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A Change of Perspective: Naïve Realism and Normal Variation

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1. Naïve Realism

Naïve realism is the view that the conscious character of experience in genuine cases of perception is constituted, at least in part, by non-representational relations between subjects and mind-independent presented elements.[1] Consider an ordinary veridical perception of an oak tree. According to the naïve realist, the conscious character of this experience is constitutively shaped by the perceptual presentation of the oak, its size, shape, colours etc.

Many theorists have deemed naïve realism incapable of accounting for perceptual illusions.[2] In response, naïve realists have felt forced to introduce unfamiliar presented elements (e.g., relational appearance properties).[3] In previous work (French & Phillips 2020), we argue that this is a mistake. The naïve realist can account for illusions without abandoning *simplicity*: the claim that presented elements are restricted to ordinary, mind-independent objects and their familiar, basic visible qualities.[4]

[1] See Martin 1997, 2002, 2006, Campbell 2002, Fish 2009, Brewer 2011, Logue 2012, Soteriou 2013, Beck 2019 and French & Phillips 2020.

[2] See Foster 2000, Smith 2010, and Block 2010.

[3] See Fish 2009, Kalderon 2011a, and Genone 2014.

[4] Cf. Martin's "parsimonious view of looks" which identifies the looks of objects with their basic visible properties, including "size, shape, colour, visible texture, spatial arrangement of parts" (2010: 161, 207), and constructions out of these.

Why cleave to simplicity? The basic reason is theoretical modesty. It will be news to no-one that objects have textures we can feel, shapes we can see, and make sounds we can hear. These features are already part of our common-sense ontology. This evidently contrasts with relational appearance properties. It is not part of our ordinary picture that objects have (or can be seen to have) properties such as *small when viewed from a distance* or *elliptical as viewed from an angle*. To populate the world with such esoteric features in order to account for our perceptual phenomenology involves the immodest thought that theoretical-cum-introspective reflection on perceptual appearances can reveal surprising and novel aspects of the mind-independent world. Our sympathy for simplicity reflects antipathy towards such immodesty.[5]

[5] Simplicity should be distinguished from a 'thin' view of the properties which can be presented to us in visual experience. Precisely which properties count as 'thin' as opposed to 'rich' is often unclear. But on some accounts, it is far from obvious that 'thin' properties exhaust those we ordinarily take ourselves to encounter in perceptual experience. For Martin (2010), the basic visible properties are said to include the purely observational properties. These he defines in terms of the absence of visual doppelgängers – thus red is an observational property since nothing which is red and visibly coloured has a doppelgänger which shares its overall look despite not being red; whereas being a tomato is not an observational property since a non-tomato can look just like a tomato. However, Martin considers the possibility that *solidity*, which he argues is not an observational property on the ground that a perfect hologram might look solid, is nonetheless a property made manifest in vision, and so visually basic. To make this claim involves, as Martin notes, holding that even someone living in a world without solid objects might nonetheless come to have knowledge of solidity through their encounter with such a hologram. It also requires us to think of such holograms as essentially illusory in appearance. We should consider other properties and relations as candidates for being non-observational, yet visually basic. One putative example is the relation of *causing*, often considered to be a 'rich' property (see, e.g., Siegel in Siegel and Byrne 2016). Thus, consider a subject living in an occasionalist world whose environment

To account for illusions without abandoning simplicity, the naïve realist must deny that differences in experiential character are exclusively a matter of differences in presented elements. Here, we address a related challenge according to which the naïve realist cannot account for the fact that ordinary *veridical* perceptual experiences, in normal perceivers, vary phenomenologically across sameness in external stimuli. We focus on three examples of this challenge from *normal variation*: variations in colour perception, size constancy, and ambiguous figures. As these examples make evident, proponents of the normal variation challenge often draw on work in vision science to evidence normal variation.

In a companion paper (French & Phillips 2023), we address a series of empirical challenges to naïve realism.[6] In general form, these challenges maintain that, either locally or globally, vision science requires us to think of perception in non-subjective, representational terms – as a matter of instantiating non-subjective, representational kinds – and that this is inconsistent with naïve realism. Our response is concessive: we grant that the relevant science establishes the existence of such representational kinds, but deny that this is inconsistent with naïve realism. We do so by rejecting the monistic assumption that there is a single level of theorising at which the naïve realist and the vision scientist are operating. Instead, we recognize both a non-subjective, representational kind, and a subjective, relational kind. Vision scientists postulate the former, in detailing the perceptual processing underlying perception. Naïve realists identify the latter with perception in the ordinary sense. Though the former may

contains no causal relations. Would certain pairs of events nonetheless there appear to instantiate causal relations? Could a subject in this world come to have knowledge of causation through their illusory visual experience? For further examples of potentially 'rich' yet visually basic relational contents, see Hafri and Firestone 2021.

[6] See, for instance, Burge 2005, Rescorla 2015, Nanay 2014, Cavendon-Taylor 2018, Berger & Nanay 2016, Block in Phillips & Block 2016.

explain, or even partly constitute, the latter, since they are distinct, psychological theorising about the former representational kind does not directly speak to the nature of the ordinary relational kind *perception*—no more than chemical theorising about clay directly speaks to the nature of the statue it constitutes.

Our argument here will also be concessive: we grant that perception science supports the existence of normal variation cases. However, since normal variation is variation in *perceptual consciousness*, we cannot simply accommodate the relevant empirical evidence at the level of psychological processing. We need a fresh response.

We proceed as follows. In §2, we discuss evidence that there are indeed cases of normal variation. In §3, we introduce the challenge that normal variation is inconsistent with naïve realism. In §4, we consider a naïve realist response to the challenge which abandons simplicity, and raise two concerns. Finally, in §5, we explain how the naïve realist can meet the normal variation challenge without abandoning simplicity. As in our discussion of illusion in French & Phillips 2020, the key will be to deny that differences in experiential character are exclusively a matter of differences in presented elements.

2. The Challenge from Normal Variation

In normal variation cases, perceptual experience varies in character without variation in (relevant) presented elements, in a 'normal' perceiver or perceivers.[7] We focus specifically on *empirical* as opposed to merely hypothetical cases.

[7] Here we take 'normal' to rule out cases in which the variation reflects a perceptual abnormality, e.g., colour blindness or jaundice. We leave an adequate explication of normality to critics

2.1 Contestable Cases

Brogaard (2018) argues against naïve realism based on normal variation in colour perception.[8] She marshals a wealth of empirical evidence of variability in colour perception both across and within groups, all of whom pass standard tests for normalcy in colour vision. Given this, it might seem that, at least with respect to colour perception, the existence of normal variation is beyond dispute. Things are not so straightforward, however. For empirical evidence to support the challenge to naïve realism, it needs to be evidence specifically of: (i) variation in *perception proper* – not merely in, e.g., perceptually based categorization, where this is understood as a post-perceptual phenomenon; (ii) *phenomenological* variation in experience – i.e., variation in what it is like for the subjects; and (iii) variation despite *qualitative identity of relevant presented elements*. In short, it needs to meet *perceptual*, *phenomenological*, and *same elements* conditions. Brogaard's discussion is too brief to establish that these conditions are met in all her cases.

For instance, Brogaard offers evidence that women have "a more fine-grained ability to discriminate light in the long-wavelength regions of the color spectrum" than men (2018:

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of naïve realism, however. In our view, the fact that the variation obtains within 'normal' perceivers is not of genuine significance.

[8] Brogaard also proposes cases of normal variation due to differences between individuals in "perceptual principles, perhaps because of radically different evolutionary histories, developmental paths in early childhood, or perceptual learning paths later in life" (2018: 92). Such differences, Brogaard suggests, will likely lead to phenomenally different experiences of precisely the same presented elements (ibid.). In our view, the strategy we develop in §5 will apply to plausible instances of such cases. However, here we focus on Brogaard's more empirically-grounded cases. Note that Brogaard takes both her arguments to support representationalism. But see Block (1999) for an argument *against* representationalism based on similar considerations regarding variation in colour perception.

89, citing Mollon 1992, and Verrelli & Tishkoff 2004). She interprets this to mean that women can perceive more colours in this region than men (ibid.). However, if this is right, it is far from obvious that men and women experience precisely the same elements. Instead, the evidence would seem to suggest that the presented elements *differ*: that women have access to more colours in the relevant region than men.[9]

Brogaard also cites a study by Webster et al. (2002) in which Indian and American participants selected from an array of 320 Munsell chips the chip which "best represented a particular color" (2002: 1953) such as yellow. The experimenters found substantial variations both across and within groups as to where participants located paradigmatic yellow. Does this support the existence of normal colour variation cases? Suppose a member from each group looks at a particular chip: *A* classifies it as the best example of yellow, whereas *B* chooses a different yellow, three hue steps away. Suppose that *A* and *B* both have veridical experiences of the first chip. Plausibly, the same elements standard is met. But do *A* and *B experience* the chip differently? Do they have *phenomenally* different experiences? An alternative hypothesis is that *A* and *B* have different ideas or prototypes of the category *yellow* which they use to judge whether the chip is paradigmatic yellow. This cognitive explanation of their differing classificatory responses is quite consistent with a shared perceptual experience of the chip.

In fact, Webster et al. (2002) speculate that two groups might well differ in their colour prototypes due to differences in the colour statistics of their natural environments. Further, discussing cultural factors, they entertain the idea that "the purest or even most unique form of a particular hue could be biased by knowledge about or experience with specific stimuli, particularly in highly specialized and color-rich environments such as a sari shop" (1960), a

[9] A similar observation can be made about Brogaard's invocation of studies which suggest that some women may have tetrachromatic colour vision (2018: 89, citing Jameson et al. 2001, 2006, and Jameson 2007).

context from which one of their populations was drawn.[10] Further work is needed to assess this cognitive account. Our point is only that, since it is taken seriously by the scientists themselves, their work can hardly be regarded as compelling evidence for the existence of normal variation cases meeting the perceptual, phenomenological, and same elements conditions set forth above.

