

REVELATION AND THE NATURE OF COLOUR

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According to naïve realist (or primitivist) theories of colour, colours are sui generis mind-independent properties. The question that I consider in this paper is the relationship of naïve realism to what Mark Johnston calls Revelation, the thesis that the essential nature of colour is fully revealed in a standard visual experience. In the first part of the paper, I argue that if naïve realism is true, then Revelation is false. In the second part of the paper, I defend naïve realism against a number of objections.

1. NAÏVE REALISM AND REVELATION

The *naïve realist theory of colour* can be understood as the conjunction of two theses:

MIND-INDEPENDENCE: colours are properties of material objects, light sources, etc. whose essential nature is constitutively independent of the experiences of perceiving subjects;

DISTINCTNESS: colours are *sui generis* properties that are distinct from properties described in the vocabulary of physical science.

The claim that colours are *mind-independent* properties of material objects (etc.) distinguishes naïve realism from broadly speaking subjectivist theories of colour: from dispositional theories according to which colours are dispositions of objects to look coloured (e.g. Evans 1980, McGinn 1983, McDowell 1985, Johnston 1992), and from eliminativist theories according to which colours are mind-dependent properties of sense-data (e.g. Russell 1912), subjective visual fields (e.g. Boghossian and Velleman 1989), or experiences themselves (e.g. Strawson 1989). The claim that colours are mind-independent properties *of material objects (etc.)* distinguishes naïve realist views from eliminativist views according to which colours are uninstantiated mind-independent properties that perceptual experiences systematically misrepresent (e.g. Chalmers 2006): Mind-Independence could be formulated as a weaker thesis that does not incorporate an instantiation requirement, however a theory that accepted only this weaker thesis would neither be *realist* or *naïve*—if we ordinarily believe anything about the colours, it is surely that colours are properties of material objects. Finally, the claim that colours are *sui generis* properties distinguishes naïve realism from (reductive) physicalist theories of colour: from the view that surface colours are identical with types of surface reflectance property (e.g. Tye 2000, Byrne and Hilbert 2003), or else the micro-physical grounds of these reflectance properties (e.g. Jackson 1996, McLaughlin

2003). So construed, proponents of naïve realism—also called *R(ealist)-primitivism*, *naïve objectivism*, or *the simple view of colour*—include Nathan (1986), Westphal (1987), Campbell (1993, 2005, 2006), Yablo (1995), McGinn (1996), Watkins (2005, 2010), Gert (2008), and perhaps Broackes (1992) and Kalderon (2008).

The question that I consider in this paper is what relationship these two metaphysical theses about the nature of colour bear to a third epistemological thesis. This is a version of the thesis that Mark Johnston (1992, 138) calls ‘Revelation’:

REVELATION: the essential nature of (for example) canary yellow is fully revealed by visual experiences as of canary yellow things.

As I will understand it, Revelation is a thesis about the *essential* nature of the colours: that which makes the colours the properties that they are, and not anything else.¹ Following Byrne and Hilbert (2006), Revelation can itself be understood as the conjunction of two further theses:

INFALLIBILITY: if it seems to be in the essential nature of the colours that *p*, then it is in the essential nature of the colours that *p*;

SELF-INTIMATION: if it is in the essential nature of the colours that *p*, then it will seem to be in the essential nature of the colours that *p*.

These theses in turn come in a variety of strengths depending on whether the essential nature of the colours is revealed in a single standard visual experience (as Johnston’s formulation might be taken to suggest), is revealed to subjects who enjoy a wide range of colour experiences across a variety of different perceptual conditions, is revealed to subjects who carefully reflect on their experiences, and so on (Byrne and Hilbert 2006, 77); indeed, talk of colour experience *revealing* the essential nature of colour might be better understood as the claim that colour experiences merely put subjects in a position to know what the essential nature of the colours is—a position that they might nevertheless fail to exploit. Abstracting from these complications for the time being, the general question that I consider in this paper is whether naïve realists about colour are committed to Revelation.

Naïve realism and Revelation might seem like natural bedfellows. According to Johnston, Revelation represents one of five core common sense beliefs about colour; as such it might seem

¹ Although Johnston himself formulates Revelation as a thesis about the *intrinsic* nature of the colours, he sometimes glosses this in essentialist terms, for instance, as a thesis about the ‘intrinsic and essential features which are evident in an experience as of canary yellow’ (e.g. 1992, 139). One advantage of the essentialist reading is that it allows for seemingly essential relational properties, such as similarity relations between different colours, to fall within the scope of Revelation. For more on the structural features of the colours, see §3 below.

that Revelation should be a commitment of the philosophical theory that purports to be representative of common sense thought about colour. Naïve realism and Revelation are sometimes implicitly linked (for instance Jackson 1998, 104, n. 14 and McLaughlin 2003, 98, n. 1 both attribute Revelation to Campbell 1993), and more explicitly Byrne and Hilbert (2006) have recently argued that Revelation is entailed by primitivist theories of colour—of which they take naïve realism (what they call ‘R[ealist]-primitivism’) to be a species.

