

Formulating the argument in this way also allows us to bring out how it differs from other arguments relying on changing appearances and related phenomena that have been put forward in the philosophical literature and, at the same time, how the Ways→Properties principle differs from principles more or less explicitly employed in those arguments. Most obviously, the argument differs from arguments meant to undermine the idea that perceptual experience ever presents us with objective, mind-independent entities.<sup>33</sup> The argument from changing appearances we are discussing does not question commitment 1) of the Simple View, Perceptual Objectivity. Accordingly, it does not need to appeal to a principle as controversial as the so-called ‘phenomenal principle’, on which if there appears to a subject to be something which possesses a particular sensible quality, then there is something of which the subject is aware which does possess that sensible quality (Robinson 1994). Moreover, the argument from changing appearances differs from an argument, sometimes called the argument from conflicting appearances.<sup>34</sup> The argument from conflicting appearances is meant to show that, because an object can appear many different and incompatible ways to different perceivers and in different circumstances, it does not really have the familiar perceivable properties we take it to have, or these properties are not objective and perceiver-independent. According to Burnyeat (1979), the argument implicitly relies on the principle that if something looks F to some perceivers and not-F to others, then it is not really or objectively F. We can see that this principle is implausible, Burnyeat observes, by considering that it is equivalent to the claim that if something is really or objectively F, then it appears F to all perceivers – and, one might add, in all conditions (1979: 30). The argument from changing appearances we are concerned with does not rely on this implausible principle. Proponents of Appearance Properties theories are granting that different subjects, or the same subject in different conditions, may genuinely perceive a certain perceivable property of an object, where this property is objective and perceiver-independent, even though the object appears different to them. As Shoemaker puts it, it is ‘absolutely commonplace’ for an object to look different to different subjects or to the same

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<sup>33</sup> See e.g. Hume (1758, section XII.1), Russell (1912: 8-11).

<sup>34</sup> See e.g. Berkeley (1713). For a discussion of this argument and some of its ancient predecessors, see Burnyeat (1979). As we mentioned earlier, projectivists and relationalists about perceivable properties arguably need to appeal to cases where, supposedly, the different ways something appears conflict, rather than simply cases of changing appearances, in order to motivate their views.



subject in different conditions without there being any misperception and without there being any difference in the objective properties perceived (2000: 253). And this subject or subjects may well be perceiving the shape, colour, size that the object really has while the object appears different to them – in Shoemaker’s words, ‘it is a commonplace that veridical experiences of the same color can differ in phenomenal character’ (2003: 266).

That these phenomena are ‘commonplace’, and that they do not threaten Perceptual Objectivity, however, does not mean that they are unproblematic: changing appearances pose a puzzle, and one that requires a metaphysical solution. In accordance with Ways→Properties, this solution needs to appeal to properties that the minimalist would not be happy to appeal to. The solution Appearance Properties views adopt is one that comes with downsides, the most relevant of which is that appearance properties are not minimalist properties, and so Metaphysical Parsimony has to be abandoned. Proponents of appearance properties disagree over the nature of these properties: some take them to be perceiver-dependent properties of objects that are partly determined by relations to certain kinds of perceivers or their experiences (Shoemaker 2000, 2006, Antony 2011). Others take them to be perceiver-independent properties of objects that are partly determined by relations to properties of the environment and other objects (e.g. Noë 2004, Schellenberg 2008, Hill 2009, Hill-Bennett 2008, Genone 2014, Allen 2016). Whatever their nature, however, appearance properties are properties of objects that we would not be committed to independently of theorising about appearances; in fact, they are introduced precisely to account for the phenomenon of changing appearances.<sup>35</sup>

## 1.4 The minimalist strategy

The phenomenon of changing appearances brings out that the Simple View, as stated, does not fully account for the ways in which things appear to subjects in certain conditions. Proponents of the argument from changing appearances claim that the Simple View does not tell us anything about the perceptual experiences we have when perceiving things with

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<sup>35</sup> Some philosophers who take appearance properties to be objective suggest that they are mere ‘logical constructions’ out of perceivable properties of objects and contextual conditions, and so ‘represent no real increase in being’ (e.g. Allen 2016: 37). Even if we conceded this point – which I doubt we should concede – appealing to appearance properties would violate Metaphysical Parsimony because we do not have reasons independent of the phenomenon of changing appearances to appeal to them.

certain objective, perceiver-independent properties; in other words, the Simple View does not explain why our experiences have the phenomenology or qualitative character they do.

Some philosophers who are moved by this criticism may be motivated by the idea that the goal of a theory of appearances is to account for the phenomenology of our perceptual experiences. As we have seen at the beginning of this chapter, however, it seems plausible that our interest in the ways in which things appear is neither exclusively nor primarily an interest in the experiences of subjects who perceive those things. On the contrary, we are often interested in the way things appear because we are interested in the way things are, in their objective properties. In fact, the way in which we talk about the appearances of things suggests that we often take them to be aspects of our surrounding environment that are intersubjectively accessible.

Even if accounting for the phenomenology of experience is not the primary goal of a theory of appearances, though, the demand for an account of the ways in which things look to subjects advanced by the argument from changing appearances is, I think, legitimate.<sup>36</sup> In this thesis I will thus address this demand for an explanation. This explanation, I will argue, need not appeal to properties other than minimalist ones. Minimalism can account for the ways things look to subjects in certain conditions, even in challenging cases of changing appearances. We need not abandon any of the core commitments that Minimalism and the Simple View share.

My defence of Minimalism will proceed on a case-by-case basis. I will focus on various cases of changing appearances – three visual cases and two olfactory ones – and discuss how the minimalist can resist the argument from changing appearances in each case.

Chapter 2 focuses on differences in the appearance of coloured objects under different illuminants. In this case, the minimalist can resist the argument from changing appearances by arguing that premise 2) is false. There is in fact a difference in the minimalist properties one perceives across different conditions – the objective, perceiver-independent properties

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<sup>36</sup> Some minimalist-minded philosophers may be inclined to think that the Simple View – or a very similar view – is really all we need. Martin (2010), for instance, may be interpreted as endorsing this approach. He argues that appealing to the objective and perceiver-independent visible properties of things is sufficient to account for the way in which we talk about the ways things look, and indeed also for some subjective aspects of our discourse about the ways things look to perceivers – in terms of the psychological impact that those objective and perceiver-independent appearances have on perceivers. He may then argue that any requests for further explanation are unjustified and can thus be resisted.

of the object one sees change. In other cases, the minimalist can resist the argument by questioning some of its theoretical assumptions.

Premise 3), the Ways→Properties principle, plays a key role in the argument. As we will see, however, there are good reasons to think that an explanation of the way things look to one in certain conditions need not comply with the demands of the principle. If our explanation can take a different form, then the minimalist can offer a satisfactory alternative account of intersubjective cases of changing appearances too. In Chapter 3 and 4 I suggest that the minimalist can appeal to explanatory factors in addition to the minimalist properties subjects perceive: the role that the subject's sensitivity plays in affecting their perceptual or cognitive access to the visible properties they are presented with. These factors, however, can be conceived as objective and perceiver-independent.

Chapter 5 explores how the minimalist approach can be applied beyond the visual domain, focusing on olfaction as a case-study. While cases of changes in how things smell to different subjects raise unique challenges, I argue that Minimalism has the resources to account for them compatibly with a view on which olfactory experience presents us with objective and perceiver-independent entities.

Considering this range of cases and the different challenges each case presents will allow us to discuss different strategies that the minimalist can adopt to resist the argument from changing appearances. One of the implicit assumptions made by Appearance Property theories is that the phenomenon of changing appearances must have a unified explanation. We will see, however, that this assumption is implausible. Explanations of the way something appears to one in certain conditions should appeal to different factors in different cases – including properties of other objects, environmental conditions, relations between object and perceiver, the perceiver's sensitivity, and even their past perceptual experiences. All these factors can contribute, in addition to the minimalist properties of the object one perceives, to an explanation of why things appear to one as they do in a given perceptual encounter with the object.

## Chapter 2: Illumination and colour appearance

### 2.1 The challenge

This chapter represents the first step in my defence of Minimalism. On the minimalist approach, we aim at accounting for the ways things appear to us in perception whilst preserving three, independently plausible commitments of the Simple View – Perceptual Objectivity, No Error Theories, and Metaphysical Parsimony. The phenomenon of changing appearances poses a challenge to this approach. According to the argument from changing appearances, in order to fully explain how things appear to a perceiver in certain conditions, we need to appeal to at least some properties over and above the ones that the minimalist is happy to appeal to, where these are objective, perceiver-independent perceivable properties that we are committed to independently of the phenomenon of changing appearances. I will focus on the version of the argument from changing appearances advanced by defenders of Appearance Properties views. While these views seem able to respect the Perceptual Objectivity and No Error Theories commitments, they argue that Metaphysical Parsimony should be abandoned because appealing to properties other than the minimalist ones is necessary.

My strategy for responding to the argument from changing appearances will be to proceed in a case-by-case manner, exploring how the minimalist can resist the argument in different cases of changing appearances, which all present somewhat different challenges. In this chapter I will focus on a very familiar case to which the argument has been applied, and argue that we do not need to commit to appearance properties nor abandon any of the other tenets of the Simple View in order to satisfactorily account for the way things appear to a perceiver in those conditions.

Here is the case I will focus on. Consider a uniformly white wall fully lit by direct sunlight, and then the same wall in shadow. It is uncontroversial that the wall looks different in the two conditions. At the same time, there is a respect in which the wall looks the same across the two conditions: it looks white, and it looks the same in colour throughout. By hypothesis, this is a case where colour constancy holds: as in most everyday situations, we are able to recognise that the colour of an object remains constant despite changes in the contextual

conditions of perception. The appearance of the wall changes, but we can tell that this is not a change in the surface colour of the wall.<sup>37</sup>

This is how the argument from changing appearances would apply to this case. As per premise 1), the wall appears two different ways to one in two different conditions. Moreover, as per premise 2), one perceives the same minimalist properties of the wall in both conditions. Not only does the wall itself not change, but given that colour constancy holds, it is plausible to concede that one genuinely perceives the wall's colour throughout – where the colour is an objective, perceiver-independent minimalist property. The Ways→Properties principle then comes into play: an object's appearing a certain way to one in certain conditions is fully explained by one's perceiving a certain property of the object in those conditions. So the way the wall looks to one in full sunlight is explained by one's perception of a property of the wall, and the same holds for the way the wall looks to one when in shadow. But the principle now requires that these two properties are different properties – premise 4). For how could one's perception of the same property fully explain both ways the wall looks to one, given that these ways are different? Since the minimalist properties of the wall that one perceives in the two lighting conditions do not differ, at least one of the properties of the wall one is perceiving is not a minimalist property.

The argument does not establish whether or not one of the two ways the wall looks to one is fully explained by one's perception of the minimalist properties of the wall, such as the wall's colour. However, defenders of Appearance Properties views would plausibly argue that it would be arbitrary to claim that the way the wall looks to one in direct sunlight is explained by one's perception of the wall's colour, while the way the wall looks in shadow is explained by one's perception of an appearance property of the wall, or viceversa. They will then argue that our case of changing appearances requires appealing to at least two different non-minimalist properties of the wall in addition to the wall's constant colour: one appearance property is perceived when the wall is in full sunlight, another appearance property is perceived when the wall is in shadow.

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<sup>37</sup> Throughout this chapter, I will understand colour constancy as the ability to recognise the presence of a constant colour despite changes in contextual conditions of perception, such as changes in the lighting conditions – however this ability is then accounted for. This is what Craven and Foster (1992) call an 'operational' understanding of colour constancy, to be contrasted with one on which colour constancy is defined as 'the invariant appearance of surface colour' under changes in the illumination. We normally enjoy a high degree of operational colour constancy, both successive (as in our example) and simultaneous (as when parts of a uniformly coloured object are differently illuminated). For a discussion of different aspects of colour constancy, see e.g. Davies (2016).

The nature of the relevant appearance properties is left open by the argument. According to Shoemaker (2000, 2006), the best explanation of the above case appeals to perceiver- or experience-dependent appearance properties, such as the property of causing or being disposed to cause an experience with a certain phenomenology in certain kinds of perceivers in certain conditions.<sup>38</sup> Others argue that Shoemaker's choice is unmotivated: because there are no differences in the perceiving subject, their psychological properties, or properties of their visual system across the two conditions in which the wall is perceived, we do not need to characterise the relevant appearance properties with reference to their effects on perceivers.<sup>39</sup> Rather, because the two conditions of perception involve differences in the lighting, it is more plausible to appeal to objective and perceiver-independent relational properties. Noë (2004), Schellenberg (2008), Genone (2014), and Allen (2016) all take appearance properties to be relational properties jointly determined by an object's intrinsic, constant, objective and perceiver-independent properties and the objective contextual conditions of perception – such as the object's position in space relative to the perceiver and the lighting conditions. In our example, the wall's appearance properties the perception of which explains the two ways it looks to one are jointly determined by the object's colour and the character of the illumination. Neither perceiver-dependent nor context-dependent appearance properties are minimalist properties, primarily because we introduce them just to explain how things appear to us in certain cases of changing appearances, against the recommendations of Metaphysical Parsimony.

In response to the argument from changing appearances, the minimalist can argue that appealing to appearance properties is not necessary to explain why the wall looks those two different ways to one in different conditions. In particular, premise 2) in the argument can be resisted, because there is in fact a difference in the minimalist properties one perceives across the two conditions. Simply, it is natural to suggest, whilst the colour one perceives

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<sup>38</sup> Shoemaker's account is complex and appeals to a variety of appearance properties. In addition to occurrent appearance properties – characterised in terms of their currently producing a certain kind of experience (1994) – there are dispositional appearance properties, whose existence does not depend on their being currently perceived (2000), and higher-order dispositional appearance properties (2002). These are characterised with reference to differently individuated kinds of perceivers and conditions of perception. For a discussion of the explanatory role of each of these kinds of appearance properties, see Egan (2006).

<sup>39</sup> Because Shoemaker appeals precisely to the case of the wall under different illuminants to support his view (2000, 2006), I will not rule out his account at the outset. However, different cases of changing appearances – such as those we will discuss in Chapters 4 and 5 – seem to provide stronger support for Shoemaker's view over other versions of the Appearance Properties approach.

stays the same across the two conditions, the character of the illumination one perceives differs; as a result, the wall looks first brightly lit and then in shadow.<sup>40</sup> For this suggestion to constitute a satisfactory answer to the argument from changing appearances, the minimalist needs to show that the character of the illumination or some relevant illumination-related property is a minimalist property, that this property contributes to the way things look, and that we can, and normally do, perceive such a property.

## 2.2 Illumination is perceivable

The first step for the minimalist is to argue that we have convincing evidence for the claim that the intensity and character of the illumination is perceivable and contributes to the way things look to us. To begin with, reflection on our everyday experience shows that we are aware of the dominant illumination in a scene. Upon entering a room, we can usually tell whether we are in dim or bright illumination, whether or not the light in the room comes from the top-right, or whether there is more than one light source. As Katz observed, when the illuminant is unusually strong or unusually weak, say if the light is very dim, we find it easier to report on what the dominant illumination in the scene is than about the colours of objects in the scene (1935: 40-41). Because we can report on the illumination just by looking, the simplest explanation for our abilities is that we perceive, and are aware of, some properties of the illumination. This awareness also plays an important epistemic role, as it allows us to gain very useful knowledge about our environment. This is most evident when we are outdoors and can gain information about the weather and the time of the day: we can see whether it is sunny or cloudy, and roughly where the sun is, we can tell if it is morning or late afternoon.

We are not merely able to perceive the dominant illumination in a scene, but the ways in which different parts of the scene, objects, and parts of objects within a scene are illuminated. In fact, the illumination is normally not uniform as its intensity differs in different parts of a scene, there may be different light sources, reflective surfaces, and objects occluding other objects from the light. All these factors, it is natural to think, have an effect on how objects and surfaces in a scene look to us. Moreover, there is evidence that we are visually sensitive to such effects. The stimulus received by the visual system, the light

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<sup>40</sup> Similar responses have been developed by Hilbert (2005), Jagnow (2009), Matthen (2010), Kalderon (ms.). Byrne (2001: 22) and Tye (2006: 172) also suggest this treatment of the case.

reflected from surfaces, is determined by both the colour of the surface and the character of the illuminant. The visual system, however, can extract from this stimulus information about surface reflectance – a physical correlate of stable surface colour. Various scientists and philosophers have argued that the visual system also plausibly extracts, and retains, information about the intensity, direction, distribution, and often also hue of the illuminant (e.g. Jameson-Hurvich 1989, Hilbert 2005, Gilchrist 2006, Matthen 2009). Information about the variable conditions of perception is just as useful as information about stable colours.

The minimalist can even argue that appealing to our ability to perceive changes in the illumination is necessary in order to account for certain phenomena. Consider cast shadows. It is a fact that we can see cast shadows. Many have observed that cast shadows do not look like patches of colour, but rather as a film lying over a surface.<sup>41</sup> As Hering illustrated, only if a contour line is drawn around a shadow, will the shadow look to be a part of the surface of a darker colour than the rest (Hering 1920). If so, then seeing shadow cannot be understood simply as an experience of colour properties. While there may be rare cases where we mistake shadows for patches of colour, we usually enjoy lightness constancy, i.e. we generally see the degree of darkness or lightness of a certain surface colour as stable across changes in the illuminant. As we have already pointed out when introducing our case study for this chapter, the wall looks to be the same in colour across the two lighting conditions, and proponents of the argument from changing appearances grant that one perceives the colour of the wall throughout.

Our awareness of shadows is best explained in terms of our perception of properties other than colours. As Kalderon (ms.) argues, our awareness of shadows is best explained in terms of our awareness of certain illumination-dependent properties. For a part of a surface or object to be in shadow is for it to be illuminated by significantly less than the light that is available in the surrounding environment. So, minimally, if we can see shadows, we can see differences in how parts of surfaces or objects are illuminated. Arguably, one could also make the stronger claim that our awareness of shadows is to be explained in terms of our perception of certain illumination-dependent properties.<sup>42</sup> A similar argument can be proposed for our awareness of cast coloured lights and specular highlights, which we do not normally see as coloured areas of the surfaces on which they seem to lie.<sup>43</sup>

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<sup>41</sup> See e.g. (Katz 1935: 48) and Hering (1920: 8), as cited by Allen (2016: 20).

<sup>42</sup> Cast shadows themselves might be better conceived as objects – see e.g. Sorensen (2008).

<sup>43</sup> For a discussion of these phenomena, see Matthen (2009) and Kalderon (ms.).



What the case of shadows shows, then, is not merely the well-known fact that we enjoy lightness constancy. It shows that the intensity and character of the illuminant contributes to the way objects look to us, and that this contribution is distinctive. In particular, this contribution is different from the contribution made by colour properties, and cannot be understood in terms of an apparent variation in a colour dimension, such as the hue, saturation, or lightness of a surface. The upshot is that we need to acknowledge that visual appearances are complex: the way an object looks in certain conditions is partly explained by the character of the illumination, which determines the way the object is illuminated.<sup>44</sup>

Importantly for our purposes, this allows us to answer the question raised by the argument from changing appearances. Since we have independent reasons to think that illumination or some illumination-dependent properties are perceivable, we can appeal to one's perception of those properties to partly explain certain ways things look to one in certain conditions. In particular, one's perception of different illumination-related properties together with one's perception of the constant colour of the wall can explain why the wall looks different ways to one in different lighting conditions.<sup>45</sup>

### 2.3 Illumination perception: minimalist accounts

In the previous section, we have argued that we can perceive illumination-related properties. It is very plausible that these properties are minimalist. Not only are they objective and independent of perceivers, but we are arguably committed to them independently of considering cases of changing appearances. As our phenomenological observations about everyday experiences suggest, we ordinarily think that there are illuminants in our environment, properties of illuminants such as being bright, reddish, or coming from a

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<sup>44</sup> Hilbert (2005) makes a similar observation. In light of the evidence on the visual system's sensitivity to illumination, he argues, we need to acknowledge that 'it is time to complicate our picture of the content of visual experience and that this more complicated content allows us to provide a better understanding of visual phenomenology' (2005: 153).

<sup>45</sup> This is only an account of the case we are focusing on in this chapter, and it only applies to surface lightness perception. As Brown (2014) argues, this is far from explaining all aspects of colour constancy – e.g. colour perception under coloured illuminants or through filters such as semi-transparent liquids and surfaces. It seems plausible that minimalist accounts of those cases are viable. For instance, in the case of seeing through filters the minimalist may appeal to one's perception of two different objects (the semi-transparent one and the one seen through it) and their respective colours. While Brown suggests that an account generalisable to all cases would be preferable, there do not seem to be principled reasons why the minimalist could not offer different accounts for different cases.

certain direction, as well as illumination-dependent properties such as being in shadow and being brightly lit. However, the evidence discussed so far leaves it open what these illumination properties are properties of. As we will see in Section 3, the minimalist's choice on this issue determines how exactly they can respond to the argument from changing appearances. I will first present what I take to be the most convincing proposal that the minimalist can adopt (Sec. 2.3.1), and then compare it with two alternatives, which are also in principle available to the minimalist (Sec. 2.3.2 and Sec. 2.3.3).

### 2.3.1 A relational property of objects

The first option for the minimalist is to argue that the properties they need to appeal to in order to explain our case of changing appearances are properties of the wall itself. In particular, they are relational properties of the wall, determined by the character, direction, and distribution of the illuminant affecting the wall. This option best accounts for the intuitive idea that the change in how the wall looks to one across the two conditions is a change in the way the wall itself is illuminated: brightly lit, then in shadow. By adopting this option, the minimalist would reply to the argument from changing appearances by resisting premise 2), i.e. the claim that one perceives the same minimalist properties of the wall across the two conditions: the relational minimalist properties one perceives differ. In fact, the minimalist would be questioning the claim that the wall example is a genuine case of changing appearances according to the characterisation given in Ch. 1. In the case we are discussing, the minimalist properties of the object – in particular, its relational, illumination-dependent properties – do in fact change across the two conditions. We can then account for our target case of changing appearances compatibly with the three core commitments of Minimalism: we respect the thesis that perceptual experience presents us with objective and perceiver-independent properties, we do not appeal to widespread illusion or error, and we do not rely on properties other than the ones we are independently committed to.

An immediate objection is that this minimalist proposal collapses into an Appearance Properties view. It is clear how the proposal differs from Shoemaker's version of the Appearance Properties view, because the illumination-dependent properties the minimalist appeals to are not perceiver- or experience-dependent. However, so the objection goes, these properties are in fact a kind of objective, perceiver-independent appearance property, just like the properties that Noë, Schellenberg, Genone, and Allen appeal to. In response, the minimalist can argue that there are significant differences between the two proposals.

The objection rightly highlights that the property of being illuminated in a certain way is a relational property, much like objective appearance properties are. However, it differs from appearance properties in nature and explanatory role. To begin with, appearance properties are properties over and above constant colours and illumination properties: an object's colour appearance property is jointly determined by its constant colour and the character of the illumination affecting the object. Moreover, as Noë (2004, Ch. 4) and Allen (2016, Ch. 2) explicitly point out, appearance properties play the explanatory role of 'apparent colours' – only, they are not *merely* apparent, but just as real and objective as the constant colours that do not change with different lighting conditions. By contrast, the minimalist account in terms of relational illumination-dependent properties does not require positing, or appealing to, anything over and above constant colours – that is, the colours we normally attribute to objects on the basis of our visual experiences – and illumination properties. There is no further property of having a certain apparent colour in a certain illumination. Relatedly, relational illumination-dependent properties are not apparent colours, nor are they partly determined by colours: they are properties of an entirely different kind.

These differences between the minimalist illumination-related properties and appearance properties have consequences for the role these properties can play in explaining how things look. Moreover, given the upshot of our discussion of illumination perception in Sec. 2, these consequences show that the minimalist proposal is superior to the Appearance Properties proposal. As I have argued, our experiences of shadows and other variations in illumination reveal that visual appearances are, in general, complex. In particular, the appearance of a coloured object under a certain illuminant results from the contribution of – at least – the colour of the object and the character of the illuminant. On the minimalist proposal, we can perceive both the colour of an object and the way it is illuminated – a relational minimalist property of it – and it is the perception of these two properties together that explains the object's looking as it does to one in a certain condition. This allows us to explain why we normally can tell whether a certain change in how things look is a change in colour or in the way the object is illuminated: we perceive both properties, and their contribution to how the object looks is distinctive.

Appearance Properties views, by contrast, do not seem capable of accounting for this complexity. On these views, the effect of the illumination does not make a distinctive contribution to how things look. Illumination determines, together with the object's colour, a further perceived property that plays the role of an apparent colour. Not only do changes in the illumination affect the apparent colour of objects – for instance, as Noë puts it, they

‘affect the brightness and perceived hue of the surface’ (2004: 127). But this is the only perceivable effect that changes in the illumination have.<sup>46</sup> As a result, differences in how things of a certain colour look under changing illumination are always differences in colour appearance, which can be captured in terms of an apparent variation in the hue, saturation, or lightness of surfaces. As Ganson (2013) puts it, when it comes to the way things look, the contribution of illumination gets lost in the mix.<sup>47</sup> Appearance Properties views then cannot account for the distinctive contribution of the illumination on how coloured objects look, and are thus at a disadvantage with respect to Minimalism.

The conception of appearance properties as apparent colours may have more general problematic consequences for how Appearance Properties views understand colour experience. The worry is that appearance properties, construed as apparent colours, seem to phenomenologically screen-off the colours themselves. This is because appearance properties are designed to do all the work needed to explain how things appear to one in certain conditions: with every variation in either the constant colour or the illumination affecting the object, there is a variation in the object’s apparent colour, and one’s perception of the apparent colour explains how the object looks to one in that illumination. If so, then it is unclear how the constant, illumination-independent colour contributes to the phenomenology of our colour experiences, other than by partly determining the apparent colour.<sup>48</sup>

Defenders of appearance properties do not seem to be insensitive to this consequence of their view. Some suggest that colours, although they do not contribute to the phenomenology of colour experience, are nonetheless in some sense perceived: we perceive them in virtue of perceiving the appearance properties they are associated with (e.g.

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<sup>46</sup> This can be taken to show that Appearance Properties views effectively deny that we can perceive illumination (Kalderon ms.).

<sup>47</sup> Ganson believes, unlike me, that this is the correct prediction. We will discuss his argument in Sec. 3 below.

<sup>48</sup> Shoemaker argues that appearance properties are needed to explain how things can look different without looking different in colour, i.e. to explain what he calls ‘phenomenal’ ways of looking (2000: 255-256, 270; 2006: 463). Given this, one may think that the perception of appearance properties explains only some of the ways things look, whereas our perception of colours explains some other ways. However, differences in how things look with respect to colour are differences in the way things ‘doxastically’ look, i.e., in the terminology introduced in Ch. 1, ways things evidentially look (Shoemaker 2000: 253-255). But then appeal to colours is only involved in accounting for subjects’ colour judgements: when we say that things look doxastically a certain way to one, we mean that one is inclined to judge, on the basis of visual evidence, that things are that way.

Shoemaker 2000, 2006; Noë 2004; Schellenberg 2008).<sup>49</sup> Others insist their view is compatible with colours themselves being perceived, but suggest that experiencing colours may be incompatible with experiencing apparent colours at one and the same time (e.g. Allen 2016).<sup>50</sup>

Ganson's (2013) response stands out: he seems to embrace the claim that colours are phenomenologically screened-off by appearance properties, and relies on it to argue that we do not perceptually experience colours at all. Interestingly, Ganson's argument relies on the idea that the contributions of both constant colours and illumination to the visual appearance of coloured objects gets 'lost in the mix'; indeed, they make 'the same kind of contribution' to the way things look in colour experience because all such variations are variations in hue, saturation, and lightness (2013: 7-8, 11-12). Because apparent colours are apt to vary with each of those variations in how things look to one, we need to appeal to our perception of them alone (*ibid.*).

If Appearance Properties views were implicitly committed to a view of colour experience where we do not experience colours, but only appearance properties, this would arguably be an undesirable result. Minimally, we intuitively take colours – the constant colours of surfaces – to explain at least in part why coloured objects look certain ways to us. Moreover, as Hilbert (2005: 154-150) and Allen (2016, Ch. 2) argue, our capacity to perceive colours provides the best explanation of colour constancy, which cannot be understood as a mere inclination to judge that objects retain their colours under changes in the illumination. The minimalist, by contrast, is immune to these worries. Contrary to what Ganson argues, the minimalist would point out, we have good reasons to think that colour and illumination make distinctive contributions to how things look, and we do not experience them as making the same contribution. But then we at once lose a reason to appeal to apparent colours and a reason to question the intuitive claim that we experience colours themselves.

The comparison between the minimalist proposal and Appearance Properties views has highlighted some important differences between the two views, and these differences count in favour of Minimalism. Appealing to relational, illumination-dependent properties of

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<sup>49</sup> As we will see in Chapter 4, Shoemaker recently proposed an alternative account to his own Appearance Properties view precisely in order to avoid this unattractive consequence his view had on our understanding of colour perception.

<sup>50</sup> According to Allen, the claim – endorsed by other Appearance Properties theorists – that we only perceive colours in virtue of perceiving apparent colours threatens our epistemic access to the mind-independent world, much the appeal to sense-data does (2016: 38-39).

objects allows us to account for the complexity of the appearance of coloured objects. According to the minimalist, the context-independent colours of objects are perceived in addition to their relational illumination properties, much like other minimalist properties such as texture are perceived in addition to colour. The result is a complex appearance. Not only are colours and relational illumination properties not in competition for explaining how objects look, but they both make an indispensable distinctive contribution to the way the object looks. A consequence of this is that in order to account for this complexity, we need to slightly revise the Ways→Properties principle. While the minimalist account defended in this section is compatible with the claim that differences in how an object looks are fully explained by differences in the properties of the object one perceives, it is not compatible with the principle as stated in Ch. 1. On that formulation, the principle says that the way an object appears to one is fully explained by one's perception of a certain property of it. What our discussion shows, however, is that sometimes it is our perception of a certain complex of properties together – colours as well as illumination-dependent properties – that explains how an object appears. The wall's looking a certain way when in full sunlight is explained by one's perception of both the wall's illumination-dependent property *and* the wall's colour; and analogously for the other way the wall looks, when in shadow.

In the literature on colour constancy, we can find at least two alternative proposals to the one I defended in this Section. Both proposals are motivated by the considerations on illumination perception we presented in Section 2.2, and they aim at accounting for the idea that illumination makes a distinctive contribution to how coloured objects look. In addition, both proposals are, at least on the face of it, compatible with Minimalism: they appeal to properties that are objective and perceiver-independent, and that we are arguably committed to independently of explaining cases of changing appearances. Moreover, just like the proposal appealing to relational illumination-dependent properties of objects, they respect all three core commitments of the minimalist approach: Perceptual Objectivity, No Error Theories, and Metaphysical Parsimony. In the following two Sections, I will compare these two alternatives to the account I defended here, and argue that there are some reasons to prefer my account.

### 2.3.2 Colour dimensions

On the first alternative proposal, defended by Hilbert (2005) and Jagnow (2010), illumination is construed as a dimension of an object's colour, i.e. a respect in which colour can vary. The white wall in bright light looks the same in some respect to the white wall in shadow – it has the same values on some dimensions of colour variation – but is different in some other respect – it has a different value on the illumination dimension. Considering the contribution of illumination to the way things look in colour experience thus gives us reason to think that there are more dimensions of colour variation than the traditional three – hue, saturation, and lightness. However many dimensions we have reason to include – and this is, according to both Hilbert and Jagnow, an empirical matter – at least one illumination dimension will have to be added to hue, saturation, and lightness.

How does this proposal differ from the one appealing to relational, illumination-dependent properties? The answer to this question is clear when considering Jagnow's proposal. Jagnow takes colours to be individuated by values on at least four dimensions of variation – hue, saturation, lightness and illumination – specifying a position in a four-dimensional colour space. As a result, whenever the illumination value changes, the colour changes. Jagnow can thus account for our target case of changing appearances by appealing to a difference in colour between the wall in bright sunlight and the wall in shadow: the two colours differ on the illumination dimension. When we see the white wall in bright light, we perceive a certain colour; and when we see the wall in shadow, we perceive a different colour (2010: 201-205). This account of the case offers an immediate response to the argument from changing appearances, because it does not require that we revise the Ways→Properties principle: each way the wall looks is fully explained by our perception of a certain property – an illumination-dependent colour. And because illumination is a dimension distinct from hue, saturation, and lightness, the account can to some extent acknowledge that illumination makes a distinctive contribution to the way things look – in this respect, faring somewhat better than an account appealing to apparent colours.

However, Jagnow's account has a counter-intuitive consequence. Colours, or at least the colours we perceive, are illumination-dependent properties (Jagnow 2010: 208). Now, we ordinarily think of colours as properties that objects retain in spite of changes in their environment: for instance, we think that bananas are yellow, and a banana will remain yellow, and will remain the specific shade of yellow it is, whether we place it under artificial light in the shop, in full sunlight, or under a red lamp. Moreover, illumination-independent

colours are the properties we have in mind when discussing colour constancy, the properties we rely on when recognising objects by sight, and the properties we pay attention to as the conditions of perception change. It is not clear whether Jagnow thinks that we should revise our pre-theoretical notion of a colour, or, instead, that the properties we perceive in colour experience and that explain how coloured things look – his illumination-dependent colours – are not the same properties that we think of and talk about in our everyday discourse about colour. The minimalist proposal appealing to relational illumination-dependent properties, by contrast, does not face any of these issues. If the property that explains the difference in how the wall looks across the two conditions is not a colour property, no revisions of our ordinary conception of colour or distinction between perceived colours and ordinary colours is required.

Jagnow's account is clearly different from the one appealing to relational illumination-dependent properties, and, as we have seen, we do not have good reasons to prefer the former over the latter. It is not obvious, by contrast, whether Hilbert's proposal is substantially different from the proposal I favour. Hilbert argues that the colour appearance of objects must be characterised in terms of more than the traditional three dimensions, including a least one dimension to account for the effect of the illuminant (2005: 150-151). This may be taken to show that Hilbert takes colours, or at least the colours we perceive, to be illumination-dependent properties, as Jagnow does. However, other remarks by Hilbert suggest that his claim concerns the overall visual appearance of an object. That is, Hilbert can be read as arguing that, in addition to three-dimensional colours, we also experience illumination-related properties: his observation that gloss and translucency may also contribute to the complex visual appearance of coloured objects points in this direction.<sup>51</sup> If so, then despite the different formulation, Hilbert can be seen as defending a very similar proposal to the one I presented in Sec. 2.3.1, and a proposal that the minimalist could safely adopt.

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<sup>51</sup> Both Gert (2010: 673-676) and Brown (2014: 5-6) take Hilbert to be talking about what we perceive in colour experience, and emphasise that he is not proposing that we think of colours as illumination-dependent.