2.2 Normal Variation (I): Colour Perception

Brogaard does, however, cite some more convincing studies. In one, men with normal colour vision were tested in a colour matching experiment to measure the proportion of red, in a mixture of red and green light, needed for that mixture to be perceived as matching a standard yellow comparison light. As the authors report:

> The ranges of red/green mixtures accepted by subjects as matching the yellow comparison light, as well as the match midpoints (centres of match ranges) fell within the limits that define normal observers but were consistently different among observers.

[10] In the quoted passage, Webster et al. are primarily focused on their data showing variation in 'unique' hue judgements as opposed to in paradigmatic or 'focal' hue judgements which Brogaard discusses, and we refer to in the main text. Unique hue judgements are elicited for a given hue (e.g., yellow) by presenting subjects with a palette of coloured circles (in the case of yellow, ranging from green to red) and asking them to select the one "that appear[s] untinged by either of the secondary colors" (i.e. appears neither reddish nor greenish; 2002: 1960). It is a nice question what the relation is between focal and unique hue judgements, and whether a cognitive account is equally plausible in both cases. In the present context, we simply note that a cognitive account of both kinds of judgement must be *considered*. For instance, as Webster et al. note, in the case of unique hue judgements "it is possible to adopt different perceptual criteria for selecting them (e.g., by focusing on the points at which different secondary hues become visible)" (ibid.). Thanks here to Will Davies for discussion.

> Some individuals clearly required more red whereas others required more green light to match the yellow comparison light. (Winderickx et al. 1992: 431)

These differences appear to result from subtle genetically determined differences in the peak sensitivity of short wavelength cones (see further Mollon 1992: 378).

In these studies, participants were presented with precisely the same familiar elements. So, plausibly, the same elements condition is met (though see §4). Moreover, since subjects were asked to match an objectively presented yellow standard, as opposed to a personal prototype, concerns about cognitive explanations are less immediate (albeit not entirely absent). Indeed, the authors themselves appear to endorse a perceptual account, conceiving of the differences in matching as manifesting "subtle perceptual differences in red-green colour vision" (1992: 431). Thus, the perceptual condition is plausibly met. Finally, since the differences between participants are manifest in conscious, deliberate colour-matching behaviour, it is plausible that the phenomenological condition is met. In his commentary, Mollon concurs, describing the study as revealing how "a difference in a single nucleotide places people in distinct phenomenal worlds" (1992: 378).

In sum, we have some empirical support for the following normal variation case:

> *Mixture*: Different male observers, divided in terms of peak sensitivity of short wavelength cones, can have phenomenally different colour experiences of precisely the same mixture of red-green light.

Before turning to how Brogaard and others exploit cases like *Mixture* to argue against naïve realism, let us consider two further kinds of case.[11]

2.3 Normal Variation (II): Size Constancy

Imagine looking at two trees of the same size in a large meadow, one nearby, the other at a distance. Reflecting on your experience, it is natural to judge that the distant tree in some sense looks smaller than the nearby tree (cf. Peacocke 1983: 12). All the same, it may be equally natural to deny that there is anything misleading about your experience. You are not at all inclined to judge on its basis that the distant tree is actually smaller than the nearby tree. This is not a case of illusion. Indeed, this is a paradigm case of size constancy: a case where, despite variation in appearance, distance, and proximal stimulation, the shared size of the trees is manifest in perceptual experience.

This description is controversial. According to *invariantists*: constancy is a matter of there being an invariant perceptual appearance across varying conditions. Invariantists deny that the trees look different near or far. For invariantists, the two trees do not witness a case of normal variation. Many theorists do, however, wish to embrace the idea that there is an element of variation in the trees' appearances. One way of understanding constancy consistent with such variation is to treat constancy in non-phenomenal, cognitive terms. Thus, one might claim that "the most basic visual experiences are closer to retinal values than to constancy and … constancy arises as a cognitive response to these retinal values" ('Introduction' in Hatfield &

[11] The cases above have focused primarily on inter-subject phenomenal variation, below we focus on intra-subject variation. This difference is not of critical importance to us. What matters is whether there is empirical support for our conditions (i)-(iii), i.e., evidence of phenomenal variation in perception proper (whether within or across subjects) despite sameness of presented elements.

Allred 2012: 2).[12] So construed, the trees do not look to be the same size at different distances; instead, they are only inferred to be the same size on the basis of varying appearances.[13] This strongly cognitivist approach to constancy is controversial.[14] In particular, it is not obvious that phenomenal variation is incompatible with the genuinely perceptual appearance of stable features.[15]

Both strong cognitivist and more modest *variantist* approaches to perceptual constancy yield normal variation cases: cases in which despite being acquainted with the same feature in two contrasting conditions, there is phenomenal variation. Focusing on size constancy, Hatfield (2011, 2016) deploys just such a case to issue a normal variation challenge to naïve realism.

In discussing the two trees above, we highlighted a variable element in perception of size at different distances through reflection on experience. As Hatfield details, research by Granrud (2004, 2009, 2012) provides empirical substantiation of such variation. Granrud conducted experiments in adults and children to test size constancy. Participants were presented with a standard white disc at near and far distances. Participants had to size-match the standard to one of nine nearby comparison objects of different sizes (one of which was the same size as the standard). Accurate matches indicate constancy; matches to smaller comparisons, underconstancy; and matches to larger comparisons, overconstancy.

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[12] One clear proponent of such a view is Russell, who writes in relation to shape constancy: "We are all in the habit of judging as to the 'real' shapes of things, and we do this so unreflectingly that we come to think we actually see the real shapes. But, in fact, …. a given thing looks different in shape from every different point of view." (1912: 3) He makes similar points about colour.

[13] For helpful discussion of these positions in relation to the case of colour constancy, see Davies 2016.

[14] See the introduction in Hatfield & Allred 2012, Wright 2013 and Davies 2016.

[15] For compatibilist views in the case of colour constancy, see Brown's (2014) layering approach, and Davies' (2016) complex invariantist approach.

Participants were tested under objective-size and apparent-size instructions. As Granrud explains, the "objective-size instructions directed participants to choose a comparison object that matched the standard object's actual size (the size it would be if "measured with a ruler"), regardless of how it looked. The apparent-size instructions directed them to choose a comparison object to match the size that the standard object looked, regardless of its actual size" (2012: 17).

In the far distance (61m) condition, all participants showed underconstancy under apparent-size instructions, choosing matches that were on average 20% smaller, compared to 10% smaller in the near distance condition (Hatfield 2011: 48). Yet, under objective-size instructions, the responses of cognitively sophisticated children and adults exhibited either constancy or overconstancy. According to Granrud, this shows that participants "clearly distinguished between the distant objects' perceived and objective sizes" (2012: 18). Hatfield concludes that quite generally "far objects look phenomenally smaller at the greater distance", even though, under objective-size instructions, sophisticated subjects can compensate for this cognitively (2011: 48).

Granrud's work might be supposed to support the claim that size constancy is merely cognitive. We take no stand on this controversial issue. Rather we emphasise a more minimal construal of his findings, namely that they attest our initial phenomenological observation that in ordinary cases such as our two trees, there is phenomenal size-related *variability*—the distant tree *in some sense* appears smaller than the nearby object—even whilst there is also size constancy in some form, in that at least sophisticated observers are not misled on the basis of

their experience and can make broadly accurate objective size judgements. To this extent, we agree with Hatfield: "Phenomenal diminution with distance is normal" (52).[16]

In short, we accept that there is empirical support for a second normal variation case:

Two Trees: There can be size-related phenomenal variation in the experience of two size-identical trees, one presented at a distance from the perceiver, the other nearby.

Finally, we turn to a third source of normal variation cases: ambiguous figures.

2.4 Normal Variation (III): Ambiguous Figures

Vision scientists have long been fascinated by ambiguous figures: "two-dimensional figures and three-dimensional objects that can be seen in two sharply distinct ways" (Macpherson 2006: 87; see the many examples therein). Philosophers have often discussed such figures as a bugbear for representationalist views. For they seem to involve changes in perceptual phenomenology which are difficult to account for in terms of shifts in perceptual representational content (again, see Macpherson 2006 and references therein). For instance, Macpherson asks: what is the change in content which constitutes the phenomenological change when one goes from seeing Figure 1 as a diamond to seeing it as a tilted square? Arguing against extant accounts, she concludes that certain forms of representationalism are thrown into doubt.[17]

[16] For recent evidence supportive of an element of variation in relation to shape perception, see Morales et al. 2020.

[17] Macpherson raises her challenge specifically to representationalists who appeal to non-conceptual contents. She also assumes that "differences in the categorising, cognising or conceptualisation of the object [or figure]" (2006: 91) cannot account for the relevant differences, since

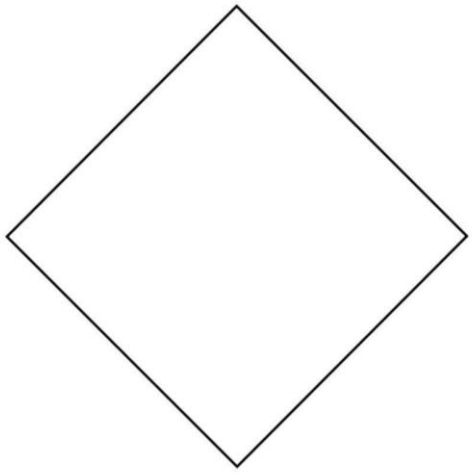

Figure 1: Mach's Square/Regular Diamond.