Without pretending to speak for all versions of naïve realism (or similar theories), I will argue that understanding naïve realism as being committed to Revelation is neither necessary nor desirable. The background worry with Revelation is that it is a very strong thesis indeed. If Revelation is true, then normal perceiving subjects who enjoy standard visual experiences already know, or are at least in a position to know, everything there is to know about the essential nature of colour. But this seems to make the epistemology of colour improbably easy. This worry is nicely illustrated by McLaughlin’s claim that naïve realists see the metaphysical enquiry into the nature of colour as akin to a grail quest, in which philosophers go to great lengths to discover what they already know:

It is a consequence of the doctrine of Revelation...that all we’ve learned, and indeed, all we can ever hope to learn by scientific investigation will contribute not one whit to our knowledge of the nature of colours themselves. For Revelation entails that there is nothing more that we can learn about the nature of our old acquaintances than what visual experiences teaches us (2003, 98).

This background worry is one that I believe the naïve realist should take seriously. I will argue that it is consistent with the naïve realist’s claim that colours are *sui generis* mind-independent properties that Revelation is false, and that colours constitute a legitimate domain of inquiry in their own right. In §2 I argue that there is a tension between Revelation and the naïve realist’s commitment to Mind-Independence. In §§3-4 I argue that Revelation is false according to two natural ways for naïve realists to understand ‘essential nature’. The remaining sections defend naïve realism so construed against some objections. §5 considers Byrne and Hilbert’s (2006) argument that Revelation follows from the naïve realist’s commitment to Distinctness, §6 considers the motivation for a naïve realist theory that denies Revelation, and §7 considers a residual epistemological objection.

2. MIND-INDEPENDENCE

In the first instance, the epistemological thesis Revelation is most naturally associated with the *denial* of Mind-Independence:

MIND-DEPENDENCE: colours are properties whose essential nature is constitutively dependent on the experiences of perceiving subjects.

For instance, in motivating the claim that Revelation is a core common sense belief about colour, Johnston cites two writers who defend the claim that colours are mind-dependent properties. The first is a famous passage (that I will return to in §7) from Russell, according to whom colours are properties of mind-dependent sense-data:

the particular shade of colour that I am seeing...may have many things to say about it...But such statements, though they make me know truths about the colour, do not make me know the colour itself better than I did before: so far as concerns knowledge of the colour itself, as opposed to knowledge of truths about it, I know the colour perfectly and completely when I see it and no further knowledge of it is even theoretically possible (1912, 25).

The second is Galen Strawson's remark that 'Colour words are words for properties which are of such a kind that their whole and essential nature as properties can be and is fully revealed in sensory-quality experience given only the qualitative character that that experience has' (1989, 224)—a remark made in the context of arguing that colours are self-presenting properties of perceptual experiences itself (i.e. *qualia*).

Mind-Dependence and Revelation are naturally associated (if not strictly speaking mutually entailing), because the metaphysical thesis promises to offer a motivation for the epistemic thesis. If the essential nature of colour is constitutively dependent on our experience of it, then—assuming that those features of our experience which determine the essential nature of the colour are transparent to us—colours cannot fail to be the way they are experienced to be; hence Infallibility (the first half of Revelation) is true. Conversely, if the essential nature of colour is exhaustively dependent on the experience of colour, then—again assuming that those features of our experience which determine the essential nature of the colour are transparent to us—colours cannot be any more than they are experienced to be either; hence Self-Intimation (the other half of Revelation) is also true.

Mind-Dependence is often associated with the more specific view that colours are mental properties. According to Berkeley, for instance, the objects of perception are mind-dependent ideas whose *esse* is *percipi*. This grounds Berkeley's claim that ideas are such that their essential nature is entirely revealed in visual experience, at least given careful attention: since ideas 'and every part of them exist only in the mind, it follows that there is nothing in them but what is perceived' (1713/34, §1.25). Similar claims were made by early twentieth century sense-datum theorists, who used the mind-dependence of sense-data—entities whose 'goods, so to speak, are entirely in the shop-window' as Price (1932, 145) puts it—to underwrite their foundationalist epistemology. The mind-dependence of sense-data is intended to give an *a priori* guarantee that their essential nature does not transcend our awareness of it, by guaranteeing that sense-data instantiate all and only those properties that are manifest in the act of awareness on which their nature constitutively depends.