### 2.3.3 A property of the illuminant

An alternative to the proposal I defended in Section 2.3.1 is to take the properties that account for our case of changing appearances to be properties of the illuminant or light source. Matthen's (2009) account of colour constancy adopts this option. Matthen agrees with the conclusion of Section 2.2: the visual appearance of coloured objects is complex, and to account for this complexity we need to acknowledge that the colour of the object and the character of the illumination each make a distinctive contribution to the object's appearance. However, he argues, the contribution of the illumination should not be explained in terms of our perception of a property of the object (2009: 246-250). Rather, it is the light in the scene, which falls, among other things, on the wall, that appears a certain way: intense, bright, dim, reddish, coming from a certain direction. The appearance of the light, which can be explained in terms of its minimalist properties – such as its colour, spatial distribution, intensity – in turn affects the appearance of the wall. But the properties of the light are not, and do not look to us to be, properties of the surface of the wall. Consider looking at a white wall under a pinkish illuminant: the wall does not normally look pink; the light does. So the best explanation of the wall's looking as it does must appeal to our perception of two distinct entities and their respective properties: the wall and its (white) colour, and the light with its (pink) colour. This analysis can be motivated, Matthen argues, by looking at the effect that our perception of the relevant property (pinkness) has on our expectations and beliefs: what our perception affects are our expectations and beliefs about the illuminant, not about the wall (2009: 249).<sup>52</sup>

This proposal can be convincingly applied to our original case of changing appearances, which focuses on our perception of the wall's lightness as constant across changes in the illumination. The way that wall looks to one in bright sunlight is explained by one's perception of the wall's colour and of the brightness of the light, whereas the way the wall looks to one when in shadow is explained by one's perception of the wall's colour and of the diminished intensity of the light, which is now dimmer. Moreover, this proposal is compatible with Minimalism, as it clearly respects all three of the core commitments of the approach. There is, however, a significant difference between this proposal and the one I defended in

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<sup>52</sup> A variant of this proposal is defended by Brown (2014), who argues that, when colour constancy holds, we see the colour of the surface through the colour of the incident light, which is perceived as a 'layer' lying on the object. However, Brown argues that changes in illumination are experienced as effects on the 'colour appearance' of objects (2014: 5).

Section 2.3.1. If the minimalist wants to adopt Matthen's proposal in response to the argument from changing appearances, they cannot straightforwardly reject premise 2) in the argument. That premise says that one perceives the same minimalist properties *of the object whose appearance changes* across the two conditions. But on Matthen's proposal there is no difference in one's perception of these properties: one perceives the object's colour throughout. There is indeed a difference in the minimalist properties one perceives across the two conditions, but these are properties of the illuminant or light source.

In order to adopt this response, then, the minimalist needs, first, to argue that the argument features an extra implicit premise, and that that premise is the one they are resisting. The premise in question, call it premise 2\*) says that there is no difference in any other minimalist property one perceives across the two conditions – that is, in addition to the minimalist properties of the object. This premise can be resisted because there is a difference in the properties of the illuminant one perceives, and these are plausibly minimalist properties. Second, and most importantly, the minimalist needs to argue that the Ways→Properties principle should be further revised, to allow for one's perception of properties other than the target object's properties to contribute to explaining how the object appears to one. This revision does not merely serve the function of allowing this minimalist response to the argument from changing appearances, because it is well motivated on independent grounds.

The general idea behind the revision is that we should not assume that the way an object appears can be explained by our perception of the properties of that object alone.<sup>53</sup> The context, the whole scene in which the object is presented, and in particular the properties of other objects that are presented in that scene also affect how an object appears. The illumination in a scene is not the only kind of element affecting the way particular objects in a scene look. Notably, the colour of the background an object is presented against affects how the object looks.<sup>54</sup> Sometimes, this effect can be misleading or illusory, and leads one to make false judgements about the colour of objects. For instance, the same grey object looks lighter against a black background and darker against a white background – a phenomenon known as simultaneous colour contrast effect. However, as Ganson points out, in most cases the effect of the colour of nearby objects, and in particular of its lightness, does

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<sup>53</sup> Matthen (2009) focuses on rejecting a different thesis: the way an object looks depends solely on the kind of light emanating from that object. I take it that his remarks also support the rejection of the more general assumption presented here.

<sup>54</sup> See e.g. Whittle (2003) for a review of the empirical evidence concerning colour contrast effects, and e.g. Kingdom (2011) for a review with a focus on lightness.

not result in illusions (2013: 6). Just as we normally enjoy lightness constancy with changes in the illumination, we normally enjoy lightness constancy with changes in the background colours (e.g. Arend-Spehar 1993).<sup>55</sup> We thus have independent reasons for revising the Ways→Properties principle: the way an object looks to one can be explained by one's perception of both properties of that object and properties of other objects and elements in a scene.

In spite of the plausibility of this general observation about the importance of the context in which an object is perceived, Matthen's specific account of our case of changing appearances has been met with criticism. In particular, many have found it implausible that the illumination-related properties the perception of which contributes to explaining how the wall looks across the two conditions should be construed as properties of the illuminant. Hilbert, for instance, argues that Matthen's account is phenomenologically inadequate: 'what we see as changing with the illumination is an aspect of the object itself, not the light source or the space surrounding the object' (Hilbert 2005: 151). Granted, we sometimes see light sources and their properties, such as when we look at an intense beam of light cutting through a dusty, dark room; but in most everyday scenarios, we are mainly conscious of the effects of illumination on the surfaces of objects. Moreover, one could argue that the plausibility of Matthen's proposal relies in part on its focus on hue constancy, as opposed to lightness constancy. His argument that our perception of the relevant illumination properties affects our beliefs and expectations about the illuminant, and not about the illuminated wall, is convincing if the property is the colour of the illumination, which in his example looks pink: this colour certainly does not seem to be a property of the wall. If we think of an achromatic illuminant, however, it is plausible that our perception of the effect of the illuminant on the wall affects our beliefs and expectations about the wall – and surrounding objects –: the wall, we think, is now brightly lit.

A defender of Minimalism who is convinced by this criticism may think that the relational property proposal discussed in Section 2.3.1 is superior to Matthen's in that it better accounts for the phenomenology of lightness constancy. On that proposal, the relevant illumination-related property of the wall that explains the difference in how it looks across the two lighting conditions is a relational, visible property of the wall itself. The minimalist

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<sup>55</sup> The visual system is supposed to achieve this by solving the same problem it has to solve when estimating surface reflectance: the colour of the background and nearby objects affects the intensity of the light reaching the eye, much like illumination and surface colour do (Gilchrist 2006).

who adopts the relational property proposal, however, may agree with the main point Matthen makes: the context in which an object is perceived and the other elements in the presented scene cannot be ignored when considering how the object appears to us in that context. Matthen's insight, though, can be respect on the relational property proposal too: taking the illumination-related property to belong to the object whose appearance changes is compatible with the idea that the context and surrounding objects may play a role in explaining how the object looks.

We may not need to appeal to the role of background and nearby objects in our original case. In that case, the difference in how the wall looks across the two conditions is adequately explained by our perception of a different property of the wall – a different relational, illumination-dependent property in each condition. Nonetheless, taking context into account may be necessary when dealing with other cases of changing appearances. Matthen's own way of taking context into account – on which we perceive the illuminant or light source – may be plausible for non-illusory cases involving coloured illuminants, such as his example of the pinkish-looking white wall. In other cases, such as those where the colours of background and nearby objects impacts how a certain coloured object looks, the minimalist may appeal to a different explanation. For instance, consider a case, such as those mentioned by Ganson, where a darker background affects the way a light object in the foreground looks, but there is no lightness illusion – the colour of the foreground object is genuinely perceived, and does not look to be lighter than it is. Here the minimalist could simply say that the way the foreground object looks to one is explained by one's perception of its colour *and* of the colour of the background. As a response to an argument from changing appearances, the proposal requires, again, that the Ways→Properties principle is revised: we need to allow that one's perception of a property other than the target object's properties can explain how the object appears; and we need to allow that perception of multiple properties features in the explanation. But we have already argued that there are good reasons to revise the principle in this way: reflection on the broader consequences of Matthen's proposal supports allowing for the first modification; and we have seen in Sec. 3.1 that reflection on the distinctive contribution of illumination in visual appearance support allowing for the second modification.

Embracing these two modifications of the Ways→Properties principle is in general very plausible. The case of illumination and background colour highlighted that visual appearances are complex, and perception of different kinds of properties may affect how coloured things look to one. As an example, shape and texture properties may affect how

things look with respect to glossiness, shininess, transparency, and translucency. Understanding how these properties interact in affecting the overall appearance of an object is not an easy task, and requires a case-by-case study. The minimalist, however, may in each case have reasons to appeal to more visible properties than those that their opponent may initially assume are available.

## 2.4 Matching and sameness of look

In Section 2.2 I have argued that there are good reasons for thinking that we can perceive illumination, and that illumination makes a distinctive contribution to the way coloured objects look to us. In Section 2.3 I have outlined and defended a minimalist account of our target case of changing appearances on which we perceive, in addition to colours, relational illumination-dependent properties of objects. The minimalist response to the argument from changing appearances as applied to the case of the white wall under different illuminants is quite simple: the wall is brightly lit in one case, in shadow in the other, we are visually sensitive to this difference, and this difference contributes to explaining how the wall looks in those two conditions. In this section, I will consider one reason why several philosophers have dismissed this response as too simple, and thus inadequate.

A common objection is that the minimalist proposal cannot explain why things of different colours sometimes can look the same in different lighting conditions. Call this the objection from sameness of look.<sup>56</sup> Consider a white wall completely in shadow and a different, grey wall fully illuminated by direct sunlight. The two walls may, in some cases, look the same. How can we explain this sameness of look? Some Appearance Properties views can offer a simple answer: the sameness is explained by a shared appearance property. This answer is not motivated by the Ways→Properties, which concerns explanations of differences in how things look, but by an analogous principle concerning explanations of sameness in how things look. On this principle, the fact that two objects (or the same object in different conditions) look the same to one is explained by one's perception of a certain property that both objects have (or that the object retains across different conditions) – call this the Shared Property

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<sup>56</sup> Versions of this objection have been advanced by many philosophers, whether in support of appearance properties or of other entities playing the role of apparent colours. See e.g. Chalmers (2006), Cohen (2008), Jagnow (2010).

principle.<sup>57</sup> Defenders of appearance properties who, like Shoemaker, endorse Shared Property will then argue that the relevant shared property is an appearance property: the white wall in shadow and the sunlit grey wall look the same to us because we they share an apparent colour, and we perceive that apparent colour (e.g. Shoemaker 2006: 476, 480).<sup>58</sup>

On the minimalist proposal I defend, this kind of explanation is not available. The visible minimalist properties that the two walls have, and the properties of the walls one perceives, are different – different colours, and different illumination-dependent properties. In fact, there is no relevant perceived property in common across the case of seeing the white wall and the case of seeing the grey wall that may explain why the two walls look the same to one.<sup>59</sup>

When considering the above example, it is natural to think of a case of lightness illusion, where we take a white wall to be grey because we are misled by the way it looks in certain lighting conditions. The minimalist does not deny that there are such cases, but they will argue that we should not base our account of the appearance of coloured objects on these cases, which, as we have seen in Section 2.2, are the exception rather than the norm. According to the minimalist, these are cases where we do not distinguish the distinctive contribution of colour and illumination, respectively, to the overall appearance of the wall.

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<sup>57</sup> Shoemaker explicitly defends this principle in conjunction with Ways→Properties. He appeals to appearance properties to explain cases where ‘the ways things appear can be different when there is no difference in “objective” sensible properties like colors, or the same when the objective sensible qualities differ’ and there is no misperception (2006: 465-466). See also: ‘the ways things appear will be the same or different just to the extent that the appearance properties they are perceived as having are the same or different’ (2006: 480). As I mentioned in Ch. 1, Shoemaker sometimes seems to endorse an identity claim, where the ways things look just are certain perceived properties. If we focus on a principle concerning explanation, however, Ways→Properties does not entail Shared Property.

<sup>58</sup> It is not obvious which defenders of appearance properties endorse Shared Property. If they reject Shared Property, though, they cannot appeal to Shoemaker’s explanation of the sameness in look. This is the case of Genone (2014), who argues that two things may look the same to one even though their appearance properties differ, because one may fail to notice, or not be in a position to recognise, this difference.

<sup>59</sup> There may of course be other obvious visible minimalist properties, whether belonging to the walls or other objects in the scene, that one perceives in both cases – for instance, one may in both cases perceive the smoothness of the wall’s surface. But I think it is reasonable to concede to my opponent that one’s perception of properties such as texture or spatial position cannot explain the purported sameness of look at stake here.

This does not show that the way coloured objects look to us is not, in general, complex, to be explained in terms of our perception of both colour and illumination properties.<sup>60</sup>

At least some proponents of the objection from sameness of look, however, seem to have in mind non-illusory cases. Shoemaker, for instance, claims to be concerned with a case where the two surfaces being compared look to be the same in colour – where he means that they evidentially look the same in colour (2006: 461-462). But if these are the cases the objection is concerned with, then the minimalist can respond by questioning the very phenomenon that they are being asked to explain. It is questionable, that is, that there is any sameness of look in cases where things look to be the colour they are. We already know from our discussion of illumination perception in Section 2.2 that we normally enjoy lightness constancy, and are able to recognise that an object retains its surface colour despite changes in the illumination, which make a difference to the intensity of the light reflected by an object. This ability also allows us to recognise differences in the colour of surfaces which may reflect light of similar or identical intensity, i.e. surfaces that are similar or equal in brightness or luminance.<sup>61</sup> For instance, as Kalderon points out, the intensity of the light reflected by the black print on a white piece of paper in sunlight is approximately the same as the intensity of the light reflected by the white areas of the same piece of paper indoors, under artificial lighting. However, the black print viewed outdoors still looks of a different, darker colour than the surrounding white areas of the page viewed indoors.<sup>62</sup>

The example of the two walls we are considering, the minimalist can argue, is analogous. As many have pointed out, it is simply false that a white wall in shadow looks the same as a

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<sup>60</sup> Advancing a minimalist account of illusions – or experiences that philosophers have traditionally classified as illusory – is beyond the scope of this thesis. In this particular case, one option for the minimalist would be to argue that one is still presented with a complex appearance, and is aware of the colour as well as of the illumination-dependent property of the wall; but one does not have full cognitive or epistemic access to the properties one is aware of, and thus is unable to recognise their presence. For a discussion of colour illusions that is compatible with Minimalism, see Kalderon (2011a).

<sup>61</sup> Brightness is sometimes used for ‘perceived luminance’, where luminance is the intensity of light reflected by a surface. While a value of luminance is compatible with different stimuli – objects of different colours, in different lighting conditions – the visual system easily and reliably distinguishes between different conditions. This does not mean, though, that brightness or luminance is perceived or experienced, and it definitely does not mean that properties of surfaces such as lightness are ‘derived’ from brightness (e.g. Gilchrist 2006).

<sup>62</sup> See Kaiser-Bolton (1996: 199), as cited by Kalderon (ms.). In fact, as noted by Matthen, we have evidence that the visual system can reliably detect the respective lightness of a black and a white object even in conditions where the black object reflects more intense light (has higher luminance) than the white object (2010: 234-235).

brightly lit grey wall (e.g. Kalderon ms., Matthen 2010). This is because a white wall in shadow does not look darker in colour than it does when fully illuminated by sunlight: we perceive the wall's lightness in both conditions, and this contributes to how the wall looks to us. Some philosophers argue that we might report on the appearance of the wall by saying that 'it looks grey'.<sup>63</sup> This is certainly not the most common report in a non-illusory case. Suppose someone asks us of the wall in shadow 'how does it look?'. Most likely, we would simply reply by listing features that the wall looks to have: 'well, it's white, smooth, quite tall...' – examples of stable, visible properties; in fact, minimalist properties. If we explicitly talk about looks at all, we would probably reply 'it looks white'. We might also say of the white wall in shadow that it looks darker than the same wall in sunlight or that it looks like a grey wall. We may use these reports, for instance, if we are at a painting class, and the teacher is helping us choose the appropriate paint to depict a white wall in shadow; or maybe if our interlocutor is asking us to set aside, for a minute, the issue of what colour the wall is, and notice the effects of the dark shadow on the wall's appearance. But in making those claims about the white wall we are not making claims about the wall's apparent colour: we are characterising the way the wall looks comparatively by pointing out that it is somewhat different from the way a white wall looks in sunlight, or somewhat similar to the way a grey wall looks. If we do say that the white wall in shadow looks grey, this is also plausibly interpreted as a comparative report, conveying that the way the wall looks in these conditions is similar to the way a grey wall looks in some other conditions. What is clear, is that, in a non-illusory case, the white wall in shadow does not look to be grey – it does not evidentially look grey – and it does not look the same as a grey wall. But if the two walls in the argument from sameness of look do not even look the same, there is no reason to appeal to a shared appearance property to play the role of a shared apparent colour: the argument does not get off the ground.

The minimalist can argue, moreover, that this result also undermines a different argument that has been taken to support Appearance Properties views. This argument targets our original case of changing appearances directly. We have argued that the difference between a white wall in shadow and the same wall in direct sunlight cannot be understood as a difference in apparent colour – it is, instead, best understood as a difference in illumination-

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<sup>63</sup> For instance, Hill argues that a minimalist account cannot explain the 'commonalities' between a tan surface in shadow and a dark brown surface, where we can describe both surfaces as 'looking dark brown' (2016: 186). It is not clear to me what the evidence is for claiming that we use these reports in non-illusory cases is.



dependent properties (see Sec. 2 and Sec. 3.1 above). Noë has advanced an argument claiming that we should re-consider this conclusion. Suppose one is asked to select among various colour chips the ones that best match the white wall in shadow and the white wall in sunlight, respectively. One would select different colour chips – one would choose a grey chip to match the shadowed wall, but not the sunlit wall. This shows, Noë argues, that the difference between the white wall in shadow and the same wall in direct sunlight is, after all, a difference in apparent colour (2004: 128). Appearance Properties view thus provide a better explanation of the difference in appearance than the minimalist's.

Experimental evidence on colour matching may also be cited in support of this conclusion. Cohen (2008) offers an argument based on the results of asymmetric matching experiments that the defender of apparent colours may adopt.<sup>64</sup> In these experiments, subjects are presented with two computer-simulated arrays of coloured patches, each presented under different illumination conditions, and are asked to adjust a patch on one display so that it 'matches' a certain patch on the other display (Arend-Reeves 1986, Arend *et al.* 1991). Subjects make different adjustments depending on the instructions they receive: to adjust the test patch 'so that it looks as if it were cut from the same piece of paper' as the reference patch, i.e. to 'match its surface colour'; or to adjust the test patch so that it matches the 'hue and saturation' of the reference patch (Arend-Reeves 1986: 1744). When the patches are matched in the second way, Cohen observes, they are rendered approximately visually indistinguishable. Because hue and saturation are standardly taken to be dimensions of colour variation, he goes on to argue, the second kind of matching is a matching in apparent colour (2008: 67-68). Consider now the first kind of matching. Subjects' ability to reliably perform this kind of matching simply confirms that they enjoy a high degree of colour constancy: they can make two patches look as if they had the same surface colour but were differently illuminated. Now, when two patches matched in this sense, they still looked different. But if one now adjust the test patch according to the second kind of matching – the hue and saturation matching – one can make the two patches look exactly the same, i.e. make them visually indistinguishable. This shows, Cohen claims, that the difference in appearance

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<sup>64</sup> I think Cohen's argument can be used to support the claim that we should appeal to apparent colours in order to account for the way coloured things look to us. Cohen's own goal is different. He assumes that two objects of the same colour under different illuminants are, in some sense, 'alike in apparent colour' and also 'easily, obviously, and quickly visually discriminable in apparent colour' (2008: 62), by which he means that we experience them, in some sense, as the same and different in colour. He then uses the argument below to show that apparent colours, i.e. colours as we experience them, are illumination-dependent – a claim he then uses to motivate the conclusion that colours themselves are illumination-dependent.

between two patches matched in the first way – so that they look to have the same surface colour – ‘can be offset by a difference in apparent colour’ (2008: 67). We can then conclude that the difference in appearance between two patches that look the same in surface colour was a difference in apparent colour. The defender of appearance properties may endorse this argument to further support Noë’s conclusion: a white wall in shadow and a white wall in sunlight differ in apparent colour (e.g. Allen 2016: 32-33).

In response to this argument from matching, Matthen notes that a difference in appearance between two patches that look to have the same surface colour but are differently illuminated is to be expected. In fact, it is what a minimalist proposal would predict, if we perceive illumination properties in addition to surface colour (Matthen 2010: 29-30). What is the reason to think that the difference in how those two patches look is best explained as a difference in their apparent colour? Applying the question to the case Noë considers: what is the reason to think that the difference in how a white wall in shadow and a white wall in sunlight look is best explained as a difference in their apparent colour? One might think so if one assumes that two surfaces that differ both in their colour and in how they are illuminated can look the same, and in particular if one assumes that a white wall in shadow looks just like a grey wall in sunlight does.<sup>65</sup> As we have seen when discussing the objection from sameness of look, however, this assumption is false. Noë says that we can match the shadowed white wall with a grey chip. But if we bring a chip close to the wall to compare their appearance, they will still look somewhat different to us. This is because we are sensitive to the illumination in the scene, and to the way the wall and the chip are now illuminated. In order to have a match such that a grey chip and the wall look exactly the same, we would have to think of the wall’s surface as part of a picture, which we can ‘cut out’ from the scene it is in, to then compare it with the chip.

Neither our ability to match surfaces with coloured chips nor asymmetric matching experiments show that the difference in how a coloured object looks under different illuminants is to be explained in terms of apparent colours. The minimalist does not deny that we can perform matches according to ‘hue and saturation’, only that explaining our matching abilities requires appealing to our perception of properties other than the colour and illumination-dependent properties of objects. Various philosophers have pointed out that matching according to ‘hue and saturation’ requires a special effort. One has to disregard all other parts of the scene as much as possible, screening off the perceptual

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<sup>65</sup> Kalderon (ms.) also suggests that this assumption is a motivation behind Noë’s argument.

context whether imaginatively or even by creating a frame with one's hands around the area one needs to match.<sup>66</sup> By employing certain viewing strategies, we can attend to certain visible similarities between differently coloured surfaces. The way these surfaces overall look to us, however, is explained by our perception of both their colour and their illumination-dependent properties.

In this section, we have seen that the minimalist can successfully respond to the objection from sameness of look and the argument from matching. A question, however, remains open. While we have good reasons to deny that a white wall in shadow looks exactly like a sunlit wall, it seems plausible to claim that the two walls look similar. Defenders of appearance properties should presumably appeal to a similarity in the apparent colours of the two walls – if they abandon the implausible claim that these apparent colours are the same. The two apparent colours, they could argue, are relatively close to each other in a three-dimensional colour space: they have similar values of hue, saturation, and lightness. But how can the minimalist account for this similarity in appearance? This is an interesting question, and we will discuss it in more detail in the following chapter. In the current case, however, we can say that what the minimalist needs is a story about why different combinations of a colour and an illumination property can have similar psychological effects on perceivers.<sup>67</sup> While Minimalism provides us with a general framework for understanding perceptual appearances in accordance with three plausible commitments concerning our perceptual relation to the world, the details of this story will plausibly be determined by empirical research.

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<sup>66</sup> Davies (2016) develops this suggestion. See also Matthen (2010) and Allen (2008, 2016).

<sup>67</sup> An example of such a story is offered by Hilbert, who appeals to structural similarities in how the visual system represents greyness and shading (2005: 151).

## Chapter 3: Blur

### 3.1 The case of seeing blurrily

In Chapter 2 we have seen that the minimalist can resist the argument from changing appearances as applied to the case of a white wall seen in different lighting conditions. We do not need to abandon any of the core commitments of the Simple View in order to account for this case: a minimalist account of the way coloured objects look under different illuminants is available, and it is in fact superior to accounts appealing to appearance properties. In this chapter, I focus on an intersubjective case of changing appearances, where the same object looks different to different subjects in the same objective conditions of perception. While, as we will see, we do not have good reasons to appeal to appearance properties in order to account for this case, the case nonetheless poses a challenge to Minimalism.

Consider this scenario. In the ophthalmologist's studio, an eyechart with letters of different sizes is being used to test the eyesight of two subjects. Looking at the eyechart from a certain distance and angle, one subject can correctly report all the letters with ease. The ophthalmologists will conclude that this subject does not need corrective glasses and that their visual capacities are functioning very well – let us call this subject a normally-sighted subject. By contrast, when the second subject looks at the eyechart from the same distance and angle, in the same lighting conditions, they struggle to report some of the letters. They correctly and easily report the first row of larger letters, correctly report most of the slightly smaller letters in the second and third row, and then make more and more mistakes in reporting the letters in subsequent rows. Even when they do report the letters correctly, this requires progressively higher effort on part of the subject: they may be squinting their eyes, try to move their head slightly closer to the eyechart, and hesitate. This subject may comment that they are having to guess what some of the letters in the rows with smaller letters are, and that once they get to the fifth row, they do not feel like they can confidently report on what letters are present at all. The ophthalmologist will prescribe corrective glasses to the second subject: the subject is classified as short-sighted, let us suppose.

On the basis of the short-sighted subject's performance, it is natural to think that the eyechart, and in particular the letters on it, look different to them than they do to the

normally-sighted subject. Let us focus on the 'T' in the third row of the eyechart. The T looks blurry or blurred to the short-sighted subject, but not to the other. If the ophthalmologist, pointing at that T, asked 'how does this letter look?', the short-sighted subject may reply 'it looks blurry'; the normally-sighted subject would then observe that it does not look that way to them – 'it doesn't look blurry at all', they might say. According to the characterization given in Chapter 1, this is a case of changing appearances – an intersubjective one. It is therefore natural to think that the anti-minimalist argument from changing appearances can be applied to it. Premise 1) clearly holds: the T on the eyechart looks a certain way to one subject and another way to another subject, in the same objective conditions of perception. According to premise 2), both subjects perceive the same minimalist properties of the T. Given the Ways→Properties principle (premise 3), in order to explain the difference in how the T looks to the two subjects, we need to suppose that there is a difference in the properties of the T that the two subjects perceive in those objective conditions (premise 4). But if both subjects perceive the same minimalist properties of the T in those conditions, then we can conclude that at least one of the two subjects perceives at least one property of the T that is not a minimalist property.

Proponents of the argument need to motivate premise 2). This premise says that both subjects in our eyechart scenario are perceiving the same minimalist properties of the T in the third row. But it is not obvious that this is true. One may begin to note that the two subjects differ in visual sensitivity: one is normally-sighted and one is short-sighted. This is something we can know about them independently of considering how things look to them: it is shown by their performance on the test above and other tests the ophthalmologist can administer. The difference in sensitivity may well make a difference to which properties the two subjects perceive. In particular, the short-sighted subject may not perceive all the minimalist properties that the normally-sighted subject perceives. A blind subject, for instance, may be visually insensitive to all visible minimalist properties, and this would clearly make a difference to which properties they perceive. Moreover, so the worry develops, this difference explains why things look different to the blind subject than they do to a normally-sighted subject. If the case of the short-sighted subject was analogous, then premise 2) would be false, and the argument from changing appearances would not go through.

The case of blindness is one where visual sensitivity makes a difference to what one perceives by determining whether, in certain conditions, one perceives or fails to perceive certain visible properties. Sensitivity here plays the same role that objective conditions of perception can play. The lack of light in a room, as well as the presence of a blinding light, for instance,

may explain why one does perceive certain visible properties in the room. Proponents of the argument from changing appearances intend to rule out these kinds of cases, as they are arguably not a serious challenge to Minimalism.<sup>68</sup> The case of short-sightedness, however, may be importantly different from these. Because the short-sighted subject is not visually insensitive to all visible minimalist properties, but only comparatively less sensitive, it is not obvious what effects their reduced or lower visual sensitivity has on their ability to perceive the minimalist properties of the eyechart, and of the T in the third row in particular.

In general, sensitivity is an ability to respond in a certain way to a certain stimulation. In the case of visual sensitivity, there is a variety of criteria that may be taken to show that a subject has a relevant ability to respond to a certain visible property. For example, one may think that a subject S is visually sensitive to property P if S is able to discriminate objects visually on the basis of their having P. One counts as visually sensitive to, for instance, redness if one can tell that two objects are different even if the only difference between them is that one is red and one is not red. Other abilities that one may take to be relevant in establishing whether S is sensitive to P are S's ability to group objects together on the basis of their having P or S's ability to recognise that P is present if she sees something that is P in good conditions of perception. Considering these criteria, one counts as visually sensitive to redness if one can tell red objects from non-red objects, even where the only visible difference is colour, or if one can normally report the presence of a red object if one sees it in good lighting conditions. Criteria concerning the role of P in contributing to the phenomenology of S's experience may also be relevant. One may count as visually sensitive to redness if redness can figure in the best explanation of why one's visual experience has the qualitative character it has, or – on another reading of this criterion – if redness determines or even constitutes the qualitative character of one's experience.

While these are just examples of relevant criteria for sensitivity to a property, it seems that, whichever we apply to the short-sighted subject, they will count as sensitive to many visible minimalist properties of the eyechart and of the letters on it. According to the description of the short-sighted subject's performance in the initial scenario, it is plausible to attribute to them a range of capacities. They can discriminate the T in the third row visually from all the other letters in the same row; they can group that letter together with other Ts, as well as

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<sup>68</sup> In Ch. 1, when presenting the Argument from Changing Appearances, I suggested that this may be achieved by introducing the assumption that the conditions of perception across which the way the object looks changes are such that the subject or subjects would *normally* perceive the minimalist properties of the object.

with other black letters; they correctly report that the letter is a 'T', that it is a capital 'T', and that it is black; and if we were to move the T somewhere else on the eyechart, change its colour or its size, they would notice so. All these capacities are either visual capacities or capacities grounded in visual capacities. And the best explanation of one's manifestation of these capacities is that one is visually sensitive to several visible minimalist properties of the T. These properties plausibly include the shape of the letter, its colour, and its spatial location. Since the normally-sighted subject certainly perceives these properties, it seems plausible that both subjects perceive them in the eyechart scenario. Unless we have further reasons to think that there are other visible minimalist properties of the T or the eyechart that the short-sighted subject does not perceive, premise 2) in the argument from changing appearances is well motivated.<sup>69</sup>

As we know, the other key premise in the argument is 3): the Ways→Properties principle. If the principle holds, then we need to find at least one property of the letter that is perceived by one subject but not by the other and thus constitutes a difference in the properties the subjects perceive. Given 2), the property is not a minimalist property. The conclusion of this argument may be taken to support a variety of anti-minimalist views. Amongst them, Appearance Properties views stand out as respecting more of the three core commitments of the Simple View: while they violate Metaphysical Parsimony, they aim at complying with Perceptual Objectivity and No Error Theories. In the next Section, we will discuss whether our case of changing appearances can be convincingly accounted for by appealing to perception of appearance properties. As we will see, the difficulties this account encounters raise some worries for the plausibility of the Ways→Properties principle that the argument relies on.

### 3.2 Apparent blurriness

Appearance Properties views build on the conclusion of the argument from changing appearances to argue that the relevant non-minimalist properties we need to account for the way things look to subjects are appearance properties. What could these appearance properties be?

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<sup>69</sup> In Sec. 3.4 below we will consider a proposal on which there is a difference in the degree of determinacy of the shape and spatial location properties that the two subjects perceive.

We can begin by noting that, in the case of changing appearances we are discussing here, proponents of these views would presumably argue that we need one appearance property only. In the case of the differently illuminated wall discussed in Chapter 2, proponents of appearance properties argued that we had good reasons to appeal to two different appearance properties, one perceived in the direct sunlight condition and the other perceived in shadow condition. Since the subject by hypothesis perceived the colour of the wall in both conditions, it would have been arbitrary to claim that perception of the wall's colour explains the way the wall looks to one in one condition, while perception of an apparent colour explains the way the wall looks to one in the other condition.

The eyechart scenario, however, is different. The way the T looks to the normally-sighted subject – that is, the way of looking we are comparing with the way things look to the short-sighted subject for the purposes of the argument from changing appearances – is just a non-blurry way of looking. The T simply does not look blurry to them. It would be implausible to claim that this way of looking is explained by the normally-sighted subject's perception of a certain property, distinct from the shapes, sizes, spatial locations, and colour properties of the T that they perceive in those conditions of perception. On the face of it, the way things look to them is fully explained by their perception of those minimalist properties of the letter, the eyechart, and nearby objects in the relevant objective conditions of perception. Since, as per premise 2), the short-sighted subject perceives the very same minimalist properties in the same objective conditions of perception, perception of these properties is not enough to explain how things look to *them*. So it is in order to explain how things look to the short-sighted subject that we need to appeal to an appearance property.

Given this, one may think that the appearance property we need is an apparent blurriness that the short-sighted subject perceives in addition to the minimalist properties of the T. Following the Ways→Properties principle, this apparent blurriness would be a visible property that the T (or the eyechart) instantiates. Apparent blurriness would have to be both context- and perceiver-dependent. It may be construed as a property that objects of certain shapes and sizes have relative to certain kinds of perceivers – short-sighted subjects, for instance – in certain conditions of perception – including the distance between object and



perceiver.<sup>70</sup> In the eyechart scenario, the short-sighted subject perceives this relational apparent blurriness of the T in the third row, in addition to its minimalist properties.<sup>71</sup>

As far as I know, this proposal has not been defended by any philosopher. Even those who endorse Appearance Properties views for other cases of changing appearances have not suggested that they would apply the same account to this case. Presumably, this is because it does not seem plausible to do so. To better understand the reasons for this implausibility, it is useful to compare the Appearance Properties account to another proposal that has, instead, been defended in the literature on seeing blurrily. On this other proposal, just as on Appearance Properties views, when one sees blurrily one experiences a certain property that apparently belongs to the things in one's environment. But this property is, unlike appearance properties, a minimalist property: it is a familiar objective, context- and perceiver-independent property that some of the objects we see instantiate. (e.g. Crane 2001, Dretske 2003, Gow 2019). This property may be the property that objects such as blurry or blurred pictures have, or it may be a property, sometimes called 'fuzziness' that objects that objects with indistinct or vague boundaries, as in the case of a water-colour painting, a patch of light projected on a wall, a cloud or perhaps a bush of Pampas grass.<sup>72</sup>

Whether the relevant minimalist property is best construed as blurriness or fuzziness, though, it is clear that the 'T' in our eyechart scenario does not instantiate this property: the T is neither blurry nor fuzzy. Sometimes things may look blurry to us because we are perceiving a blurred picture or fuzzy object. In the eyechart scenario, however, we merely seem to perceive the minimalist property: we have a visual illusion. Call this the Illusory Blurriness proposal.

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<sup>70</sup> The relevant appearance property may be understood, for instance, as an apparent shape – an apparent fuzzy shape that is phenomenologically overlaid on top of the objective shape, and which is both context- and perceiver-dependent – or a Shoemakerian appearance property – the property of causing or being disposed to cause blurry experiences in short-sighted perceivers in certain conditions. The first option has the disadvantage of rendering the proposal more similar to the illusory fuzziness proposal; the second option has the disadvantage of relying on an independent grasp of what it is for an experience to have a blurry phenomenology – which presumably was, in part, what the appeal to the perception of an appearance property was supposed to explain.