Ambiguous figures also present naïve realists with a third type of normal variation case:

Square/Diamond: There can be two phenomenally distinct types of experience associated with the very same figure.

Neither is illusory, and many of us can straightforwardly experience both with no implication of abnormality.

Other familiar kinds of ambiguous figures highlight a further consideration which the naïve realist must address, namely the fact that the perceptual world typically appears organised "whenever we perceive a sufficiently complex scene" (Green 2016: 126). Thus, consider Figure 2.

these are not differences in perceptual phenomenology. However, this is controversial. In particular, if following Block (2023) we allow for "non-conceptual perceptual categorization" as distinct from conceptual judgement, then Gestalt shifts might be understood in terms of differences in non-conceptual perceptual category representations.

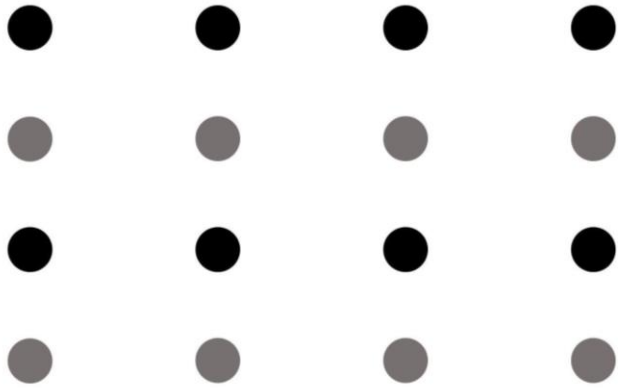

Figure 2: Rows/Columns. Redrawn based on Peacocke 1983: 25, and Green 2016: 124.

Here, we can experience the same set of dots as organised in at least two distinct ways. In one, we see the array as comprised of four horizontal rows of same-coloured dots; in the other, we instead see the array as comprising four vertical columns of nearby dots. This provides yet another kind of normal variation case:

> *Rows/Columns*: There can be at least two phenomenally distinct experiences of the very same dot array.

3. Normal Variation Contra Naïve Realism

We've now considered several empirically supported normal variation cases: cases in which we take it to be empirically plausible that we have variation in the *phenomenological* character of *perception* despite *qualitative identity of relevant presented elements*. Why think that they present a problem for naïve realism? Brogaard argues that such cases "show that the phenomenology of experience is not exhausted by the external object and its perceptible

property instances. This counts against naïve realism when understood as the view that visual experience is constituted by a perceptual relation between a subject and a mind-independent physical object" (2018: 9; see also: 90). The experiences involved in *Mixture* differ in colour character without differing in relevant presented elements. Brogaard is right that it is hard to see how this could be if phenomenal character were exhausted by presented elements.

Hatfield runs a similar argument regarding size constancy: "objects at a distance may be phenomenally smaller than when seen close at hand. Assuming that the object remains the same physical size when near and far, if the object itself provides the very content [character] of experience, it should appear with its actual size at both distances" (2011: 41). The experience in *Two Trees* differs in size-related character without differing in relevant presented elements. Again, Hatfield is right that it is hard to see how this could be if character is simply provided by presented elements.

Similar reasoning applies to *Square/Diamond* and *Rows/Columns*: if character comes just from the figure or array being "directly present in consciousness in all its naked glory" (Hatfield 2011: 41), then how can there possibly be variations in character when viewing such figures?

These arguments all assume that built into naïve realism is the claim that the character of experience is *exhausted* by its mind-independent presented elements. This is to assume that naïve realism requires commitment to a thesis which Martin labels "Diaphaneity": that "sameness and difference of phenomenal properties just are sameness and difference in [character-constituting] presented elements" (1998: 175). In turn, it is to assume that naïve realists are committed to holding that any differences in character are explicable solely in terms of differences in relevant presented elements. Call this the *Difference Explanation Principle*.[18]

[18] This is the explanatory analogue of the Difference Principle of French & Phillips (2020: 4).

Brogaard is aware that not all naïve realists endorse such assumptions. She highlights Brewer, who argues that we should understand experience in terms of conscious acquaintance with mind-independent objects "*from a given spatiotemporal point of view, in a particular sense modality, and in certain specific circumstances of perception (such as lighting conditions in the case of vision)*" (2011: 96, emphasis in the original).[19] Brogaard claims that Brewer's *appeal to perspective*, as we call this general approach in French & Phillips (2020: 6), will allow the naïve realist to deal with *certain* normal variation cases, since the naïve realist will not be obliged to explain the variation in terms of presented elements, but can appeal instead to variation in perspective – Brogaard mentions viewing the same coin, in tilted and non-tilted conditions (2018: 87).[20] However, she seems to think that no such move can explain variation cases such as *Mixture*. These cases do not involve relevant differences in spatiotemporal point of view, sense-modality, or viewing conditions (92).[21] Hence, the naïve realist is committed to explaining them in terms of differences in presented elements.

Hatfield too discusses Brewer's account, expressing scepticism regarding its explanation of perspectival variations in shape perception. He worries that it is "rather abstract" and doesn't "explain how the specifics of the perceiver's spatial relation… enter in" (2011: 42). Presumably, Hatfield would find any attempt to treat *Two Trees* by appeal to perspective equally problematic.

[19] See also Campbell 2009, 2014.

[20] Whether Brewer's view does reject the Difference Explanation Principle depends upon how precisely we understand the role of perspectival factors, specifically, whether they only play an availability role. For discussion, see French 2018 and French & Phillips 2020.

[21] Brogaard only explicitly addresses this point in her discussion of variation based on perceptual principles. But presumably she holds the same with respect to her other cases of normal variation, since she equally takes them to challenge naïve realism, including Brewer's version.

We'll return to these charges later. For now, the key point is that Brogaard and Hatfield's challenge to naïve realism based on normal variation begins by–and garners its dialectical force from–saddling the naïve realist with the Difference Explanation Principle. Then, to the extent that both recognize the possibility of appealing to perspectival factors, these are construed extremely narrowly, or not taken seriously as a critical aspect of the naive realist's account of perception—the assumption being again that it is primarily presented elements which will have to account for cases of perceptual variation. In short, Diaphaneity looms large in introducing a tension between normal variation and naïve realism. Ultimately, our defence of naïve realism will involve rejecting Diaphaneity and offering a much fuller account of the appeal to perspective.

4. The Different Elements Strategy

Before we get to this, let's consider an alternative naïve realist response. This response embraces the Difference Explanation Principle, and insists that variation cases *do* involve differences in relevant mind-independent presented elements after all. Call this the *Different Elements Strategy*.

Recall *Mixture.* Two groups differ in terms of the peak sensitivity of their short wavelength cones. Suppose that *A* and *B* from these different groups are presented with precisely the same mixture of red and green light. They see it differently, as manifest in the fact that *B* requires more red light to match the yellow comparison light than *A.* A proponent of the Different Elements Strategy may argue that a difference in presented elements explains the phenomenal difference here by supposing that the relevant qualities presented to *A* and *B* (e.g., redness) have distinct qualitative aspects, and that, due to their differential peak sensitivities, *A* perceives different aspects of redness than *B. A* thus sees the red light differently, and hence its mixture with green. Since these qualitative aspects of colour are mind-

independent presented elements this is consistent with naïve realism and the Difference Explanation Principle.[22]

Now, consider *Two Trees.* Here, the naïve realist might claim that intrinsic size is not the only kind of size-related presented element. Thus, Hatfield, drawing on Noë (2004), considers the option of distinguishing between size and "perspectival size", where this is an objective property corresponding "to the size of the patch that one must fill in on a given plane perpendicular to the line of sight in order to perfectly occlude an object from view" (Noë 2004: 82). Embracing this idea, the naïve realist can claim that there *is* variation in size-related presented elements in *Two Trees.* They differ in perspectival size; the more distant tree having a smaller occlusion size.

Now, *Square/Diamond.* We'll talk of the two experiences associated with the single unchanged stimulus, *S* (see Figure 1), as E_1 (diamond) and E_2 (titled square), and of the transitions between them as *Gestalt shifts*. Can we account for the shift between E_1 and E_2 by appeal to a change in presented elements? Well, consider Raftopoulos' (2011) defence of a representational account on which the difference is understood in terms of a shift of coordinate frames (see Figure 3).[23]

[22] See Kalderon 2008, 2011a, 2011b.

[23] Peacocke (1992: 77) proposes that the difference in phenomenology involves going from seeing the figure's symmetry about the bisectors of its angles to seeing its symmetry about the bisectors of its sides. Though close to Raftopoulos' account in that Peacocke's axes of symmetry are Raftopoulos' coordinate axes, Peacocke's account fails to generalise to non-symmetric figures (see Raftopoulos 2011 and MacPherson 2006 for discussion). As a result, it is best seen as a special case.