However, Mind-Dependence does not entail the view that colours are mental properties. A number of later sense-datum theorists thought of sense-data as mind-dependent entities that

existed at, or 'belonged to', the surfaces of material objects, and so construed sense-data are not obviously mental (e.g. Price 1932). Likewise, according to at least some versions of dispositional theories of colour, colours are mind-dependent properties of material objects whose essential nature is fully revealed in colour experience. On Evans's version of dispositionalism, for instance, our conception of colour is a conception of a property of material substances which 'is directly and exclusively...woven out of the materials given in ['pure sensory'] experience' (Evans 1980, 270). In support of this, Evans uses a version of Berkeley's 'master argument' (1713/34, §§1.22-4) to argue that we are unable to make sense of colours being anything more than dispositions of material objects to appear coloured: if we try to imagine that colours are abiding properties of objects that persist unperceived, we do not imagine anything but perceiving a colour unperceived by anyone else (Evans 1980, 272-4; for discussion, see Allen 2007).

But whereas Revelation is often associated with Mind-Dependence, there is a clear tension between Revelation and Mind-Independence. If the essential nature of colour is constitutively independent of the experience of colour, then it is possible that colours are other than they appear; hence it is possible that Infallibility is false. It is also possible that Self-Intimation is false: if the essential nature of colour is constitutively independent of the experience of colour, then it does not follow that there is nothing more to the essential nature of colour than is manifest in an experience of colour.

Is the naïve realist committed to Mind-Independence? Naïve realism is sometimes characterised as a version of primitivism, where primitivism is strictly speaking neutral between realism ('R-primitivism') and eliminativism ('E-primitivism') (e.g. Chalmers 2006, 66-7, Byrne and Hilbert 2006). On this view, the naïve realist's commitment to Mind-Independence is a merely optional extra, and the dispute between eliminativist and realist forms of primitivism is just over where in the world, or alternatively in which possible worlds, colours are to be located: whilst realist primitivists locate colours at the surfaces of material objects, eliminativist primitivists think of colours as properties of ideas, sense-data, subjective visual fields, the experiences of conscious subjects, or at best, the surfaces of material objects in non-actual 'Edenic' worlds. But although some primitivists might be willing to accept that colours would be essentially the same properties whether they were mind-independent properties of material objects or not, naïve realists need not accept this assumption (cf. Watkins 2010, 123 n. 1). First, following Stroud (2000, especially Chapter 7), there are concerns about the coherence of 'projectivist' theories which deny that colours are properties of material objects. Second, the physical realization of colours arguably makes an essential difference to their nature. For instance, in arguing that colours are self-presenting intrinsic properties of a subjective visual field, Boghossian and Velleman claim:

The colours that one sees when experiencing an after-image are precisely the qualities that one sees as belonging to external objects. When red spots float before one's eyes, one sees the same colour quality that fire-hydrants and maraschino cherries normally appear to have (1989, 86-7).

But it is far from clear that reflecting on illusory experiences (for instance, of coloured after-images) gives a better an insight into the essential nature of colour than the veridical experiences of coloured material objects (Kalderon 2008). There are important differences between these experiences, and these differences do not exclusively appear to be differences in non-colour related aspects of the experience, such as the lack of determinate spatio-temporal location (as Boghossian and Velleman seem to suggest). Differences in the experiences can also be traced to differences in the properties that they are experiences of: the way in which colours are integrated into the ‘fabric’ of material objects, and the way that these properties shape (along with their other visible properties, such as shape and size) how the object will appear as the conditions vary.

One motivation for Mind-Independence is that, like shapes and sizes, colours exhibit perceptual constancy: there is an important sense in which colours appear to remain constant despite variations in their appearance as perceptual conditions vary. To say that colours are mind-independent is to say that colour is one thing, our experience of colour another; as such, Mind-Independence entails a distinction between appearance and reality. Colour constancy is evidence of this appearance-reality distinction, and provides a reason for denying that colours are properties whose ‘goods, so to speak, are entirely in the shop-window’ (as Price describes sense-data). Instead, colours persist through variations in our experience of them, and ground and explain the object’s variable appearance as conditions change—just as shapes and sizes persist through variations in our experience of them, grounding and explaining the object’s variable appearance. Views which try to account for variation across perceptual conditions by introducing distinct mind-dependent properties for each distinct way the object appears are often thought to be unable to account for colour constancy. As Johnston puts it, for instance, if colours were dispositions to appear coloured, then we might expect them to look like ‘colored highlights or better, like shifting, unsteady colors, e.g. the swirling evanescent colors that one sees one the back of compact discs’ (1992, 141). Given that colours exhibit constancy, there is no reason for the naïve realist to accept that *these* properties could have been properties of mind-dependent sense-data or self-presenting properties of perceptual experiences.²