<sup>71</sup> A similar proposal is formulated, but not endorsed, by French (2014: 399-401). French presents the relevant property as a relational 'looks property' of objects.

<sup>72</sup> Smith (2008) argues that it is part of the meaning of 'blurry' and 'blurred' that these terms do not apply to ordinary objects and scenes. This seems too strong a claim: according to the OED at least, the English words 'blurry' and 'blurred' may well apply to objects other than photographs. For instance, 'blurry' is defined as 'full of blurs; indistinct in features' and 'blurred' as 'smeared with or as with ink, as when wet writing is rubbed or brushed' as well as 'made indistinct and dim'.

The Illusory Blurriness proposal raises some worries. First, it is not obvious that seeing blurrily is best understood as an illusion, at least if by illusion we mean an experience of an object as having a property that it does not really instantiate.<sup>73</sup> Subjects neither normally make false judgements about the properties of the objects they see nor are they misled by their experiences, and explaining the occasional errors in judgements in terms of perceptual error seems unnecessary. This does not mean that it is implausible to take cases of seeing blurrily as cases where one's visual awareness is somewhat deficient. One could see blurrily because of a condition that impairs one's visual capacities. This can be a relatively permanent impairment such as short-sightedness, long-sightedness or astigmatism, but it can also be a temporary impairment caused, for instance, by intoxication, dizziness, or receiving a hard blow to the head. It is plausible to take all these conditions as resulting in visual experiences that are somewhat deficient when compared to those of unaffected subjects. For one, if someone had one of those conditions, we would take them to be in a worse epistemic position when it comes to telling what properties the visible things in a scene have. For another, we normally seek to correct those conditions – whether with corrective lenses or by relieving the cause of the temporary impairment – because we take them to negatively affect subjects' cognitive performances and ability to act effectively. However, that we take these experiences as deficient or otherwise worse with respect to others does not mean that we take them to involve an illusion as of a property that the things one sees do not really have.

Second, the Illusory Blurriness proposal has a problematic consequence: it predicts that visual illusions are unjustifiably widespread.<sup>74</sup> While the short-sighted subject in the eyechart scenario has a relatively severe loss of visual acuity compared to the norm, visual impairments leading to reduced sensitivity come in degrees. Many subjects have mild forms of short-sightedness or other impairments, and some have such mild short-sightedness that they might be able to correctly report on all of the letters on the eyechart, including the smallest ones. The smallest letters would look slightly blurry to these subjects, but it seems

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<sup>73</sup> See Kalderon (2011a) for a critical discussion of this notion of illusion.

<sup>74</sup> Pace offers another reason why the Illusory Blurriness proposal may be committed to widespread illusion. As blurriness functions as a depth cue, it is characteristic of well-functioning vision (Pace 2007: 339-340). When looking at a scene, one can focus alternatively on the chair in the foreground and on the bookcase in the background. When one focuses on the foreground, the background looks blurry, and viceversa. On the proposal under consideration, both experiences would be illusory in some respect as they would involve the experience of apparent blurriness or fuzziness, even if we were to grant that one would not, in virtue of those experiences, normally judge that the world is changing at one's whim as one's focus changes.

very implausible to claim that they are suffering a visual illusion. However, on the Illusory Blurriness proposal, there does not seem to be a principled reason for distinguishing between those degrees of loss of visual sensitivity, and associated degrees of blurriness, that are illusory and those that are not. The proposal thus leads to positing widespread visual illusions, a consequence that many intend to avoid – thus respecting the No Error Theories commitment.

Appealing to appearance properties to explain seeing blurrily avoids this undesirable consequence of the Illusory Blurriness proposal. However exactly apparent blurriness is construed, it is a property that the things one sees blurrily really instantiate, and that one genuinely perceives. However, an Appearance Properties view of seeing blurrily is still subject to another worry that has often been raised against Illusory Blurriness. The worry is, in a nutshell, that the blurriness of seeing blurrily does not even seem to be a property one perceives, and a fortiori it does not seem to be a perceivable property that belongs to the objects one sees.

To begin with, the Illusory Blurriness view has been criticised on the grounds that we do not attribute blurriness or fuzziness to the things we see when seeing blurrily (Pace 2007, Smith 2008). Our short-sighted subject, for instance, does not judge nor is disposed to judge that the eyechart or the letter T are blurry or fuzzy. In fact, we do not normally, on the basis of things looking that way to us, take things to have any properties that they do not really have. Rather, if things look blurry to one, one's normal inclination is to refrain from judging, and at the same time to try and put oneself in a better viewing condition – by moving closer to the objects, focusing one's attention on them, squint one's eyes to get the objects in focus. This is also supported by the reactions we normally have when going from seeing blurrily to seeing clearly. Suppose that the ophthalmologist gives our short-sighted subject a pair of corrective glasses to try, which should help them see more clearly. When, looking at the T on the eyechart, the subject puts their glasses on, they do not react by saying, surprised, that the shape of the T has now changed, or even that it seems to have changed. They just take themselves to be seeing better or more clearly. An analogous worry, it seems, would apply to an Appearance Properties view: when we see the eyechart blurrily, we do not judge or are disposed to judge that the eyechart or the letters have an apparent blurriness or fuzziness.

Here the defender of appearance properties could adopt the answer that defenders of Illusory Blurriness provide. We do not normally take blurry experiences as evidence for the fuzziness or blurriness of the things we see, they argue, because we have relevant background knowledge about the stable visible properties of those things. When a short-

sighted subject looks at the eyechart with their corrective glasses on and off, they do not judge or come to believe that the world around them is changing depending on whether or not they are wearing glasses because they independently know or believe that this is not how things work. If they were to take their experience at face value, though, they would make those judgements or form those beliefs to the effect that the scene itself changes when it looks blurry (Crane 2001: 143-144).

One may worry, though, that this is not an adequate explanation of why we do not take blurry experiences as evidence for the fuzziness or blurriness of the things around us. The best explanation of this fact is rather that things do not look the same when they are fuzzy or blurry and when we see them blurrily. One does not normally confuse seeing something blurrily with seeing something that is fuzzy or blurry, because things look different to one in the two conditions (Pace 2007, Smith 2008). This worry applies not only to Illusory Blurriness but also to the Appearance Properties view. It does, that is, if the apparent blurriness or fuzziness that the Appearance Properties view appeals to is such that one would not be able to tell whether one is seeing a blurred picture as opposed to a non-blurred picture with apparent blurriness, or a fuzzy patch of ink as opposed to a non-fuzzy patch of ink with apparent fuzziness.

Now, as many have pointed out, things can look, in looking blurrily due to, say, short-sightedness, exactly as they do when they are blurry or fuzzy and one sees them clearly (e.g. Schroer 2002, Tye 2003, Bourget 2015, Gow 2019). It is easy to modify the eyechart scenario slightly so as to have a case one would not be able to tell, on the basis of how things look to one, whether one is seeing blurrily or seeing clearly something that is blurry. It is enough to imagine that the subjects are looking at the eyechart through a tube, so that one can only see the eyechart itself and no other surrounding objects. When the short-sighted subject sees the eyechart through the tube, some of the letters look very blurry to them. If the eyechart or part of it fills all of one's visual field, they would not be able to tell, on the basis of how things look to them, whether they are seeing blurrily – because of their short-sightedness – or they are seeing something which is blurry. In fact, they may be looking at a blurred version of an eyechart – a blurred eyechart that the ophthalmologist uses to visually

illustrate the effects of short-sightedness, for instance, similar to the eyechart on the left in Fig. 1 below.<sup>75</sup>

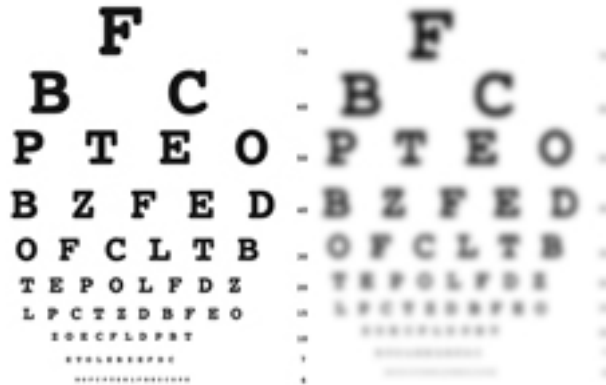


Figure 1. A blurred and a non-blurred version of the same eyechart.<sup>76</sup>

What these considerations show is that there are cases where there may be no difference in how things look – or at least no noticeable difference – between seeing blurrily and seeing something blurry. The worry for the Appearance Properties proposal, however, remains. For in ordinary circumstances, we can usually tell whether we are seeing a non-blurry and non-fuzzy object blurrily or whether we are seeing something blurry or fuzzy clearly. A lesson we have learnt in Chapter 2 is that the context in which an object is presented cannot be ignored when explaining how it looks to one. Just like a white wall in shadow does not look just like a grey wall, so a T with sharp boundaries seen blurrily does not look just like a blurred T. And this is not just because we have non-perceptual background knowledge that we are short-sighted and that this condition distorts how things look, or knowledge that the world does not change when we take our glasses off. As Schroer (2002) observes, we can compare the target object, which looks blurry, to other objects in the same scene. If most of the shapes we see, especially focusing on their boundaries, seem uniformly less sharp and distinct, like the boundaries of the target object, then one would normally believe that one is seeing the object blurrily. If the boundaries of the objects surrounding the target seem sharper and more distinct, then one would normally believe that one is clearly seeing an object with

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<sup>75</sup> Of course, if the short-sighted subject was *comparing* seeing a normal eyechart through the tube with seeing a blurred eyechart through the tube, they would plausibly notice a difference: the blurred print seen blurrily presumably looks blurrier to them.

<sup>76</sup> Source: NIDDK Image Library, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.

indistinct boundaries. The way the overall scene looks normally differs across the two conditions.

One can then argue that, contrary to Illusory Blurriness and Appearance Properties views, the best explanation of why the short-sighted subject in the eyechart scenario does not judge nor is disposed to judge that the T in the third row is blurred is that the T does not look to them just like a blurred T. In turn, this supports the claim that the way the T looks to them is not best explained in terms of one's perception of an apparent blurriness or apparent fuzziness. The difference between seeing a letter clearly and seeing blurrily does not seem to be a matter of what one perceives; rather, one may think, it is a matter of *how* one experiences the letter. In the case of changing appearances we discussed in Chapter 2, the Ways→Properties principle had some plausibility. The difference in how a white wall looks in direct sunlight and in shadow did not intuitively seem to be a difference in the wall itself in the sense of not seeming to be a difference in the wall's colour. However, it arguably seemed, to a hypothetical subject witnessing the change in appearance, to be a difference in what was visible, a difference in a visible aspect of the scene before one. It was then not implausible to try and account for the difference in terms of a difference in visible properties perceived. In the case of seeing blurrily, however, this initial plausibility for the Ways→Properties principle is lacking. This asymmetry may explain why even defenders of appearance properties have not proposed to apply their account to this case, or have even suggested that the account does not apply (e.g. Genone 2016).

Even if we suppose that an Appearance Properties account of seeing blurrily would not be plausible, this does not mean that we have resisted the conclusion of argument from changing appearances. The eyechart scenario clearly presents a challenge to Minimalism. The challenge is especially difficult because the difference in how things look to the two subjects seems to be a matter of something about the subjects themselves – their visual sensitivities – rather than something about the objective, perceiver-independent entities that there are presented with. If we cannot appeal, as we did in Chapter 2, to the subject's perception of minimalist properties alone, what else can we appeal to, without violating any of the three core commitments of the Simple View? In Section 3.3, I will outline some proposals on which Ways→Properties does not hold for seeing blurrily, and discuss whether the minimalist can adopt one of them to account for the eyechart scenario. In Section 3.4, I will discuss a proposal that aims at respecting the Ways→Properties principle even in the case of seeing blurrily without appealing to appearance properties.

### 3.3 An alternative strategy

In the previous section, we have seen what an Appearance Properties account of seeing blurrily would look like, and have discussed why such an account is not very plausible. The challenge remains for the minimalist to explain the difference in how the letters on the eyechart look to the short-sighted and normally-sighted subject. Is there an account in the literature on seeing blurrily that the minimalist can adopt? Some philosophers think that the strategy pursued by accounts appealing to illusory fuzziness or apparent fuzziness or blurriness is in principle mistaken. Blurriness, they argue, cannot be explained in terms of properties one perceives, and requires appealing to properties of one's experience. The Ways Properties principle, then, does not apply to this case of changing appearances. In this Section, I will consider two accounts of seeing blurrily that pursue this alternative strategy. Because these accounts do not respect all three core commitments of the Simple View, they are incompatible with Minimalism. I will conclude the Section by suggesting a different way of pursuing the alternative strategy which is in line with the minimalist's commitments.

#### 3.3.1 A qualitative property of experience

As we have seen, it is phenomenologically implausible that seeing blurrily is a matter of perceiving apparent blurriness or fuzziness. Some philosophers think this gives us reason to abandon the project of explaining the way things look to one when one sees blurrily in terms of the properties one perceives (e.g. Pace 2007, Smith 2008, French 2014). We should instead look at properties of the experience one has when one sees blurrily. To use a metaphor, blurry experiences are not transparent: the subject of the experience cannot 'look through' the experience at the objects and properties in the world, like through a transparent glass; the blurriness is a residual aspect one would still be aware of.<sup>77</sup> In many everyday circumstances in which we see blurrily, we can tell that we are not seeing a fuzzy or blurry

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<sup>77</sup> The literature on seeing blurrily mostly focuses on whether seeing blurrily is a counterexample to the 'transparency of experience'. There are many different claims that philosophers have in mind when talking of transparency, some phenomenological, i.e. having to do with how things seem to the subject of the experience, and some having to do with the metaphysical relation between the properties we experience and the phenomenology of the experience. Considering whether and why seeing blurrily is a counter-example to any of them is beyond the scope of this section. I will instead be discussing whether an explanation of how things look when one sees blurrily needs to appeal to properties of one's experience, independently of whether some or all transparency theses are compatible with seeing blurrily.

object. In those circumstances, such as in the eyechart scenario, if one was seeing blurrily one would know it. The best explanation of this, one may argue, is that in those circumstances one is aware of a property of one's experience, and one takes this property to be a property of one's experience, as opposed to a property of the things in one's environment. Call this the Experiential Quality proposal.

On a strong reading of the Experiential Quality proposal, one is, in seeing blurrily, aware of a qualitative property of one's experience that seems to one to be such. While the blurriness of one's experience does not seem to one to be a property of the objects one experiences, it does seem, one could argue, to be a property of something. The best candidate bearer of this property is one's experience, and so we should conclude that it seems to one, in being aware of this blurriness, as if one is aware of a property of one's experience (e.g. Crane 2006: 131, Smith 2008: 204, French 2014).

The problem with this argument is that it does not follow from the fact that blurriness does not seem to one to be a property of the things one sees that blurriness seems to one to be a property of something else, let alone that it seems to one to be a property of one's experience. Granted, when the letters on the eyechart look blurry to one, it does not seem to one as if the letters are really blurry, and so the blurriness does not seem to one to be a property of the letters (or of the eyechart). But one may argue that, at least in these cases where one can tell that one is seeing blurrily, the blurriness does not seem to one to be a property that one is aware of full stop. This is not to deny that one, in seeing blurrily, can notice that things look blurry to one – if one's short-sightedness is severe enough, or the letters are small enough – and so reach the conclusion that one's visual experience, or one's visual capacities, have certain properties. One may conclude, by reflecting on how things look to one on a certain occasion, that one is short-sighted, or that one's visual acuity is limited, or that one has not put one's contact lenses on. However, this is not fundamentally different from other cases where one realizes, by reflecting on one's experience, that one's visual access to the external environment is limited, such as when one looks at a scene with one eye closed or in dim light. The fact that in some of these cases the cause of one's limited visual access is something about oneself or one's visual system – if say, one cannot open one's eye because it is very irritated, or again, if one cannot see a letter because one is myopic – does not make a significant difference. In neither case are we justified in concluding that there is a distinctive property that one is aware of, other than the visible properties that one takes to belong to what one sees. So, a fortiori, we do not seem to be justified in



concluding that, when one sees blurrily, one is aware of a distinctive property of one's experience that seems to one to be a property of one's experience.<sup>78</sup>

On a weaker reading of the Experiential Quality proposal, the best explanation of why in most circumstances in which we see blurrily we can tell that we are seeing blurrily is that we are aware of a qualitative property of our experience, even if it does not seem to us to be a property of our experience. The problem with this weaker reading is that it shares the same controversial commitments of the stronger reading while lacking some of that reading's explanatory power.

On the one hand, it is not clear what the motivation for this proposal is. In particular, its explanation of why one can tell that one is seeing blurrily, and so that the blurriness is something about them or their experience, does not seem to be superior to one that does not appeal to qualitative properties of experience. On this view, one's would not be able to tell that the property one is aware of is a property of one's experience simply by undergoing the experience. So in order to tell that the blurriness is something about them, as opposed to a property of the things one sees, one would have to rely on grounds other than one's supposed awareness of a qualitative property of one's experience. But one would be in the epistemic same position if one was not aware of that property at all. One could be relying on perceptual cues: how other parts of the scene look compared to the target object, how the way things look changes if one moves with respect to them, what happens if one re-focuses one's eyes, and so on. These cues, usually together with background knowledge of the kinds of things one is seeing, the conditions of perception and of one's own visual system, seem sufficient grounds for inferring that the blurriness is not a property of the things one sees.

On the other hand, the weaker version of the Experiential Quality proposal appeals to there being qualitative properties of experiences that we are aware of, in undergoing at least some experiences. Now, a commitment to there being properties of experiences does not per se constitute a violation of the Metaphysical Parsimony commitment. Even on Minimalism, we should of course admit that our experiences – whatever their nature – have properties: for

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<sup>78</sup> A different reason in support of the claim that when we see blurrily we are aware of a property of our experience and it seems to us that we are is that there supposedly are 'positive aspects' to the phenomenology of at least some cases of seeing blurrily which are not apparent aspects of what we experience. For instance, haloes appear around the edges of the objects we see (e.g. Allen 2013: 267, 269). I do not discuss this reason in part because I am not sure what the evidence for the existence of such haloes would be, and in part because claiming that there are properties of experience we are aware of as such just to explain this relatively marginal aspect of some cases of seeing blurrily does not seem to me a more convincing strategy than the one we just discussed.

instance, an experience can have the property of being visual, of being the experience of a certain subject, or of being caused by a certain stimulation. Moreover, we may allow that some of these properties play a role in explaining why things look a certain way to the subject of a certain experience. To give a relatively uncontroversial example, I need to be having a certain visual experience right now in order for things to look any way at all to me right now. This experience has certain properties – such as being my experience, being visual, occurring at a certain point in time – which play a role in explaining why things look a certain way to me now, rather than no way at all.

However, it is a further question whether my experience contributes to explaining why things look a certain way to me by simply making me aware of a certain scene in the mind-independent environment, or in some other way. On the current proposal, just as on the stronger version of Experiential Quality, blurry experiences contribute to explaining how things look to one by instantiating certain qualitative properties that one is aware of. Arguably, this does not respect Metaphysical Parsimony. For the explanation here would be appealing to properties that we are not independently committed to. There does not seem to be any reason to appeal to qualitative properties of experience as different from (and possibly irreducible to) perceivable properties of the worldly things we see, other than the need to account for certain cases of changing appearances. For this reason, the minimalist cannot adopt either version of the Experiential Quality Proposal.<sup>79</sup>

### 3.3.2 A mode of perceiving

One may agree with the proponents of the Experiential Quality proposal that it is implausible to explain seeing blurrily in terms of a property one perceives. At the same time, one may also want to avoid the commitment to qualitative properties of experience that we can be aware of. If so, one could appeal to the notion of a way or mode of experiencing. On the Mode of Perceiving proposal, the difference in qualitative character between seeing blurrily and seeing clearly is due to the fact that seeing blurrily is a distinctive way or mode of seeing (Cf. Crane 2006: 143, Allen 2013: 261-262). It seems plausible that we are independently committed to there being different modes of perceiving: visually, as opposed to auditorily or

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<sup>79</sup> The appeal to qualitative properties of experience that one is aware of also raises the issue of what kind of awareness one has of those properties – given that it is plausibly is not visual, or more generally, perceptual awareness.

tactilely, say. The suggestion here is to extend the notion of a mode to more fine-grained modes: seeing blurrily and seeing clearly are two different modes of seeing. An advantage of this proposal is that one does not need to be aware of the mode of one's experience for the mode to make a difference to how things look to one. This also allows us to distinguish between contributions to the phenomenology made by what one experiences – the sensible objects and their objective properties – and contributions made by some intrinsic feature of the experience that does not depend on what the experience presents, but rather on certain facts about the subject – such as the subject's visual acuity. The Mode of Perceiving proposal also has the advantage of relying on a general and plausible claim about perceptual experience, i.e. that we can experience the same things in different ways. And one's degree of sensitivity, in addition to the sense modality or modalities involved in that experience, can plausibly make a difference to the way in which one experiences a scene.

In spite of these advantages, the Mode of Perceiving proposal, as stated, also comes with significant commitments. Since the purpose of modes is to account for any difference in experience that is not matched by a difference in what is perceived, then presumably the proposal will have to introduce modes that are more fine-grained than the seeing blurrily mode. As one's visual sensitivity can come in many degrees – e.g. one can be more or less severely short-sighted – and that would make a difference to how things look to one, we would need a different mode for each difference in degree of visual sensitivity that results in things looking blurry to one (Allen 2013: 262). Moreover, there are different subjective conditions that may cause things to look blurry to one, in addition to being short-sighted; for instance, being astigmatic, long-sighted, or simply light-headed. But the ways things look to one, in looking blurry, may be slightly different depending on the condition that one is affected by. To reflect such differences, the current proposal would presumably introduce a fine-grained mode of seeing blurrily for each of these conditions, which would then be more finely determined by the degree at which one has the condition. Given this, the Mode of Perceiving proposal is no more parsimonious than the one appealing to qualitative properties of experience. Since Metaphysical Parsimony is not respected, the minimalist cannot adopt this proposal.

### 3.3.3 A property of subjects

There is, I think, a way of pursuing the strategy of the Mode of Perceiving proposal within a minimalist approach. On this version of the proposal, there would be only one mode of

perceiving associated with each perceiver, and specified in terms of the perceiver's current visual (or possibly also non-visual) sensitivity. When one sees a letter blurrily, the way the letter looks to one is partly explained by the fact that one's mode of seeing is mode M, where M is individuated with reference to one's visual sensitivity. But the same mode M would also feature as a factor in an explanation of the way things look to that subject in all circumstances in which the subject has a visual experience at all: as long as one sees, there is a mode in which one sees. Sometimes mode M would simply be a condition for one to be aware of certain objective visible properties, but in other cases the same mode M may explain why the subject's visual access to certain objective properties is somehow deficient – as in the case of seeing blurrily. In contrast to the Mode of Perceiving proposal outlined in Section 3.2, here the suggestion is to construe the relevant mode of perceiving as a property of the subject, or their visual system. While we can say that a subject's visual experience always has a mode, this is simply a matter of the subject or their visual system having certain sensitivities.

There are two important things to note about this proposal. First, the explanation of the way things look to one when one sees blurrily evidently appeals to a factor other than the minimalist properties one perceives. Is this compatible with Minimalism? We have already seen that there are good reason to question the plausibility of the Ways→Properties principle for the case of changing appearances under discussion. If so, there seems to be no reason not to appeal to properties other than perceived properties in an explanation of the way things look to one in certain conditions. The question then is whether it is compatible with Minimalism to appeal to properties of subjects or visual systems. The answer, I think, is that it is. The proposal appealing to a mode of perceiving, understood as a property of subjects, respects all three core commitments of the Simple View: Perceptual Objectivity is respected because the properties one perceives, in perceiving in that mode, are fully objective and perceiver-independent; no error or misperception is involved; and because we are independently committed to there being such properties of subjects as their visual sensitivities, appealing to these properties does not violate Metaphysical Parsimony.

The second point is that the minimalist proposal avoids the metaphysical commitments of the original Mode of Perceiving proposal by giving up an explanatory principle over and above Ways→Properties. Both the Mode of Perceiving and the Experiential Quality proposals, I suspect, implicitly subscribe to a certain principle connecting ways things look to one with properties of one's experience that can be understood as the parallel of Ways→Properties. The idea is that experiences that differ in how things look to their subjects

have a different phenomenology or qualitative character. Having this phenomenology is then understood in terms of having certain properties, so that if two experiences differ in phenomenology, their properties differ.<sup>80</sup> The resulting explanatory principle holds that each variation in the phenomenology of one's experience, that is, each variation in how things look to one, must be explained by a distinctive property of experience. To satisfy this principle, we need to posit very many properties of experience – whether qualitative properties or modes – to match, and in this sense at least explain, those variations in how things look to one. Our explanation of the way things look to one when one sees blurrily, then, needs to take the form of the explanations offered by Experiential Quality and Mode of Perceiving. Unless we accept this controversial principle, however, there does not seem to be a reason to posit a different experiential quality or mode of perceiving for each difference in the degree of blurriness of one's experience. Modes of perceiving, then, do not need to be designed to 'match' changes in how things look to one. Rather, on the minimalist proposal, they are explanatory factors that sometimes do, and sometimes do not, result in differences in how things look to one.

### 3.4 Blurriness as loss of information

In Section 2 we have argued that an Appearance Properties account of seeing blurrily is not *prima facie* plausible, and is definitely less plausible than in other cases of changing appearances. Since the blurry character of an experience of seeing blurrily does not even seem to be an aspect of the objects we see, there is no *prima facie* motivation for an account of the way things look to one in having that experience that appeals only to properties of the objects one perceives. Our discussion in that section may be taken to show that the reason for the implausibility of an Appearance Properties view is that the Ways→Properties principle more generally is implausible or at least not generalizable to all cases. The case of seeing blurrily, it is natural to think, is one where we do not have good reasons to think that the principle applies.

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<sup>80</sup> Several philosophers also seem to subscribe to a different principle connecting ways of looking and properties of experience, which is the parallel of Shoemaker's strong version of the Ways→Properties principle that motivated the objection from sameness of look in Ch. 2., Sec. 2.4. We will talk about the plausibility of both principles in Sec. 3.5 below.

Some philosophers think, however, that this verdict is too hasty: the difficulties of the Illusory Blurriness and Appearance Properties proposals do not motivate abandoning the project of accounting for the eyechart scenario in terms of properties that the two subjects perceive. Those proposals are implausible, one may think, because they look for a distinctive blurriness or fuzziness property that the short-sighted subject, but not the normally-sighted subject, may experience or perceive. An alternative way of pursuing the project is to build on a more general and independently plausible claim about the effects of a loss of sensitivity. A loss of sensitivity involves a loss of information, and in particular a loss of visual sensitivity – as it occurs with short-sightedness and other impairments – involves a loss of visual information. On this approach, we do not need to look for a special property that differs in kind from the shape, size, location, colours, and other visible minimalist properties of the eyechart and letters that both subjects in the eyechart scenario plausibly perceive. We instead look for a difference in the visual detail concerning these very visible minimalist properties that is available to each subject. This difference, so the thought goes, can then be taken to amount to a difference in what the two subjects perceive, and this difference in turn may explain the difference in how the eyechart and the T on it look to each subject, in accordance with the original Ways→Properties principle.

### 3.4.1 The amplification argument

Bourget has offered an argument, which he calls the ‘amplification argument’, that can be used to motivate this alternative approach (2015: 20-23).<sup>81</sup> Begin by considering the difference between seeing a square clearly and seeing the same square so blurrily that one cannot tell what shape one is seeing. The way things look in these two conditions is illustrated by the first and last image in the first row of Fig. 2 below.

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<sup>81</sup> Bourget is concerned with defending a particular view of perceptual experience, on which experiences have representational contents and their contents co-vary with their phenomenology or qualitative character. Accordingly, he takes his argument to show that with each difference in the blurriness of one’s experience there is a difference in what objects and features one’s experience represents. Because the features Bourget is concerned with are features that the things one sees have, and so that one genuinely perceives (as opposed to merely illusorily represent), I am here assuming that Bourget’s reasoning can be formulated in terms of differences in what one perceives.

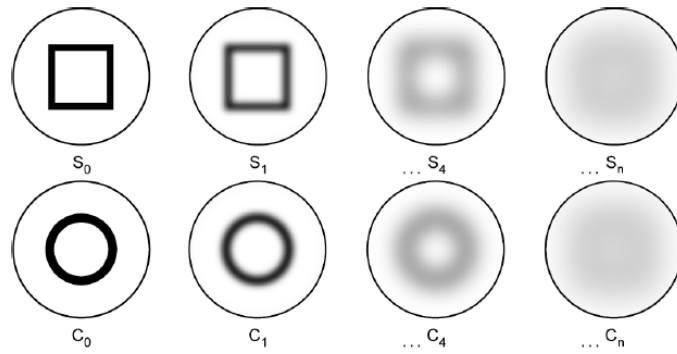


Figure 2. A series of progressively blurrier experiences.<sup>82</sup>

Plausibly, Bourget argues, there is a difference in what one perceives across these two conditions. After all, in the second condition one is seeing so blurrily that one's experience of the square is indiscriminable from an equally blurry experience of a circle: one is arguably not visually sensitive to the presence of one shape rather than the other.<sup>83</sup> We can now imagine a series of experiences, between those two extremes, in which the square looks progressively more and more blurry. Clearly, there is a drastic loss of visual information or detail between the very clear and the extremely blurry experience of the square. Bourget then argues that the best explanation of the drastic loss of visual information between the first and the last experience in the series is that there is a progressive loss of visual information with each experience in the series (2015: 21-23). This loss of information, Bourget claims, makes a difference to what one experiences, as one's experience gets

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<sup>82</sup> Figure reproduced with permission. Original source: Bourget (2015). <https://www.tandfonline.com/doi/abs/10.1080/00455091.2014.981932?journalCode=rcjp20>

<sup>83</sup> I think this observation is sufficient to motivate the claim, plausibly, what one perceives differs across the two experiences. Bourget's motivation for this step in the argument is different. He argues that since things look the same in the very blurry experience of the square and in the very blurry experience of the circle, those two experiences must have the same content (2015: 21). This should make us think that the very clear experience of the square differs in content from the very blurry experience of it; otherwise, we would have to allow that the very blurry experience of the circle has the same content as the very clear experience of it; and since the very blurry experience of the circle has the same content as the very blurry experience of the square, we would have the absurd consequence that the very clear experience of the square and the very clear experience of the circle have the same content. I do not endorse this motivation. Bourget's reasoning here relies on a controversial claim – that experiences where things look the same to one must have the same content – that I do not wish to commit to. In fact, as we will see below, I do not wish to commit to an analogous claim in terms of sameness of perceived properties either.

blurrier. So for each degree of blurriness, or each degree of visual distortion more generally, however small, there is a difference in what one experiences.

To be sure, it may be difficult to articulate exactly what differs between one experience in the series and the next one. There are a lot of features that the subject of the first, clear experience is sensitive to, and which make a difference to how things look to them: the square shape, the size of the angles, the sharpness, the length and width of the sides, the colour of every visible portion of the sides as well as of the area inside the square figure. One becomes progressively insensitive to these features as one's experience gets blurrier – for instance, one may still recognize that one is seeing a squarish shape even though one cannot tell exactly where its boundaries lie. However, it is difficult to specify what objects, parts of objects, and properties one stops being visually sensitive to as one's experience becomes ever so slightly blurrier. As Bourget points out, some properties are, so to speak, lost progressively: for instance, there is no clear point in the series where one stops perceiving the area of the square figure, yet with each increase in blur some information about the area is lost; there is no clear point where one stops perceiving the dark lines that constitute the sides of the square, yet information about those lines is lost at each step. If the difference in degree of blurriness is very large, as between the first, clear experience in the series and one of the last experiences, where one is not sure what shape one is seeing, then we may be able to specify the difference in what one perceives. Bourget himself is skeptical that we will be able to do so (2015: 29-32).

While Bourget's amplification argument is neutral about how exactly we should understand the effects of blurriness on what subjects perceive, one option is to take the argument to support the stronger claim that decreases in one's visual sensitivity that give rise to blurriness make a difference to which properties one perceives. In Section 3.4.2, I discuss a proposal on which the relevant differences are differences in the determinacy of the properties perceived. The strategy of finding a difference in perceived properties for each difference in degree of blurriness, I suggest, leads to commitments that do not fit well with a minimalist approach. Adopting this strategy, however, is not necessary to account for Bourget's idea that decreases in visual sensitivity determine a loss of visual detail or information. In Section 3.4.3, I explore how the minimalist can account for various effects of differences in the blurriness of one's experience on one's behavior.



### 3.4.2 A determinable property

In the previous section, we considered an argument for the thesis that every difference in the blurriness of one's experience can be explained by a difference in the visual information or detail available to one. Several philosophers develop this thesis by appealing to perceivable properties of different degrees of determinacy. One may begin by observing that when one sees blurrily, one's experience 'makes no comment' on the exact shape and spatial location, or more generally about the fine-grained details, of the objects one sees (Tye 2003: 18-20). This does not mean that when one sees blurrily, one does not visually experience properties such as shapes and spatial locations; it means that one visually experiences *less determinate* shapes and spatial locations than the ones one would experience if one were seeing the same objects clearly. This difference in the determinacy of the properties that one experiences when seeing blurrily, as opposed to clearly, can then explain why things look blurry to one when seeing blurrily but not when seeing clearly (e.g. Tye 2003, Nanay 2011).<sup>84</sup> Call this the Determinable Property account of seeing blurrily.

As we have seen in Section 2, it is implausible to treat seeing blurrily as an illusory experience. When we see blurrily, we are aware of the visible properties that the things we see really have, and we do not take those things to have properties other than those. In order for the Determinable Property account to avoid treating all blurry experiences as illusions, one needs to be a realist about determinable properties.<sup>85</sup> If one takes up this commitment, then one can hold that the things we see really have certain determinable visible shapes, and their boundaries have certain determinable visible locations. We can then allow that when one sees an object blurrily, one genuinely perceives a determinable shape the object really has, as opposed to merely experiencing a property that the object may not have. Suppose a short-sighted subject is at a rose bush in a garden. At a distance, they can see that there are looking at roses, but the roses would look blurry. On the current account, we can allow that the short-sighted subject genuinely perceives a determinable shape of the roses: their roundishness, say. This is a determinable shape that roses share with dahlias, zinnias, peonies, and

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<sup>84</sup> Tye and Nanay adopt a representationalist view of the nature of perceptual experiences. Because of this, they formulate their proposals in terms of properties that subjects visually represent or attribute. I am here supposing that a more neutral formulation of the proposal can be given in terms of experiencing the relevant properties. French argues that this proposal can be adopted by philosophers that are not representationalist, such as naïve realists (2014: 406-407).