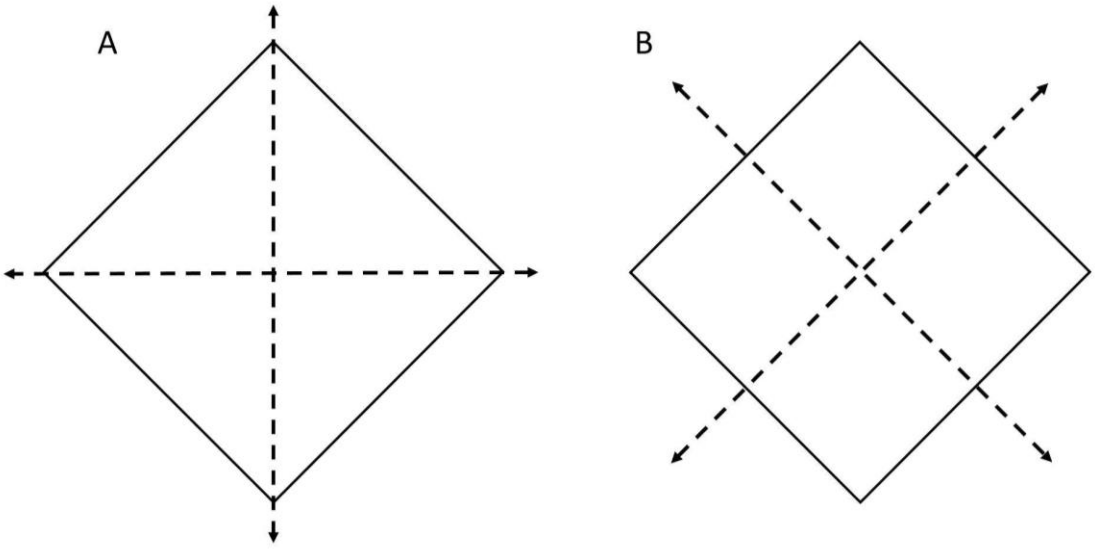

Figure 3: Mach's figure in two differently oriented Cartesian frames. Redrawn based on Raftopoulos 2011: 504.

In like spirit, the naïve realist might claim that distinct presented features are made available in the two cases. In E_1, we see the figure as instantiating a certain relational property, such as the property of filling-out space in such-and-such a way relative to a certain origin and set of Cartesian axes (cf. Peacocke 1992). Whereas in E_2, we see the figure as instantiating a distinct relational property, such as the property of filling-out space in such-and-such a way relative to a distinct set of Cartesian axes.

Finally, what about *Rows/Columns*? Here, consider Green's representationalist treatment. The dot array in Figure 2 can appear grouped into rows (by colour similarity) or columns (by proximity). Grouping, says Green, means that "the dots in the collection seem to 'go together' in your experience" (2016: 124). How does this difference in character reflect a difference in content? According to Green's cue-based composition account, when elements are grouped together, they are "experientially represented as composing a larger individual" (130). Experience thus represents mereological relations (not just shape, size, colour, etc.) and "reifies

perceptual groups" (ibid.). Indeed, because of the cue-based part of the account we get two kinds of relation represented: grouping cues, and part-whole relations. So, with respect to the dots of Figure 2, we might have the following content, where $d_{1\text{-}4}$ are the dots in a top row and a is the row they form (134):

> Same-colour(d_1, d_2, d_3, d_4) & Part-of(d_1, a) & Part-of(d_2, a) & Part-of(d_3, a) & Part-of(d_4, a)

The naïve realist can mirror this account by claiming that presented elements can include mereological relations and perceptual groups. To do so, the naïve realist must accept that relevant mereological relations and groups are amongst the furniture of the mind-independent world and thereby candidates for being presented elements.[24]

Of course, these are not the only ways of executing the Different Elements Strategy, but illustrative examples of the approach. What should we make of it?

On the one hand, the Different Elements Strategy shows that it is much more difficult than one might think to establish the same elements claim. On the other hand, the strategy raises two concerns. The most obvious is that the strategy involves rejecting *simplicity*: the idea that mind-independent presented elements are just ordinary mind-independent objects and their familiar, basic visible qualities. For it requires admitting qualitative aspects of basic visible qualities, perspectival sizes, complex relational spatial properties, mereological relations and perceptual groups into the range of elements presented in experience. The postulation of such elements is not incoherent. But it constitutes a surprising theoretical commitment, beyond what

[24] This need not involve claiming that such relations and groups are entirely independent of the operations of our visual systems. The theorist in question may wish to think of such relations and groups as anthropocentric. Compare here a sports team and the relation of being a team member.

ordinary observers would naïvely regard themselves as being presented with simply in reflecting on their experience. We are not ordinarily and independently of theory committed to the idea that the dot array elements really do form perceptual groups. Nor do we find it obvious that objects like trees have, in addition to their ordinary sizes, also 'perspectival' sizes. So, it is legitimate to ask whether a commitment to such exotic worldly elements is forced on us, or whether the naïve realist has a simpler option.

Hatfield (2011) introduces a second, related concern with the Different Elements Strategy in arguing on empirical grounds that the perspectival size strategy cannot account for examples such as *Two Trees*.[25] Let us grant, for the sake of the argument, that perspectival size is a mind-independent property. Hatfield argues that it fails to determine perceived size. This is because perceived size is not only a function of occlusion size (or visual angle) but also of perceived distance. In other words, taking phenomenal size to be fixed just by perspectival size in such cases as seeing the distant tree conflicts with the size-distance invariance hypothesis – according to which the ratio of perceived size to perceived distance is a constant ratio of visual angle.[26]

To illustrate, consider Figure 4:

[25] Though Noë is Hatfield's stalking horse, there are alternative proposals about 'non-simple' presented elements which the naïve realist might draw on, e.g., Schellenberg's "situation-dependent properties" (2008) and Genone's relational "appearance properties" (2014). For a helpful catalogue of various options, and critical discussion, see Green and Schellenberg (2017).

[26] Hatfield takes this to be empirically plausible. But questions can certainly be raised. Gruber (1954) presents some evidence against the hypothesis—though see Rock (1975: 36) for a reply. And in his review of size-constancy research, Wagner (2006: Chapter 6, 2012), finds the hypothesis to be well-supported by the data only for *unfamiliar* stimuli, with mixed results for familiar stimuli. Ross and Plug (1998) also highlight some of its explanatory limitations in their review.

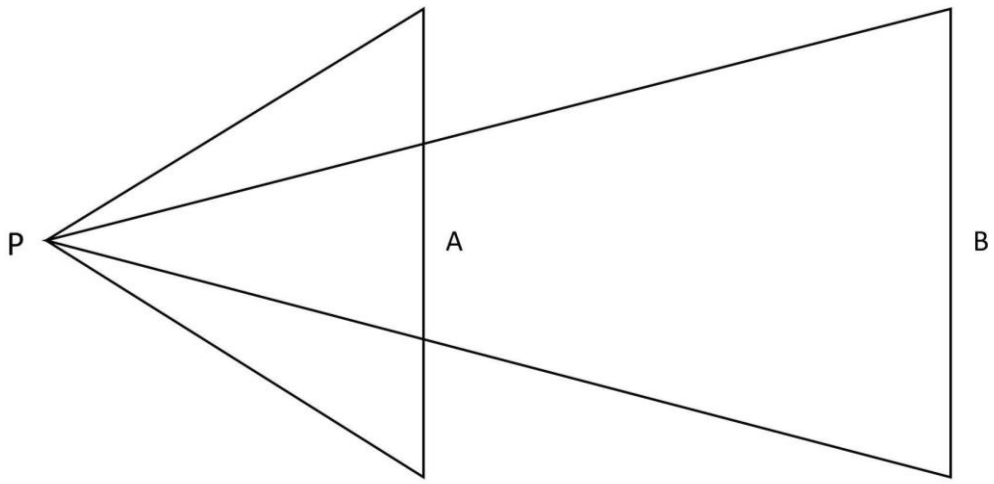

Figure 4. Lines A and B have the same length but, since B subtends a smaller visual angle than A relative to perspective, P, it is said to have a smaller *perspectival* size. Redraw based on Hatfield 2011: 45.

Here, lines *A* and *B* are identical in size. However, since *B* subtends a smaller visual angle than *A*, it has a smaller *perspectival* size. Does this mean that *B* will have a smaller perceived size? Not according to Hatfield. For, by the size-distance invariance hypothesis, we must also account for perceived distance. And if the distances to *A* and *B* are perceived veridically, then *A* and *B* will be perceived as having the same size. Yet, in *Two Trees* the more distant tree did look smaller. The explanation must be that its distance is undervalued.

Critically, Hatfield argues that such systematic underestimation of distance is not an objective feature of the mind-independent world, fixed by "the geometry of projection or … the physical relationship between objects and the eye" (2011: 54). Rather it is something which must be "determined empirically," being "a subjective feature of visual experience" (ibid.). The problem then is not just that specific appeal to perspectival size fails to account for our experience of size, it is that our experience of size cannot be accounted for solely in terms of

the presentation of mind-independent presented elements. Instead, it requires appeal to something subjective: the extent to which our visual system undervalues distance.

For this reason, Hatfield's critique has wider scope than just Noë's appeal to 'perspectival properties'.[27] If Hatfield is right, then some aspects of the phenomenology of spatial perception require us to appeal to *what is going on within the visual system itself*. Exclusive appeal to mind-independent presented elements will not suffice.

These concerns motivate the naïve realist to explore other options for handling cases of normal variation beyond the Different Elements Strategy.[28] If Diaphaneity and the Difference Explanation Principle were non-negotiable, the Different Elements Strategy would seem the only option. These principles are not mandatory, however. In French & Phillips (2020: §6) we show that arguments for Diaphaneity are unconvincing. Here, we show how, by rejecting Diaphaneity and the Difference Explanation Principle, a simple naïve realist account of normal variation is available.[29]

[27] Although he doesn't elaborate, Hatfield (2011, fn. 24) also suggests that his argument tells against Schellenberg's (2008) situation-dependent property account.