Assuming that colours *are* essentially mind-independent, is *this* at least something that is revealed by careful reflection on colour experience? It is tempting to suppose that it is. To the extent that the argument for Mind-Independence depends on consideration of colour constancy, then this would seem to be something that careful reflection on a range of colour experiences is sufficient for knowledge of. Nevertheless there are problems even with the minimal claim that reflection on colour experience reveals that colours are essentially mind-independent. For one thing, careful reflection on our experiences is sometimes thought to support Mind-Dependence, not Mind-Independence. According to Berkeley and Evans, for instance, we cannot so much as

² I discuss colour constancy in more detail elsewhere (Allen 2009). For complementary discussion, although in support of slightly different conclusions, see e.g. Broackes 1992, Byrne and Hilbert 2003, Kalderon 2008.

make sense of the claim that colours are mind-independent properties. Alternatively, Cohen (e.g. 2009, 19-36, 153-160) argues that at least if we attend to the *right* experiences—those in which objects appear different in colour under different conditions and to different subjects—then careful reflection on experience reveals that colours are in fact mind-dependent relational properties, constituted in terms of perceiving subjects and perceptual conditions. If colours are essentially mind-independent, then Revelation would at least need to be weak enough to allow that careful reflection on colour experience can deliver the wrong verdict about the essential nature of the colours. But even if we concede that Mind-Independence *is* revealed by careful reflection on our experience, this only takes us so far. It still leaves the more specific nature of the colours open. And as I will now argue, according to two more specific ways for naïve realists to understand what the essential nature of the colours consists in, Revelation is false.

3. CAUSAL ROLE

Although colours might lack the ‘wide causal role’ of physical properties, naïve realists often try to secure some causal contribution for colours to make. At a minimum, the causal role of colours extends at least as far as causally explaining our colour experiences: for instance, yellow causes yellow experiences. Indeed, the requirement that colours play some role in the production of our colour experiences is sometimes taken to follow simply from a commitment to Mind-Independence (e.g. Campbell 1993, 178, Yablo 1995, Watkins 2005, 2010, Byrne and Hilbert 2006, 75); in contrast, Mind-Dependence is often associated with the claim that colours are causally inefficacious, either because colours are properties of sense-data with which we are non-causally acquainted (e.g. Russell 1912, Price 1932, 146), or because colours are dispositional properties whose categorical grounds are the cause of our colour experiences (e.g. Evans 1980). More generally, naïve realists sometimes argue that colours affect the perceived colour of juxtaposed samples, or are properties in virtue of which objects reflect phenomenally characterised light: for instance, that red objects reflect light that is phenomenally red (e.g. Westphal 1987, Broackes 1992).

Even ascribing colours a minimal causal role in the production of colour experiences is in tension with Revelation. An immediate problem is that the claim that colours are causally *inefficacious* sometimes purports to be based on careful reflection on experience: according to Berkeley, for instance, the immediate objects of perception (of which colours are a paradigmatic example) are ‘visibly inactive, there is nothing of power or agency included within them’ (1713/34, §1.25). If colours in fact cause our colour experiences, then Berkeley’s claim that colours are causally inefficacious constitutes a counter-example to Revelation. Self-Intimation is false, because it is in the nature of the colours that they are causally efficacious, yet it does not appear to Berkeley to be in the nature of the colours that they are causally efficacious. Infallibility is also false, because it appears to Berkeley to be in the nature of the colours that they are causally inefficacious, but it is not in the nature of the colours that they

are causally inefficacious. Of course, if Berkeley is right that colours are causally inefficacious, Revelation is still in trouble. For it seems no less obvious to others that colours cause our colour experiences, and again this sometimes purports to be based on careful reflection on experience. But if colours are causally inert, then colours would be causally inefficacious without appearing to be so (hence Self-Intimation would be false), and appear causally efficacious without being so (hence Infallibility would be false). Either way, Revelation would be false.

One way of avoiding this putative counter-example to Revelation is to idealise the judgements involved, and allow that actual careful reflection on a wide range of colour experiences might produce an incorrect judgement about the essential nature of the colours. However, even so idealised, it is far from clear that reflection on colour experience would be sufficient to settle the question of whether colours cause our colour experiences. After all, judgements about the causal efficacy of colours depend on theoretical commitments about the nature of causation, about which colour experience itself is presumably silent: for instance, whether dispositional and functional properties are causally excluded by their categorical bases (which is denied, for instance, by Johnston 1992, 147-149 and Cohen 2009, 205-217).

Revelation is still more obviously false if naïve realists allow that colours' causal roles extend beyond their being such as to produce colour experiences: for instance, if they are the categorical grounds of dispositions to appear coloured (at least in part) in virtue of grounding objects' dispositions to affect the apparent colour of juxtaposed objects, or modifying phenomenally characterised light.