<sup>85</sup> Realism about determinables is a controversial position. See Wilson (2017) for an overview of the literature.

countless other flowers and objects that are not flowers. While the roses also have a more determinate shape, this visual experience is not misleading as regards the shape of the roses: one does not come to believe that the roses have a merely determinable shape. If one can tell, on the basis of contextual cues or independent knowledge about their short-sightedness and about roses, that one is seeing blurrily, one may well be disposed to judge that the flowers have relatively more determinate shapes than one is currently in a position to tell. Moreover, on the Determinable Property account, we can allow that there is a sense in which a short-sighted subject perceives the shape of the roses – after all, they can tell that they are roses.

The resulting account can be applied to our case of changing appearances. As French (2014) illustrates, in our eyechart scenario the edges of the T are located precisely between points p1 and p2 on the eyechart.<sup>86</sup> So the T has the relatively determinate spatial location property of having an edge at a particular point between p1 and p2. In virtue of having this property, the T also has the relatively determinable spatial location property of having an edge somewhere or other between p1 and p2. We may say that, as a result of the spatial location properties of its edges, the T has both a certain relatively determinate shape and a certain relatively determinable shape. While the normally-sighted subject can perceive the first property, the short-sighted subject is only in a position to perceive the second property. Still, both experiences are genuine perceptions of the shape of the T. The difference in the degree of determinacy of the shape properties the two subjects perceive explains the difference in how the T looks to them.<sup>87</sup>

Suppose the Determinable Property account can avoid treating all cases of seeing blurrily as illusions. The account would then be superior to the Apparent Blurriness account. As we have

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<sup>86</sup> French presents this account, but ultimately does not endorse it – for reasons other than the ones I discuss below (2014: 406-407).

<sup>87</sup> So formulated, the Determinable Property account raises a further question. In order to the difference in how things look to the two subjects in the eyechart scenario in accordance with the Ways→Properties principle, there has to be at least one property that one subject perceives while the other does not perceive. Applying the Determinable Property account to this case, the normally-sighted subject would be perceiving a property that the short-sighted subject does not perceive, namely the determinate shape of the T. We then face the question of what it means for the short-sighted subject to perceive a determinable shape without perceiving the more determinate shape, where both properties are instantiated by the object they see. In particular, it is not obvious what it would mean for the determinable shape to make a difference to their visual phenomenology or be present in their experience without the determinate shape making a difference to their visual phenomenology. Since I do not offer an account of what it is for a property to be present in experience or make a difference to the phenomenology of an experience, I do not pursue this question for the Determinable Property account here.

seen in Section 2, an Appearance Properties account of seeing blurrily can be accused of being phenomenologically inadequate: the blurriness of seeing blurrily does not seem to be a visible property of the objects we see. The Determinable Property account is not subject to the same objection. While it accounts for the fact that the T looks blurry to one in terms of a perceived property of the T, in accordance with the Ways→Properties principle, this property is a shape property, and is not construed as an apparent blurriness or fuzziness that one would perceive in addition to the shape and location of the objects one sees. And the determinable shape of the T does seem to be a visible property of the T one sees.

Since the Determinable Property account seems to be in a better position than the Apparent Blurriness account, we can now ask whether it is also compatible with Minimalism. If so, then a minimalist who is persuaded by Bourget's amplification argument could adopt this account instead of the account appealing to differences in sensitivity as a property of subjects that we outlined in Section 3.3.3. There is, however, a reason to think that the Determinable Property view is not compatible with a minimalist approach: one may worry that the account cannot fully respect the Metaphysical Parsimony commitment. The problem does not arise due to the nature of determinable shapes or spatial locations. As French highlights, while this account appeals to a subjective factor to explain why one perceives certain properties rather than others, this factor does not affect the nature of the properties perceived (2014: 406-407). The short-sighted subject perceives the determinable shape of the T because of a subjective factor: their limited visual sensitivity, which is a property of them or their visual system. But this subjective factor, analogously to objective factors such as lighting conditions or one's position in space, only makes a difference to which of the available visible properties one perceives. Unlike apparent blurriness or fuzziness, determinable shapes are objective and perceiver-independent properties.

The problem arises instead because the account would have to appeal to very many such properties. Proponents of the Determinable Property account argue, building on a certain interpretation of Bourget's amplification argument, that we can find a difference in perceived properties for every difference in the degree of blurriness of one's experience. In principle, we could find an appropriately individuated property that one would be perceiving when one's experience is blurry at a certain degree D1, but that one stops perceiving as one's experience gets slightly blurrier, to degree D2, where the D2 is the minimal increase in blurriness from D1. Even if we could construe these properties as visible, objective, and perceiver-independent properties that the objects we see really have, these properties may not count as minimalist properties. This is because it is not clear whether we would have

independent reasons to commit to there being such a wide range of visible properties, i.e. reasons independent of that of explaining certain cases of changing appearances. If we did not have such reasons, then appealing to one's perception of such properties to account for the way things look to one in certain conditions would violate Metaphysical Parsimony, and thus be in tension with the minimalist approach.<sup>88</sup>

### 3.4.3 Effects of sensitivity: a minimalist approach

The Determinable Property account of seeing blurrily we discussed in the previous section enjoyed some advantages over the Illusory Blurriness and the Apparent Blurriness accounts we discussed in Section 2 of this chapter. However, it confirmed that explaining the way things look to one when one sees blurrily in terms of properties that one perceives is not an easy task. If one can avoid unjustifiably treating all blurry experiences as illusory, one ends up making commitments that are not in line with Metaphysical Parsimony, and therefore with Minimalism. Does the phenomenon of seeing blurrily really motivate such commitments? My hypothesis is that the motivation has in part a difference source: a certain explanatory principle that, implicitly or explicitly, all these proposals are designed to respect – the Ways→Properties principle. This principle requires that an explanation of the way things look to a subject in certain conditions take a specific form, such that for each way something looks to one there is a certain property that one perceives.

In the course of this chapter, we effectively encountered two independent reasons for doubting that Ways→Properties should be accepted as a general principle. The first reason is that it simply seems implausible, on phenomenological and theoretical grounds, to account for the blurry way things look when one sees blurrily by appealing only to the properties one perceives. The difference in how things look when one sees blurrily as opposed to clearly is more plausibly due to a difference in one's visual sensitivity. In Section 3.3 I outlined a way in which the minimalist may develop this idea, i.e. by including one's visual sensitivity, construed as a property of subjects, as an explanatory factor that contributes to determining

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<sup>88</sup> There may be alternative ways of developing the Determinable Property proposal which may be compatible with Minimalism. French (2014) presents Brewer as advancing one such alternative. Because Brewer's account does not obviously account for differences in the blurriness of one's experience in terms of differences in the properties one perceives, I take his account to be more similar to the minimalist alternative discussed in Sec. 3.4.3 than to the proposal discussed in this section.

how one perceives the visible minimalist properties one perceives. We can now appreciate a second reason for questioning Ways→Properties: complying with the explanatory demands set by the principle in all cases of changing appearances leads, perhaps inevitably, to a violation of the Metaphysical Parsimony commitment, which we have independent reasons to try and respect. The minimalist has thus good reasons to resist the demands of Ways→Properties.

In the face of this conclusion, one may insist that the phenomenon of changing appearances, and the eyechart case in particular, do in fact give us good reasons for abandoning Metaphysical Parsimony. As Bourget's amplification argument shows, differences in the blurriness of one's experiences are not mere differences in what it is like to have the experience, or its qualitative character: there is a loss of visual detail or information. And a loss of visual detail or information is to be understood as a reduction in the determinacy of the visible properties one perceives. Therefore, we cannot account for Bourget's point unless we suppose that every difference in the blurriness of one's experience is 'matched' by a difference in the properties one perceives. If this requires giving up Metaphysical Parsimony, then we cannot give a satisfactory account of seeing blurrily, and therefore of the eyechart case, within a minimalist framework.

I now want to suggest that the minimalist has the resources to account for the point made by Bourget's amplification argument. Let us take the proposal outlined in Section 3.3.3 as a starting point. On that proposal, whenever a subject perceives visually, they perceive in a certain mode, where this is determined by their visual sensitivity – a property of the subject or their visual system. The subject's visual sensitivity thus enters into an explanation of why things look to them as they do together with the minimalist properties that the subject perceives. While sometimes sensitivity simply functions as a condition for perceiving certain minimalist properties, as opposed to failing to perceive them, in other cases – such as when one sees blurrily – one's sensitivity can negatively affect one's visual access to the minimalist properties one perceives. In this sense, when one sees blurrily, one's visual sensitivity can make one's visual awareness somehow comparatively deficient or limited – compared, that is, to the awareness one has, or would have, when seeing clearly.

We are now in a better position to understand what it means for one's visual awareness to be so affected by one's sensitivity. Consider the short-sighted subject in our initial scenario. The big F in the first row of the eyechart does not look very blurry to them. On the basis of how the F looks, the short-sighted subject would be able to tell us various things about it: it is an F, it is a capital F, it is printed in a bold, thick font, it has serifs. When the subject turns

their attention to the T in the third row, which looks significantly blurrier to them, there are fewer details they can report: it is a T, it is a capital T, it is black. They cannot tell whether it is printed in a bold, or in a serif font. In fact, on the basis of looks alone, they are not sure whether the contours of the T are sharp or whether, say, it has been painted with a thick brush and has fuzzy boundaries. If we now ask the short-sighted subject to tell us everything they can about the E in the sixth row of the eyechart, they would probably say very little. That letter looks so blurry to them that they do not even feel confident enough to try and recognise which letter it is, let alone whether it is a capital E, whether it has sharp boundaries or what kind of font it is printed in.<sup>89</sup>

It seems plausible that there is a loss of visual information or detail among the three cases. Depending on one's criteria for what it takes to perceive a property, one may be inclined to think that the short-sighted subject does not perceive the shape of the E in the sixth row, as they are not visually sensitive to it. The minimalist allows that one's visual sensitivity may in certain conditions – such as when looking at letters that are small in size at a certain distance – function as a condition for perceiving or failing to perceive a certain property. However, we may be unable to specify the difference between these cases in terms of visible properties that the subject perceives in the first case but not in the second, and in the second but not in the third – if we try to do so, that is, we will encounter the problems faced by some of the anti-minimalist accounts. This does not mean that we need to treat differences in the degree of blurriness of one's experiences as mere differences in what it is like to have the experience. When something looks blurry to one on account of one's visual sensitivity, one can make comparatively fewer discriminations and recognitions on the basis of how things look to one, and one's reports and interactions with the objects one sees are also limited, compared to a situation where one sees the same objects clearly.<sup>90</sup>

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<sup>89</sup> Similar remarks would apply to Bourget's case of seeing the same object increasingly more blurrily. I use the eyechart example here to show that differences in the degree of blurriness of one's experience may be due to a variety of factors, even when one's short-sightedness always plays a role in the explanation: a change in one's sensitivity, as in Bourget's example, changes in the objects one sees (such as the size of the letters in my example), or external factors such as one's distance from the objects one sees.

<sup>90</sup> Brewer (2017) could be interpreted as endorsing a similar proposal. He suggests that the reduction in one's visual sensitivity that occurs when one sees blurrily causes a reduction in the objective visual similarities that are salient and potentially recognizable to one (2017: 224-225). If the salience of these visual similarities to one is not understood as a perceptual experience of a certain property, where seeing blurrily and seeing clearly are then construed as experiences of different properties, then Brewer's suggestion is compatible with the one I outline here. His proposal could be understood as one on which, when seeing a square blurrily, one is not in a position to notice and recognise the objective visual similarities that the square bears to paradigm exemplars of determinately shaped and

Once we are not bound by the demands of the Ways→Properties principle, we can see how the kind of explanation it requires is simply not needed in order to account for the phenomena. The minimalist, free of those unnecessary demands, can allow that one's visual sensitivity does not always make a difference to which properties one perceives. They can argue, however, that it can nonetheless make a difference to what one can do, so to speak, on the basis of perceiving those properties: what capacities one can successfully exercise in a given context in virtue of experiencing certain properties. Differences in how things look to one may not always be accompanied by differences in what one perceives, but they can be accompanied by differences in the kind of cognitive and epistemic access one has to what one perceives, and these differences can help explain how things look to one.

### 3.5 Looking blurry: sameness and similarity

I have argued that our case of changing appearances can be accounted for compatibly with Minimalism. The minimalist can allow that subjective or subject-dependent factors such as one's sensitivity contribute to explaining why do things look a certain way to one when one sees blurrily, together with the minimalist properties one perceives. Moreover, the minimalist can allow that one's sensitivity plays a further role than that of an enabling condition for perceiving, as opposed to failing to perceive, certain properties in certain conditions. As a result, the minimalist can account for the effect that differences in the blurriness of one's experiences, partly explained by one's visual sensitivity, have on one's cognitive and epistemic access to what one experiences: one's discriminations, recognitions, reports, and actions are impacted, usually negatively, by an increase in blurriness.

I now want to point out that while the minimalist can appeal to this second role of visual sensitivity in the case of seeing blurrily when one is short-sighted, sensitivity may not play this explanatory role in other cases where things may look just the same or very similar. There are good reasons to think, as we have seen in Section 3.2 of this chapter, that normally, when one sees blurrily (e.g. when one sees the eyechart in our initial scenario blurrily), things do not look to one exactly the same as they do when one is seeing something that is blurry,

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sharply boundaried objects. One is only in a position to notice and recognize the objective visual similarities that the square has to objects of a wide range of sizes and shapes. And this difference in what one can notice and recognize – as opposed to a difference in the properties one perceives – explains why the square looks different to one when one sees it blurrily and when one sees it sharply.

blurred, or fuzzy (e.g. when one sees a blurred eyechart). But when contextual cues are unavailable – as when seeing through a tube that restricts one’s field of vision – things may well look just the same to one in the two conditions, independently of whether one is misled and makes false judgements about what one is seeing.

In fact, things could look to one, in looking blurry, that very same way in a wider range of circumstances. Things can look that way if one has visual impairments other than short-sightedness – say, astigmatism or long-sightedness – or if one feels dizzy, is under the influence of some drugs, is seeing things in the periphery of one’s visual field, or is ‘un-focusing’ one’s eyes. Environmental conditions can also result in things looking that way: if one sees non-fuzzy things through non-transparent media such as distorting lenses, a thick fog or mist, a worked glass pane, or water. And as the example of the blurred eyechart suggests, things can look that way to one if one is normally-sighted but the things one sees are blurry, blurred, or fuzzy. In each of these cases one may not be in a position to tell which case one is in. For instance, one may be unable to exploit contextual cues, to see the whole scene in which the object is presented, or to move around and explore the object from different points of view or with senses other than vision. If so, then one could be experiencing very different objects and properties, in different objective as well as subjective conditions of perception, and yet things may look the same to one.

The minimalist does not explain the sameness of look in terms of a shared property or properties, whether perceived or experiential. Some philosophers may find this approach unsatisfactory. I suspect that this dissatisfaction is at least in part motivated by some commitments that these philosophers independently take on, and that they bring with them when approaching the phenomenon of changing appearances.

Among those who may find the minimalist approach unsatisfactory are defenders of accounts of seeing blurrily appealing to apparent properties (Sec. 3.2) or to experiential properties we are aware of (Sec. 3.3.2). These accounts can offer a simple explanation of the sameness of look: on one account, things look the same to one in those two conditions because one is perceiving a certain apparent blurriness in both conditions; on the other account, it is because one’s experiences instantiates the same qualitative property in both conditions and one is aware of that property. Despite the significant differences between these two accounts, they are both implicitly designed to respect a certain principle connecting sameness in look to sameness in properties: the Shared Property principle.



We have already encountered Shoemaker's version of this principle when discussing the objection from sameness of look as applied to seeing a white wall in shadow in Chapter 2. On Shoemaker's version of the principle, the fact that two objects (or the same object in different conditions) look the same to one is explained by one's perception of a certain property that both objects have (or that the object retains across different conditions). But there is a parallel version of Shared Property that one may adopt if one does not subscribe to Shoemaker's project of explaining how things look in terms of properties perceived, and instead appeals to properties of experiences. The idea is that we can group experiences together in classes on the basis of the phenomenal or qualitative character, where this is identified with the way things look to the subject in having a certain experience. Moreover, for an experience to belong to one of these classes is for it to share a certain qualitative property with all and only the other members of the class.<sup>91</sup> Given this version of Shared Property, the fact that things look the same to one across different experiences is explained by the instantiation of a distinctive qualitative property by all those experiences.

Whether the Shared Property principle is interpreted as concerning properties one perceives or properties of one's experiences, the principle imposes a certain form on an explanation of the way things look to one. But reflection on cases where things look blurry suggests that these principles, while perhaps motivated by independent theoretical commitments, are simply implausible when we consider the phenomena to be explained.<sup>92</sup> Given the range and diversity of circumstances and factors that could lead to things looking the same to one, in looking blurry to one, it is implausible that there is a shared property, whether perceived or experiential, that is common across all cases and can play the explanatory role Shared Property requires.

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<sup>91</sup> See e.g. Farkas (2006) for an explicit statement of this idea: 'An ordinary perceptual experience is something appearing (looking, sounding, smelling, tasting, feeling) to someone in a certain way. An experience has a phenomenal character, which is the same thing as what it is like to have that experience. Further, the character of an experience is determined by – or perhaps is the same as – how things appear when having that experience. And if two experiences involve things appearing in the same way in a certain respect (for example, both involve something appearing blue), then to that extent their phenomenal character is shared. When I say that things appear (look, feel, taste, etc.) the same colour, shape, or otherwise, this amounts to saying that the experiences of things appearing in this way share a phenomenal property' (2006: 206-207).

<sup>92</sup> When discussing the objection from sameness of look (Ch. 2, Sec. 2.4) we did not need to question Shared Property, as in the case at hand (an everyday experience of a white wall in shadow and a grey wall in sunlight) the sameness of look simply was not there. Here we can see that actual cases of sameness of look are also not a good reason to abandon a minimalist approach.

The minimalist can instead argue that the best approach is a pluralist one. Different explanatory factors, in addition to the minimalist properties one perceives, can play a role in explaining why things look as they do in different cases. This pluralism naturally extends to specific ways of looking, where the reason why things look a certain way to one may be very different in different cases.

At this point, a critic could point out that this pluralist approach lacks an account of similarity among different ways things can look. Reflection on looking blurry is, again, instructive: in addition to somewhat special situations in which things can look, in looking blurry, exactly the same to one, there are many more situations where although things do not look exactly the same to one, they still look, in looking blurry, very similar or relatively similar. Things can look similar whether we have a visual impairment, or we are looking at a scene through mist or a translucent glass, whether the object we see is a fuzzy bush at a distance or a blurred picture. Indeed, we may report the way they look to us in all these cases by saying that things look blurry. Even if we grant that there is not a distinctive property shared by all cases where things look the same, there should still be a similarity across these cases that accounts for why things look similar. Pace and Allen, for instance, worry that on the approach adopted by the minimalist there would be no 'principled reason' why those experiences are similar, and so the similarities would have to be 'brute' (Pace 2007: 342-343, Allen 2013: 262-263).<sup>93</sup>

In response, the minimalist can point out that Pace and Allen seem to have a specific kind of reason in mind. Pace, in particular, suggests that the problem is that these experiences where things look similar have 'very different metaphysical structures' (2007: 342). Pace is assuming similarity in how things look can only be explained if we suppose that the cases where things look similar share the same or a similar metaphysical structure. But this is a substantial assumption that is not motivated by the phenomena themselves. Just as the minimalist does not have to accept the demands imposed by Shared Property, they do not have to accept the demand imposed by the assumption Pace voices. Once these principles and assumptions are called into question, we can see that satisfactory explanations do not have to take the form these require.

Moreover, the minimalist does not have to accept that similarities in how things look to one are 'brute'. As Martin suggests, we can understand why things look similar to one in different

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<sup>93</sup> Both Allen and Pace raise this objection against the Mode of Perceiving proposal. However, I take it that by Allen's and Pace's lights the objection would equally, if not more forcefully, apply to the pluralist view of looking blurry suggested here.

cases by considering why one finds things to be similar or why things ‘strike one as alike’ in those cases (2010: 215-217).<sup>94</sup> The reason why one may find that things look similar in different conditions, though, will depend on a variety of factors from the context in which one is perceiving those things to one’s psychological condition and even one’s past experiences. For one, in order to notice a similarity in how things look across the different cases in which things may look blurry, one needs to be familiar with certain kinds of objects and properties. For instance, a short-sighted child may see something blurrily before they encounter a blurred print or photograph. Things may look to the child the very same way they would look to them if they were to see a blurred print with corrective glasses on, or the way they look to a normally-sighted subject when they see a blurred print, but they may not be in a position to notice this similarity. Similarly, one needs to be familiar with certain kinds of conditions for seeing. If one has never encountered a thick mist, say, one would not think that the way things look to them when they see blurrily is similar to the way they look, or would look, when seen through a thick mist. Analogous considerations hold for subjective conditions: familiarity with short-sightedness, other eyesight deficiencies, or temporary visual impairments seems to be required to notice or report certain similarities. Different cases where things look blurry are similar – i.e. things look similar ways in all those cases – to the extent that a subject who can exploit familiarity with certain kinds of objects, objective and conditions of perception finds those cases to be similar or to strike them as alike.

Being in a position to compare different experiences one has or has had is also crucial to noticing whether things look blurry to one in a particular case. For instance, a short-sighted child who has not been diagnosed as such may well not be able to tell that things look blurry to them, i.e. that there is an aspect of the way the world looks to them that is not just an aspect of the world. A short-sighted adult who has been wearing corrective glasses for a long time, by contrast, would find that way things look when they are not wearing their glasses to be noticeably different, and in particular to be blurry. The adult, but not the child, is in a position to compare the way things look to them without their glasses on with how they expect them to look. This suggests that experience with conditions in which things do not look blurry is crucial to one’s noticing that things look blurry to one, and to one’s understanding of what it is for things to look blurry.

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<sup>94</sup> Martin develops this suggestion to account for the fact that we report the ways things appear as similar in cases where the things that so appear may not have any relevant visible property in common.

One suggestion, then, is that someone who is in a position to find cases where things look blurry to be similar, and to notice that things look blurry on each occasion, is in a position to notice that cases where things look blurry are different, in some relevant respects, to cases where things do not look blurry. The condition of one's visual system, the presence of a distorting medium, the fact that things are too far for one to notice their details or precisely locate their boundaries: all these factors affect one's visual and cognitive access to the minimalist properties in one's environment. Cases where things look blurry, then, in spite of being fundamentally different from each other, may all be cases where one's visual access to the properties one perceives is limited or not as good as it could be, compared to the visual access one has in conditions where things do not look blurry.

## Chapter 4: Colour-blindness

### 4.1 The case of colour-blindness

In the course of our discussion so far, we have encountered some reasons to question a key premise in the argument from changing appearances that the minimalist was supposed to respond to: the Ways→Properties principle. In Chapter 2, we have learnt that accounting for the way coloured objects look in different contexts requires revising the principle, to allow that a combination of different perceived minimalist properties of the object can, as a whole, explain a way the object looks, and to allow that perceived minimalist properties of nearby objects and other elements in the scene can contribute to explaining how an object looks. In Chapter 3, we have learnt that even the revised Ways→Properties principle is implausible in certain cases of changing appearances, such as that of seeing blurrily, where differences in how things appear do not seem to amount to differences in the properties one perceives. Moreover, respecting the principle results in accounts that cannot respect all three core commitments that Minimalism shared with the Simple View, and in particular Metaphysical Parsimony. We thus have good reasons to question the principle, and resist the argument from changing appearances outlined in Chapter 1. A satisfactory explanation of why things look as they do to one in certain conditions does not have to comply with the explanatory demands of the Ways→Properties principle. It is therefore possible for the minimalist to provide such an explanation, even in cases of changing appearances where there does not seem to be a difference in the minimalist properties that one subject perceives in different conditions or that different subjects perceive in the same conditions.

In this chapter, we turn to an intersubjective case of changing appearances that presents a different challenge to the minimalist than any of the cases discussed so far: the case of colour-blindness. As we will see, we have plenty of evidence for thinking that objects of certain colours look different to colour-blind perceivers than they do to normal perceivers.<sup>95</sup> The difference in how an object looks to colour-blind and normal subjects in the same objective conditions of perception is due to a difference in the subjects' visual sensitivity to colour properties. As we have seen, the minimalist can allow that one's sensitivity

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<sup>95</sup> By 'normal' perceivers I mean perceivers with visual systems relevantly similar to those of the majority. Sec. 4.1.2 will discuss in more detail what the differences are in the case of colour-blindness.

contributes, together to the minimalist properties one perceives, to explaining how things look to one. One's sensitivity may function as an enabling condition for perceiving, as opposed to failing to perceive, a certain minimalist property in certain conditions. Or it may affect one's cognitive and epistemic access to the properties one perceives, making a difference to one's ability to make certain discriminations, recognitions, and reports in certain conditions – as in the case of seeing blurrily. The new worry is that the role that subjective sensitivity plays in explaining how things look to the colour-blind and to normal perceivers, respectively, is different from both these roles or functions. In particular, the subjects' visual sensitivity may play the role of partly determining not which minimalist properties they perceive, but what the nature of these properties is. This role would be incompatible with Minimalism: as per the Perceptual Objectivity commitment, the properties we are aware of in perceptual experience are objective and independent of perceivers and their experiences.

In order to see whether this new worry is justified, we need to address two questions. First, is the difference in how things look to a normal and to a colour-blind perceiver best explained in terms of a difference in the properties they perceive? Second, if we answer yes to the first question, are the different perceived properties partly dependent for their nature on the perceivers' sensitivities? In Section 4.1.2, I review some of the evidence on the discrimination and recognition performance of the colour-blind, and present some examples of first-person reports of how things look to them. In light of this evidence, we can then proceed to assess some of the answers that philosophers have given to the first question, and the implications these answers have for our second question.<sup>96</sup> In Section 4.2, I discuss a view on which the colour-blind perceive the same kind of colour properties as normal perceivers, but a restricted range of them. In Section 4.3, I discuss views on which the colour-blind perceive a different kind of colour properties than normal perceivers. In Section 4.4, I discuss views on which the colour-blind perceive the same kind and the same range of colour properties as normal perceivers.

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<sup>96</sup> Some of these answers have been explicitly advanced to account for colour-blindness, while others have been proposed for other cases of intersubjective variation in colour perception.

#### 4.1.2 Discrimination, categorisation, reports

You may have at some point met a person who disagreed with you on whether two brownish objects were the same or different in colour, or on whether an object was orange rather than olive green. It is possible that either you or that person are colour-blind to some degree. However, not all colour-blind subjects fit this description: some have serious difficulties in discriminating colours that, for normal perceivers, are very different, while some do not even notice that they are colour-blind until they take a specific test.

‘Colour-blindness’ is actually an umbrella term for different conditions, involving more or less severe deficiencies in colour perception. The different kinds of colour-blindness can be characterised in terms of differences in the photoreceptors in a subject’s retina. Normal human subjects perceive colours in daylight thanks to three types of photoreceptors called cones, which are primarily sensitive to light of long wavelengths (L-cones), medium wavelengths (M-cones), and short wavelengths (S-cones), respectively. By comparing the response of the different cones, the visual system can obtain information about the wavelengths of the light reflected by surfaces.

Achromatopsia is a very rare condition where subjects do not have any functioning cones, and can rely on one kind of photoreceptor only – rods – which normal perceivers rely on in darkness or dim light.<sup>97</sup> While rods allow us to be sensitive to brightness, they do not allow for perception of hues. The achromatopsics’ colour experiences are thus limited to degrees of light and dark. It is fairly uncontroversial that things look different to achromatopic subjects than they do to normal subjects, and that differences in visual sensitivity to colours contribute to explaining this difference. The role that sensitivity plays here is plausibly analogous to the role it plays in accounting for complete blindness: that of an enabling condition for perceiving, as opposed to failing to perceive, a certain class of properties – colours, or at least hues. The minimalist can thus argue that failing to perceive the colours or hues of the things one sees makes a difference to how those things look to one.

Is this simple explanation available in all cases of colour-blindness? The vast majority of colour-blind subjects have at least two types of cones that function to an extent. Dichromat perceivers have only two types of functioning cones: subjects with protanopia, the most common kind of dichromacy, have no functioning L-cone; deuteranopia and tritanopia are

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<sup>97</sup> For a review of the empirical literature on achromatopsia, see e.g. Remmer *et al.* (2015).

characterised by no functioning M-cones and S-cones, respectively. The remaining colour-blind subjects – in fact, the majority – are anomalous trichromats: like normal perceivers, they have all three types of cones, but one or more of their cone types function in an anomalous way. Are dichromats and anomalous trichromats wholly insensitive to colours and more specifically to hues? Our starting point for answering this question is evidence concerning discrimination performance, use of colour words, appreciation of colour similarity, and anecdotal self-reports.<sup>98</sup>

To begin with, there are some shades of colour that dichromats and anomalous trichromats tend to confuse and sometimes cannot discriminate. Protanopes, for instance, sometimes struggle to discriminate between reds, pinks, greens, browns, and oranges. These difficulties are revealed by some tests for diagnosing colour-blindness. When performing the Ishihara test, for instance, the colour-blind may fail to see a figure (e.g. a number) against a background if the dots composing the figure and those composing the background have colours that they cannot reliably distinguish, such as a brownish-orange and a green for the protanope and protanomalous subjects. The colour-blind's performance differs the most when the stimuli are spectral lights. Some tests for colour-blindness require subjects to match two halves of an illuminated disc: one half is the target light, which needs to be matched by adjusting the intensity of the lights that determine the look of the other half. While normal perceivers need to mix three primary lights to get a match, dichromats can match the target light using only two lights; anomalous trichromats need three lights, but sometimes report a match where normal subjects report a difference. These difficulties can have an impact on the everyday life of the colour-blind. In some conditions, colour-blindness can be not only annoying, but also dangerous. For instance, subjects may mistake a blinking red traffic light for a yellow or amber light, they may be unable to judge on the basis of looking whether their skin is getting sunburnt or whether a tomato is ripe, they may struggle to interpret signals and colour codes (e.g. Steward-Cole 1989, Cole 2004).

On the basis of this evidence, one may be inclined to conclude that the colour-blind are not sensitive to hue. This strong conclusion does not seem plausible, however, once we consider a wider range of conditions. The extent and frequency of the difficulties with colour discrimination depends both on the stimuli and on the conditions of perception, even when

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<sup>98</sup> I here present only a quick review of some key evidence, drawing on the more detailed reviews of the empirical literature on colour-blindness (especially dichromacy) by Broackes (2010a) and Byrne-Hilbert (2010).



considering the same shades of colour. First, when the stimuli are larger, when they are ordinary material objects – rather than spectral lights – and when their colours are more saturated, colour-blind subjects tend to have a discriminatory performance closer to the norm (e.g. Wachtler *et al.* 2004, Broackes 2010b, Logvinenko 2014). Second, the colour-blind's discrimination performance is especially affected in unfavourable lighting and visibility conditions: for instance, if the objects are seen under fluorescent lamps as opposed to natural daylight, if it rains or is foggy (e.g. Broackes 2010a). Overall the evidence shows that there are some colours that the colour-blind sometimes discriminate and sometimes fail to discriminate. This evidence alone does not yet tell us whether the colour-blind perceive the same colours and hues as normal subjects.

One may think that looking at the colour naming and categorisation performance of the colour-blind may help us settle this issue. If the colour-blind cannot perceive certain colours, it is natural to suppose, surely they will also misname and miscategorise objects with those colours. As a matter of fact, though, the colour-blind's naming and categorisation performance does not align with their colour discrimination performance. The colour-blind use a vast range of colour terms consistently and correctly – that is, they use them in the same way as normal subjects do or think that they should do (e.g. Jameson-Hurvich 1978, Montag-Boynton 1987, Bonnardel 2006). And this range of colour terms includes terms for shades that the colour-blind struggle, or fail, to discriminate in some conditions. Notably, the categorisation and naming performance of the colour-blind cannot be explained simply by supposing that the colour-blind have learnt what colour things are on the basis of testimony, because the colour of unfamiliar objects is also often correctly identified. While this is not enough to show that the colour-blind perceive the colours that they can correctly categorise, it plausibly shows that they apply colour terms on the basis of their visual experiences, and so on the basis of how things look to them.

The evidence summarised so far brings out that dichromats and anomalous trichromats are not insensitive to hue, while at the same time supporting the idea that colours – or at least some colours – look different to them than they do to normal perceivers. A difference in how things look, one may think, would help explain the difficulties with colour discrimination and categorisation. This conclusion is confirmed by colour ordering tests and first-person reports by colour-blind subjects.

Evidence from discriminatory performance at most tells us which stimuli look the same to the colour-blind – namely, the stimuli that they confuse or cannot tell apart. However, we can test how the colour-blind order stimuli according to colour, and thus gain insight into the

similarity relations that they perceive among those stimuli. One such test is the Farnsworth D-15 test, which uses 15 differently coloured caps of equal saturation.<sup>99</sup> While dichromats can name most of the colours correctly, they behave very differently from normal perceivers when it comes to arranging the caps according to how similar they are to each other in colour. Starting from a slightly greenish blue reference cap and ending with a brownish pink reference cap, protanopes choose a sequence that alternates some red and green caps (Jameson-Hurvich 1978). This performance suggests that some greenish shades (e.g. a greenish blue) look to them to be more similar to some reddish shades (e.g. some purples and pinks) than to other greenish shades. The caps, it is natural to think, look different to them than they do to normal perceivers.

Moreover, some colour-blind subjects report being confused by colour categories, even if they can usually apply those categories correctly. The amount of colour terms that can be used to describe differences in some areas of the colour spectrum seems to some overwhelming and difficult to justify. Dalton, for instance, reports: ‘with respect to colours that were white, yellow, or green, I readily assented to the appropriate term. Blue, purple, pink, and crimson appeared rather less distinguishable; being according to my idea, all referable to blue. I have often seriously asked a person whether a flower was blue or pink, but was generally considered to be in jest’ (Dalton 1977: 520). Some colour differences, then, may be unnoticeable to the colour-blind, and this can contribute to explaining why some coloured objects look different to them than they do to normal subjects.

If an object of a certain colour can look different to a colour-blind and to a normal perceiver, we have a case of changing appearances. The difference in how the object looks, however, cannot simply be explained in terms of a failure to perceive colour on part of the colour-blind perceiver. The defender of Minimalism thus faces the challenge of providing another explanation of this difference. The challenge is especially hard because the evidence we have does not tell us what the difference exactly amounts to, i.e. *how* things look to the colour-blind – or to a certain kind of colour-blind subjects. While there are plenty of images purporting to simulate how the world looks to the colour-blind, their accuracy is disputed.<sup>100</sup>

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<sup>99</sup> See <https://www.color-blindness.com/color-arrangement-test/>. For an example of the colour ordering chosen by a protanope subject, see <https://www.color-blindness.com/2009/03/10/online-farnsworth-d-15-dichotomous-color-blindness-test/>.