[28] See also Davies' (ms) phenomenological and empirical arguments against apparent, viewpoint-relative, perspectival and situation-dependent colour properties (views respectively found in: Allen 2016, Tye 1996, Noë 2004 and Schellenberg 2008).

[29] Our account can helpfully be compared with the approach taken in Lande (2018). Lande is not concerned with naïve realism, and works instead in a representationalist framework. Still, he similarly rejects accounts of variation in terms of special relational or perspectival properties in addition to basic visible qualities. He also presents an empirical argument, though different from Hatfield's, against accounts such as Noë's and Schellenberg's. Finally, he accounts for variation in terms of differences in the *structure* of representations. Though we don't appeal to differences in the structure of representations in our constitutive account of phenomenal variation, we concur in resisting an explanation merely in terms of differences in presented elements.

5. Naïve Realism Without Diaphaneity

5.1 Rejecting the Difference Explanation Principle

In rejecting Diaphaneity, the naïve realist claims that even though an experience's mind-independent presented elements are constitutive of its character, they are not *exhaustive* of it. This might be taken merely to highlight the possibility of hybrid theories of experience, where naïve realism applies to some aspects of conscious character, but we invoke the resources of another theory for other aspects – e.g., representational content, sense-data, etc. (cf. Martin 1998). Our claim here, however, is that *even naïve realist aspects of experience* (i.e., aspects which constitutively involve the presentation of some mind-independent element) are not constituted exhaustively by mind-independent presented elements. Rather the *ways* in which we perceive mind-independent presented elements contribute to the character of experience (Martin 1998: 175). Since presented elements can be consciously presented in different ways, there is no function from presented elements to conscious characters.

In discussing Brewer above, we encountered the idea of appealing to perspectival factors to account for differences in experience. We accommodate this by holding that the perspective from which you perceive an object can affect the way you perceive it (we clarify this further below). To perceive an object close-up is to perceive it in a different way than to perceive it in the far distance. We construe perspectival factors very broadly, to include factors about the environment such as lighting conditions, facts about the relation between subject and environment such as spatio-temporal point of view, and factors concerning the subject, for

Furthermore, treated as an account of subpersonal perceptual processing, Lande's account may well illuminate the causal basis of relevant cases of phenomenal variation.

instance which perceptual modality is operative and how it is operating. We do not deny that differences in perspective can affect *which* elements are presented in experience. Our point is that, unlike the Different Elements Strategy, we do not think that this is their *only* role. Even having settled what is available and presented, perspectival factors can make a difference to the way in which presented elements are experienced.[30]

Our view is naïve realist: aspects of the mind-independent world are constitutive of the character of experience. Indeed, it is consistent with a *pure* form of naïve realism: one which entirely eschews the resources of other theories of experience in explaining the character of experience. And it is *simple*: it doesn't invoke mind-independent presented elements other than ordinary mind-independent objects and familiar, basic visible qualities. But it rejects Diaphaneity and with it the Difference Explanation Principle, insisting that the mind-independent world can be presented to us in diverse ways. The common conflation of naive realism with a view committed to Diaphaneity is simply a mistake (see further French & Phillips 2020).

In the first instance, the rejection of Diaphaneity and the invocation of the idea that we can perceive the very same elements in distinct ways is largely negative. Its aim is to block arguments against naïve realism by explaining that they presuppose something false about experience, namely that it is structured in a way which allows no variation in character without

[30] Our view here is thus close to that of Campbell (2009, 2014) and Brewer (2011) who conceive of experience as a three-place relation involving a subject, object, and standpoint or third-relatum comprising various perspectival factors. Whilst their understanding of the third-relatum is sometimes interpreted as excluding any appeal to the subjective (though see Campbell 2011: 49 for reason to think this is a misinterpretation), we are inclined to read their main point as simply denying that there is any function from objects to experiences. For reasons discussed in French & Phillips (2020: §5.2), we prefer to express our view in terms of experience being a multiply-determinable two-place relation between a subject and aspects of mind-independent reality.

variation in presented elements. Against this, we insist that the structure of experience is richer, insofar as we can perceive the very same elements in a variety of ways.

In line with this largely negative – indeed, quietist – agenda, our aim is not to provide a general, positive account of 'ways of perceiving'. Indeed, we do not think any such account is possible. That said, in what follows, we hope to illuminate our account in a number of dimensions and thereby respond to Hatfield's charge levelled against Brewer above that it is too abstract and lacks explanatory power.

The first (still negative) point to make is that ways are not themselves objects which are perceived. Nor do they correspond to perceptible qualities. If a round penny looks elliptical to you, you are perceiving the penny in a certain way. But this way is not itself *elliptical*. Nor are we perceiving it *elliptically*. Relatedly, ways of perceiving are not separable and independent character-constituting aspects of experience: for your experience to involve a way in which something is perceived, something must actually be perceived. If one were to extinguish the round penny, one would not be left with an experience with any kind of character constituted by a leftover 'way of perceiving'.[31]

A very reasonable demand, however, is to explain why when seen in a certain way, a round penny can look elliptical to us, even if still under conditions where constancies are operative and there is no illusion. Here, we draw on Martin's (2010) treatment of comparative looks-statements. We frame our discussion in terms of looks, since talk of how things look to us reflects a critical aspect of what the naïve realist needs to explain. Talk of how things look to us can be a way of describing aspects of the conscious character of experience. It can therefore be a way of describing some of what the naïve realist is supposed to account for when charged to explain how ellipticity can get into the experiential picture even when only

[31] For a fuller discussion see French & Phillips 2020: §5.

roundness is presented to us. Put in terms of looks, the question is: how can a round penny *look* elliptical to us? Appealing to looks-talk helps the naïve realist to *frame* this question. And, appealing to Martin's account of looks helps them *answer* it. How so?

The basic idea is to understand the situation in comparative terms: as the penny presenting a look to us which is relevantly similar to some paradigm look of an elliptical object. Following Martin's parsimonious account of looks, on which looks are simply basic visible qualities, the presented look of the penny can be identified with its circular shape (or more precisely: a selection of its basic visible properties, and constructions out of these, most obviously, its circularity; we'll take this qualification as read in what follows). Likewise, the relevant paradigm look of an elliptical object can be identified with its ellipticity.

Of course, the question then arises: in what way is circularity similar to ellipticity? The answer is that roundness and ellipticity are similar in terms of their *subjective impact* in the relevant context.[32] Seen at an angle, the circular coin impacts us in a way which is relevantly similar to how an elliptical object might impact us in paradigm circumstances of perception (e.g., viewed head-on). In this way, despite not being elliptical, the round coin can *look* elliptical to us, in that its roundness has a subjective impact on us which is relevantly similar to the subjective impact of an elliptical coin seen in paradigm circumstances. This is how features not presented to us, can nonetheless play a critical role in characterising our experience.

An appeal to a subjective measure of similarity, specifically a measure whereby the standard of similarity concerns the subjective impact that things have on us, is central to our account. But what precisely is meant by 'subjective impact'?

[32] Cf. Smart's (1959) comparative treatment of sensation statements.

As with ways of perceiving, we resist the urge to give a general account of the notion, relying instead on our having an intuitive grasp of how different situations have similar or different subjective impacts, and allowing that there can be a whole range of different such impacts, involving different levels of subjectivity (e.g., cognitive, affective, and so on). For our account to work, it is not necessary that we sharply define 'subjective impact', it is only necessary that claims about similarity or difference in subjective impact can be supported. So, take our illustrative case again, and consider more specifically how the round coin has a subjective impact on us that is relevantly similar to that of ellipticity in paradigm circumstances.

Plausibly, part of this will involve the round coin, or the roundness of the coin, *striking* us as similar to ellipticity (Martin 2010: 214ff.). This, of course, simply defers the question: What is it for something to strike us as similar or different to something else? Without more being said, there will remain the lurking suspicion that all this talk of 'subjective impact' and 'striking' simply smuggles in the idea that the reason the coin strikes us as similar to something elliptical is that it is *represented* as elliptical in perceptual experience. And one might wonder, then, whether we are ultimately relying on a non-naïve realist account of certain aspects of experience after all.

There are, however, two reasons why the naïve realist can resist such a charge. Exploring them will allow us to further clarify our framework. First of all, even if we agree that *striking* is to be understood in representational terms, this does not involve abandoning naïve realism, or introducing non-naïve aspects of experience. For our claim is not that the experience in which the round coin looks elliptical to us is *constituted* by the coin striking us as similar to an elliptical coin. It is that the experience in which the round coin looks elliptical to us is constituted by being presented with the round coin in a certain way. And to be clear, being presented with the round coin in the way in question cannot be identified with the coin

striking us as similar to an elliptical coin. Instead, how the coin strikes us is an indirect characterisation of the experience in question in terms of its impact: how we are struck as a result of having such an experience. The invocation of the round coin striking us as similar to an elliptical coin is not a claim about what is constitutive of experience, but rather a claim about the similarity in subjective bearing of the round coin and an elliptical coin. Its purpose is to articulate the subjective measure of comparison which substantiates the claim that the coin's way of looking is relevantly similar to that of a paradigm elliptical coin.