Consider contrast effects first. Contrast effects are most pronounced for the achromatic colours black, white and grey, but to a lesser extent can be generated for the chromatic colours as well (see Hardin 1988, Plate 2). As Broackes (1992) argues, these effects are entirely law-like. In a famous study of contrast effects, for instance, Goethe notes that complementary colours 'reciprocally evoke each other in the eye' (1810, §50): for instance, green makes an adjacent colour appear slightly reddish and *vice versa*, blue makes it appear slightly orange, and purple makes it seem slightly yellow. Where the adjacent colour is non-complementary, this has the effect of making the colours appear 'contaminated'; in cases where the adjacent colour is complementary, this has the effect of making both appear more intense. Either way, as Chevreul states in his famous law, 'where the eye sees at the same time two contiguous colours, they will appear as dissimilar as possible' (1839, §16).

Yet there is no obvious sense in which the fact that colours systematically affect the way other colours appear is *revealed* in perceptual experience. For one thing, during the normal course of our standard visual experiences, the effects of contrast typically go unnoticed: to notice the effects of contrast on an object's colour we need to adopt what in the phenomenological tradition is sometimes called the 'analytic attitude', focussing our attention on the object's colour

by screening off the surrounding context. As such, contrast effects have been more readily recognised by artists and dyers, amongst whom distinctly non-standard visual experiences are more normal. But even in the artistic community, knowledge of contrast effects was greatly enhanced as a result of detailed studies by Goethe and Chevreul. The effects of juxtaposition on perceived colour were brought to Chevreul's attention, for instance, in his role as designer of dyes at the Gobelins tapestry factory in Paris. Chevreul received complaints about the quality of the black dye used in the factory after the blacks in some of the factory's tapestries appeared dull and faded. Upon investigation, Chevreul discovered that the faded appearance of the black was not the result of inferior quality dye at all, but rather a result of the juxtaposition of the black with other colours in the tapestry; what was being experienced were the effects of simultaneous colour contrast. But Chevreul's weavers—people who pay more attention to colours than most—failed to realise this.

Once Revelation is weakened to allow that subjects who carefully attend to a wide range of experiences can be ignorant of the essential nature of colours, then there need no longer be any suggestion that a commitment to Revelation makes the epistemology of colour improbably easy (see the 'Background Worry' in §1). If naïve realism only entailed this weak version of Revelation, then naïve realism would not be obviously implausible as a result. But it is not clear that simply weakening Revelation in this way is sufficient. Carefully attending to colour experiences is only part of what is required for acknowledging that colours are essentially such as to affect the perceived colour of juxtaposed colours. Even when it is noticed that colour experience varies systematically depending on the context, it is a further step to the claim that it is an essential property of the colours that they systematically affect the perceived colour of juxtaposed samples. After all, careful reflection on contrast phenomena is sometimes taken to support the eliminativist view that colours do not exist at all. Contrast phenomena provide a common illustration of the 'argument from perceptual variation': in the absence of any non-arbitrary way of identifying one of the colours that an object appears as the colour that it really is, then it might seem that we are forced to conclude that the object is really none of the colours that it appears (e.g. Hardin 1988; for some responses, see e.g. Tye 2000, Kalderon 2007, and Cohen 2009).

There is a similar tension between Revelation and the claim that colours are ways of modifying phenomenally characterised light (Westphal 1987, Broackes 1992). If it is part of the essential nature of colour that coloured objects reflect phenomenally characterised light, then it seems unlikely that this is something that is revealed in colour experience. This demands careful observation and philosophical argument. As Broackes remarks, 'It is of the nature of a discovery, though a fairly obvious one, that the property in question, in the case of surfaces, is a way of changing the light' (1992, 210). So if it is in the essential nature of the colours that colours are ways of modifying phenomenally characterised light, then Revelation is false, because it does not appear to be in the nature of the colours that they are ways of modifying phenomenally characterised light.

There would not be a problem for the truth of Revelation if causal powers are not essential to the colours: for instance, if yellow is not essentially such as to produce yellow experiences, affect the perceived colour of juxtaposed samples in a particular fashion, or reflect phenomenally yellow light. But to deny that colours have their causal powers essentially presupposes controversial views about the nature of properties and perceptual experiences that there are good reasons for naïve realists to reject.

In general, the view that colours have their causal powers essentially follows from a commitment to a version of the causal theory of properties, according to which properties are individuated in terms of the causal powers which they confer upon their bearers (e.g. Yablo 1995 and Watkins 2005, 2010). In the specific case of colour, if causal role is not essential to the colours, then this is most naturally taken to imply that there would either be a metaphysically possible world in which yellowness is causally inefficacious, or else there would be a metaphysically possible world in which yellowness grounds the disposition to produce, say, blue experiences. If the possible world in which colours are causally inefficacious is a world in which colours are properties of sense-data, then the first possibility involves denying that colours are essentially mind-independent, which I have already considered (and rejected) in §2. The second possibility is no less problematic. If properties are only contingently associated with causal powers, it is difficult to see how instantiating a property could explain the object's possessing the causal powers it does. Is it really intelligible that the property associated with the power to produce yellow experiences in the actual world could have been associated with the power to produce blue experiences—or perhaps even the causal powers characteristic of triangularity? Disallowing this kind of permutation of properties and causal powers does not quite establish the claim that yellow *essentially* produces yellow experiences—unless truths about essential properties are reduced to truths about necessary properties—but it is unclear what the motivation would be for the view that yellowness necessarily, but not essentially, causes yellow experiences.