<sup>100</sup> For an example: <https://www.color-blindness.com/coblis-color-blindness-simulator/>

First-person reports offer conflicting evidence in this respect. Some dichromats and severe anomalous trichromats report that they enjoy a very limited variety of colour experiences. An example is offered by Pole's description of his experience of Chevreul's hue circle as a protanope subject (1859). Starting from the green bottom shades and going clock-wise towards orange and then red, he reports that his 'sensation of yellow becomes fainter and fainter (...) until very soon the yellow disappears altogether, and nothing but a dark grey or perfectly colourless hue remains' (Pole 1859: 329-330). At the top of the circle, Pole observes, 'there is a hue of red which, to me, is, *as a colour, absolutely invisible*' (*ibid.*).<sup>101</sup> Pole describes himself as being able to only see two hues, in addition to black, white, and grey: yellow and blue.

Other dichromats, however, report seeing more than two hues. The deuteranope Dalton, for instance, confuses reds and browns and greens, but he does not report reds, browns, and greens as always looking the same to him – and definitely not as looking an achromatic grey. Rather, he speaks as if sometimes a shade of brown looked green to him, and sometimes a shade of green looked red: 'a decoction of Bohea tea, a solution of liver of sulphur, ale, etc., which others call brown, appear to me green'; but 'green woollen cloth, such as is used to cover tables, appears to me a dull, dark, brownish red colour' (Dalton 1798: 92).

Broackes (1992, 2010a), a protanomalous perceiver, also reports that some objects clearly look red to him (e.g. fire engines) and others clearly look green (e.g. grass), as soon as he sees them. In other cases, he can 'come to see the object as having its true colour' after observing it more carefully (Broackes 1992: 216). These shifts are also accompanied by phenomenological changes. In particular, Broackes reports that contrast increases when he comes to notice a difference in hue in a scene that initially looked uniform. It is easier to distinguish the individual leaves on an autumn tree, for instance, when he realises that they are not uniform in colour, but their tips are reddish while the part near their stem is green. Overall, these examples self-reports suggest that there may be significant differences in how things look among colour-blind subjects, and even among dichromats.<sup>102</sup>

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<sup>101</sup> Pole's reports is analogous for the left half of Chevreul's hue circle. He sees the blue 'perfectly', but the violet only as a darker blue; the supposed green section of the circle is just absence of the blue and looks again grey; then lightness and the 'sensation of yellow' increase again progressively (1859: 329-330).

<sup>102</sup> Broackes (2010a) discusses a wider range of reports, including reports by unilateral dichromats and subjects with acquired dichromacy.

Finally, a recent source of evidence comes from reports of protanomalous and deuteranomalous colour-blind subjects who tried EnChroma glasses. These glasses are supposedly able to alleviate the effects of mild colour-blindness, by selectively filtering out light at wavelengths that the colour-blind tend to confuse. This evidence is suggestive: some subjects have very strong emotional reactions to wearing these glasses, and some even claim that they can see novel hues that they had never seen before.<sup>103</sup> It is clear that things look different to some of these subjects than they did before putting the glasses on. However, this evidence alone tell us neither how things looked to them before nor how things look to them with EnChroma glasses.

To summarise, the evidence concerning colour-blindness we reviewed so far supports four main claims. First, the colour discrimination performance of the colour-blind differs from the norm, but it depends on the kind of stimuli and the context. Second, the categorisation and colour naming performance of the colour-blind is remarkably similar to that of normal perceivers – although the colour-blind still struggle more. Third, things of certain colours look different to the colour-blind than they do to normal perceivers, presumably on account of their different visual sensitivities to hue. Fourth, we do not know exactly how things look to the colour-blind, and reports suggest there may be high individual variation. Can we offer a minimalist account of the way coloured objects look to the colour-blind in light of these four conclusions?

## 4.2 Fewer colours

A simple explanation of the fact that some coloured objects look different to the colour-blind than they do to normal perceivers appeals to a difference in which colours the two kinds of subjects perceive. On the Reduction view, the colour-blind perceive fewer colours than normal perceivers. As a result, so the view holds, the colour experiences of the colour-blind lack an entire colour dimension.<sup>104</sup> On a widely endorsed version of the Reduction view, for

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<sup>103</sup> There are plenty of videos of these reactions available online. Notably, a philosopher claims to have seen a colour he had neither seen nor imagined before: <https://junkyardofthemind.com/blog/2017/6/20/seeing-a-shade-of-green-that-i-couldnt-imagine-before>

<sup>104</sup> Different versions of the Reduction view make different predictions about the way things look to the colour-blind, but they all agree that the colour-blind's experience lacks a colour dimension. For a historical overview, see Broackes (2010a).

instance, protanopes – also known as red-green colour-blind – cannot perceive any shade of red or green. They can only perceive darker and lighter, more or less saturated, shades of blue and yellow, black, white, and neutral grey.<sup>105</sup> This reduction in what colours the colour-blind perceive is accompanied by a reduction in the range of ways that things can look to them: things only look lighter and darker shades of blue and yellow, black, white, or grey (Byrne-Hilbert 2010). While the Reduction view is primarily applied to dichromats, one may think that a version of it also applies to some severe anomalous trichromats. On the face of it, the Reduction view is compatible with Minimalism: the difference in how things look to different subjects is explained in terms of a difference in which of the available colours they perceive, and these colours are minimalist properties.

The Reduction view, however, does not seem to have the resources to account for all the evidence we reviewed. As we have seen in Sec. 4.1.2, colour-blind subjects normally categorise and name a wide range of colours correctly. For instance, a protanope uses colour terms such as red, pink, orange, purple, green, and turquoise almost normally in their everyday life. Crucially, they do so on the basis of their visual experience or on the basis of how things look to them – as you may remember, they do not need to be familiar with a certain kind of object in order to identify its colour. How can the Reduction view explain this performance? The view predicts that a protanope subject can only perceive yellow, blue, black, white, and grey. Moreover, it predicts that objects of any other colour look either yellow, blue, or achromatic to them: not just red and green objects, but all objects that are neither pure blue or pure yellow or achromatic (Byrne-Hilbert 2010). Since the red-green dimension of colour variation is absent from the colour experience of protanopes, objects of hues that result from combining the red or green with yellow or blue will look either yellow or blue, depending on how much the yellow or blue component of their hue stimulates the well-functioning photoreceptors of the protanopes. For instance, oranges look to the protanopes the way that lemons look to normal perceivers.<sup>106</sup> But if things can only look such

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<sup>105</sup> Some defenders of the Reduction view argue that the view is supported by the opponent processing theory of colour vision (e.g. Byrne-Hilbert 2010). On this theory, information about the colours is processed in three independent ‘channels’: red-green, yellow-blue, white-black. The output of the red-green channel depends on the difference between the outputs of L and M-cones. But a dichromat protanope lacks functioning L-cones, and so presumably has no functioning red-green channel. The hue information they receive, then, is processed exclusively in their yellow-blue channel, which supposedly functions normally. The natural conclusion is that protanopes only perceive yellow and blue hues, in addition to achromatic colours.

<sup>106</sup> Byrne and Hilbert argue that this prediction has the implausible consequence that protanopes have colour illusions when seeing all objects that are not pure blue, pure yellow, or achromatic – colours for which they have well-functioning receptors. They thus propose to amend the Reduction view, by

a restricted range of ways to the colour-blind, the Reduction view seems unable to explain how the colour-blind can categorise and identify many more colours on the basis of how things look to them. However exactly a red and a green object respectively look to a protanope, they at least sometimes must look different from one another and be visually distinguishable.

Defenders of the Reduction view can legitimately insist that the ability to correctly categorise and name colours in certain conditions does not have to be explained in terms of the capacity to perceive those colours. What matters is that objects with those colours are visually discriminable. In turn, discriminating, say, reds from greens in certain conditions implies neither perceiving red and green nor having experiences where things look red and green to one. To illustrate this point, Byrne and Hilbert compare the colour-blind to a normal perceiver who learns to discriminate objects in unfavourable lighting conditions.<sup>107</sup> Consider an underground garage with dim, bluish light. Suppose that red cars have a distinctive look in this light, to the point that someone familiar with this garage can easily tell whether a certain car parked there is red. Now consider how the same car would look in midday sunlight. While the car can be said to look red in both cases, because in both cases one would judge it to be red, the car looks quite different across the two lighting conditions. A protanope perceiver may be in a somewhat analogous position as an observer who only sees red cars in the underground, dimly-lit garage. In some conditions, they reliably identify red objects as red on the basis of their look, and so are able in those conditions to discriminate them visually from objects that are not red. Still, defenders of the Reduction view can argue,

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claiming that dichromats perceive two determinable hues – for instance, yellowish, where this is a determinable hue encompassing all shades that contain some yellow in them, from orange to lime green. On Byrne and Hilbert’s revised view, oranges are (correctly) perceived as determinably yellowish. I do not think that the (alleged) fact that oranges look to protanopes just like lemons look to normal perceivers obviously shows that protanopes have colour illusions (as of yellow) when seeing oranges, or that they do not perceive the colour oranges really have. In Sec. 4.4.3 I will develop this point further. While I leave it open how exactly a minimalist who endorses the Reduction view would account for this alleged fact, I do not think that they need to appeal to perception of determinable colours.

<sup>107</sup> Byrne and Hilbert use this example to show that there is a special, ‘phenomenal’ sense of ‘looking’ in which things do not look red to a protanope subject, even though they evidentially look red to them – a red car in the garage does not look red in this non-evidential sense, they say. Whether we are justified in supposing that there is such a sense is controversial (cf. Martin 2010: 176-177, 192-194). The thesis, presented here, that discriminating differently coloured objects does not require that those objects look a distinctive way to one with respect to colour or that one’s colour experience as a certain ‘colour phenomenology’, does not depend on claims about the meaning of ‘looks’.

they may do so even though red things do not look to them just like they do to normal perceivers, and they may do so without perceiving the cars' colour.<sup>108</sup>

Once we acknowledge this point, however, the task remains for the Reduction view to explain on what other basis the colour-blind categorise and name colours that, according to the view, they cannot perceive (such as red and green objects for protanopes) or cannot fully experience because they look the same hue to them (such as turquoise, lime green, teal and purple objects for protanopes and maybe protanomalous subjects). A plausible suggestion is that the colour-blind do so in virtue of perceiving some visible properties other than colours, and in virtue of implicit or explicit knowledge about the connections between those properties and colours.

One option is to appeal to differences in lightness, which all colour-blind subjects can perceive. Now, it is not the case that each shade that for a normal perceiver has a different hue also has a distinctive lightness value. So it is not the case that all shades that, on the Reduction view, look the same to the colour-blind nonetheless look different to them with respect to the lightness dimension of colour variation. Eliminating the hue dimension from colours would not preserve all the visible similarities and differences among coloured things that normal perceivers can appreciate.<sup>109</sup> However, colour-blind subjects could exploit lightness if there were rules associating certain lightness values to certain hues. The colour-blind, thanks to long-term perceptual interactions with coloured objects and exposure to colour language, may be implicitly and unconsciously relying on such rules when they struggle with discriminating or categorising certain shades of colour. Jameson and Hurvich (1978), for instance, suggest that the colour-blind can correctly name many if not all caps in the Farnsworth test because they rely on such a rule of inference.

The problem with this proposal is that it is very difficult to formulate any useful rule. The suggestion offered by Jameson and Hurvich is that a protanope uses a rule such as 'if dark, then red' (1978: 154). But this rule is too simplistic to explain the protanope's performance. First, there are greens that are darker than some reds and reds that are lighter than some

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<sup>108</sup> In using this analogy with seeing red cars in the garage to illustrate this point on behalf of the Reduction view, I do not intend to endorse the claim that the normal perceiver in the garage cannot perceive the redness of the red cars. There are certainly disanalogies.

<sup>109</sup> The idea of appealing to the perception of lightness is suggested in a thought experiment discussed by Jackson's (1977: 34-36). The case Jackson imagines, though, is merely hypothetical, because it involves a subject with complete achromatopsia who is, however, so sensitive to differences in lightness that they can make as many discriminations among colours as normal perceivers make.

greens – even among the stimuli used in the Farnsworth test. Second, there are reds, greens, as well as oranges, lime greens, teals, and so on, that do not differ in lightness. Minimally, if there is a rule from lightness to hue, it must be a more complex one. While an explanation appealing to lightness cues is not ruled out, the Reduction view still owes us an account of the colour-blind’s naming and categorisation performance.

Even if this account was provided, however, there would be some other evidence that the Reduction view may be unable to explain. In Section 4.1.2, we have seen that the first-person reports given by different colour-blind subjects make conflicting suggestions about the way things look to them, even focusing on dichromats only. Some reports are in agreement with the predictions of the Reduction view. Pole (1859), for instance, claims to only be able to see lighter and darker shades of blue and yellow, grey, black, or white. He even claims, just as predicted by the view, that red objects look coloured, but that they look just like dark yellow things look to him (Pole 1859: 328). Reports by other subjects, however, seem difficult to accommodate.

Consider Dalton’s reports. Dalton, a deuteranope subject, reports that brown objects sometimes look green to him, and green objects sometimes look red. According to the Reduction view, things cannot look red and green to Dalton. That is, red and green objects do not look to him as they do to normal perceivers, and in particular they look slightly bluish or slightly yellowish shades of grey. But the difference in appearance that Dalton reports among those shades does not seem to amount to the difference among lighter and darker shades of the same hue.<sup>110</sup> While Dalton sometimes confuses reds, browns, and greens – he calls a green tablecloth ‘dark red’, for instance – he insists that these shades look different in hue. In fact, Dalton is compelled to report that objects look these ways with respect to colour even though he knows that normal perceivers would not agree with his choice of colour words.

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<sup>110</sup> What precise predictions the Reduction view would make about the way those brown and green objects look to a deuteranope like Dalton presumably depends on the precise shade of the stimuli. If so, one may think that the view would, after all, predict that those stimuli look different in hue to Dalton, due to a blue or yellow component. Notice, though, that this would not help in the case of the brown objects – Dalton mentions tea and ale – if their shade contained even just a little bit of yellow – if their shade was anywhere between orangey red and lime green, going through browns and olives. For then the view would predict that the objects look yellow to Dalton, and so the same in hue. It is also not clear whether this prediction would help if some of the reds, browns, and greens that Dalton reports looked blue to him and others looked yellow. For then how could we explain that Dalton confuses them, sometimes taking greens for reds, and browns for greens? If anything, given that these are supposedly the only hues he can experience, the difference between a slightly bluish and a slightly yellowish colour should be more salient to him than it would be to a normal perceiver.



Even by the lights of the Reduction view, Dalton knows what a difference in hue looks like: a difference between blue and yellow. Other reports by Dalton seem to confirm that he is not confusing a perceived variation in lightness with a – for him, supposedly imperceptible – variation in hue. Red and blue, he reports, look very different: a pink geranium flower looks, by candlelight, ‘what I called red, a colour which forms a striking contrast to blue’ (Dalton 1977: 520). The reports are best explained, one can argue, if we suppose that Dalton experiences some visible variation in colour among those browns and greens, and among the pink flower and blue objects, which cannot be reduced to a difference in lightness. While we have only considered anecdotal evidence by one perceiver – albeit a scientist – Broackes (2010a) offers a survey of other reports that do not obviously fit the predictions of the Reduction view. The case of Pole, he claims, is the exception rather than the rule (2010a: 389, fn. 65). The task of accounting for the appearance reports given by different colour-blind subjects compatibly with the Reduction view would be even more challenging if we considered reports by anomalous trichromats, such as Broackes, who claim that they undoubtedly see reds and greens.

Overall, the discrimination and identification performance of the colour-blind and their reports about the way things look seem to be best explained if we suppose that things can look to the colour-blind a wider range of ways that the Reduction view predicts. The view, supplemented with an account of colour categorisation and naming capacities, may successfully apply to some cases of dichromacy. In these cases, the minimalist could adopt the Reduction view and explain the way things look to those subjects by appealing to the fact that they perceive fewer colours than normal subjects. However, the Reduction view does not plausibly extend to all dichromats and to anomalous trichromats. These other cases of colour-blindness, then, still pose a challenge to Minimalism.

### 4.3 Different colours

In light of the discussion in the previous section, one may think that the Reduction view does not have the resources to account for the way things look to the colour-blind in all cases. There is, however, an alternative way of pursuing the strategy of explaining the difference in how coloured objects look to a colour-blind and to normal subject in terms of a difference in the colour properties that these subjects perceive. According to this alternative, the *Different*

*Colours* view, a dichromat or anomalous trichromat does not perceive fewer colours than a normal perceiver: they perceive different colours.

The evidence we reviewed suggests that the colour-blind, including dichromats, enjoy a relatively rich variety of colour experiences: things do not look uniform in hue to them, even when the colour-blind are perceiving colours that, at least according to the Reduction view, they should be insensitive to – such as reds and greens for protanopes and deuteranopes. However, proponents of Different Colours point out, that evidence also clearly shows that at least some coloured things do not look to the colour-blind just as they do to normal perceivers. To be sure, some aspects of the performance and reports of colour-blind subjects are such that, if what we believe to be a normal perceiver exhibited those aspects, we would think that they enjoy colour experiences just like ours: we would assume that they can perceive the same properties of the objects they see, and that those objects look to them just like, or sufficiently like, they look to us. Undeniably, though, other aspects of the colour-blind's behaviour are puzzling.

Consider how a colour-blind subject performs on the Farnsworth D-15 test. While they can name the coloured caps correctly, the similarity ordering they choose is incomprehensible to a normal perceiver: their ordering suggests that some greenish shades look to them more similar to some reddish shades than to other greenish shades. If what we believe to be a normal perceiver exhibited those aspects, and we did not know about colour-blindness, we may think that there is something strange or even wrong with them – at least if we can rule out that there is anything strange or wrong with us. Some of the linguistic reports about how things look are similarly puzzling. Earlier I have cited a quote from Dalton about a pink geranium flower looking red by candlelight. In the same context, Dalton also claims that, by daylight, the same flower looks 'almost an exact sky-blue' to him (Dalton 1977: 520). The main advantage of the Different Colours view over the Reduction view is that it has the resources to account for this puzzling behaviour: if the colour-blind perceive many hues, rather than just two, then the range of ways that things can look to them with respect to colour can be at least as wide as the one needed to characterise the colour experiences of normal perceivers.

Suppose that we allow that things can look many different ways, with respect to hue, to the colour-blind, and that often things do not look to them like they do to normal perceivers. The question then arises of whether the colour-blind suffer colour-illusions when things look to them ways that normal perceivers find puzzling. Consider again Dalton's experience of looking at the pink geranium flower by daylight. If we allow that the flower can look more

ways, with respect to colour, than the Reduction view allows, then, one may think, we can allow that it looks to Dalton the way that the sky on a sunny day looks to us. After all, he calls the flower sky-blue, even though he knows that it is pink. But then, one may think, Dalton would be experiencing a sky-blue colour while perceiving a pink object; so he would be having a colour illusion. A similar verdict would apply in all those cases where we have reasons to think – on the basis of similarity orderings and reports, for instance – that things look very different to the colour-blind than they do to normal perceivers.

We have good reasons to resist this verdict. First, it is in general difficult to find a non-arbitrary criterion for what counts as a standard or normal perceiver, so that someone like Dalton would count as deviant, and thus justifiably taken to be in error. As Cohen argues, criteria such as similarity to the numerical majority, average performance, reference to what is defined as standard for scientific and industrial purposes, may be useful for certain practical goals, but arbitrary as criteria for establishing whether a certain subject is genuinely perceiving the objective properties in their environment (2009: 31-33).

Second, the verdict may overgeneralise.<sup>111</sup> Among normal perceivers there is significant variation in the performance and reports concerning certain hues: for instance, certain shades are reported as pure or unique green by some subjects, and as bluish green by others (e.g. Cohen 2009, Allen 2016). Some of the criteria that, on the reasoning sketched above, would motivate the verdict that the colour-blind often misperceive colours, such as different reports, are also present in the case of unique hues. However, we do not think that normal perceivers have colour illusions when disagreeing with other normal perceivers about whether a certain shade is unique green, and we arguably would not have good reasons to do so. Moreover, the different reports concerning unique hues are plausibly explained by differences in the perceivers' visual systems, just like the differences between normal perceivers and the colour-blind. It is not clear how we would draw the line between normal

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<sup>111</sup> Another reason to worry about over-generalisation is given by Mizrahi (2006: 289). If dichromats are defective perceivers, this is plausibly because their eyes lack certain sensory receptors that normal human perceivers, who, we can assume, are trichromats, instead have. But consider now the fact that some non-human animals such as some birds, fish, and turtles are tetrachromats, i.e. they have at least four different types of cones in their eyes. If we apply to trichromat humans the same criterion that the current proposal applies to dichromat colour-blind humans, Mizrahi observes, we should conclude that normal human vision is defective, because normal humans lack a certain type of sensory receptor. Normal human perceivers would thus be having widespread colour illusion. One reason why Mizrahi's argument may not apply to our case is that there could be species-specific standards for the accuracy of visual experiences – it is not clear what conclusions we can reach about intra-species variation from verdicts about inter-species variation.

and abnormal perceivers, given that the variation in how colours are reported, due to differences in the perceiver's visual systems, are so widespread.

Finally, as we observed already in the case of seeing blurrily, that a subject has deficient or limited perceptual sensitivity according to a standard does not obviously show that they have visual illusions. We may have reasons to consider dichromatic and anomalous trichromatic vision as defective: it involves a lack of a certain type of functioning sensory receptor, which results in reduced discriminatory capacities in various tasks and conditions. But this does not mean that when things look to the colour-blind other than they do to normal perceivers, the colour-blind experience colours that are not really there.

The Different Colours view can respect this conclusion. It is a mistake to think that Dalton, when he describes a pink flower as sky-blue, is experiencing sky-blue, or, more neutrally, that the flower looks to him like the sunny sky looks to us. Dalton is perceiving a different colour than the one normal subjects perceive when looking at that pink flower. Puzzling reports by the colour-blind are to be expected: they perceive properties that, in spite of being colour properties, are not the same properties most of us are familiar with. The visual similarities between coloured objects that the colour-blind experience, then, may be significantly different than the ones we experience – as shown by the colour-blind's performance on the Farnsworth D-15 test. The pink flower Dalton describes, for instance, may be very similar to the sky in visual appearance, and more precisely in colour appearance. For the colour Dalton perceives is not what normal perceivers call 'sky-blue' (nor is it what they call 'pink'), but a different colour entirely, perhaps shared by some pink objects and the sky on a sunny day. Of course, Dalton uses the colour words we all use to describe the appearance of the pink flower in those conditions, and so calls the flower 'sky-blue': But this is not because it looks to him like the sunny sky looks to normal perceivers; it may be because the sunny sky is Dalton's paradigm of a sky-blue object, given how he learnt colour words.

How can it be that both a colour-blind subject and a normal subject genuinely perceive the colour of an object, if they experience different colours? This is impossible if we assume that each object can only be one colour all over at one and the same time. The Different Colours view, however, can allow for this possibility by embracing colour pluralism: the thesis that each thing can have multiple colours all over at one and the same time (e.g. Mizrahi 2006, Calderon 2011).

To be sure, defenders of Different Colours will have to provide an explanation of the overall pattern of linguistic reports and colour judgements of the colour-blind. The view can explain

why the colour-blind sometimes struggle with using names for some shades and make mistakes more often than normal subjects. They are constantly attempting to work out how to use colour terms that, for them, are not applied on the basis of visual similarity in hue – colour language is implicitly a colour language best suited to talk about the colours that normal subjects perceive. But how can the view explain the fact that the colour-blind generally agree on what the colours of the objects around them are, if they perceive entirely different colours than the majority? As Allen (2016) points out, this case is different from one of disagreement about the location of unique hues. Subjects who disagree over whether a certain shade is unique green or bluish-green would still agree that the shade is green, and the agreement over such determinable hues can be explained because, it is plausible to suppose, the shade does not look *that* different to the two subjects. Since some shades presumably look very different to the colour-blind than they do to normal perceivers, one may worry that the Different Colours view will have to appeal, much like the Reduction view, to there being an implicit rule associating ‘normal hues’ to, say ‘protanope hues’.

Once this account of correct colour judgements is in place, however, the Different Colours view, supplemented with colour pluralism, is superior to the Reduction view in explaining the difference in how things look to a colour-blind and to a normal perceiver in terms of a difference in the colours that the subjects genuinely perceive. We can now ask whether this account of our case of changing appearances is one that the minimalist can adopt.

The first issue is whether the perceived properties featuring in the explanation are objective and perceiver-independent in nature. Once we agree that the subjects in our case of changing appearances perceive different colours, on account of their different visual sensitivity, one may worry that these colours are partly dependent on perceivers or their visual systems. On some versions of the Different Colours view, it is indeed the case that the subject’s sensitivity partly determines the nature of the colour properties they perceive. This version of Different Colours is defended, for instance, by Cohen (2009).<sup>112</sup> Cohen takes colours to be relational properties of objects that are partly determined by the perceiver’s visual systems. Since an object with certain objective and mind-independent properties – physical surface reflectance properties, for instance – can stand in very many different

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<sup>112</sup> Another defence of a similar pluralist view is offered by Matthen (2005), who takes colours to be characterised in terms of the perceptual categorizations made by a perceiver’s perceptual system. Both Cohen and Matthen develop their views in detail, and have sophisticated answers to many objections. For the purposes of this chapter, I am only considering whether their main thesis, as applied to the case of colour-blindness, is compatible with Minimalism.

relations to different kinds of perceivers, we can easily find an appropriate relational property that can be the object's colour for each kind of perceiver. In turn, pluralism is understood as the view that each object has many different perceiver-dependent colours, each perceivable by a different kind of perceiver.

Giving up the thesis that colours are objective and perceiver-independent, however, does not fit well within Minimalism. While this subjectivist version of colour pluralism may respect the No Error Theories commitment of the Simple View, it does not respect Perceptual Objectivity, on which we only perceive objective and perceiver-independent properties. Now, it may be that colour is a visible property for which we need to make an exception, and that we have good reasons to abandon Perceptual Objectivity as a general thesis. There are, however, other versions of colour pluralism with analogous explanatory resources to Cohen's, which respect this commitment, as the minimalist wants to do.

Mizrahi (2006) and Kalderon (2007) defend an objectivist version of colour pluralism.<sup>113</sup> On this version, a subject's visual sensitivity determines not the nature of the properties they perceive, but the visual availability of these properties: which among the many colours that an object has are visible to them in certain conditions. This conception of sensitivity is suggested by the metaphor of selection (Kalderon 2007: 592-594). There are many regularities in one's environment, depending on the objective and perceiver-independent – potentially, physical – properties instantiated. One's sensitivity 'selects' which of these regularities are perceptually available to one, and so which of the objective properties can play the role of the colours for one. As a result, we can specify different sets or families of colours relative to each kind of visual sensitivity – the normal perceivers' family, the protanope's family, the deuteranope's family, and so on. The properties belonging to each family, i.e. the colours, can be fully objective and perceiver-independent in nature, albeit 'anthropocentric' insofar as their being colours – their being part of one of those families – is partly a matter of the perceivers' sensitivity.

This objectivist colour pluralism can then be incorporated into the Different Colours view of colour-blindness: a colour-blind subject, in virtue of the specific visual sensitivity they have, will select a different property to be the colour of an object than a normal perceiver does, in the same conditions. As Kalderon points out, selection of a property as a member of a family of colours by one kind of perceiver does not exclude the selection of the same property as a

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<sup>113</sup> Kalderon (2011b) defends a view on which colours are 'multiply qualitative'. I think that that view can be interpreted as being different from colour pluralism, and I will discuss it in Sec. 4.4 below.

member of a different family by another kind of perceiver. While members of a colour family are mutually exclusive – e.g. something cannot have two colours belonging to the protanope family all over at the same time – members of different families are not – e.g. an object can have two colours from the protanope and the normal perceiver families, respectively, all over at the same time.<sup>114</sup> In turn, the difference in the colours that a colour-blind and a normal subject, respectively, perceive can explain the difference in how coloured objects look to them.

Is the resulting account of colour-blindness compatible with Minimalism? The account respects the Perceptual Objectivity commitment. However, colour pluralism is a substantive metaphysical commitment which, one may worry, does not fit well with the minimalist approach.

To begin with, colour pluralism is somewhat revisionary with respect to our pre-theoretical conception of the colours of things. We do not normally think, for instance, that an apple can have more than one colour all over: either it is green all over or it is not; if it is not green all over, then it can be yellow or red or speckled; but if it is green all over, that is its (only) colour. Defenders of colour pluralism may argue that we do sometimes allow that things have more than one colour (e.g. Mizrahi 2006: 298-300). We do not usually pay attention to differences in how coloured objects look to our interlocutors, as long as everyone uses the same colour terms in the same way. But when there is disagreement about the colour of an object, we realise that there are more colours than those perceived by the majority of us. One may object, however, that all our practices show is that we sometimes allow that the same thing can look different ways to different perceivers. Moreover, we are most typically happy to allow for this when the variation in how things look – as evidenced by reports, categorisation, and discrimination behaviour – is relatively small. For instance, if one argues that a shirt under artificial lighting is teal while one's interlocutor insists that it is turquoise, one may accept the disagreement without too much resentment or concern. If one's interlocutor was to argue that the shirt is yellow, though, one would take them to be joking, or worry that there may something wrong with their eyes, or one's own.

The counter-intuitive character of colour pluralism, however, is not a good reason not to embrace it. The real question is whether colour pluralism is compatible with the core

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<sup>114</sup> While Mizrahi argues that her colour pluralist account can be applied to colour-blindness, Kalderon is not explicit. He does however suggest that a colour pluralist account can be applied to intra-species cases of variation in colour perception, such as intersubjective differences in the location of unique hues.

commitments of the Simple View, which the minimalist aims at respecting. In particular, one may worry that appealing to a plurality of family of colours, one per each kind of visual sensitivity to hue, does not fully respect Metaphysical Parsimony. Metaphysical Parsimony recommends that one's account of a case of changing appearances only appeals to objective and perceiver-independent properties that we are committed to independently of the phenomenon of changing appearances. As we have seen, pluralist colours can be fully objective and perceiver-independent. However, it is not clear that we have independent grounds for committing to there being a plurality of families of colours, that is, independently of explaining certain cases of changing appearances, such as those involving colour-blind subjects. For instance, this commitment does not seem motivated by the need to explain the colour judgements we make on the basis of our visual experiences, given that the colour-blind often agree with the majority of perceivers. Given this worry, the minimalist should explore whether it is possible to account for the way things look to the colour-blind without committing to colour pluralism.

#### 4.4 Same colours

Suppose one agrees with the conclusion of Section 4.2 that the Reduction view cannot account for the way things look to all colour-blind perceivers – even though it may account for some cases of dichromacy or severe anomalous trichromacy. The evidence reviewed in Section 4.1.2 is best explained if we suppose that the range of ways that things can look to the colour-blind with respect to colour is wider than the Reduction view predicts. But suppose also that one would prefer avoiding the commitment to colour pluralism, which the Different Colours view needs. One may think that colour pluralism is too revisionary or that it is not sufficiently minimalist because it does not fully respect Metaphysical Parsimony. An alternative one may explore is to allow that the colour-blind perceive the very same colours as normal perceivers, and to explain the difference in how things look to perceivers with different sensitivities to hue in some other way.



#### 4.4.1 Colour-blindness and visual exploration

Broackes (2010a) is an advocate of this alternative – call it the *Same Colours* view. His argument for the claim that colour-blind and normal subjects perceive the same colour properties relies on the idea that a difference or even deficiency in one’s sensory receptors for certain hues does not imply that one cannot perceive those hues. Consider the visual experience of depth. Someone who sees with only one eye can visually gain information about the third spatial dimension by observing an object from multiple points of view, compensating for the lack of sensory input that is available to subjects with binocular vision when they look at the object from one point of view; over time, and across conditions, this may result in an experience of depth. Analogously, Broackes suggests, the colour-blind’s experiences may be grounded in a different sensory input than the normal perceivers’ experiences, but may still be experiences of the very same colour properties (2010a: 335-337). According to Broackes, this may be possible even for dichromats, who only have two functioning types of photoreceptor, and so supposedly should be insensitive to a certain dimension of colour variation – for instance, the red-green dimension for protanopes and deuteranopes.<sup>115</sup>

How could dichromats gain visual information about the supposedly ‘missing’ colour dimension? As we have seen in Section 4.1.2, the colour discrimination and identification performance of the colour-blind depends on the type of stimuli and the conditions of perception. While they struggle with spectral lights, small stimuli and certain lighting conditions, the colour-blind behave similarly to normal perceivers when the stimuli are larger, when they are surfaces and ordinary three-dimensional objects, and when the lighting conditions are more favourable. One hypothesis is that certain objects and surfaces allow for better exploration and inspection. This hypothesis is in agreement with the fact that colour-blind subjects who are aware of their condition often inspect objects carefully when they are trying to establish what colour they are: they look at them from different perspectives – for instance by moving around them or bringing them closer – against different backgrounds,

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<sup>115</sup> There is some empirical evidence that subjects who are classified as dichromats according to most tests nonetheless have some residual sensitivity to all colour dimensions – for instance, sensitivity to the red-green dimension for protanopes and deuteranopes. Some researchers hypothesise that this is explained by activity of the rods, or the presence, after all, of some cones of the supposedly missing type (e.g. Scheibner-Boynton 1968, Nagy 1980). Broackes’ goal is to develop a proposal on which dichromats who only have two kinds of functioning receptors, and so only receive two-dimensional colour information, may nonetheless come to perceive the same colours as normal subjects.

and in different illuminations – by moving them from the shade into full sunlight, or under a lamp.<sup>116</sup> This practice of visual exploration can be explained if we suppose that it results in the perceiver gaining more visual information about the colours of objects, thus facilitating discrimination and identification.

Broackes' proposed explanation, in particular, is that seeing an object under different illuminants allows dichromats to gain, in time, information about hue that they may lack at any one moment (2010a: 337-360). This is because different light sources affect surfaces differently, and by paying attention to how surfaces respond to changes in illumination, one can discover some properties of those surfaces. For instance, suppose a red object is first in direct sunlight, which is yellowish, and then, as a cloud occludes the sun, is illuminated by the light of the rest of the sky. The object will darken in relation to the surrounding objects. By contrast, a green object undergoing the same change in the light it is exposed to will not darken. As a result, two objects that look indistinguishable to a protanope under a certain illuminant, such as a green and a red object, may look different under a different illuminant (Broackes 2010a: 337-346). This difference in how things look can be exploited by the dichromat. As we have seen in Chapter 2, we are usually able to perceive the way things are illuminated, and the colour and intensity of the illumination in a scene, without confusing it with the colour of the illuminated surfaces. Assuming that this capacity is intact in dichromat perceivers, these perceivers can rely on their past experience of certain illuminants and how they affect surfaces to gain visual information about hue. If so, the defender of the Same Colours view would argue, it is possible that this information will allow them to perceive those hues, in spite of their deficiency at the level of sensory receptors.