Second, it is far from clear that being struck by a similarity or difference *is* in all cases a matter of experiential representation. Evans (1982; see also Martin 2010) provides an alternative model: "for one thing to strike me as like another is simply a reaction which those things occasion in me; it is not a judgement, to which the question of truth or falsity can significantly be applied" (293). There are two elements here which contrast with an experiential representational model. First, the idea that striking is not a judgement, open to evaluation as true or false, but perhaps simply a feeling, pulls us away from a representational model. Second, the idea of striking being a reaction suggests that it is *post-experiential*: experience presents to one a thing (in a certain way) which then elicits a reaction of being struck by its similarity. Thus, again, even if this reaction is representational, it is not the kind of experiential representation that figures in representational theories of experience, and so would not move us away from naïve realism.[33]

These remarks help explain the core notions we are appealing to, and how they function our account. Clearly, these notions are closely knit. For instance, the sense in which the round coin is relevantly similar to an elliptical coin is that its *subjective impact* on us when perceived

[33] For behavioural evidence of similarity in subjective impact see, again, Morales et al. 2020. Notice how the impacts on reaction times demonstrated in this work need not be understood in terms of the *experiential representation* of ellipticity in cases where a titled round coin is presented.

in a certain way, is similar to that of an elliptical coin perceived in *a different way*, in paradigm conditions. However, we don't take these connections to indicate any problematic kind of circularity. Our aim, recall, is to explain how the naïve realist can resist a certain line of argument from normal variation. This we achieve by explaining how the naïve realist has the resources to accommodate the kinds of cases of variation adduced by her opponents, and by showing how these resources form a coherent package. We do not seek to provide a reductive account of ways of perceiving, subjective similarity etc. Nor to offer general accounts or definitions of these notions in independent terms.

We are not trying to define these notions, partly because we are sceptical of the prospects of such theoretical endeavours, but more importantly, because doing so is simply not necessary for defending naïve realism. To do that requires explaining how a naïve realist account of experience can accommodate the experiential phenomena we have set out. This critically involves appealing to the possibility of perceiving things in different ways. Beyond that we see no reason the naïve realist needs to offer more than partial and piecemeal explanations of the role of particular ways of perceiving in particular cases, and likewise of subjective impacts.

With these general remarks behind us, we now put our account to work in relation to the normal variation challenges encountered above.

5.2 The Anti-Diaphaneity Strategy

By rejecting Diaphaneity and the Difference Explanation Principle, the naïve realist can account for empirical cases of normal variation by saying that the variation arises not because of a difference in presented elements but because the very same elements are perceived in different ways, and so shape the character of experience differently.

Above we flagged Hatfield's worry that Brewer's (2011) appeal to perspective is abstract and unexplanatory (Hatfield 2011: 42). We suspect this is unfair to Brewer. Here, however, we take up the challenge with respect to our view.[34] As just noted, we do not believe that any general account of ways of perceiving can be given, and so do not offer any general account of how presented elements and perspectival factors interact to fix character. Nonetheless, *in particular cases*, we can provide genuine explanations. Such explanations will detail the relevant perspectival factors which affect the way in which we perceive a given presented element or set of elements, and they will also explain why, so-seen, the presented element(s) has the subjective impact that it does: why, in that sense, it looks to us as it does. In providing such explanations, care is needed to distinguish between causal and constitutive levels of explanation.

Let us begin with *Two Trees*. The distant tree looks small to us. What is it for the tree to look small to us? Following Martin (2010), we can understand this as our being presented with its actual size (again: and other basic visible properties, and constructions out of these) in such a way that it is relevantly similar to that of a small tree perceived in paradigmatic circumstances. How could the tree's large size possibly be relevantly similar to smallness? At a personal level, we can appeal to the way the tree is perceived, and the psychological impact its size has on us when perceived in this way. Thus, perceived in the way it is, the actual size of the large distant tree has a psychological impact on you which is relevantly similar to the psychological impact of the size of a small tree when viewed in paradigm circumstances. Because you perceive it in this way, you will find the size of the distant large tree relevantly subjectively similar to the size of a small tree.

[34] Insofar as our view may be understood as a variant of Brewer's view (see fn. 29), one way to read what follows is as a defence of Brewer.

Importantly, this is consistent with the case involving no illusion, but instead being an example of size constancy, perceptually understood. The key point here is that one and the same thing can look both small and large, since it can have similarities both with small and large things. (Compare how you might look both like your mother and your father, even though they look nothing alike.) In the case of the trees, the distant tree may look *large* to you insofar as it presents a look which is relevantly similar to the look of a large tree. And, indeed, it does: for its actual large size—which just is part of the look of a large tree—is manifest in experience, perceived for what it is. Nonetheless, it may also look *small* insofar as its large size has a psychological impact on you which is relevantly similar to the psychological impact of a small tree seen in paradigm circumstances. And, in that sense, it also looks *smaller* than the nearby tree which has the psychological impact of a larger tree seen in paradigm circumstances.[35]

Turning to a subpersonal level of explanation, we can begin to explain (in a partial, and piecemeal fashion) the subjective similarity of psychological impact by considering how the two stimuli impact on the visual system. Suppose for the sake of argument, that the paradigm circumstances for perceiving such a tree is at a distance of 10m.[36] Suppose the tree is actually 20m high. Then its subtended visual angle (which determines retinal image size, given fixed eye dimensions) will be 90°. If a 20m tree is 60m away instead, it will subtend an angle of

[35] For further important discussion of these ideas, see Martin 2020.

[36] In making this suggestion, we do not suppose that there is any determinate or context-independent answer to the question: "What is the paradigm circumstance for seeing a tree?" But this fact should not encourage us to abandon the notion entirely. Neither seeing a tree from 10,000ft nor with one's eyeball pressed up against it are paradigm viewing distances. For the reader sceptical of there being any useful notion here: Look at the results of a Google image search for 'tree'. Is there no recognition here of something like a paradigm viewing perspective in many of the results?

roughly 19°. This corresponds to the visual angle which a 3 1/3m tree would subtend at the paradigm distance of 10m.[37] In terms of subtended visual angle and retinal image size, then, the impact of the distant tree's size is the same as that of a close small tree's size.

Now, of course, the perceived size of a stimulus is not a simple function of retinal image size. Indeed, this point was central to Hatfield's criticism of Noë's account above which insisted that the visual system considers perceived distance in calculating perceived size. This was a problem for theorists like Noë who wanted to find objective mind-independent properties to serve as presented elements. However, from our point of view, Hatfield's objection (and, likewise, more sophisticated treatments of size perception) simply indicates that the processing of visual size is not a simple function of subtended visual angle. But this does not affect our basic point, namely that details of the processing of visual size, however complex, can serve to illuminate the similarities and differences in subjective impact of visible properties in different conditions. Such accounts detail the subpersonal processing underlying our perception of basic visible properties. At a personal level, such processing is reflected in the different ways in which we perceive features. And such accounts help us understand how, when perceived in certain ways, distinct features may have a similar psychological impact upon us; and, likewise, why perceived in different ways, the same feature may have quite different impacts upon us.

Consider Hatfield's view of matters. His central claim is that given the "size-distance invariance relation, if the distance registered by the visual system is systematically smaller than the true physical distance of objects, then the objects will appear phenomenally smaller at a distance, and will appear even smaller the greater the physical distance" (2011: 54). Part of why the distant tree looks smaller, then, is that the visual system undervalues its distance. The visual system's valuing of distance, Hatfield explains, is not at the level of experience, the

[37] Where visual angle, $\theta = \tan^{-1}$ (size / distance).

"value is subpersonal, and presumably enters into nonconscious processes of perception that combine the registered value for distance with the registered value for visual angle to yield a phenomenally perceived distance that is available to consciousness" (60, fn. 23).

In our framework, we can include the way the visual system undervalues distance as among the perspectival factors that shape the subject's perspective on the tree, and so lead her to see it in the way she does. We can further note that this aspect of her perspective is (partly) causally responsible for the fact that the tree's psychological impact on her is similar to that of a smaller tree perceived in paradigm circumstances. For such circumstances are circumstances in which the small tree is relatively nearby, such that distance is properly valued, and the perceiver perceives the tree's small size for what it is. One implication of the visual system undervaluing distance in the case of the *distant* tree is to bring the psychological situation, in terms of the registered value for distance, closer to, and therefore more similar to, the paradigm case: for now, just as in the paradigm case, the registered value for distance is a 'relatively nearby' value. Thus, given the size-distance invariance hypothesis, the tree's size will have a similar psychological impact to that of a smaller tree.

Hatfield describes the visual system's undervaluing of distance as a "subjective feature" of visual experience (2011: 54). He glosses this by saying that it is "in no way required by the geometry of projection or by the physical relationship between objects and the eye" (54). This is problematic for the naïve realist who, pursuing the Different Elements Strategy, appeals just to Noë's mind-independent perspectival size to account for the fact that the distant tree looks small. For perspectival size is precisely supposed to be determined by projective geometry and independent of the operations of the visual system. However, our naïve realist account – which Hatfield fails to countenance – is perfectly capable of accommodating this subjective element. For, on our account, a subject's perceptual engagement with the world is structured by the

perspective they have on it, as well as the world itself. And our perspective certainly reflects the underlying functioning of our visual systems.

Finally, there is something misleading about referring to the visual system's subpersonal undervaluing of distance as a *subjective feature of visual experience* – especially in the context of a dispute with naïve realism: a view famously sceptical of such features. For although naïve realists *are* sceptical of subjective intrinsic qualities, which attach to experience to give it is conscious character (qualia, raw feels, etc), assigning an explanatory role to the visual system's subpersonal undervaluing of distance need not involve flirting with *anything like* that idea. Hatfield himself seems to think that finding a role for the visual system's undervaluing of distance leads us inexorably to a view of cases of diminished phenomenal size (e.g., where the distant tree looks small) which involves diminished size being present in consciousness as a phenomenal quality – an instance of "subjective qualitative phenomenality" (56, see also Hatfield 2016). But, as we've shown, acknowledging an explanatory role for the workings of the visual system has no such consequence, and is entirely consistent with simple naïve realism.