As well presupposing controversial views about the nature of properties, the view that colours and their causal powers could be permuted also depends upon a controversial view of perceptual experience. Considering the objection that properties and powers (in the terminology that he uses, categorical grounds and dispositions) can be 'switched' in order to show that the naïve realist's hypothesis that colours produce colour experiences is a mere 'pseudo-hypothesis', Campbell argues that:

This whole line of objection rests on the supposition that perceptions have their contents, as experience of this or that property, quite independently of which properties of things in the environment they are responses to (1993, 187).

That is, making sense of the situation in which the causal powers are switched presupposes that it is possible to identify experiences independently of what they are experiences of. But this is rejected by views, such as naïve realist theories of perception, according to which perception is

essentially relational, and perceptual experiences are constitutively dependent on their objects (e.g. Campbell 2002, Martin 2002). If the nature of the perceptual experience constitutively depends on the nature of what it is a perceptual experience of, then, as Campbell puts it, ‘there is no possibility of setting up alternative causal hypotheses to explain colour vision: they simply bring with them changes in the characterization of the experiences to be explained’ (Campbell 1993, 188). As such, yellowness could not be anything other than the ground of the disposition to appear yellow.

4. HIGHER-ORDER PROPERTIES OF THE COLOURS

I argued in this last section that if it is essential to the colours that they play certain causal roles, then Revelation is false. In this section I will consider a weaker and less controversial understanding of what the essential nature of colour consists in. Colours instantiate a number of higher-order properties: for instance, they stand in distinctive relations of similarity, difference, and exclusion, and admit of a fundamental distinction into elemental and compound colours. These higher-order properties are usually thought to be essential to the colours if anything is, and as such are normally taken to fall within the scope of Revelation (e.g. Johnston 1992, 164, Byrne and Hilbert 2006, 78). But these higher-order properties of the colours are no more obviously revealed by visual experience than their causal role is.

Consider the elemental-compound distinction. Elemental colours comprise the elemental hues red, yellow, green, blue, and, at least by extension, the achromatic colours black and white. These colours enjoy a special psychological status. Elemental colours admit of instances that appear to be ‘unique’, or ‘phenomenally uncomposed’. In contrast, compound colours, like orange, olive green, and grey, always appear to be ‘phenomenally composed’: orange is ‘phenomenally composed’ of red and yellow, pink red and white, grey black and white, and so on. It is not easy to give a clear characterisation of exactly what phenomenal composition amounts to. Phenomenal mixture is not physical mixture, achieved by mixing coloured lights or pigments: phenomenal composition pertains to the appearance of colour, not to its production. Nor do the constituents of a phenomenal mixture exist as distinct, separable elements of the mixture: they are not like peas and beans in a stew (Hering 1920, 20). Rather, a phenomenally uncomposed colour like unique yellow appears neither reddish nor greenish nor bluish, whereas a phenomenally composed colour like orange appears both reddish and yellowish (for further discussion, e.g. Byrne and Hilbert 2008).

It is easy to take the elemental-compound distinction for granted. The distinction is central to the modern opponent process theory of colour vision, and is widely discussed in the philosophical literature on colour. Moreover the distinction is one that most colour perceivers find relatively easy to grasp. But to say that the distinction is one that most colour perceivers are able to grasp is not to say that it is in any sense *obvious*. Both the extension of the distinction, and even its very existence, have been the subject of intense controversy.

The distinction was popularised by Ewald Hering around the turn of the twentieth century. Prior to Hering, there was a long tradition which denied that green is an elemental colour, claiming that every instance of green is a phenomenal mixture of blue and yellow: some notable proponents include Berkeley (1707-8, §502), Goethe (1810, §801), and in Hering's own time, Brentano (1907; for discussion, see Holt 1912 and Schnetzer ms.). Whereas green is sometimes excluded from the set of elemental colours, brown raises the converse problem. Without direction, it can be difficult to know how to describe brown without simply using the word 'brown'. In light of this, it has been suggested that brown might itself be an elemental colour (Fuld *et al* 1983). Empirical studies have subsequently shown that if directed to describe brown colour samples using just Hering's six elemental colours—red, green, yellow, blue, black and white—subjects reliably describe brown samples in terms of yellow and black, suggesting that brown is not an elemental colour after all (Quinn *et al* 1988). But even Hering did not think that the phenomenal composition of brown was in any sense *obvious*, remarking that the 'distinguishing feature of brown, namely, its blackness, never shows up clearly as an independent quality added to the yellow hue' (1920, 58). Indeed, Hering thought that the phenomenal composition of brown is so *unobvious* that he advises viewing brown objects through a reduction screen (a piece of card with a hole cut in it) to aid the recognition of the blackness that brown phenomenally contains.