In response, one may note that the fact that a red and a green object look different to a colour-blind subject does not imply that they look different with respect to hue. That one object looks darker as the illumination changes does not tell us which hue it look to have; in fact the object may *just* look darker to the subject. If so, while Broackes may have identified some cues that the colour-blind, including dichromats, can attend to in order identify the colours of things, this recovery may be not be best explained in terms of hue perception. In particular, it may be explained in terms of perception of some other property, most plausibly lightness, plus some independently acquired knowledge about the relation between changes

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<sup>116</sup> For descriptions of these behaviours, see e.g. Broackes (2010a: 344-346, 361).

in lightness due to certain kinds of illumination and changes in hue – where possessing this knowledge does not require being able to perceive those hues.<sup>117</sup>

The defender of the Same Colours view can reply that their explanation is superior. If we suppose that, in virtue of gaining richer visual information through visual exploration, the colour-blind can come to perceive the hues that they identify, we can better explain some of their reports. When a colour-blind subject comes to recognise or notice a colour that they did not see before inspecting the object or bringing it under a different illuminant, they report undergoing an experiential change. Broackes, who is an anomalous trichromat, describes one such change: when he comes to notice a difference in hue among the leaves on an autumn tree, which at first looked uniform in colour to him, the individual leaves, and different parts of each leaf, are easily distinguishable (2010a: 360-364). Reports by some dichromats suggest that they also enjoy these shifts in experience. Wilson observes, for instance, that the individual berries in a bush appear to him ‘for the first few seconds rather black than red, and only gradually assume their red hue’ (Wilson 1855: 30). This difference, one may argue, is best explained if we suppose that these subjects have come to perceive the reddish and greenish colours in the tree, and the red of the berries, respectively.<sup>118</sup>

Recent research also provides some support to the hypothesis that seeing objects under different illuminants may allow dichromats to perceive more colours than they do in other conditions. The dichromats’ colour discrimination performance for certain shades improves under certain illuminants (Flinkman-Nakauchi 2017). Under illuminants similar to daylight, for instance, deuteranope subjects’ performance on the Ishihara and Farnsworth D-15 tests was almost normal. Notably, the Farnsworth D-15 test does not just measure whether two stimuli are discriminable: subjects need to place various coloured caps according to colour similarity. Proponents of the Same Colours view may argue that the deuteranopes’ performance on this test is best explained if we suppose that, under certain illuminants, these subjects can experience some of the colour similarities that normal perceivers usually experience.

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<sup>117</sup> This explanation is an improvement over the one considered in Sec. 4.2, for here colour identification would be achieved not on the basis of lightness perception simpliciter, but on the basis of perception of variations in surface lightness and associated perceptions of variations in illumination.

<sup>118</sup> Broackes (2010) presents his version of the Same Colours view as one on which colour-blind subjects can, by visually exploring objects, come to perceive colours that they did not perceive before. An alternative hypothesis is that the colour-blind perceive those colours throughout, and then report that things ‘assume their red hue’ or ‘start looking red’ when they are in a position to *identify* the colour. I will explore this alternative in Sec. 4.4.3 below.

While limited, this evidence from the reports, visual exploration practices, and colour discrimination performance of dichromats and anomalous trichromats can be taken to support the Same Colours view. If we allow that the colour-blind's perception of colour is dynamic, and involves integrating visual information gained over time, then we can allow that the colour-blind, at least in some conditions, perceive all or most of the colours of the objects they see. And unless we subscribe to colour pluralism, these are the same colours that normal subjects perceive. The obvious question for the Same Colours view is how it explains the significant differences between colour-blind and normal perceivers, if not in terms of a difference in the colour properties perceived.

Some of the reports by colour-blind subjects about the way things look to them are clearly at odds with the thesis that they perceive the same colours as the majority of us. To begin with, there are reports suggesting that things only look two ways with respect to hue to them, and all other visible differences are differences in lightness and darkness or saturation. This is the case with Pole, who claims that the sections of Chevreul's hue circle look lighter and darker shades of the same blue or yellow. The most plausible response here, it seems, would be to concede that the Same Colours view does not apply to all colour-blind subjects. Some rare individuals, such as Pole, may not have the capacity to integrate the visual information they receive across time when visually exploring objects and surfaces, so as to compensate for their deficiency at the receptor level.

The Same Colours view, however, also struggles to explain reports by colour-blind perceivers who claim that they can see many hues. And the view should paradigmatically apply to these perceivers. Consider again Dalton's reports. Dalton, a deuteranope, describes a pink geranium flower as sky-blue by daylight and red by candlelight. This is presumably not how a normal perceiver would usually report the appearance of that object in those conditions.

First, a normal perceiver would not report the change in how the flower looks across those two viewing conditions as a change in colour: the flower remains, and looks to be, the same colour throughout. If we take Dalton's report to be an evidential one, i.e. to report on the colour that the flower looks to him to be, we will conclude that Dalton is confusing changes in illumination with changes in colour. If Dalton's difficulties with colour constancy were widespread, they may be in tension with Broackes' hypothesis that dichromats exploit the differences in how things look in different illumination to gain more visual information about hues that they initially cannot discriminate. In order to do so, dichromats presumably need to distinguish the contribution that illumination makes to how things look from the contribution made by surface colour, and hue more specifically. Second, the colour terms

chosen by Dalton are not ones a normal perceiver would use. Supposing that the geranium flower is indeed pink, a normal perceiver would never describe that flower as looking sky-blue in daylight. The Different Colours view has a good explanation of Dalton's puzzling reports. Once we adopt colour pluralism, we can say that the flower looks different to Dalton than it does to normal perceivers because Dalton is perceiving, and thus reporting on, a different colour property – a deuteranope colour. But how can the Same Colours view accommodate these reports?

On behalf of Same Colours one may argue that there are other explanations of the occasional deviant reports by colour-blind subjects. Granted, the reports show that coloured objects look different to the colour-blind than they do to normal perceivers, but this is not because the perceived colours are from different families. Rather, the colour-blind have to cope with an impoverished or anomalous visual input and may only be able to compensate for this to an extent, depending on the viewing conditions. Sometimes, then, they will not succeed in gaining sufficient visual evidence to recognise what colour they are seeing at a certain time: they may mis-identify a colour – calling a pink flower 'sky-blue' – or confuse changes in the appearance of an object due to changes in the illumination for changes in colour – saying that the flower has gone from blue to red – even though they normally enjoy colour constancy.<sup>119</sup> After all, a pink flower looks quite different by daylight and by candlelight even to normal perceivers. Another possibility is that Dalton's reports should not be read as evidential reports. Dalton knows that the flower is pink; so by reporting that it looks sky-blue, he may be characterising the appearance of the flower with reference to the colour he would take the flower to be if he did not know that it was not that colour. If coloured things sometimes look different to a colour-blind subject than they do to normal perceivers, then it is understandable that this subject's colour judgements and reports about the ways things look sometimes differ from the norm.

The perceptual disadvantages of the colour-blind, it seems, can explain some of their deviant judgements and reports: in some cases, they make mistakes due to a lack of visual information about hue, which affects how things look to them. One may insist, however, that

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<sup>119</sup> We have empirical evidence that the colour-blind, including dichromats, have the ability to distinguish changes in illumination from changes in surface colour when looking at patterns of coloured squares – when, therefore, they could not rely on independent knowledge of the typical colours of familiar objects. Under certain illuminants, especially daylight, anomalous trichromats exhibit the same, or almost the same, degree of colour constancy as normal trichromats; dichromats struggle more than the other two kinds of subject, but still perform only slightly worse, especially if tested with naturally occurring colours (Baraas *et al.* 2010).

something is missing from this explanation: why do things look different to the colour-blind? If we grant that they perceive the same colours as normal perceivers, then there are two main options for the defender of the Same Colours view. In Section 4.4.2 I will discuss views on which the way things look to the colour-blind is, after all, explained by what the colour-blind perceive: either by properties other than the colours or by different aspects of the colours themselves. In Section 4.4.3 I explore a minimalist version of the second proposal. Given a certain understanding of colour and colour perception, we have the resources to account for the fact that things look different to the colour-blind and to normal subjects, even if we allow that they both perceive the same properties.

#### 4.4.2 Appearance properties and qualitative characters

Suppose that a colour-blind and a normal subject, looking at the same object in the same lighting conditions, perceive the colour of the object. For instance, the object is red and the colour-blind subject is a deuteranope subject; in these conditions, the object does not look the same to the deuteranope subject and to the normal subject, although they both judge that the object is red. Unless we are colour pluralists, the colour property that the subjects perceive is the same colour property. If there was a further difference in what the two subjects perceive, that could explain why the object looks different to them, what difference would it be?

The first answer is one that we are by now familiar with: the colour-blind and the normal subject perceive different appearance properties. As we have seen in Chapter 2, some philosophers appeal to the idea that an object may have one constant colour (say, a certain shade of red), but different apparent colours, which the object manifests in different lighting conditions. An Appearance Properties view can also be applied to the current case of changing appearances: the two subjects may perceive different apparent colours, where apparent colours are designed to explain how things look to one in colour experience. In the case of accounting for the appearance of coloured objects under different illuminants, I have argued that construing the relevant appearance properties as apparent colours, which account for experienced variation in the hue, saturation, and lightness, was problematic.<sup>120</sup> In the current case, however, apparent colours may be precisely the kind of property we

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<sup>120</sup> That appearance is instead best explained by supposing that illumination and constant colour each make a distinctive contribution (see Ch. 2).

need. In a sense – the evidential sense – the red object looks the same to both subjects with respect to colour: it looks to be red, and they would judge it to be red, or even a specific shade of red. But in another sense, the proponent of the Appearance Properties view would say, the object looks different to the two subjects with respect to colour: the way the object looks to each of them, as characterised by perceived hue, saturation, and lightness, differs. The Same Colours view is thus at least in part vindicated, as long as we can argue that both subjects perceive the same constant colour. According to various defenders of appearance properties, one can in some sense perceive the constant colour of an object in virtue of perceiving the apparent colour that accounts for the way the object looks.<sup>121</sup>

We know, however, that even if an Appearance Properties account of colour-blindness was plausible, it would not be compatible with Minimalism. The account does not respect the Metaphysical Parsimony commitment because appearance properties are only introduced to account for the phenomenon of changing appearances. Furthermore, the appearance properties needed in the present case would have to be construed as perceiver- or experience-dependent properties, along the lines of Shoemaker's (2000) account. In our example, the object looks different to different subjects in the very same objective conditions of perception; and we have independent knowledge that the visual systems of the subjects differ in their sensitivity to certain hues; so any supposed relational appearance property that is perceived by one, but not the other subject, in those conditions would plausibly be in part determined by the subject's visual sensitivity. This gives us an even stronger reason why the resulting account violates Metaphysical Parsimony, as well as a reason to worry that the account does not respect Perceptual Objectivity.

The second answer to the question of what explains the difference in how things look to a colour-blind and a normal perceiver also appeals to a difference in what the two kinds of subject perceive, but aims at avoiding the commitment to appearance properties. In particular, it aims at avoiding the idea that the way things look to one in colour experience is explained by one's perception of properties distinct from, and to some extent independent of, the colours. This answer could appeal to accounts of colour perception put forward by

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<sup>121</sup> To be sure, the current proposal would still face the worry, discussed in Chapter 2, that the resulting view of colour experience is problematic. The suggestion is that, in the case of colour-blindness and perhaps more generally intersubjective variation due to subjective factors, it may be somewhat less implausible to accept this view of colour experience. On the current proposal, the Same Colours view would not be interpreted as a claim about what is phenomenologically present in one's experience – apparent colours would play this role, not colours.

Shoemaker (2006) and Kalderon (2008, 2011b).<sup>122</sup> Shoemaker and Kalderon argue that intersubjective differences in how colours look can be explained by adopting a certain view of colours themselves: colours have multiple qualitative aspects or characters, which they present in different conditions of perception, and to different perceivers. Call this the Qualitative Characters view. This view can be combined with the Same Colours view to provide an explanation of our case of changing appearances: a colour-blind and a normal subject may experience the same colour, but in virtue of their different visual sensitivities, they will be presented with different qualitative characters of it.

The Qualitative Characters view is motivated by a more general conception of perceptual experiences as *partial* (e.g. Hilbert 1987, Kalderon 2008, 2011b). Suppose, as per the Same Colours view, that a colour-blind subject can experience the same colour as a normal perceiver in certain conditions. The object looks different to them, indeed the object's colour looks different. This is only problematic, however, if one supposes that the colour is fully revealed to one in any single experience of it. But it is independently plausible that each perceptual encounter with our environment only provides us with a partial perspective on it. Just as there may be perceivable objects and properties that are not visually available to one due to the objective viewing conditions (e.g. lighting conditions), there may be perceivable objects and properties that are not visually available to one on account of one's visual sensitivity. In the case of colour-blindness, the idea would be that, if perception is partial, there may even be aspects of a property one perceives that are not manifested or available to one on a given occasion (Kalderon 2011b: 248-249, 256).

Is the Qualitative Characters view compatible with Minimalism? This depends, first of all, on what the nature of qualitative characters is. Shoemaker (2006) seems to think that qualitative characters are, just like his old appearance properties, partly dependent on perceivers, and in particular on the kind of visual system they have.<sup>123</sup> If so, then a perceiver's visual sensitivity would play the role of partly determining the nature of the qualitative characters they are presented with, in perceiving a certain colour in certain conditions.

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<sup>122</sup> Neither Shoemaker nor Kalderon explicitly refer to colour-blindness as an application of their views. However, colour-blindness may count as relevantly similar to a case that they do discuss, i.e. that of intersubjective differences in the location of unique hues.

<sup>123</sup> Shoemaker now defends a view of colour experience that appeals to qualitative characters in part to avoid the problematic consequence of his old Appearance Properties view that we perceive colours only in virtue of perceiving properties distinct from the colours (e.g. Shoemaker 2006: 474-476). He does not suggest, however, that he has changed his mind concerning the perceiver-dependent nature of the properties his account appeals to in order to explain how things look to one.



Shoemaker's version of Qualitative Characters is thus incompatible with Minimalism, as it would arguably violate the Perceptual Objectivity commitment: while the perceived colours may be objective and perceiver-independent, their perceived characters or aspects would not be.

Kalderon's version of Qualitative Characters, by contrast, avoids this commitment to perceiver-dependent entities that subjects would perceive. On his version, the role one's sensitivity plays in contributing to an explanation of how things of a certain colour look to one is not that of partly determining the nature of the colour, or of its qualitative character. Rather, one's sensitivity determines what is visually available to one in certain conditions of perception (cf. Kalderon 2011b: 242-245). The qualitative characters one perceives can thus be construed as perfectly objective and independent of perceivers.<sup>124</sup> In fact, according to Kalderon, we should allow that colours have multiple qualitative characters already to account for the fact that things of a certain colour look different in different lighting conditions. What differs between that case of changing appearances and the present one is just the nature of the factors affecting the visual availability of a certain qualitative character: objective illumination, in one case, and subjective sensitivity, in the other (2011b: 257). Qualitative characters so conceived are thus compatible with Minimalism as far as their metaphysical nature goes, as they allow us to fully respect both Perceptual Objectivity and Metaphysical Parsimony.

However, there is another issue we need to consider in order to establish whether a minimalist can appeal to qualitative characters. If qualitative characters were properties that we introduce just in order to account for certain cases of changing appearances, then appealing to them would constitute a violation of the Metaphysical Parsimony commitment.

On one conception, a qualitative character is a visible property that fully explains, by being perceived, the way in which the colour it is a qualitative character of looks to one in certain conditions. On this conception, even if qualitative characters were objective and perceiver-independent – as on Kalderon's view – they would play a very similar explanatory role as apparent colours. This is because they would be designed to 'match' every variation in how

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<sup>124</sup> This role sensitivity plays is similar to the 'selective' role it played in Kalderon's objectivist version of colour pluralism we discussed in Sec. 4.3 of this chapter. I am here considering a reading of Kalderon on which appealing to qualitative characters of colours is different from appealing to multiple families of colours. This reading seems to be supported by Kalderon's observation, in his (2011b), that there can be differences in phenomenology of colour experience – and so presumably differences in how things look to the subject – without a difference in the colour the subject is presented with – and so presumably without a difference in the colour they perceive (2011b: 246-247).

a certain colour looks to one, whether these variations are due to different objective conditions of perception or to features of one's visual system. Where the Appearance Properties view posited a distinct apparent colour, the Qualitative Characters view posits a distinct qualitative character.<sup>125</sup> Construing qualitative characters in this way would allow one to explain all differences in how a coloured object looks to different subjects in terms of differences in qualitative characters that the subjects perceive or are presented with. Shoemaker seems to have this goal, as he holds that 'there is a necessary correspondence between phenomenal characters of color experiences and qualitative characters of colors' (2006: 477).<sup>126</sup> Kalderon also intends to allow that the phenomenal character of one's experience is 'inherited' from the qualitative character of the colour that is manifest to one (2011b: 248-249).

So conceived, qualitative characters would be subject to some of the same worries that appearance properties are subject to. On the one hand, Kalderon himself points out that taking qualitative characters to be visible properties distinct from the colours – second-order properties of colours, one may think – would result in problematic consequences. One may worry – as we did with appearance properties – that qualitative characters and colours would be 'in competition' for playing the role of the properties that explain how things look to the subject and may 'screen each other off' (Kalderon 2011b: 257-258). On the other hand, appealing to qualitative characters may not be, after all, more metaphysically parsimonious than appealing to appearance properties. Granted, qualitative characters may be so closely connected to colours that they can be said to be 'part of [their] essential nature' (Shoemaker 2006: 475). But as long as they are properties distinct from the colours, appealing to them would involve a special metaphysical commitment. And if such qualitative characters are only be appealed to in order to explain certain cases of changing appearances, then the Qualitative Characters view would not respect Metaphysical Parsimony, and thus be incompatible with a minimalist approach.

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<sup>125</sup> As Shoemaker puts it: 'qualitative characters are closely related to what I have called appearance properties. If something with a certain color presents one of its qualitative characters, the thing will have the occurrent appearance property associated with that qualitative character. And if in certain circumstances an object is disposed to present one of the qualitative characters of its color to observers of certain sorts, the object will have the dispositional appearance property associated with that qualitative character' (2006: 476).

<sup>126</sup> Incidentally, both Shoemaker and Kalderon endorse the further claim that sameness in how a colour looks is explained by sameness of qualitative characters presented to one.

There may be, however, an alternative way of thinking about qualitative characters. Kalderon seems to suggest this when he says that qualitative characters are not properties of colours: they really are just ‘what the colour is like’ (2011b: 258). The manifestation of a colour, he argues, just is the manifestation of its qualitative character. Kalderon seems to be claiming that qualitative characters are not visible properties distinct from the colours.<sup>127</sup> If so, then one question we face is what qualitative characters are, instead. Another question is how, on the Qualitative Characters view, we can explain the difference in how a coloured object looks to different subjects in terms of a difference in what the subjects perceive. This explanation does not seem available if qualitative characters are not properties that subjects perceive, and properties distinct from the colour, for the Same Colours view supposes that in our case of changing appearances both subjects perceive the same colour.

In Section 4.4.3 I will discuss how a minimalist can account for the fact that a coloured object may look different to different perceivers without appealing to properties distinct from the colour. The account I will propose embraces many of Kalderon’s insights concerning colour and colour perception. However, it explores the idea that appealing to qualitative characters may not be necessary to account for our case of changing appearances.

#### 4.4.3 Same property, different looks

If qualitative characters are understood as visible properties distinct from the colours, then the Qualitative Characters view seems to be subject to some of the same worries as the Appearance Properties view. In particular, it seems to violate the Metaphysical Parsimony commitment, thus being unacceptable to a minimalist. The good news for the minimalist is that appealing to qualitative characters may not be necessary in order to account for the difference in how a coloured object looks to a colour-blind and to a normal perceiver. If our goal is to explain this difference in terms of a difference in what the two subjects perceive, then since on the Same Colours view the two subjects perceive the same colour, we need to find a further perceivable property or otherwise characterised entity to play this explanatory role. On the Qualitative Character view we considered in the previous section, moreover, each difference in how a certain coloured object looks is explained by a distinct qualitative

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<sup>127</sup> Kalderon here focuses on the claim that qualitative characters are not properties *of colours* and distinct from the colours, although he acknowledges that qualitative characters may be properties ‘in a thin sense’ (2011b: 257-258).

character that is presented to one. This view, then, is implicitly designed to respect an explanatory principle we are by now familiar with: the Ways→Properties principle. But we have seen that there are good reasons to question this principle. If our explanation of the way things look to the colour-blind does not have to comply with the demands set by the Ways→Properties principle, then we lose a reason to appeal to different qualitative characters that the colour-blind and the normal subject perceiving the same colour may be, respectively, presented with.

We can consider the possibility, then, that the case of changing appearances we need to explain does not give us other reasons to do so. This possibility seems especially compelling if we endorse a more general thesis about perceptual experience that Kalderon himself subscribes to: the partiality of perception. If perception only provides us with partial perspective on our environment, not every perceivable aspect of a scene, object, or even property will be revealed to one in a single encounter with it. But then it is unproblematic that a colour-blind and a normal perceiver may both count as genuinely perceiving the same colour, even though it looks different to them. So the Same Colours view is defeasible. The minimalist can then take this reasoning a step further. Since a colour looking different to different subjects does not undermine the claim that both subjects perceive that colour, we also do not need to explain this difference in look in terms of the perception of some further property distinct from the colour. If we are not concerned with respecting Ways→Properties, the partiality of perception may provide us with an alternative, negative explanatory principle: the existence of context- and perceiver-dependent variations in how things of a certain colour look does not require supposing that there is some property, or more generally entity, in the world to 'match' and explain each variation in how the object looks to one.

Suppose that there is no difference in the properties that a colour-blind and a normal subject perceive when looking at a coloured object. How can the minimalist explain the fact that the object looks different to them? They can argue that, given a certain conception of colour experience, both normal and anomalous, we can make sense of the idea that different subjects, on account of their different visual sensitivities, may have different cognitive and epistemic access to the same colours.

We can start by considering normal colour experience. Kalderon (2008, 2011b) and Broackes (2010a) both argue that colour perception is dynamic, and this is reflected in the epistemic role it plays with respect to colour attributions. As Kalderon (2008) argues, knowing which colour one is seeing generally requires experiencing the way the colour looks in different

conditions of perception. This is illustrated by the phenomenon of metamerism (Kalderon 2008: 939-940). For instance, a shirt may be indistinguishable from another under the fluorescent light of a shop – the two shirts are metameric pairs. In order to establish whether the shirts would really match in colour in different contexts, we may bring them close to a window, into natural daylight and against a neutral background; we may discover that they look different in colour. When we are interested in knowing which colour an object is or at least in becoming more confident about it, we will try to vary the conditions of illumination and possibly the surrounding colours. In light of the partiality of perception, this does not mean that, under the fluorescent lighting, we did not have a genuine perception of the colour of the shirts – it is not the case that we really see the colours of things only in natural daylight (Kalderon 2008: 940-941). Kalderon argues that the achievement of coming to know, in virtue of these different experiences, which colour one is seeing can only be explained if those different experiences are construed as presenting us with aspects of the world (*ibid.*). The suggestion that the minimalist can explore is that those experiences can play the role of both presenting us with the colour and allowing us to discover more, about that colour, by perceiving it, even if they are not experiences of different qualitative characters or otherwise construed properties distinct from the colour.

Supposing that the suggestion can be applied to the case of metamerism, can it be applied to that of colour-blindness, where we need to explain why different kinds of perceivers have different experiences – experiences where things look different to them – when perceiving the same colour? As you may have noticed, Kalderon's points about the behaviour of normal subjects in certain lighting conditions echo Broackes' points about the behaviour of colour-blind subjects who are trying to tell which colour an object is. Visually exploring the object, testing how it looks under different illuminants and against different backgrounds are behaviours that both kinds of perceivers adopt when they are interested in which colour an object is. The difference between colour-blind and normal subjects, then, one may think, is not in the properties they can perceive on a given occasion, but in the cognitive and epistemic access they have to those properties on account of their different sensitivities to hue. The colour-blind may need to examine objects of certain colours for longer and in a wider range of conditions in order to be confident about what colour the objects are. Similarly, there will be a wider range of lighting conditions in which it is not clear what colours things are – conditions analogous to seeing in dim light, under unfamiliar lights, or against strongly coloured backgrounds for a normal perceivers. Given the partiality of perception, all

these experiences offer the colour-blind subject a partial perspective on the colour, which they perceive in all these conditions.

The difference between metamerism and colour-blindness, then, may not be as deep as one might have thought. In fact, both objective factors – the illumination – and subjective factors – the subject’s visual sensitivity – are involved in explaining why two coloured objects may be indistinguishable to one in certain conditions, or be such that one is unsure about which colour they are. Things are always metamers relative to subjects with a certain kind of visual system, even if this kind is the most common one and thus considered the norm. In fact, recent evidence suggests that pairs of stimuli that may be indistinguishable or almost indistinguishable for normal perceivers are very easily distinguishable for some anomalous trichromats, to whom they presumably look quite different (e.g. Bosten *et al.* 2005). Likewise, the colour and intensity of the illumination is in both cases partly responsible for the fact that two objects can sometimes look different to one and sometimes the same.<sup>128</sup> What differs across the case of a normal perceiver presented with a metameric pair and that of the deuteranope perceiver presented with a red shade that they struggle to discriminate is just the extent and the kind of sensory exploration each perceiver will need in order to reach a better epistemic position about the object’s colour.

These considerations suggest that the colour-blind’s sensitivity thus plays a role similar to that played by the short-sighted subjects’ sensitivity in explaining why things sometimes look blurry to them. It affects what discriminations and recognitions one can make on the basis of what one perceives, even when it does not affect which properties one perceives.<sup>129</sup> Given this understanding of how visual exploration supports the colour-blind in their coming to know which colour they are seeing, one may wonder how we should think of the colour-

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<sup>128</sup> Kalderon agrees on the similarity between these two cases of discovering, by looking, what colour an object is (e.g. Kalderon 2011b: 248-249, 256). At least on a reading of his proposal, though, both cases are explained by appealing to different qualitative characters of the colour being presented to one.

<sup>129</sup> Brewer makes a suggestion along these lines in his (2017), when he says that, like short-sightedness, colour-blindness is a form of ‘degraded acquaintance’. However, his further claims about the way things look to the colour-blind are implausible given the evidence we have discussed so far. According to him, the colour-blind would be only in a position to notice very determinable similarities: a red object would look ‘red-or-green’ to them, because their visual system is only sensitive to ‘colour-like features shared by red and green things’, and so possibly ‘greyish’. While I am not sure how to interpret the claim that things look red-or-green to one (other than in the evidential sense that one is not sure whether they are red or green), I take it that Brewer’s suggestion is more in line with the Reduction view than with the Same Colours view.

blind's colour perception. In defending the Same Colours view, Broackes argued that a colour-blind subject can integrate visual information gained through visually exploring an object in various conditions, and thus 'come to see' the colours they initially could not discriminate (Sec. 4.4.1). An alternative suggestion is that the colour-blind subject who is visually exploring an object in order to discover which colour it is may be perceiving the object's colour throughout. If colour experience is dynamic, then perceiving a colour generally involves undergoing a range of experiences where the colour looks different ways to one. But if perception is partial, then the colour-blind may count as perceiving the colour through all those different experiences of it. What a colour-blind subject is reporting, when they say that the berries now look red or that the leaves now look partly red and partly green, is an epistemic achievement: their coming to know, or becoming more confident about, which colour they are seeing – even though they may have been seeing that colour throughout their visual exploration.

The minimalist seems to have the resources to account for our case of changing appearances compatibly with the Same Colours view. At this point, the question arises of how we are to think of the colours, within this dynamic model of colour perception and identification. In order for their account to be a genuine alternative to the ones considered in Sections 4.4.2, in particular, our conception of colours cannot be such as to end up appealing, after all, to either appearance properties or qualitative characters.

The conception of colour that the minimalist needs is one on which we can make sense of the idea that colours have qualitative structure or are qualitatively complex. This would allow them to explain why different perceptual encounters with a colour, due to objective and subjective factors, only provide one with a partial perspective on the colour, so that one may discover more about the colour thanks to multiple encounters with it. One conception along these lines is offered by Broackes (1992, 2010a). On his view, the colour of a surface is a complex property that we can characterise by 'the way it changes the light falling on it in process of reflecting it', i.e. by its spectral reflectance function. For instance, pure cadmium red pigment does not reflect much incident light when the colour of the light is in the range from blue to green to yellow, but reflects a high percentage of incident light when the light is orange or red; and this behaviour can be captured by a characteristic function from the type of incident light to the type of light the surface reflects (Broackes 2010a: 365-366). Colours thus have a complex qualitative structure and are only 'fully manifested' to one as one perceives them in a variety of lighting conditions – so that one can fully appreciate 'what it can do to a variety of kinds of light' (*ibid.*).

If colours are understood as ways surfaces change the light, then we can explain why sometimes visual exploration is necessary in order to come to know which colour one is seeing. For instance, I may take an object to be a white card; but I can only confirm this hypothesis if the object reacts in the expected ways, if, say, a shadow is cast on the card if I put my hand over it, or if the card looks somewhat orangey when put under an orange lamp; if the card keeps looking the same throughout these changes in illuminant, I would have to conclude that I am looking at some unusual glowing object (Broackes 2010a: 366). At the same time, though, construing colours along these lines does not imply that one cannot perceive the colour of a surface when one sees it at a glance, on a particular occasion; nor that a colour-blind subject cannot perceive the colour of a surface when they are unsure which colour it is.

Now, Broackes argues that, given this conception of colour, the colour-blind may be able to experience all of the manifestations of each colour and so all of its complex qualitative structure, just as a normal perceiver can do across a variety of viewing conditions (2010a: 365-367). One may be tempted to deny this, Broackes claims, if one characterised colours in terms of the surface's disposition to cause or elicit certain kinds of visual experiences in certain kinds of perceivers under certain illuminants. Broackes illustrates the point by focusing on a normal perceiver wearing sunglasses and looking at a white object. If surface colour is understood in terms of the surface's disposition to elicit certain kinds of experiences in certain kinds of perceivers or in terms of its 'pattern of appearances', the subject will count as perceiving the white colour because the way the object looks to them is one of the ways that it is disposed to look to them – one of the experiences the colour is disposed to elicit – even though this way of looking is a brownish or greyish way of looking. However, the subject with sunglasses will only be able to experience a subset of those 'appearances' or manifestations of the whiteness (Broackes 2010a: 366-367). A similar point, one may think, holds for views on which colours have appearance properties or qualitative characters characterised with reference to how colours look to subjects. The subject with sunglasses, that is, would only be able to experience a subset of the appearance properties or qualitative characters of the colour.

If, by contrast, we think of the colour as a power to affect the light in various ways, then we can say that the subject with sunglasses can experience the same range of manifestations of whiteness as a subject who is not wearing sunglasses. Both subjects may experience the same pattern of changes in their environment as the illumination hitting the white object changes, even if for one subject this experience would be mediated by the presence of the



sunglasses. By analogy, one may think, a colour-blind subject may be said to experience all of the ways in which an object of a certain colour can affect light, and so all of its qualitative aspects. Broackes goes so far as to suggest that colour-blind and normal perceivers may even enjoy experiences with the very same phenomenology – as he puts it, a protanope may enjoy the ‘sensation of redness’ (2010a: 367).<sup>130</sup>

Broackes’ claims seem at odds with the variety of evidence showing that some coloured objects look different to normal and colour-blind subjects – dichromats and anomalous trichromats alike. We do not need to follow Broackes this far, though, in order to vindicate the idea that the colour-blind experience the same colours as normal perceivers. Given the partiality of perception, there is no single way the colour looks, no single manifestation, or even special subset of manifestations, of the colour that counts as the way it looks, or the way it should look. So there is no way of looking or manifestation of a colour that one needs to experience or be presented with in order for one to count as perceiving the colour. As a result, we can allow not only that the colour-blind perceive the same colours as normal perceivers even though some of those colours may look different to them, but also that, compatibly with this, the colour-blind do not fully appreciate the complex qualitative structure of certain colours or the full range of some colours’ manifestations.

To be sure, we do sometimes talk of the way red things look full stop. For instance, we generally suppose that our interlocutor knows what we mean when we talk about the way a red rose looks. This does not mean that the way the rose looks in different conditions and to different perceivers are not ways that its red colour looks, and so occasions for perceiving its colour. It may be that we consider some ways a certain colour looks, some manifestations of the colour’s complexity, to be paradigmatic. We might think, for instance, that the way a red rose looks in natural daylight is paradigmatic in virtue of being more conducive to correct evidential reports about the colour of the rose and colour attributions. Given this, we can make sense of the idea that a colour-blind subject is somehow deficient – rather than merely different. Because of their visual sensitivity, the colour-blind may not have access to those paradigmatic ways red objects look, even though they perceive the red colour, and will thus

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<sup>130</sup> Broackes’ idea is that, in the case of a protanope subject, this ‘sensation of redness’ – by which he presumably means the kind of phenomenology normal perceivers have when seeing something red – may be grounded in a range of experiences. A Broackes puts it ‘the idea that there is an identifiable quale of (say) white, or of red<sup>27</sup>, may make little sense, any more than the notion of a quale of say, shininess. Of course one can experience the shininess of something, but that experience comes from having a range or pattern of experiences, not from having just one’ (2010a: 367).

sometimes be at a disadvantage when it comes to colour identification with normal perceivers – at least by the standards of our community.

The colour-blind's limited access to the complex qualitative nature of some colours may also explain the fact that they are sometimes insensitive to certain visual similarities and differences among colours. While this may be a disadvantage in some everyday circumstances – given that the artificial world, at least, is designed for the non-colour-blind – it may be an advantage in others. Some studies suggest, in fact, that some colour-blind subjects exhibit superior discrimination performance for certain stimuli: anomalous trichromats easily discriminate differences among certain shades that for normal perceivers are almost indistinguishable, and may be able to spot camouflage (e.g. Bosten *et al.* 2005). The colour-blind, then, may be in an analogous position as the subject who always wears sunglasses. It seems implausible to claim that someone wearing sunglasses is not perceiving the same colours as someone who does not wear them: even though things always look different to them, they are generally visually sensitive to the same changes in the environment and often have the same discrimination behaviour as those who do not wear sunglasses. Sometimes, though, if the light is dim or the colours they perceive are not very different in lightness, they may fail to discriminate certain hues. This does not mean that the colour-blind, just like the wearer of sunglasses, are always epistemically worse off. Once we recognise that even normal trichromatic perception is partial, it would be unsurprising if there were some manifestations of a colour that are not accessible or at least not easily accessible to a normal perceiver but are easily accessible to a colour-blind perceiver.

Given this conception of colour and colour experience, the minimalist has the resources to account for the way things look to the colour-blind, both in cases where the Same Colours view is most plausible, and in cases, if there are any, where the Reduction view is most plausible. Because Minimalism is an approach, rather than a determinate view, the minimalist can rely on both accounts of colour-blindness, depending on the specific case.