This completes our treatment of *Two Trees.* We now turn to our other examples. We'll be briefer here, mirroring some of the ideas set out above.

First, *Mixture*. Suppose that *A* and *B* witness the same mixture of red and green light, *RG*. For *A*, *RG* matches the yellow comparison light, but for *B* it doesn't quite: *B* requires a slightly greater proportion of red light for a match. *A* and *B*'s perspectives differ in terms of their sensitivity to red light (again, this exploits our broad understanding of perspectival factors). Given *A*'s sensitivity, he perceives *RG* in a certain way, such that it strikes him as more similar to the comparison light than anything else, whereas given *B*'s different sensitivity, he perceives *RG* in a different way, such that it strikes him as almost but not quite the same colour as the comparison.

Shifting from personal to subpersonal levels of explanation, why do these subjects perceive *RG* in different ways, giving rise to distinct psychological impacts? Very crudely, we can suppose that for *A* both the yellow comparison light and *RG* both excite *L* and *M* cone cells equally. In consequence, the two lights are seen in ways which provoke a similar subjective impact. In contrast, we can suppose that the mixture fails to excite *B*'s *L* cells to quite the same degree as his *M* cells. The subjective impact of *B's* experience of *RG* is thus slightly different to that of his experience of the yellow comparison.

Second, *Square/Diamond*. Again, suppose that the contrasting experiences E_1 and E_2 involve the same presented elements: the Mach figure with its shape (equally describable as a regular diamond or square). What differs is not what is presented but *the way* it is presented. Perceived in one way, as in E_1, the figure *looks vertically oriented*. On Martin's account: the figure has a look (its shape, perhaps in combination with other basic visible qualities) which is relevantly similar to some paradigmatic look of a vertically oriented figure. The similarity here may be subjective: a matter of how the figure strikes you. And we might find evidence of its striking you differently in, amongst much else, the ways in which one's attention and eye movements are drawn to and move amongst certain parts of the figure, the ways in which one's hand would instinctively grasp it, the kinds of errors one might make in drawing the figure, how one would group it with other figures, and so forth.

Let's switch now to the cognitive processing which subserves such experience. Here, there is no reason why we cannot postulate shifts in coordinate frames to explain why the figures look oriented one way or another. We might put the point like this: our perceptual systems aim to grant us access to the shapes of things in the world. But our subpersonal systems have different ways of achieving this. (We might compare seeing the world through different transparent lenses—be these flat, convex or concave. The world may look different, but it is nothing other than the world we are seeing.) These different ways of achieving access to the

shape of Figure 1 may make use of different coordinate systems to represent what is there, and thereby put us properly in touch with it.[38] The consequences of such subpersonal processes are reflected in the different ways in which we see the figure, and the subjective impacts the figure, so seen, has on us.

Finally, *Rows/Columns*. Suppose, in E_1, the dots in the rows look visually grouped, and, in E_2, the dots in the columns look visually grouped. Again, on our account, we will say that this is a matter of seeing the dots in different ways. But what is it for a dot to look visually grouped with the other dots in its row/column? Consider dot, d_1, in E_1. This looks to you grouped with the other dots, $d_{2\text{-}4}$. Following Martin's account, we can say that this is for it to have a look which is relevantly similar to some look of something paradigmatically grouped with dots, $d_{2\text{-}4}$. And surely it does have such a look amongst its basic visible properties, namely, its colour which is the same as the other dots, and location which is colinear with the other dots. For the dot's colour and location are features of a paradigmatic dot grouped with such other dots—coloured and located as they are.

This account so far says nothing about what visual grouping involves. One option here would be to appeal to objective facts about groups in the world. But, given that appeal to subjective features of visual processing is entirely consistent with our naïve realism, we need not pursue this idea. Instead, we can look to the grouping principles expounded by Gestalt psychologists which Green relates (2016: 129):

[38] Indeed, a cursory examination of work in visual cognition reveals a highly complex picture of representation involving complex hierarchies of coordinate-based representation. These details are not our present concern. The present point is simply that our ways of seeing scenes depend crucially on, and so naturally reflect, such complex processing and representation. This is all entirely consistent with naïve realism. For the reader concerned about whether appealing to *representation* at this level is consistent with naïve realism, see French & Phillips (2023).

Principle of proximity: Elements that are close together tend to be grouped.

Principle of similarity: Elements that are similar (in color, shape, size, orientation, etc.) tend to be grouped.

Principle of good continuation: Elements that fall along a smooth curve tend to be grouped.

Principle of common fate: Elements that move together (e.g., along equal and parallel motion trajectories) tend to be grouped.

Principle of element connectedness: Connected elements tend to be grouped.

These principles tell us that our visual systems process certain configurations of elements as groups. The principles tell us (roughly) *when* this happens. Further empirical work details precisely *what* this involves, both in terms of consequences (e.g., as regards the impact on attention, action and cognition) and at a subpersonal level of processing. At the level of subpersonal processing, Green's account may well essentially be correct. It may explain what grouping cues elicit in terms of visual representation. The naïve realist, however, will see such details as reflected at the personal, experiential level in our seeing each dot in a certain way—a way which relates it to the way in which other dots are perceived. When we make a comparative looks statement such as, "The dot, d_1, looks grouped with the other dots in a row," we invoke stored knowledge of how such configurations impact creatures with visual systems like ours. We say: "Recall the impact of visual groups ('Gestalts'), the way certain objects with certain common features can seem to go together: our dot looks like one of those, in companion with the other dots in its row."

This account is wholly consistent with presented elements being exclusively basic visible features (e.g., location, colour, shape, size). There is no need to postulate mereological

relations or groups as presented elements. Nor need we worry about the objectivity of such groups. We can perfectly happily think of them as artefacts of our visual system, not objective, mind-independent features.

In a famous discussion of ambiguous figures, Wittgenstein comments: "What is incomprehensible is that *nothing*, and yet *everything* has changed, after all. That is the only way to put it. Surely this way is wrong: it has not changed in one respect but has in another. There would be nothing strange about that…" (RPP II (1980), §474; see Eilan 2013 for discussion). Our account of ambiguous figures addresses this felt tension. In our view, when a Gestalt shift occurs, nothing changes, not only in that the stimulus does not change, but that the presented elements across the two experiences do not (or at least need not) change either. On the other hand, the *way* in which the relevant presented elements are perceived does change—perhaps dramatically—across the cases. Since this may apply to all the perceived elements, there is also a sense in which everything has changed: for everything is seen in a new way. We thus diagnose Wittgenstein's puzzlement as deriving from a failure to appreciate the fact that we can see the very same things in quite different ways.

6. Conclusion

This completes our defence of naïve realism against the challenge from normal variation. The cases we have considered are cases where perceptual experience varies in character without variation in (relevant) presented elements, in a 'normal' perceiver or perceivers. Such cases, we have argued, are unproblematic for the naïve realist so long as she denies that experience is Diaphanous, and instead allows that we can be presented with the same mind-independent elements in distinct ways. On this view, mind-independent features are constitutive of the character of experience, but our perceptual engagement with the world

is structured by our perspective. This allows us to defend a version of naïve realism which is *simple* – not requiring presented elements beyond ordinary mind-independent objects and their basic visual qualities – and *pure* – not requiring the resources of any other theory of experience to account for perceptual phenomenology.

Throughout, we have focused on cases of 'normal' variation supported by perception science. Those who think that such cases challenge naïve realism might take them to confirm the widespread impression that naïve realism is inconsistent with perception science. We reject this entirely. Not only are such cases not problematic for the naïve realist, our discussion shows how the naïve realist is able to invoke relevant empirical details, 'shifting down' a level in spelling out what is happening in cases of normal variation. Far from being incompatible with vision science, naïve realism embraces it.

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References

Allen, Keith. (2016). *A Naïve Realist Theory of Colour*. Oxford: OUP.

Arend, Lawrence & Reeves, Adam (1986). "Simultaneous color constancy." *Journal of the Optical Society of America, A, Optics, Image & Science* 3(10): 1743–51.

Beck, Ori (2019). “Rethinking Naive Realism”. *Philosophical Studies* 176: 607–633.

Berger, Jacob & Nanay, Bence (2016). “Relationalism and unconscious perception.” *Analysis* 76(4): 426–433.

Block, Ned (1999). “Sexism, Racism, Ageism, and the Nature of Consciousness.” *Philosophical Topics* 26: 39–70.

— (2010). “Attention and Mental Paint.” *Philosophical Issues* 20: 23–63.

— (2023). *The Border Between Seeing and Thinking.* Oxford: OUP.

Brewer, Bill (2011). *Perception and its Objects*. Oxford: OUP.

Brogaard, Berit (2018). *Seeing and Saying: The Language of Perception and the Representational View of Experience*. New York: OUP.

Burge, Tyler (2005). “Disjunctivism and perceptual psychology.” *Philosophical Topics* 33(1): 1–78.

Campbell, John (2002). *Reference and Consciousness*. Oxford: OUP.

— (2009). “Consciousness and Reference.” In: *The Oxford Handbook of Philosophy of Mind*. Brian McLaughlin, Ansgar Beckermann & Sven Walter (eds). Oxford: OUP, pp. 648–662.

— (2011). “Relational vs Kantian Responses to Berkeley's Puzzle.” In: *Perception, Causation, and Objectivity*. Johannes Roessler, Hemdat Lerman & Naomi Eilan (eds). Oxford: OUP, pp. 35–50.

Campbell, John & Cassam, Quassim (2014). *Berkeley’s Puzzle: What Does Experience Teach Us?* Oxford: OUP.