It is not just the extension of the elemental-compound distinction that is problematic: the very existence of the distinction is controversial. Brentano's writings on the phenomenal composition of green were part of a major debate at the end of the nineteenth century. Other participants, including the psychologists Külpe, Titchener and Ebbinghaus, denied that *any* colours are phenomenally composed, even orange or purple. On their view, all talk of phenomenal composition can be explained purely in terms of facts about similarities between the colours.

This widespread disagreement about the nature and extension of the elemental-compound distinction poses a serious problem for Revelation. Consider brown. Despite a lifetime's supply of standard visual experiences of brown, it seems that we learn something new when we learn of the relationship that brown bears to yellow and black. Assuming that it is part of the essential nature of brown that it is a phenomenal composition of black and yellow, Revelation is false because it does not appear in standard visual experience to be part of the essential nature of brown that it is phenomenally composed of black and yellow; in this respect, the essential nature of brown is not self-intimating.

It might seem that the problem here is just that normal perceiving subjects do not enjoy a sufficiently broad range of colour experiences, pay sufficiently close attention to these experiences, or reflect on their experiences in sufficient detail. To avoid the widespread ignorance of the elemental-compound distinction amongst the normal perceiving population from constituting a counterexample to Revelation, we might therefore idealise away from actual normal perceivers, and stipulate that knowledge of the essential nature of colour requires that

subjects reflect carefully on their experiences, and perhaps even enjoy the sort of non-standard visual experiences involving reduction screens that Hering recommends.

This suggestion, however, faces serious problems. For one thing, whilst standard perceiving subjects might habitually fail to reflect carefully on their experiences, the same can hardly be said of the participants in the debate at the turn of the twentieth century about the elemental-compound distinction. This whole debate was *explicitly* framed in phenomenological terms. But even after carefully reflecting on their experiences of colour, participants in the debate about phenomenal composition consistently reached conflicting conclusions. For instance, Boring describes an attempt to settle the general question of whether there is a elemental-compound distinction at a meeting of the American Psychological Association:

Ladd-Franklin [a proponent of the view that some colours are phenomenally composed] appealed to the consensus of expert opinion by exhibiting [differently coloured] disks and asking for the judgements of psychologists. The problem was never settled. It simply disappeared (Boring 1942, 131).

A similar fate befell the specific question of whether green is composed of blue and yellow. Boring describes an occasion on which he was:

present in a group of psychologists which included Titchener [who denied any unique-binary distinction] and Holt [who defended the Berkeley-Goethe-Brentano view that green in binary] when this question of the complexity of green came up for discussion. These two men flatly disagreed as to the evidence of introspection, and there was nothing that anyone could propose to bring about agreement (Boring 1942, 131).

So even if we require that subjects reflect carefully on their experiences, the dispute about the phenomenal composition of the colours still presents a counterexample to Revelation. Assuming (as is now standard) that there is a elemental-compound distinction, and that the elemental colours are the six colours identified by Hering, then Infallibility is false: it appears to some to be in the essential nature of the colours that there is no elemental-compound distinction, and to others that green is a compound colour, yet it is in the nature of the colours that there is an elemental-compound distinction, and that green is an elemental colour. Likewise, Self-Intimation is false: it is in the essential nature of the colours that there is an elemental-compound distinction and that green is an elemental colour, but even after careful reflection on colour experience it does not necessarily seem to be in the nature of the colours either that there is an elemental-compound distinction, or that green is an elemental colour.

Of course, one option at this point would be to attempt to explain away the judgements of those who, even after careful reflection, fail to correctly determine supposedly obvious facts about the essential nature of colour. For instance, perhaps their descriptions of the phenomenology are *misdescriptions*, induced by the influence of a malign theory. A common debunking explanation of the view that green is phenomenally composed of yellow and blue, for

example, is that judgements about phenomenal composition have been influenced by knowledge about physical composition, and the fact that yellow and blue pigments, when mixed, produce green paint. In a similar vein, the view that no colours are compound might be explained by the antecedent theoretical conviction that colours are simple properties, motivated by the epistemological conviction that there must be *some* simple entities about which error is logically impossible, and which form the foundation of the rest of our empirical knowledge.