## CHAPTER 5: The case of smell

### 5.1 Smell and objectivity

In the preceding chapters, we have seen that a minimalist approach to the phenomenon of changing appearances is promising in a variety of cases. We can account for the way things look to one in certain conditions compatibly with all three core commitments that Minimalism and the Simple View share: Perceptual Objectivity, No Error Theories, and Metaphysical Parsimony. One may wonder now whether the minimalist approach can be applied beyond the visual case. Arguably, it would be desirable if the minimalist was also able to account for the ways things sound, taste, smell, feel, and so on. Because of its three core commitments, Minimalism is compatible with a view of perceptual experience that is, one may argue, independently attractive: a view on which perceptual experience puts us in touch with objective entities that do not essentially depend on us and our experiences. If one found this view to be plausible not just for vision, but also for some or all of the other senses, then one would need, or at least benefit from, a minimalist account of the way things seem to us in those other sensory modalities.

In this chapter, I explore how Minimalism can be applied beyond the visual domain by focusing on olfaction as a case study. I choose to focus on olfaction for three main reasons. First, olfactory perception has often been regarded as fundamentally different from vision: the two senses may differ in structure, function, and phenomenology (e.g. Lycan 2000, Batty 2010a, 2011, Barwich 2014, 2019). A key question for the minimalist is then whether olfactory experience can be said to present us with objective and perceiver-independent properties – in accordance with the Perceptual Objectivity commitment. Second, some cases of changing appearances in the olfactory domain present unique challenges and may be significantly more widespread than in the visual domain, thus providing the minimalist with an opportunity to further develop their account. As we will see, in particular, subjects' past experiences seem to play an important role in determining how things smell to them. Third, philosophers have only recently started to investigate the nature of olfactory perception, smells, and olfactory properties (see e.g. Batty 2010b). The question of why things smell to one as they do in certain conditions, in particular, is largely unexplored. It is thus an opportune time for the minimalist to make a positive contribution to our understanding of

this sensory modality and perceptual experience in general, thus demonstrating that Minimalism is not merely a negative and defensive position.

This chapter will thus address two questions. The first question is whether it is plausible to adopt a minimalist approach to theorising about the way things smell to one. In the first part of this chapter, I discuss some aspects of our discourse about smells and of the phenomenology of olfactory experience to motivate the thesis that smells can be construed as objective and independent of perceivers. I then outline how a minimalist account of the way things smell to one would look like, given some considerations on the ontology of smells and the structure of olfactory appearances. The second question is whether this minimalist approach can account for some challenging cases of changing appearances in the olfactory modality. The second part of the chapter articulates the challenges raised by two cases, and explores how the minimalist can respond to them.

If Minimalism can successfully be applied in the olfactory domain, this does not guarantee that it can then be extended to all other sensory modalities. However, by investigating how various aspects of the minimalist approach to visual appearances can be adapted to suit the specificity of a sensory modality different from vision, we will learn some lessons that minimalist philosophers can apply when approaching other modalities, as well as potentially cross-modal and multi-modal appearances.

### 5.1.1 Talking about smells

When theorising about visual appearances, we adopted as our starting point the idea that visual experience presents us with objective and perceiver-independent properties – the Perceptual Objectivity commitment. We assumed that visible properties such as shapes, colours, sizes, textures were good examples of minimalist properties we perceive. In light of the phenomenon of changing appearances, we could then ask whether appealing to our perception of those properties was sufficient to explain how things look to us in certain conditions, and considered what other explanatory factors we may need to appeal to. A minimalist approach to perceptual appearances – an approach that aims at respecting Perceptual Objectivity – had some initial plausibility, and it was only challenged by the phenomenon of changing appearances.

Is Perceptual Objectivity also a plausible starting point in the case of olfactory appearances? This depends on whether we have reasons to take smells and their properties to be objective

and perceiver-independent entities that we can perceive. If so, then they can play a role in a minimalist account of the ways things smell to us, just like minimalist visible properties such as colours and shapes contribute to explaining the ways things look to us.<sup>131</sup> Reflection on the ways in which we ordinarily talk about smell supports a positive answer to our question. Even if many of us underestimate the importance of smell in our lives, we often think and talk about the ways in which the things around us smell. Sometimes, we talk generically about the way certain kinds of things smell: we say that toast smells slightly burnt, that gasoline smells pungent, that our favourite perfume smells of lavender. But we can also talk about particular smells: we say, for instance, that our coffee today smells exceptionally strong, and we wonder where that pleasant smell of cake comes from. By looking at how we use statements about the ways things smell, we can notice features that our discourse about olfactory appearances has in common with our discourse about visual appearances.

First, we take olfactory appearances to play an important epistemological role. We often rely on the way things smell to make judgements about the way things are. Unless we are concerned with tasks where appearance is all that matters, such as deciding what perfume to wear or whether a certain food would pair well with a certain wine, our interest in the smells of things is primarily an interest in the things giving off those smells. We take familiar smells to inform us about objects and events in our surroundings: for instance, we take a burnt smell in the kitchen to indicate that the toast is burning. When we encounter an unfamiliar smell, especially if it strikes us as unpleasant, we quickly try to find out where it comes from and what its source is, to establish whether the smell is, so to speak, an alarm signal that we should take seriously.

Second, our expectations suggest that we take olfactory appearances to exhibit a certain degree of intersubjectivity. We expect others to react to smells like we do, and to agree with our judgements on the basis on the way things smell to them. If I think that the toast is burning, I will try and convince my flatmate that they need to take it out by telling them that it smells burnt. I expect them to agree with me on what smell is present in the room, and I expect them to take that smell as good evidence for my claim. One natural explanation of these expectations is that, just as in the visual case, we assume that our interlocutors are familiar with certain kinds of smells thanks to past encounters with them and that they have

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<sup>131</sup> As we have seen in the course of the last three chapters, appealing to the minimalist properties one perceives is not sufficient to account for how things look to one when one perceives those properties: other explanatory factors are needed. However, on the minimalist approach, one's perception of those minimalist properties always plays a fundamental role in the explanation.

knowledge of the typical sources of these smells. This in turn shows, one may think, that we normally take our interlocutors to be able to perceive the very same smells we do.

The way in which we handle disagreements about smells also supports this claim. If my flatmate disagrees that the toast is burning, I would normally be surprised, and try to establish what the source of this disagreement is. First, I will sniff again, perhaps getting closer to the toaster, to make sure that the smell I reported is really there. Then, I will invite my flatmate to smell again, as perhaps they were distracted and did not notice the smell. If these attempts fail and my flatmate still insists that there is no burnt smell, I might think that they have a bad cold, and are thus unable to perceive the smell that, I assume, is there.

If the above examples are representative of how we ordinarily think and talk about smells and the way things smell, they suggest that we take smells to be intersubjectively accessible entities that all of us can perceive, given the right conditions. A view on which smells are objective and independent of perceivers and their experiences, then, would provide a simple explanation of the above patterns of discourse. This is a reason for preferring this view over a subjectivist view on which olfactory appearances are sensations or mere modifications of our consciousness (e.g. Perkins 1983).

A subjectivist view is not incompatible with the existence of the expectations and communicative practices we observed above. The fact that we usually agree on what smells are present may be explained by the fact that our olfactory sensations are, by and large, very similar to those of our interlocutors, and that we have learned to associate sensations of certain kinds with the presence of certain properties in our environment. We usually get things right, the subjectivist could hold, by relying on these sensations, because things with certain properties tend to cause those sensations when we sniff them – for instance, we know that a sensation with a certain phenomenal quality is a reliable indicator of the presence of roses. However, one could argue that, given the way in which we talk about smells, we do not seem to take them to be sensations or properties of our experience. Minimally, if we took smells to be mere sensations, we would more easily accept different reports about what smells are there, and would not try to convince each other – especially not by inviting each other to pay more attention to the external environment.

One may argue that while smells are sensations, they seem to us to be objective. As many philosophers argue, smells seem to us to be present in our environment and independent of us (e.g. Batty 2009, 2011, Young 2016, Richardson 2018). But then one would be adopting a projectivist view of smells – as Perkins ends up doing. As we have seen in Chapter 1, however,

projectivism is committed to an error theory of our perceptual experiences, or at least of the judgements we form on their basis. As I did in the case of visual appearance, here too I will assume that, unless we have good reasons to reject all alternatives, we should avoid committing to an error theory.

Conceiving of smells as objective and perceiver-independent entities is, then, *prima facie* plausible in light of the evidence concerning the way we talk about smells.<sup>132</sup> It is then plausible to aim, in our theorising about smells and the way things smell to us, at respecting two of the core commitments that the minimalist tried to respect in the case of visual appearances: Perceptual Objectivity and No Error Theories.

### 5.1.2 Smells and smell sources

While there are important similarities between visual and olfactory appearances, there are also some differences that the minimalist needs to take into account when theorising about the way things smell. These differences concern the ontological status of the entities that we perceive in each sensory modality.

In the case of vision, our reporting that the things in our environment look certain ways – that lemons look yellow, that a shirt looks silky, that the glasses look oval – reflects something about how those very things look to us in visual experience. Lemons, shirts, glasses – ordinary objects we see – look those ways. In the case of olfaction, we also make claims about the ways in which the objects in our environment smell: we say that the piece of toast smells burnt, that gasoline smells pungent, that our favourite perfume smells of lavender. However, it is not obvious that our olfactory experience presents us with those very things that we judge to be smelly – a piece of toast, gasoline, a perfume. Once we grant that in olfactory experience we are aware of something objective, as opposed to being aware

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<sup>132</sup> What is more, by supposing that smells really are entities in the external environment, as opposed to sensations, we can give a better or at least simpler explanation of certain facts about perceptual experience. Consider for instance our ability to keep track of a smell across time and space, and to reliably locate its source. Upon entering your house after a holiday, you have an experience as of a rotten smell; you will be able to quickly realise that it comes from the kitchen, and, moving around the cupboards and sniffing, locate a potato forgotten under the fridge as the source of the smell. If smells were sensations or properties of our experiences, we could explain our ability and explorative behaviour by suggesting that we have learnt how to rely on our sensations and their changes in intensity and quality as a reliable indication of the presence of certain things in our environment, such as rotten potatoes, and, upon undergoing that sensation, we can now take it as a premise for an inference to the presence of those things. A simpler explanation, though, is that we perceive the smell which in fact comes from the kitchen, and in particular from under the fridge.

of our own experiences or sensations, there are various options concerning the ontology of smells.

First, one may argue that olfaction is analogous to vision in this respect. Just like shapes and colours are properties of the ordinary objects we see, smells are properties of the ordinary objects we smell. So just like the shapes and colours we perceive contribute to explaining how the things that have them look, the smells we perceive contribute to explaining how the things that have them smell. On this view, when a piece of toast smells burnt to one, this may be because one is perceiving the piece of toast and the property of smelling burnt that it has. One worry for this option is that our experiences of visible objects differ from our experiences of smelly objects. Sometimes we perceive a smell without being aware of the ordinary object that would be the bearer of the smell; when we perceive an object's colour, by contrast, we are aware of the object as the bearer of the colour. For instance, sometimes we perceive a smell without being able to locate its source or recognise it, such as when we encounter an unfamiliar smell upon entering a room. The source of the smell, it seems, is not something we are aware of, at least in this case.

Many philosophers think that this difference in how we experience smells and visible properties tells us something about the nature of smells.<sup>133</sup> Smells, they argue, have different persistence in time and different extension in space than the ordinary objects that they seem to come from. The smell of burnt toast, for instance, may linger in the kitchen after the toast has been eaten. The smell of my toast is there, even though the slice of bread and its burnt edges are not there anymore; the space this smell occupies, moreover, is not limited to the small space occupied by the slice – the smell pervades the entire kitchen. But if smells and their sources are distinct, we have a problem for the view that olfactory experience presents us with ordinary objects (Batty 2010c). If, in sniffing the burnt smell, I was experiencing the slice of toast, then since there is no longer any toast around to be perceived, my experience would be a hallucination. This is clearly an unacceptable verdict. Considering how often we experience smells when their sources are not in the vicinity or do not exist anymore, the verdict would generalise to many olfactory experiences that we treat as good examples of well-functioning olfactory capacities and which allow us to gain knowledge about our environment. We should then conclude that olfactory experience does not make us aware

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<sup>133</sup> See Batty (2009, 2010b, 2010c, 2011), Lycan (2000), Richardson (2013), Mizrahi (2014), Young (2016).



of ordinary objects, or at most it does so by making us aware of their smells, however exactly these are construed.<sup>134</sup>

The second option is that olfactory experience presents us with particular smells, but these particulars are not ordinary objects. Variations of this option that have been defended in the literature disagree on how the particular smells are individuated. Particular smells have been taken to be clouds of volatile molecules (e.g. Roberts 2015), molecular structures diffused in an odour plume (Young 2016), or parcels of qualitative stuff, individuated by appealing to irreducibly qualitative olfactory properties (Richardson 2018). All versions of this option are motivated by considerations about the phenomenology of olfactory experience.<sup>135</sup> Smells, it is argued, seem to be at a certain distance from us, to be coming from a certain direction, and to have certain, perhaps vague, boundaries. The burnt smell seems closer and closer to us as we search around the kitchen for its source, it seems to come from the toaster, it pervades the kitchen but is not present in the bathroom. Moreover, it is observed, we can keep track of a smell as it moves through space, as we do when we follow a warm slice of apple cake being brought to our table at a cafe. And we can keep track of a smell through time: when the perfume we sprayed on our wrist in the morning gradually fades away, it seems as if the very same smell on our wrist is changing in intensity.

A third option is that olfactory experience presents us with stuffs and their properties (Mizrahi 2014). Roughly, stuffs are substances with a certain chemical nature, such as coffee, perfume, the stuff that toast is made of. On this view, then, we perceive the stuffs that the ordinary objects that we take to be sources of smells are made of. Because stuffs do not have boundaries and precise locations, it is not surprising that olfactory experience is not very precise as far as spatial properties go. At the same time, our ability to track smells through time and space, even if we cannot track the ordinary objects that are sources of smells, is

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<sup>134</sup> Accepting this conclusion does not mean denying that, thanks to our olfactory experiences, we can gain knowledge of ordinary objects and events, such as knowledge that the toast is burning. However, that knowledge would not be gained simply in virtue of undergoing those experiences. Background knowledge of what kinds of objects usually give off certain kinds of smells (e.g. that burnt breads, or burnt things, smell like that) as well as experiences in other sensory modalities (e.g. seeing the 'on' light of the toaster, or the darkened piece of bread) are necessary (see e.g. Richardson 2018).

<sup>135</sup> Some authors arguing that olfactory experiences seem to present us with ordinary objects are concerned with how things seem in experience, how they are 'represented' to be by our experiences, or whether our olfactory system 'treats' certain stimuli as objects – see e.g. Millar (2017). This is a different project than the one we are concerned with in this chapter: here we are trying to understand what kinds of entities we are in fact aware of in olfactory experience.

explained by the fact that we track the stuffs those sources are made of, which can move in the air, persist in the absence of the source, and undergo chemical changes.

A fourth option is that olfactory experience only presents us with properties, and not with particulars (Batty 2009, 2010c, 2011).<sup>136</sup> These could be properties of clouds of volatile molecules but also properties of ordinary objects, stuffs, or parcels of stuff. This view is motivated by reflection on certain deficiencies characteristic of olfactory experience. First, olfactory experience lacks precise spatial information: it does not present smells at particular locations; rather, they seem to simply pervade the space around us. Relatedly, olfactory experience often does not allow us to discriminate different particular smells if they are qualitatively identical, it does not make us aware of a precise number of particular smells, and cannot distinguish between scenes in which the same properties are presented but in different arrangements. When sniffing a tray of freshly baked cookies, for instance, we will not be aware of the individual smells given off by the cookie, but rather of a smell coming from the whole tray. This view can also account for the observations that were used to motivate the view that smells are particulars. If smells are properties, we can explain the fact that they seem to be at a certain distance from us or be at a certain location either in terms of the indeterminate location of certain regions of space, or in terms of our ability to infer where the likely source of a smell is on the basis of experiencing changes in the intensity of the smell.

The defender of second option – that olfactory experience presents us with particular smells – may object that olfactory experience often presents us with discrete smelly units – an intense coffee smell and a weak apple cake smell, for instance –, as opposed to an undifferentiated mixture of qualities – a mixture of coffee-ness and apple cake-ness. Both the third and second option, though, are compatible with this claim. However, they would plausibly explain it by appealing to the role that olfactory properties play. If one thinks that smells are stuffs with properties, one could appeal to the fact that different stuffs have different olfactory properties – the coffee-ness and the apple cake-ness –, and argue that this explains why we experience them as different. If one thinks that smells are just properties, one could argue that, thanks to our past experience with certain olfactory

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<sup>136</sup> Here I am interpreting Batty's claims as claims about what smells are. Strictly speaking, she is concerned with how olfactory experience represents things to be: she takes them to have an existentially quantified content, attributing olfactory properties (which for her are properties of molecular clouds) to 'something in the air' at an indeterminate location.

properties in certain combinations, we treat olfactory properties that we do not usually encounter together as distinct.

Another consideration cited in favor of treating smells as objects is that it is plausible that distinct smells can smell the same or, to put it more clearly, can be qualitatively identical. For instance, the smell given off by my slice of apple cake and the smell given off by your slice of the same cake can have the very same character, and be olfactorily indiscriminable, in spite of being distinct smells. This, however, is not a decisive consideration. If we are not presupposing that smells are particulars given off by sources, we will also find evidence for the opposite conclusion by looking at how ordinary speakers talk about smells. In the very same scenario, in fact, it is also natural to say that the two slices of cake have the same smell, or give off the same smell. As Batty highlights (2010b), ordinary language is not a good guide to the ontology of smells. Sometimes we talk of smells as properties that things – pieces of toast, people, rooms, the air – have, sometimes we talk of them as particulars – that smell over there, the smell given off by this person. Moreover, sometimes we talk of things as being smelly or smelling certain ways – we say, for instance, that this orange smells fresh, or that the milk has a bad smell – and sometimes we talk of smells themselves, independently of anything that they make come from or that they may belong to – for instance, we say that there is a bad smell in here, or that this is a pungent smell.

Where does our brief survey of the available options leave us? Although we have good reasons to think that smells are at least sometimes distinct from their sources, I do not think that we currently have decisive reasons to favor one view of the ontology of smells over another. Minimalism is an approach, and different views may be compatible with this approach. What is crucial is that our conception of smells allows us to respect the thesis that olfactory experience presents us with entities that are objective and not essentially dependent on individual perceivers, in line with the Perceptual Objectivity commitment.

### 5.1.3 Olfactory properties

All the views of the ontology of smells we considered have one commitment in common: there are olfactory properties. The fact that smells have the character they do – their burnt-ness, coffee-ness, pungency – can naturally be explained in terms of the olfactory properties those smells have. As my interest in this thesis focuses on explaining the ways things appear to us – in this case, the way things smell to us – my focus will be on the nature of olfactory

properties. In what follows, I will thus assume that olfactory experience presents us with olfactory properties, whether it also presents us with their bearers and whatever these properties belong to.<sup>137</sup> The question then arises: how are we to think of olfactory properties on a minimalist approach? While I will not provide a fully-developed theory of olfactory properties here, there are a few points that the minimalist needs to consider when theorizing about smells.

For olfactory properties to be minimalist, they need to be objective and independent of perceivers and their experiences, in line with the Perceptual Objectivity commitment. Among the options mentioned in the literature, minimalism is incompatible with projectivist views on which olfactory properties are properties of our experience or properties that nothing instantiates (Perkins 1983, Mendelovici 2018); views on which these properties are appearance properties – such as the property of causing, or being disposed to cause, certain kinds of experiences in certain perceivers (Shoemaker 2006); and views on which these properties are relations to perceivers, their olfactory system, or some of their psychological properties – a view that is often attributed to Locke (Essay II, viii, §13).

A minimalist conception of olfactory properties may be attributed to Reid, who takes smells to be ‘some power, quality, or virtue, in the rose [for example], or in the effluvia proceeding from it, which hath a permanent existence, independent of the mind, and which, by the constitution of our nature, produces the sensation in us’ (Inquiry, 43). In the more recent literature, views that respect Perceptual Objectivity take olfactory properties to be chemical properties (e.g. Young 2016), properties that supervene on chemical properties (e.g. Smith 2008), or irreducibly qualitative but nonetheless perceiver-independent properties (e.g. Richardson 2018).<sup>138</sup>

When, in Section 5.1.2, we have been introduced to the notion of an olfactory property, the examples we have been given included coffee-ness, smell of orange, smell like burnt toast, apple cake smell. All these characterisations make reference to ordinary objects and substances – coffee, oranges, toast, apple cake. This is, in fact, how we normally characterise smells. It is useful to characterise smells in this way because, at least in our environment,

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<sup>137</sup> For simplicity, I will talk of smells as having a certain character or certain properties, but this assumption will not play any crucial role. In fact, compatibly with this commitment, we may not even have to choose: we could be pluralist and claim that the olfactory properties experience presents us with are sometimes properties of ordinary objects, sometimes of the air, sometimes of stuffs.

<sup>138</sup> In this thesis, I will not argue for one objectivist view in particular. For a critical discussion of some options, see Stevenson-Wilson (2006), Richardson (2018), Young (2019).

smells with that character – coffee-ness, a citrusy character, a burnt quality – are usually produced by coffee, oranges, and over-toasted bread. That there is this reliable association between smells with that character and certain kinds of ordinary objects and substances is what allows us to rely on the way things smell in order to know about how things are around us: what kind of ordinary objects and substances there are, whether they are nearby or far away, whether they are edible, dangerous, and so on.

In light of these examples, one may be tempted to think that smells have the character they have because they are given off by certain kinds of things. After all, if we ask someone sniffing an orange why the smell that they are experiencing is like that, we can expect an answer to the effect that that smell has that character because it is the smell of an orange. However, it is not in general true that smells have the character or quality they do because of what kind of source they have. For instance, smells do not in general have the character they do because of the natural and artificial kind properties of their sources. The character of a smell given off by an orange, for instance, does not depend on the fact that its source is an orange, or even a fruit. Things that are not oranges or do not have orange juice, pulp, or zest in them can give off smells with the very same character as those given off by oranges. For instance, a cake with orange zest in it and a cake with artificial orange flavouring in it could give off smells with the same fresh, sweet, and citrusy character – as we sometimes put it, the two cakes may give off the very same smell.

Whichever objectivist view of olfactory properties the minimalist adopts, then, it is plausible that olfactory properties are distinct from, and independent of, the properties of the ordinary objects that are sources of smells.<sup>139</sup> This is so, that is, if olfactory properties are meant to account for the qualitative identities, similarities, and differences among smells: the cake containing orange zest and the one with artificial flavouring may give off smells that share all their olfactory properties. The fact that we characterize the way things smell with reference to kinds of sources of smells – coffee, oranges, apple cake – is an example of an aspect in which smells differ from looks. For in the visual case, we can often characterise the way something appears by naming its visible properties directly – red, square, rough, and so on. This point about the relation between olfactory properties and kinds of ordinary objects

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<sup>139</sup> Unless, of course, one thinks that smells just are properties of ordinary objects. In which case, the claim made here would be that smells are distinct from, and independent of, for instance, the natural and artificial kind properties of ordinary objects with those smells. We will mention other examples of properties of ordinary objects that we appeal to in order to describe smells in Sec. 5.3 below.

will be important when discussing the minimalist response to the challenge raised in the second part of this chapter.

An example of another difference between olfactory properties and visible properties concerns the role they play in contributing to the way things smell. If olfactory properties account for the qualitative identities, similarities and differences among smells, one may think that these properties are very fine-grained. One may think, for instance, that there is an olfactory property corresponding to each type of molecule that the smell or its source contains, or more precisely to each type of molecule with a distinctive and discriminable smell. This conception of olfactory properties is inspired by the ‘stimulus-response’ model of olfactory perception, who used to be the traditional model in empirical research on olfaction.<sup>140</sup> On this model, olfactory experience is analytic: it ‘analyses’ the smelly mixtures we encounter in our everyday life into their components. When we perceive the smell given off by a cup of coffee, for instance, we perceive each of the olfactory properties associated with the odoriferous molecule-types present in the coffee or in the steam emanating from it.

The stimulus-response model has been criticised by several empirical scientists and philosophers.<sup>141</sup> This is because its predictions seem unacceptable. Consider that most known molecules have discriminable and unique smells (e.g. Wise *et al.* 2000) and, according to a recent estimate, we can olfactorily discriminate more than one trillion different qualities (Bushdid *et al.* 2014). In the case of coffee, it is estimated that it contains around a thousand volatile compounds. Now, only around 40 of these compounds may actually contribute to the smell of coffee, because many are in concentrations that are too low for us to detect. Even supposing that the olfactory appearance of our cup of coffee is composed by only 40 different olfactory properties, we arguably reach a puzzling result. For our olfactory experience of that smell, even in the best conditions of perception, does not present us with 40 or even 20 different olfactory properties. This suggests, critics of the model argue, that the function of our olfactory system is not to detect such fine-grained properties, corresponding to each molecule-type.

According to an alternative model of olfactory perception, the ‘object recognition’ model, our olfactory system relies on our past encounters with smells with a certain character or

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<sup>140</sup> On this model, each feature of our olfactory experiences represents a chemical property of the stimulus. I here abstract from this theoretical framework.

<sup>141</sup> For discussion, see Stevenson-Wilson (2006), Batty (2010b), Richardson (2018).

quality to discriminate familiar patterns of molecules against a background, which are experienced as unitary percepts (e.g. Stevenson-Wilson 2006). For instance, upon entering the kitchen in the morning, one encounters the molecules of the smell given off by the piece of toast, those of the smell given off by the coffee, those of the smell given off by the bin – each of these smells comprising many different kinds of molecules. What one’s experience presents one with, however, is not a confused array of distinct qualities, each for any of the molecules that fill the air in one’s kitchen, but the smell of toast, the smell of coffee, and the smell of the bin. This model conceives of olfaction as synthetic, rather than analytic. Mixtures of various molecular compounds are experienced as having a certain unified olfactory quality as opposed to a collection of olfactory qualities, and we struggle to tell apart more than a few components of mixtures, sometimes even when we are familiar with them (e.g. Jinks-Laing 1999, Weiss *et al.* 2012).<sup>142</sup> This is true in spite of the fact that those components usually have distinctive smells of their own, when presented in isolation. If one is convinced by the object-recognition model of olfactory perception, one may think that we should take these unified qualities to be the olfactory properties of smells.

It is not obvious, though, that we need to choose between these two ways of individuating olfactory properties. We have evidence that we can, at least sometimes, perceive smells analytically, as claimed by the stimulus-response model. So it is plausible that there are olfactory properties individuated with reference to types of odoriferous molecules. However, this proposal does not capture all of the olfactory properties that we need if we want to account for the qualitative identities, similarities, and differences among smells. In particular, the way a mixture of different molecular compounds smells cannot be characterised by the sum of the smells of the components, as individuated by molecule-types. The character of the smell given off by a cup of coffee is not experienced as a composite of the all the olfactory properties corresponding to the odoriferous molecules in the coffee, but as a unified coffee-y character. We thus cannot fully characterise the way something smells by listing its fine-grained olfactory properties, in analogy with the way in which we can characterise the visual appearance of an object by listing its determinate colour, shape, size, and so on.

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<sup>142</sup> Sometimes the synthetic nature of olfaction is appealed to in the context of discussing the difficulties researchers have found when trying to establish a correspondence between chemical structure of odorants and olfactory qualities. But even if one is not concerned with finding that correspondence or providing a reductive analysis of olfactory qualities, the problem of accounting for the qualities of complex mixtures remains.

Not only can we smell both synthetically and analytically, but it seems that we can ‘move’ from one mode of perceiving to the other, depending on which aspects of a smell we attend to. For instance, if one is comparing different kinds of coffee, one may notice that one kind has a chocolate note that others lack, that most of them have a burnt note, and some an acidic note. And if one regularly smells coffee, and is able to compare different varieties, one may be able to start noticing more and more fine-grained qualities of their smell. However, one can easily ‘switch’ to a more synthetic mode of perceiving and experience the distinctive overall smell of a certain kind of coffee – a recognisably coffee-y smell. Moreover, we can sometimes recognise how olfactory qualities that are themselves complex, such as the smell of coffee, combine to give rise to even more complex smells. Consider for instance smelling a coffee and walnut cake; since some of the ingredients in it have familiar smells, one will likely be able to recognise that some quality of the smell of the cake is a coffee quality and another component of the overall smell is a nutty quality. This possibility of switching between different modes of perceiving to appreciate different olfactory properties of a smell may be a distinctive feature of olfaction as compared to vision.<sup>143</sup>

## 5.2 Challenges to Minimalism about smells

In the first part of this chapter, we have seen that a view on which olfactory experience presents us with objective and perceiver-independent entities is plausible in light of the way in which we talk about smells and the phenomenology of olfactory experiences. The entities olfactory experience presents us with include smells – whatever exactly their ontological status is – and olfactory properties, which account for the qualitative identities, similarities, and differences among smells. Within this framework, olfactory properties can be conceived, for instance, as chemical properties, properties supervenient on chemical properties, or as objective, but irreducibly qualitative properties. However exactly we construe olfactory properties, we have some initial reasons to take them to be objective and independent of perceivers and their experiences. If so, then the first commitment of Minimalism – Perceptual Objectivity – holds in the olfactory domain.

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<sup>143</sup> It is not obvious what the analogue of this would be for vision. It seems implausible, for instance, that we can move from visually experiencing an orange shade as a unified quality to visually experiencing it as a mixture of red and yellow component colours.



The question then arises: can we account for the way things smell to subjects compatibly with Perceptual Objectivity? I address this question by discussing two cases of changing appearances where things smell different to different subjects, or to the same subject in different conditions. These cases may be taken to motivate views on which olfactory properties are partly dependent on perceivers or their experiences, thus threatening Minimalism.

### 5.2.1 Changes in how things smell

In our everyday linguistic exchanges concerning the way things smell, we can often assume that our interlocutor knows, thanks to their current or past experience, what smell we are talking about. In the first part of the chapter, we have argued that we take our interlocutors to be perceiving the same smells as we do, and to be familiar with certain kinds of smells, which we refer to by citing the typical sources of those smells. In doing so, we usually assume that things of a certain kind have recognisable and stable smells. However, it is also common knowledge among us that things of a certain kind can smell different in different conditions and to different subjects. A cup of coffee, for instance, smells different when freshly made than it does once it has cooled down, and it smells different than usual after we have added milk to it, if someone has sprayed a strong perfume in the air, or if we have a cold.

Some of these changes in how something smells across contexts can be easily explained in terms of a change in the source of the smell. For instance, it is not surprising that the smell of my cup of coffee changes when I pour milk into it. By doing so, I alter the properties of the source of the smell; and since milk is a substance with a smell of its own, it is to be expected that the smell of milk will now contribute to the overall smell given off by the milky coffee. Sometimes, though, the way something smells changes even though the source of the smell, the stuff it is made of, or the cloud of odoriferous molecules it emanates do not change. In these cases, Smell Minimalism usually appeals to one of these two explanations.

The first explanation appeals to a change in what smells are present. If a new smell has been introduced in the environment, it may interact with the target smell and thus change the way the target smell smells. For instance, if someone sprayed a strong perfume, the smell of coffee may mix with that of the perfume, resulting in a new smell. This kind of case is not a problem for Minimalism: as there is a change in the properties of the smells or sources present in the scene, it is plausible that there is a change in the objective, perceiver-

independent smells that are available for one to perceive. Once we accept that the initial smells of coffee and perfume are objective and perceiver-independent, we must accept that the same holds for the new mixed smell.

The second explanation appeals to a change in what one perceives on an occasion, among the available smells in one's environment. Sometimes the factor affecting what smells one perceives is a change in the environment. When the temperature in the kitchen is high, for instance, it will be easier to perceive the smell of coffee than when the temperature is very low. Other times, the factor affecting what smells one perceives is a subjective condition. If one has a bad cold, is fully or selectively anosmic, one may be unable to perceive the smell of coffee that another subject exposed to the same scene will perceive. This kind of case is not a problem for Minimalism because the difference in what one perceives on each occasion amounts to the difference between perceiving a smell and failing to perceive it.<sup>144</sup> This is compatible with Perceptual Objectivity: the smells that are present in one's environment are objective and perceiver-independent; simply, one has to be in the condition to become aware of those smells.

However, the minimalist cannot always rely on these two explanations. None of the familiar examples we started with are problematic. However, recent experimental evidence provides examples of changes in how things smell that are more difficult to explain. Opponents of Smell Minimalism could argue that this experimental evidence brings out a more widespread perceptual variation in the olfactory domain, and thus cannot be ignored.

### 5.2.2 Two challenges

Sometimes different subjects, or the same subject at different times, disagree on what smells are present, or on what character the smells they experience have. The opponent of Minimalism argues that the best explanation of these disagreements is that things smell different to each subject, or on each occasion. In turn, this motivates the claim that at least some of the smells that the subjects perceive, and in particular their olfactory properties, are

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<sup>144</sup> As Batty suggests (2010b), the case of hyposmia, where subjects have a reduced sensitivity to smells and thus higher detection thresholds may require a different treatment. Given the complexity of this case, I will not discuss it in this chapter due to space constraints. I intend to address it in my future research.

not objective and perceiver-independent. We have, in other words, cases of changing appearances.

The first case involves dihydromyrcenol, a substance that can smell both citrusy and lime-like or woody and pine-like. What makes a difference to how it smells is the context in which the substance is presented, and in particular what other smells are present, either at the same time or immediately before, dihydromyrcenol is smelled. Subjects report that dihydromyrcenol smells citrusy or lime-like when presented together with woody-smelling odorants, and that it smells woody or pine-like when presented with citrusy-smelling odorants (Lawless-Glatzer-Hohn 1991). In the first context, a subject reports:

1) This smells citrusy.

In the second context, another subject reports:

2) This smells woody.

The case threatens Minimalism about olfactory appearances. The subjects' reports indicate that things smell differently to them, but the minimalist cannot appeal to any of the simple explanations considered above. First, the difference in how things smell cannot be explained by appealing to a change in the objective and perceiver-independent properties of the source of the smell: both subjects are sniffing the same sample of dihydromyrcenol, and the properties of this substance have not changed from one context to the other. Second, the difference in how things smell cannot be explained in terms of new sources, and thus new smells, being introduced in the second context – as in the case of smelling coffee after perfume has been sprayed in the room. Finally, the case plausibly does not involve one or both of the subjects failing to perceive a smell that is present in their surroundings. In fact, both subjects are able to detect the presence of dihydromyrcenol by smelling.

The minimalist may point out that reports such as 1) and 2) can be elicited by presenting dihydromyrcenol together with woody odorants, in one context, and citrusy odorants, in the other context. Under these conditions, there is a difference in the sources of smells, and thus in the smells, that one is presented with; the presence of new smells can plausibly alter the overall perceivable scene. If there is a difference in what smells are present, then, consistently with Minimalism, there may be a difference in how things overall smell to one. This explanation, however, is ruled out by the fact that the presence of odorants other than dihydromyrcenol is not required in order to elicit contrasting reports such as 1) and 2). The same effects are achieved when subject smell dihydromyrcenol *after* having been presented with either woody or citrusy smells.