Brown, Derek H. (2014). “Colour layering and colour constancy.” *Philosophers’ Imprint* 14(15): 1–31.

Cavedon-Taylor, Dan (2018). "Naïve Realism and the Cognitive Penetrability of Perception." *Analytic Philosophy* 59(3): 391–412.

Cohen, Jonathan (2008). "Colour constancy as counterfactual." *Australasian Journal of Philosophy* 86(1): 61–92.

Davies, Will (2016). "Colour Constancy, Illumination, and Matching." *Philosophy of Science* 83(4): 540–562.

— (ms). "Seen the light?"

Eilan, Naomi (2013). "On the Paradox of Gestalt Switches: Wittgenstein's Response to Kohler." *Journal for the History of Analytical Philosophy* 2(3): 1–21.

Fish, William (2009). *Perception, Hallucination, and Illusion*. Oxford: OUP.

Foster, John (2000). *The Nature of Perception*. Oxford: OUP.

French, Craig (2018). "Naïve Realism and Diaphaneity." *Proceedings of the Aristotelian Society* 118(2): 149–175.

French, Craig & Phillips, Ian (2020). "Austerity and Illusion." *Philosophers' Imprint* 20(15): 1–19.

— (2023). "Naïve Realism, the Slightest Philosophy, and the Slightest Science." In: *Contemporary Debates in the Philosophy of Mind*. Brian McLaughlin & Jonathan Cohen (eds). Blackwell, pp. 363–383.

Genone, James (2014). "Appearance and Illusion." *Mind* 123(490): 339–376.

Granrud, Carl E. (2004). "Visual Metacognition and the Development of Size Constancy." In: *Thinking and Seeing: Visual Metacognition in Adults and Children*. Daniel T. Levin (ed.). Cambridge: MIT Press, pp. 75–95.

— (2009). “Development of Size Constancy in Children: A Test of the Metacognitive Theory.” *Attention, Perception, and Psychophysics* 71: 644–54.

— (2012). “Judging the Size of a Distant Object: Strategy Use by Children and Adults.” In: *Visual Experience: Sensation, Cognition, and Constancy*. Gary Hatfield & Sarah Allred (eds.). Oxford: OUP, pp. 13–34.

Green, E. J. (2016). “Representationalism and Perceptual Organization.” *Philosophical Topics* 44(2): 121–148.

Green, E. J. & Schellenberg, Susanna (2018). “Spatial perception: The perspectival aspect of perception.” *Philosophy Compass* 13: e12472.

Gruber, H. E. (1954). “The relation of perceived size to perceived distance.” *The American Journal of Psychology*. 67(3): 411–426.

Hafri, Alon & Firestone, Chaz. 2021. “The Perception of Relations.” *Trends in Cognitive Sciences* 25(6): 475–492.

Hatfield, Gary & Allred, Sarah (eds.) (2012). *Visual Experience: Sensation, Cognition, and Constancy*. Oxford: OUP.

Hatfield, Gary (2011). “Philosophy of Perception and the Phenomenology of Visual Space.” *Philosophic Exchange* 42(1): 31–66.

— (2016). “Perceiving as Having Subjectively Conditioned Appearances.” *Philosophical Topics* 44(2): 149–178.

Jameson, Kimberly A., Highnote, Susan M., & Wasserman, Linda M. (2001). “Richer Color Experience in Observers with Multiple Photopigment Opsin Genes.” *Psychonomic Bulletin & Review* 8: 244–261.

Jameson, Kinberly A., Bimler, David, & Wasserman, Linda M. (2006). "Re-assessing Perceptual Diagnostics for Observers with Diverse Retinal Photopigment Genotypes." In: *Progress in Colour Studies 2: Cognition*. Nicola J. Pitchford & Carole P. Biggam (eds). Amsterdam: John Benjamins, pp. 13–33.

Jameson, Kimberly A. (2007). "Tetrachromatic Color Vision." In: *Oxford Companion to Consciousness*. Patrick Wilken, Tim Bayne, & Axel Cleeremans (eds). Oxford: Oxford University Press, pp. 155– 158.

Kalderon, Mark Eli (2008). "Metamerism, Constancy, and Knowing Which." *Mind* 117(468): 549–585.

— (2011a). "Color Illusion." *Noûs* 45 (4):751–775.

— (2011b). "The Multiply Qualitative" *Mind* 120(478): 239–262.

Lande, Kevin J. (2018). "The Perspectival Character of Perception." *Journal of Philosophy* 115(4): 187–214.

Logue, Heather (2012). "Why Naive Realism?" *Proceedings of the Aristotelian Society* 112(2): 211–237.

Macpherson, Fiona (2006). "Ambiguous Figures and the Content of Experience." *Noûs* 40(1): 82–117.

Martin, Michael G. F. (1997). "The reality of appearances." In: *Thought and Ontology*. M. Sainsbury (ed.). Milan: Franco Angeli, pp. 77–96.

— (1998). "Setting Things Before the Mind." In: *Current Issues in Philosophy of Mind*. Anthony O'Hear (ed.). Cambridge: CUP, pp. 157–179.

— (2002). "The Transparency of Experience." *Mind & Language* 17: 376–425.

— (2006). “On Being Alienated.” In: *Perceptual Experience*. Tamar Gendler and John Hawthorne (eds) Oxford: OUP, pp. 354–410.

— (2010). “What’s in a Look?” In: *Perceiving the World*. Bence Nanay (ed.). Oxford: OUP, pp. 160–225.

— (2020). “Variation and Change in Appearances.” In: *Epistemology After Sextus Empiricus*. Katja Maria Vogt & Justin Vlasits (eds.). Oxford: OUP, pp. 89–115.

Mollon, J. (1992). “Worlds of Difference.” *Nature* 356: 378–379

Morales, Jorge, Bax, Axel & Firestone, Chaz (2020). “Sustained Representation of Perspectival Shape.” *Proceedings of the National Academy of Sciences of the United States of America* 117(26): 14873–14882.

Nanay, Bence (2014). “Empirical problems with anti-representationalism.” In: *Does Perception have Content?* Berit Brogaard (ed.). Oxford: OUP, pp. 39–50.

Noë, Alva (2004). *Action in Perception*. Cambridge, MA: MIT Press.

Peacocke, Christopher (1983). *Sense and Content.* Oxford: OUP.

— (1992). *A Study of Concepts.* Cambridge, MA: MIT Press

Phillips, Ian & Block, Ned (2016). “Debate on Unconscious Perception.” In: *Current Controversies in the Philosophy of Perception.* Bence Nanay (ed.). New York, USA: Routledge, pp. 165–192.

Raftopoulos, Athanasios (2011). “Ambiguous figures and representationalism.” *Synthese* 181(3): 489–514.

Rescorla, Michael (2015). “Bayesian Perceptual Psychology.” In: *The Oxford Handbook of Philosophy of Perception*. Mohan Matthen (ed.). Oxford: OUP, pp. 694–716.

Rock, Irvin (1975). *An Introduction to Perception*. London: Macmillan

Ross, Helen E. & Cornelis Plug (1998). "The History of Size Constancy and Size Illusions." In: *Perceptual Constancy: Why Things Look as They Do*. Vincent Walsh & Janusz Kulikowski (eds). Cambridge: CUP, pp. 499–528.

Russell, Bertrand. (1912, reissued 2001). *The Problems of Philosophy*. Oxford: OUP.

Schellenberg, Susanna (2008). "The Situation-Dependency of Perception." *Journal of Philosophy* 105(2): 55–84.

Siegel, Susanna & Byrne, Alex (2017). "Rich or thin?" In: *Current Controversies in Philosophy of Perception*. Bence Nanay (ed.). New York, USA: Routledge. pp. 59–80.

Smart, Jack J. C. (1959). "Sensations and Brain Processes." *Philosophical Review* 68: 141–156.

Smith, Arthur David (2010). "Disjunctivism and Illusion." *Philosophy & Phenomenological Research* 80(2): 384–410.

Soteriou, Matthew (2013). *The Mind's Construction: The Ontology of Mind and Mental Action*. Oxford: OUP.

Tye, M. (1996). "Perceptual Experience is a Many-Layered Thing." *Philosophical Issues* 7: 117–26.

Verrelli, Brian C. & Tishkoff, Sarah A. (2004). "Signatures of Selection and Gene Conversion Associated with Human Color Vision Variation." *American Journal of Human Genetics* 75(3): 363–375.

Wagner, Mark (2006). *Geometries of Visual Space*. Mahwah, N.J.: Erlbaum.

— (2012). "Sensory and Cognitive Explanations for a Century of Size Constancy Research." In: *Visual Experience: Sensation, Cognition, and Constancy*. Gary Hatfield & Sarah Allred (eds). Oxford: Oxford University Press, pp. 63–86.

Winderickx, Joris, Lindsey, Delwin T., Sanocki, Elizabeth, Teller, Davida Y., Motulsky, Arno G. & Deeb, Samir S. (1992). "Polymorphism in Red Photopigment Underlies Variation in Colour Matching." *Nature* 356: 431–433.

Webster, Michael A., Webster, Shernaaz M., Bharadwaj, Shrikant, Verma, Richa, Jaikumar, Jaikishan, Madan, Gitanjali & Vaithilingham, E. (2002). "Variations in Normal Color Vision. III. Unique Hues in Indian and United States Observers." *Journal of the Optical Society of America. A, Optics, image science, and vision* 19(10): 1951–1962.

Wittgenstein, Ludwig (1980). *Remarks on the Philosophy of Psychology*. Blackwell.

Wright, Wayne (2013). "Color Constancy Reconsidered." *Acta Analytica* 28(4): 435–455.