The second counter-example centres on the phenomenon of odour-odour learning. When repeatedly presented with mixtures containing two odorants, subjects rate these odorants as smelling more similar to one another than before the experiment (e.g. Stevenson 2001a, 2001b). For instance, subjects would first sniff mushroom-smelling champignol and rate this smell along several dimensions; they would then be repeatedly exposed to a mixture of champignol and lemon-smelling citral; finally, subjects would again be presented with champignol alone, and asked to rate its smell. The surprising result is that subjects will rate the smell of champignol as more lemony after the exposure phase than they did before; moreover, the smell of champignol will also be rated as more similar to the smell of citral. After the exposure phase a subject may utter this report in the presence of champignol:

3) This smells lemony.

Let us now suppose for the sake of argument that the same subject's ratings of the smell of champignol before the exposure phase show that the subject does not take the smell of champignol to be lemony. We can thus imagine that before the exposure phase, at least if queried, the subject would report the smell of champignol thus:

4) This does not smell lemony.

The different reports, it is argued, show that champignol smells different to the first subject than it does to the second one. As in the case of dihydromyrcenol, the usual explanatory strategies compatible with Smell Minimalism do not apply: there is no change in the source of the smell, and no failure to perceive the smell. Moreover, it is not necessary that the subject is currently presented with the odorant that champignol was paired with during the learning phase (citral) in order to elicit the odour-odour learning effects. What is surprising about this case is precisely that having previously experienced the lemony smell – in a mixture with the mushroomy one – influences one's rating and descriptions of the mushroomy smell, when it is presented alone.

One may be tempted to classify the two cases as illusions or misperceptions. If that was the case, addressing these counter-examples would involve providing an account of illusion, and this is beyond the scope of this thesis. However, the verdict seems unjustified in the first case. As the researchers argue, the smell of dihydromyrcenol genuinely has both a citrusy and a woody note (Lawless-Glatte-Hohn 1991). But it is not obvious that the second case is best understood as illusory either. For one, all subjects who were independently classified as normal perceivers, given the same stimulation, uttered reports or gave ratings along the lines of 1)-4). For another, we do not have strong grounds for deciding which experience would

be the illusory one – whether the experience had by the first subject or the one had by the second subject, in each case. Consider odour-odour learning. The main reason to count the experience had after the learning phase as illusory seems to be that we find it surprising that an odorant that we usually characterise as mushroom-smelling would be reported as lemony. But surprising reports are clearly not a sufficient criterion for identifying illusions. In the case of dihydromyrcenol, for instance, each subject may find the other subject’s report surprising: a subject who has only smelled dihydromyrcenol in other first condition (with or after woody odorants) would find it strange that that smell is reported as woody. In this case, it seems unjustified to take one condition but not the other to be illusory. One reason is that the surprised subject will not be surprised anymore once they are allowed to smell dihydromyrcenol in the second condition (with or after citrusy odorants). In that context, they would understand that that report can be appropriate. If this is the verdict we reach about the first case, we do not seem to have principled reasons to reach a different verdict about the second case. In what follows, I will thus proceed on the assumption that these cases are not olfactory illusions, and will focus on responding to anti-minimalist views that take them to be genuine perceptions instead.<sup>145</sup>

Dihydromyrcenol and odour-odour learning thus pose a challenge to the minimalist approach to olfactory appearances. In the next section, we will see how an argument against Minimalism can be construed on the basis of these two cases of changing appearances.

### 5.2.3 An argument from changing appearances

Why should we think that the two cases above are problematic for the minimalist? The cases, it seems, involve a change in how things smell. It is plausible that they do, because this would be the best explanation of the disagreements in reports and ratings across subjects.<sup>146</sup> The worry is not merely that it is difficult to explain this change in minimalist terms; but that the best and most natural explanation of these cases is incompatible with Minimalism. If things

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<sup>145</sup> While I believe that the minimalist account of the phenomenon of changing appearances can be potentially extended to many cases that are traditionally considered illusory, I do not undertake this project in this thesis.

<sup>146</sup> A similar view, applied to disagreement about perceptual appearances, has recently been defended by Rudolph (2020). Rudolph’s thesis is that, with some exceptions, the best explanation of faultless disagreement about appearances is that the disagreeing subjects are having different perceptual experiences.

smell different to different subjects, so the reasoning goes, it is natural to think that the subjects are experiencing different smells, or different olfactory properties. But if neither the source of the smell nor the chemical structure of the smell cloud have changed, then there is no difference in the olfactory properties that are present and thus potentially perceivable to one. What, then, differs across the two conditions in each case? The way things smell to the one, one may think, seems to change with a change in no other factor than one's past experience of certain smells: one's previous perception of woody or citrusy smells in the case of dihydromyrcenol and one's previous repeated perceptions of a certain mixture of chamingnol and citral in the odour-odour learning case. If so, then one may argue that the olfactory properties one perceives, and that account for the way things smell to one, are partly determined by certain subjective properties, on account of one's past experiences.<sup>147</sup> This conclusion would be incompatible with Minimalism, as it threatens the Perceptual Objectivity and the Metaphysical Parsimony commitments.

This is how an argument along these lines could be applied to the case of dihydromyrcenol. Two subjects disagree about the smell of dihydromyrcenol: one reports it as smelling citrusy, and another as smelling woody. The best explanation of this disagreement is that dihydromyrcenol smells different to each subject. In particular, it smells citrusy to a subject S1 – who has smelled a woody odorant – but it smells woody to another subject S2 – who has smelled a citrusy odorant. The best explanation for this difference in how things smell to each subject is that what each subject experiences differs: S1 is experiencing a certain, citrusy olfactory property, and S2 is experiencing another, woody olfactory property.<sup>148</sup> Both subjects are presented with the very same source, whose properties do not differ from one context to the other. But we do not have another reason to think that something in the world differs, i.e. that different objective and perceiver-independent smells are present in each context. On the contrary, since dihydromyrcenol smells different to different perceivers, we have reason to think that something about *them* has changed. If we suppose that neither subject is misperceiving, though, and we accept the above best explanation of the difference in how things smell to them, we have to conclude that what the subjects perceive is

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<sup>147</sup> This argument has not explicitly been defended in the literature. However, as we will see, some researchers have suggested a similar argument for the odour-odour learning case.

<sup>148</sup> On this way of describing the case, both subjects are perceiving the same particular smell, and yet this has a different character for each of them – they thus perceive different olfactory properties. If one thinks that smells are properties, one could describe the case as one where each subject perceives a different smell. Dihydromyrcenol, then, presents two smells: a citrusy and a woody one. The argument against Minimalism would then proceed in a very similar way.

something that partly depends on them, their experiences, or perceptual capacities. In particular, if the difference in what is perceived is a difference in the olfactory properties that each subject is presented with, these properties are not objective and perceiver-independent. Minimalism, then, cannot account for this case of changing appearances.

An analogous argument can be run for the case of odour-odour learning. Presented with the same odorant, two subjects give different reports of what they smell. One subject – who has been exposed to a mixture of champignol and citral – reports champignol as smelling lemony, while the other subject – who has not undergone any such exposure – reports it as not smelling lemony. These different reports show that champignol smells different to each subject. The best explanation of this difference is a difference in what each subject smells: they perceive different olfactory properties. But then, one may argue, these properties are partly determined by properties of the perceivers, on account of their different past experiences.

The olfaction scientist Stevenson and his colleagues seem to endorse this conclusion.<sup>149</sup> According to them, there is a difference in what ‘quality’ each subject experiences: after the learning phase, one experiences a lemony quality that one did not perceive before. But then, if the subject smelling champignol after the learning phase is not having an illusion, the smell they experience now is different from the smell they experienced before: the smell has acquired a new, lemony quality. This lemony quality, it is suggested, has been acquired from citral, the lemony-smelling odorant that champignol was paired with. Stevenson and colleagues hypothesise that during the learning phase, subjects form a mental image of the mixture of champignol and citral; sniffing one of the components then causes this image of previously experienced but absent smells to be retrieved; entertaining this image affects how the present odorant smells.<sup>150</sup> If this is the right characterisation of the effects of odour-odour learning on a single subject, the same conclusion should be reached when comparing a subject after the learning with a control subject who has not undergone any exposure to mixture prior to sniffing champignol. Our case of changing appearances is, again, one that the minimalist cannot account for.

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<sup>149</sup> See Stevenson (2001a), (2001b), (2001c), and Stevenson-Case (2005).

<sup>150</sup> E.g. Stevenson (2001a),

### 5.3 The minimalist response

The arguments outlined above aim at showing that Minimalism cannot account for certain cases of changing appearances in the olfactory modality. Both the example of dihydromyrcenol and that of odour-odour learning are taken to show that the change in how things smell to different subjects can only be explained by supposing that each subject perceives different, perceiver-dependent olfactory properties, due to the effects of their past experiences on how things smell to them. In defence of Minimalism, I will argue that we do not have good reasons for thinking that the best explanation of the cases is that there is a difference in what the subjects perceive. This, in turn, undermines the inference to the conclusion that the entities that the subjects perceive are not objective and perceiver-independent. Much of the appeal of the argument against Minimalism as applied to these two cases derives from a certain way of understanding our linguistic reports about the ways things smell. There is, however, an independently plausible way of understanding those reports that does not motivate the argument. Finally, I will argue that any differences in how things appear that are not reducible to differences in how things are reported to be can be explained in terms compatible with a minimalist approach.

#### 5.3.1 Ratings and reports

The first step in the argument against Minimalism motivates the claim that what we need to explain is a case of changing appearances, as opposed to a mere change in the subjects' judgements or their descriptions of what they smell. This step is necessary because the evidence concerning dihydromyrcenol and odour-odour learning primarily concerns categorisation and linguistic labels.

In the first case, the evidence is that subjects who smell dihydromyrcenol together with, immediately after, or immediately before a paradigmatically woody odorant tend to rate it as more citrusy; by contrast, subjects who smell dihydromyrcenol together with, immediately after, or immediately before, a paradigmatically citrusy odorant tend to rate it as more woody.<sup>151</sup> This evidence directly supports claims about how subjects report or

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<sup>151</sup> Similar results were obtained using two different rating scales: a nine-point scale of 'intensity' for each attribute (e.g. from 'slightly citrusy' to 'very citrusy'), and a nine-point scale from one attribute to the other (i.e. from 'mostly citrusy' to 'mostly woody').



characterise what they smell. What the rating data gives us knowledge of is certain facts about how subjects tend to categorise smells with respect to categories that are expressed in their language with descriptors such as ‘citrusy’ and ‘woody’, that are given to them by the experimenters.

In the second case, there are two main experimental results. One result concerns ratings of a smell along a certain qualitative dimension. After being exposed to a mixture of two smells, subjects rate one of the smells as possessing a typical quality of the other smell to a higher degree than before exposure to the mixture. For instance, subjects exposed to a mixture of champignol and citral rated champignol as more ‘lemony’ after exposure. As in the case of dihydromyrcenol, this evidence tells us something about how subjects categorise smells, and in particular how they apply linguistic labels such as ‘lemony’. The other result is that subjects rate smells that they experienced together in a mixture as more similar to one another than to other smells that they have not experienced together. For instance, subjects exposed to a mixture of champignol and citral rated champignol as more similar to citral than to other odorants – such as fruity-smelling water chestnut and grassy-smelling cis-3-hexanol. These ratings can be understood as implicit judgements of similarity given in response to the question of how similar two odorants are.

My suggestion is that the step is motivated by a certain interpretation of the evidence. On this interpretation, what subjects are doing when they rate odorants with respect to categories such as lemony, woody, and citrusy, is attributing certain properties to smells. The ratings we are discussing can plausibly be translated into linguistic reports about the way things smell. For instance, a rating of a smell as ‘very lemony’, given in response to the question ‘how lemony is this?’ or ‘how lemony does this smell?’, can be taken to be roughly equivalent to a report such as ‘this smells lemony’ or ‘this has a lemony smell’. One may take this report to involve the attribution of a property – the property designated by ‘lemony’ – to the smell given off by the thing that the subject is presented with, and invited to sniff. This way of understanding the report ‘this smells lemony’ is an instance of a general view about reports of the form ‘this smells F’ or ‘this has an F smell’. On this view – which I will call the Attribution view – reports of how things smell attribute properties to smells.<sup>152</sup>

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<sup>152</sup> Sometimes we talk of things smelling certain ways not only, or not primarily, to characterise smells, but to make claims about those very things which give off smells. The report ‘this cake smells lemony’, for instance, can be used to make a claim about the cake itself: on the basis of its smell, we have evidence that the cake is lemony, that is, that it contains lemons or lemon juice among its ingredients. In this case, a smell report is used evidentially. I take it that reports 1)-4) in the two scenarios

What kind of properties are these? With reports such as ‘this smells lemony’, at least in the two cases we are discussing, subjects intend to describe the character of the smell that the report is about. If in doing so they attribute properties to smells, these will be properties that account for the qualitative identities, similarities, and differences among smells: olfactory properties. These properties, as we have seen, are distinct from, and independent of, the properties of ordinary objects that can be sources of smells.

Consider report 1), ‘This smells citrusy’, uttered by a subject who is smelling dihydromyrcenol after being presented with a woody odorant. On the Attribution view, this report is understood thus:

1\*) The smell given off by this is citrusy.

‘Citrusy’ here does not designate the property of being citrus fruit or containing citrus fruit, which we normally attribute to ordinary objects such as oranges, grapefruit juice, or lemon cakes. It designates an olfactory property that a smell can have independently of whether it is produced by a citrusy object or citrusy stuff.

If one adopts the Attribution view, I suggest, one has a motivation for the first move in the argument against Minimalism. Since in making a report, one is attributing an olfactory property to a smell, different reports may attribute different olfactory properties. This is the case, one could argue, in our two alleged counter-examples. With dihydromyrcenol, the two attributes, ‘citrusy’ and ‘woody’, usually characterise very different smells; with champignon, we even have two incompatible attributes, ‘lemony’ and ‘not lemony’. If these attributes qualify the smell a subject perceives, then it is plausible to think that the smell must smell different to a subject who reports the smell as having one attribute (e.g. citrusy) than it does to a subject who reports it as having the other attribute (e.g. woody). Since the subjects are making these reports on the basis of their non-illusory perceptual experiences of the smell, each of them must be perceiving a different olfactory property.

Analogously in the odour-odour learning case. On the Attribution view, in making a report along the lines of 3) – ‘This smells lemony’ – one is attributing an olfactory property to a smell that one is not attributing when one makes a report such as 4) – ‘This does not smell lemony’. When one goes from report 4) to report 3), so the argument goes, the way things

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considered are not used evidentially. Subjects are rating the qualities and qualitative similarities and differences among smells, completely disregarding what source these smells might have and what they may be taken to indicate about properties of sources. Thus, those reports are plausibly primarily about smells. In what follows, I will focus on non-evidential smell reports.

smell to one must have changed. In particular, when making report 3) one experiences an olfactory property – lemony-ness – that one did not experience before the learning phase, when one’s report was 4). If one is not suffering an illusion, then, the smell given off by champignol must have changed: it has now acquired a lemony property that it did not have before. As Stevenson puts it, if a smell is reported as more lemony, this is because its qualities have changed; if two smells are reported as more similar to one another, this is because they have come to share more qualities (Stevenson 2001a: 561-562, 2001b: 176).

Given this step, the opponent of Minimalism can argue that these olfactory properties are not objective and perceiver-independent. Nothing in the world has changed with the change in smell report, except for the prior experience of the subject making the report. The smells thus seem to have changed – from citrusy to woody, from not lemony to lemony – in response to the past experiences of their perceivers. But then these properties are partly dependent of those perceivers, their experiences or their psychological properties. The lemony-ness acquired by champignol, for instance, could be understood as an appearance property, such as the property of causing or being disposed to cause experiences with a certain phenomenology in a certain subject, or in a subject with a similar kind of olfactory system and past experiences. Appealing to this kind of property is incompatible with both Perceptual Objectivity and Metaphysical Parsimony.

This explanation of the different ratings and reports, however, is not forced upon us. This explanation may be motivated by understanding the evidence according to the Attribution view of smell reports, but there are independent reasons to resist this view. In particular, this view is too demanding, and thus makes the wrong predictions on the truth-value of our reports about smells. This is because it is often difficult to specify what olfactory property a smell report would be attributing. On one interpretation, the Attribution view claims that in order for a report of the form ‘o smells F’ to be true of the smell given off by o, the smell needs to have the olfactory property of F-ness. This interpretation is clearly too demanding. Suppose that one describes the smell given off by dihydromyrcenol as a smell of lime by reporting ‘This smells lime-y’. It is not plausible that the report would only be true in case the smell is lime-y, where this is a distinctive olfactory property. For the same smell could be just as accurately characterised as a smell of unripe lemon, say, or of lime sorbet. On a weaker interpretation, the Attribution view only requires that, for a report of the form ‘o smells F’ to be true of the smell of o, this smell needs to have a certain, distinctive olfactory property – whether we refer to that property as the property ‘F’ or not. However, even this weaker version does not capture how we in fact use smell reports.

In some cases, it seems, we can find an appropriate olfactory property. For instance, there are smells that we characterise as sweet. While the overall character of these smells may be heterogenous – they may be vanilla, strawberry, chocolate smells – one may think that there is a property all and only these smells have: they are sweet. And, one may think, all smells that have sweetness smell a certain way, at least in the sense that there is a distinguishable component of the character of these smells that is determined by their sweetness. Even if this proposal was plausible in the case of sweetness, though, it would be difficult to extend it to other cases.

Consider the report ‘This candle smells floral’. What olfactory property does the smell emanating from the candle need to have for the report to be true of it? That smell, it seems, can have very many different characters, ranging from the delicate and fresh smell of apricot blossoms to the rich and intense smell of lilac, to the pungent smell of dried lavender: all these smells can be correctly characterised with that report. According to the Attribution view, these smells would all have a certain, distinctive floral olfactory property. But is there a property that all smells that we characterise as floral have in common? It is difficult to specify what this property may be.

One may think that the properties our smell reports attribute often are determinable olfactory properties. We can acknowledge, so the response would go, that a report such as ‘This smells citrusy’ can be true of smells that are qualitatively different: lemony smells, smells of orange, lime-like smells, smells of lemon cake, of orange marmalade, of grapefruit juice etc. However, one may think, it is plausible that all these smells have a recognisable character, a very determinable property that we refer to as citrusy-ness. This response, however, does not work in all cases. This is because the categories we normally employ in English to characterise smells include smells that can be qualitatively heterogenous. The example of ‘floral’ shows that smells in a certain category can be so qualitatively different from one another that it is implausible that they have a common olfactory property – that is, a property that accounts for the qualitative character of smells, and a property that we can perceive. More generally, the ways in which we ordinarily categorise smells together as, say, smells of coffee, floral smells, or citrusy smells, do not require that these smells all share a distinctive olfactory property in virtue of which they belong to the category.

In light of these observations, the Attribution view seems to be inadequate as a general view of our smell reports. But if we abandon this view, we lose a motivation for accepting the first step in the argument against Minimalism: that the different reports are best explained by a difference in how things smell. In turn, this undermines the move to the claim that this

difference is a difference in what olfactory properties the perceived smells have. What is more, there is an alternative view of our smell reports that is not subject to this worry and is compatible with a minimalist approach.

### 5.3.2 The Comparative view

The difficulties encountered by the Attribution view in section 5.3.1 suggest a diagnosis: our reports about how things smell do not attribute olfactory properties to smells. Taking this diagnosis as a starting point we can develop an alternative view of our smell reports. This *Comparative* view of smell reports is inspired by Martin (2010)'s comparative account of look statements. On the Comparative view, smell reports have an implicit comparative structure. Report 1), for instance, is understood thus:

1\*\*) This has a smell which is olfactorily similar to the typical smell given off by citrus fruit or citrusy things.

The smell that report 1) is about is characterised indirectly, by reference to a comparison class – the typical smell of citrus. This class is specified with reference to the typical sources of smells with a certain character; 'citrus' and 'citrusy' in 1\*\*), then, do not designate olfactory properties, but properties of ordinary objects. An important and difficult question here is what 'the typical smell of citrus fruit' or more generally 'the typical smell of Fs' refers to. To begin with, it cannot refer to a determinable way of smelling that smells given off by Fs usually or typically have. If there was such a determinable way of smelling, one may think, there would also be a determinable olfactory property that all smells usually given off by Fs share – as on the Attribution view of smell reports. But there are reasons to doubt that there is always such a property. One option is that the typical smell of Fs is the class of the smells usually given off by Fs. Alternatively, the typical smell of Fs can be understood as the paradigm for a smell that is given off by Fs. Either way, it is worth noting that what counts as the typical smell of Fs may differ across contexts and across subjects.

The Comparative view is *prima facie* promising when we consider how we talk about smells in everyday English. It is very common for us to characterise smells using terms that apply – or at least primarily apply – to properties of entities other than smells. These include properties of typical sources (e.g. rotten, ripe, fruity), the stuff these sources are made of (e.g. woody, metallic), taste properties (e.g. sweet, acidic), and tactile properties (e.g. fresh, pungent, oily). Nonetheless, our smell reports do not concern the properties of sources of

smells, but the character of smells which, on the Comparative view, is specified comparatively. Our everyday categories for smells, then, include smells that are relatively similar to one another and, most often, are good examples of smells given off by certain kinds of sources.

Now, other languages, such as Maniq and Jahai, have significantly more terms that only apply to smells (Majid-Burenhult 2014). One may think that the Attribution view is better suited for these languages. However, it should be noted that the categories unique to those languages, while applying only to smells, apply to smells that are qualitatively heterogeneous, so it is not clear that they designate a distinctive olfactory property. For instance, in Jahai 'the term *ltpçt* is used for the smell of various flowers and ripe fruit, including intense smell of durian, perfume, soap, Aquillaria wood, and bearcat (which, according to Wikipedia, smells like popcorn). *CNes*, another smell word, is used for the smell of petrol, smoke, bat droppings and bat caves, some species of millipede, root of wild ginger, leaf of gingerwort, wood of wild mango, among other odor sources' (Majid-Burenhult 2014, 267). It thus seems that the speakers of these languages may not always or often categorise smells with reference to their typical sources. However, it is also implausible that the smells in each of their categories share a distinctive olfactory property.

The Comparative view overcomes the obstacles faced by Attribution view because it does not require that, for a report of the form 'o smells F' to be true, the smell given off by o has a specific olfactory property, let alone the olfactory property of being F. What matters is that that smell has a relevant olfactory similarity to a certain class of smells. And olfactory similarity among smells, on this view, is not always a matter of sharing an olfactory property or properties.

Once we adopt the Comparative view, then, the motivation for the first step in the argument against the minimalist approach is lacking. We do not need to appeal to differences in how things smell, and in particular in what olfactory properties subjects experience, in order to make sense of different and apparently conflicting smell reports. For a statement of the form 'o smells F' to be true, the smell given off by o does not need to have a specific olfactory property, let alone the olfactory property of being F. What matters is that that smell has a relevant olfactory similarity to a certain class of smells. For 1\*\*) to be true of the smell given off by dihydromyrcenol, then, it is not necessary that the smell has acquired a certain olfactory property that it did not have when one would not have reported the smell by uttering 1). So reports 1) and 2) can both correctly apply to the smell of dihydromyrcenol, as that smell can well be both similar to typical smells of wood and typical smells of citrus.

Likewise, reports 3) and 4) can both be true of the smell of champignol. For a comparative reading of 3) to be true of the smell given off by champignol, it is not necessary that the smell has acquired a certain olfactory property that it did not have before. This is also not necessary to account for the subjects' rating of champignol as more similar to citral than before learning either: olfactory similarity among smells, on this approach, is not necessarily a matter of sharing an olfactory property or properties.

### 5.3.3 Beyond language

At this point, the opponent of Minimalism may grant the superiority of the Comparative view of smell reports, and may acknowledge that different comparative reports may be true of the very same smell. Still, they may complain that the Comparative view unwarrantedly treats the cases of dihydromyrcenol and odour-odour learning as analogous to more familiar cases where subjects give different descriptions of what they perceive. For instance, different subjects may refer to the same smell, emanating from a solution of benzaldehyde, as a smell of almond, of marzipan, or of maraschino cherry (Lawless 1990). Perhaps one subject usually encounters that kind of smell when eating almonds, another when smelling marzipan sweets, and the third one when sipping a cocktail. Because of their different past experiences, the subjects characterize the smell they are presented with by comparing it to the smells of objects of different kinds, which are all typical sources of smells with that character. But this is not a good reason to suppose that benzaldehyde smells different to each of them, and so no reason to think that what each subject experiences differs.

However, the objection goes, there is an important difference between the case of odour-odour learning and that of benzaldehyde. All three comparative descriptions of the smell of benzaldehyde (making reference to smells given off by almonds, cherries, marzipan) may be appropriate in the very same context. If a subject is familiar with all three kinds of sources of smells with that character, they will recognise all of the comparative characterisations as appropriate upon perceiving the sample of benzaldehyde. However, the characterisation of the smell of champignol expressed by 4), even if we understand it comparatively, is used selectively. Only when one is presented with champignol after having been exposed to the mixture of champignol and citral, does one find a report along the lines of 4) to be appropriate. The minimalist owes us an explanation of why subjects find a certain report appropriate only under certain conditions. According to the opponent of Minimalism, this is

because only under those conditions one experience the relevant lemony olfactory property, which one then attributes to the smell one perceives in one's reports.

The Comparative view provides the minimalist with the resources to offer an alternative explanation of why subjects find a certain characterisation appropriate only after having had certain experiences. The view allows that different factors can contribute to making a report more or less apt in certain contexts.

One factor is the conversational context, including expectations about one's interlocutors knowledge and familiarity with certain kinds of smells, as in the case of benzaldehyde. As we have seen, smell reports characterise smells with reference to comparison classes. Different subjects may make reference to different comparison classes due to their past experience and familiarity with certain kinds of sources rather than others. Consider the case of benzaldehyde. A subject's greater familiarity with marzipan may affect their choice of comparative report; in order to fully understand their report and recognise it as appropriate, their interlocutors need to have some knowledge of what marzipan typically smells like – which they will have gained through, among other things, perceptual encounters with marzipan. If their interlocutors lack such knowledge, they may not see why the report is appropriate as a characterisation of the smell they are experiencing.

The perceptual context in which a smell is presented is another factor that may explain why one finds a certain comparative characterisation to be apt or not. What other smells – or more generally perceivable entities – are currently present, or have just been, in one's and one's interlocutors' surroundings may affect what reports one will find appropriate. This is plausibly the case for dihydromyrcenol, where the different reports are elicited by a difference in what other smells are presented together, or immediately before, the target smell. The perceptual context makes certain aspects of a smell more salient to one. In particular, the context increases the salience of those aspects of the smell that are most different from the context. Among woody smells, for instance, the citrusy character of the smell of dihydromyrcenol tends to stand out and be noticed.

If the context affects the salience of a smell or of some properties of it, that smell or those properties may be very hard to notice in certain contexts. One may worry that the claim that some smells or aspects of them can only be noticed in certain conditions threatens their objectivity. But with similar cases in the visual domain we do not draw this conclusion. A shiny, red object can look a certain way when presented among shiny, yellow objects, and another way when presented among opaque, red objects. In the first case, the redness of



the object is salient, while in the second case the opaque quality of the object is salient. But there is no reason to think that the object changes in its visible properties across the two contexts: being shiny and being red are two objective, perceivable properties of the object and they fully explain the way it looks. As with looks, so with smells: that some aspects of a smell are only noticeable in certain contexts does not make them less objective.

Analogously, the minimalist can argue that one's past experience can play a similar role as the perceptual context, putting one in a position to notice objective, perceivable aspects of one's environment. It is plausible that experience plays such a role in the case of smell experts, such as wine tasters. Being in a position to compare how different wines smell, for instance, may be required to notice certain aspects of their smell, or at least may make it much easier to do so. A novice that has not had the extensive past experience of many different kinds of wines, and has not systematically compared and contrasted their smells, will have a different comparison class than the expert. This alone, on the Comparative View, would explain why their reports of the same smell may differ. But this difference in past experience between novice and expert may also explain why the expert may notice something in a presented smell that for the novice does not stand out. Consistently with this story, acquiring the relevant past experience and expanding one's comparison class may well allow a subject without formal training or explicit knowledge of wines to come to notice those subtle similarities and differences.<sup>153</sup> However, this does not motivate a view on which the properties that expert wine tasters smell are not objective and perceiver-independent.<sup>154</sup> Rather, we think, these experts are discovering something objective about the wines – by discovering something about their smells.

One's past experience can make a difference to what smell reports one makes and what smell reports one is in a position to understand and find appropriate, in a given context. Past experience plays this role by affecting what smells one is familiar with and so what comparison classes one can make reference to, and what one's paradigms for smells typical of certain sources are. In some cases, past experience plays this role by allowing one to notice certain perceptual similarities and differences between the present smell and some other smells that are not there, but are remembered or imagined, thus eliciting a certain report. This may be what happens in the odour-odour learning case, consistently with Stevenson

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<sup>153</sup> There is support for this hypothesis in the empirical literature of perceptual expertise. See e.g. Rabin (1988), Royet *et al.* (2013).

<sup>154</sup> See Smith (2008) for a similar point about flavours.

and colleagues' suggestion that the current perceptual context (the smell of champignon) reminds one of some absent smells (the smell of citral, which was paired with champignon), causing one to entertain certain olfactory images based on one's past experiences. One hypothesis is that the context, including perhaps the olfactory imagery automatically elicited by what one currently perceives, may make the aspects of the smell that remind one of the mixture one perceived in the past more salient. It may be that there are genuine perceptual similarities between the smells given off by champignon and citral, which we fail to notice in our everyday experience with mushroomy and lemony smells. This is left undecided by, but is compatible with, the available empirical evidence: we know that the odour-odour learning effects only occur for certain combinations of odorants, but we do not know what the reason is.<sup>155</sup>

However exactly odour-odour learning and cases of contextual variation in how things smell are understood, I have argued that a minimalist approach to olfactory appearances, supplemented with the Comparative view of smell reports, has the resources to account for the two challenging cases of changing appearances we focused on in this chapter. Whether these cases involves a mere difference in one's smell reports, or also a difference in how things smell to one, this difference does not need to be understood as a difference in what smells or olfactory properties one is aware of. These smells and their properties, then, may well be objective and independent of perceivers, in accordance with the commitments of Minimalism.

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<sup>155</sup> See Stevenson (2001c). A piece of evidence that the minimalist would easily account for is that the effects one's prior experience has on how things smell to one are constrained by the odorants one has smelled and is currently smelling. The empirical results so far show that odour-odour learning effects are only elicited by certain combinations of odorants. An important criterion seems to be whether the odorants tend, in virtue of the character of their smells, to blend into a mixture that may be easily perceived synthetically has having a novel quality.

## Conclusion

Our starting point in this thesis was the Simple View of perceptual appearances, on which the ways a thing appears are fully explained by its objective, perceiver-independent, perceivable properties. On the face of it, the Simple View straightforwardly explains how we think and talk about perceptual appearances as objective aspects of the world that are accessible to everyone with the appropriate perceptual capacities. The phenomenon of changing appearances, however, poses a challenge to the Simple View. Because things can appear different in different conditions and to different perceivers without changing their objective, perceiver-independent properties, the Simple View does not account for the ways things perceptually appear to perceivers in certain conditions.

In response to this challenge, I proposed a minimalist approach. On this approach, we aim at accounting for the phenomenon of changing appearances without abandoning the three core commitments of the Simple View: Perceptual Objectivity, No Error Theories, and Metaphysical Parsimony. In this thesis, I defended Minimalism against the argument from changing appearances. A key premise in this argument is the Ways→Properties principle. According to this principle, each way an object appears to one is fully explained by one's perception of a certain property of the object. Given this principle, the opponent of Minimalism argues that a satisfactory account of the ways things appear to subjects must appeal to properties other than the objective, perceiver-independent properties that we are committed to independently of the phenomenon of changing appearances. Appealing to these properties, however, is incompatible with one or more of the core commitments of the Simple View.

I have argued that the argument from changing appearances is unsuccessful. I focused on a variety of cases of changing appearances – three visual cases and two olfactory cases – and discussed how the minimalist can resist the argument in each case. Each case presented a somewhat different challenge, allowing us to explore different strategies that the minimalist can appeal to.

In some cases, the minimalist can argue that the objective, perceiver-independent, perceivable properties one perceives fully explain how things look to one in certain conditions. As we have seen in Chapter 2, the minimalist can account for the appearance of coloured objects under different illuminants by appealing to the thesis that both surface colour and illumination are perceived. In other cases, the minimalist can appeal to further

explanatory factors in addition to the properties one perceives. Chapter 3 discussed how the minimalist can appeal to differences in subjects' visual sensitivity to explain why things look different to them. Sensitivity may play the role of a condition for perceiving, as opposed to failing to perceive, a certain objective, perceiver-independent property in certain conditions. The case of seeing blurrily, however, shows that sensitivity may not always make a difference to which properties one perceives. Here the minimalist can argue that one's sensitivity affects one's cognitive and epistemic access to the properties one perceives, and thus affects the discriminations and identifications one can make, the similarities one notices, and one's reports.

Chapter 4 focused on colour-blindness to discuss a case of changing appearances where, one may think, one's sensitivity plays a role incompatible with Minimalism, i.e. that of partly determining the nature of the properties one perceives. In some severe cases, a colour-blind subject may simply fail to perceive some of the colours that a normal subject perceives. In other cases, however, we have reasons to think that the colour-blind perceive the same colours as normal subjects. Here the minimalist can appeal to the partiality of perception thesis, and argue that different subjects perceive the same objective colour even though each of them has limited access to its complex qualitative nature on account of their visual sensitivity.

Chapter 5 explored how Minimalism may apply to sense modalities other than vision by focusing on olfaction as a case-study. I first argued that we have good reasons to think of olfactory experience as presenting us with objective and perceiver-independent smells and their properties, in accordance with Perceptual Objectivity. I then discussed how the minimalist can account for two challenging cases of changing appearances in the olfactory domain. These cases are not best understood as involving a change in the olfactory properties one experiences – where these may then be argued to be perceiver-dependent. Factors such as the perceptual context, one's sensitivity, as well as one's past experiences may affect which similarities between the smell one perceives and other smells are salient to one, thus affecting one's reports about the way things smell.

In the course of our discussion of these cases, we have seen multiple ways in which the minimalist can account for the way things appear to one in certain conditions. Proponents of the argument from changing appearances argued that the minimalist could not explain the way things appear to subjects in certain conditions because they assumed that this explanation had to respect the Ways→Properties principle. To satisfy the demands of the principle, one needs to find a perceivable property to 'match' each variation in how things

appear to one. As a result, one's view cannot respect the Metaphysical Parsimony commitment of Minimalism. Adoption of an analogous principle connecting variations in how things appear to variations in properties of experiences, as we have seen in Chapter 3, also leads to this consequence. Neither the Ways→Properties principle nor the analogue principle appealing to properties of experience, however, are motivated by the phenomena we need to explain. If an explanation of the way things look to subjects does not have to take the form that those principles impose, then our explanation can respect all three core commitments of Minimalism.

In addition to providing a partial defense of Minimalism from a particular argument that may be advanced against it, this thesis thus allowed us to explore the positive contributions that a minimalist approach can make to our understanding of perceptual appearances and their impact on us.

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