But these explanations are far from unproblematic. It *might* be plausible in *some* cases that the judgement that, say, green is composed of yellow and blue is influenced by knowledge of paint mixing techniques. This might be true, for example, of Goethe, who was himself a painter—although there is cause for concern even here, as Brentano points out, because black and yellow paints can be mixed to produce green, and no-one thinks that green is phenomenally composed of black and yellow. But even so, it is not clear that this explanation generalises. For instance, it is not clear that this explains why Berkeley thought that green was composed of yellow and blue, because unlike Goethe, Berkeley was not a painter. Brentano himself represents even more of a problem, as he was well aware of this debunking explanation, and explicitly distinguishes physical and phenomenal mixture, insisting that *his* judgements about the composition of green pertain only to the *appearance* of the colour.

How is this debate about what is supposedly obvious possible? One explanation is that judgements about the structural properties of the colours do not depend solely on what is delivered in colour experience. First, these judgement involve comparing and contrasting colour experiences with experiences of other kinds: for instance, experiences of mixtures of peas and beans or musical chords, in which the constituent elements are still distinguishable. Second, these judgements draw on theoretical concepts pertaining to phenomenal appearance and phenomenal composition, as distinct from concepts pertaining to causal production, literal mixture involving separable components, and brute similarity relations. These judgements also depend on philosophical argument and scientific knowledge. To the extent that these issues have been resolved (and there is still some dissent, e.g. Saunders and van Brakel 1993), it was not by careful reflection on colour experience. These issues were resolved by the discovery of neural mechanisms that implement the opponent-process pathways which predict two sets of opponently organised hues: red/green and yellow/blue (for details, see e.g. Hardin 1988). Far from being *revealed* by colour experience, the elemental-compound distinction was a *discovery*.

5. DISTINCTNESS

I have argued so far that the naïve realist's conception of colour is inconsistent with Revelation. The remaining sections defend naïve realism so-understood in response to some objections. The first objection draws on an argument of Byrne and Hilbert (2006) that Revelation follows from the naïve realist's commitment to Distinctness. Byrne and Hilbert understand Distinctness as the specific claim that colours have 'no non-chromatic nature'. This is to say that the essential nature of colour can be completely described solely using 'purely chromatic sentences', composed only

of ‘topic neutral and color vocabulary’ (2006, 78), where following Smart (1959) ‘topic neutral vocabulary’ can be understood as consisting of logical connectives and terms that do not prejudice substantive questions about the essential nature of the things being referred to: in the present case, vocabulary that is neutral between physicalist, dispositionalist, eliminativist, and naïve realist theories of colour. As such, Byrne and Hilbert offer the following examples of ‘purely chromatic sentences’: ‘every shade of orange is reddish’, ‘Canary yellow is not a shade of blue’ (Johnston’s example), ‘Canary yellow is a shade of blue’, ‘Purple is more similar to red than to yellow’, ‘Brown is blackened orange’, and so on’.

Byrne and Hilbert argue that given two further assumptions, Distinctness entails the stronger of the two theses that comprise Revelation, Self-Intimation. The first assumption is the weaker of the two theses that comprise Revelation, Infallibility: this, they suggest, is common ground amongst colour theorists, and not something that naïve realists are likely to deny. The second assumption is Completeness:

COMPLETENESS: if we idealize the “careful reflection”, the relevant range of color experiences, and the subject’s powers of discrimination, then a verdict (right or wrong) would be forthcoming on whether it is in the nature of the colours that p , where ‘ p ’ is a “purely chromatic sentence” (2006, 79).

If Completeness is true, then colour experience is sufficient to deliver a verdict on any given statement about the essential nature of colour where this statement is purely chromatic. Given Infallibility, this verdict is true. Assuming Distinctness (as Byrne and Hilbert understand it), colours have no non-chromatic nature and hence their essential nature can be completely described using purely chromatic sentences. This in turn entails Self-Intimation, and hence Revelation.

Byrne and Hilbert’s argument is clearly intend to show that what I am calling naïve realism (what they call R[ealist]-primitivism) entails Revelation, as they cite Campbell, Watkins, and Westphal as ‘clear examples’ of naïve realists, Broackes as a possible proponent, and Yablo as at least sympathetic (2006 81). Moreover, they apparently assume that the claim that colours have ‘no non-chromatic nature’ is equivalent to what I am calling Distinctness, as they initially characterise the ‘minimal defining feature of primitivism’ as the view that ‘the colors are not identical to physical properties (e.g. ways of altering light), dispositions to affect perceivers, and the like: colors are *sui generis* properties’ (2006, 74). However, their argument that *naïve realism* entails Revelation fails, because the claim that colours have ‘no non-chromatic nature’ is much stronger than the claim that colours are *sui generis* properties—so strong, in fact, that it is inconsistent with naïve realism.

It should be reasonably clear that the claim that colours have ‘no non-chromatic nature’ is inconsistent with the view of Westphal and Broackes that colours are dispositions to reflect phenomenally-characterised light. Indeed, Byrne and Hilbert themselves concede that

Revelation, which they derive from Distinctness, is inconsistent with acknowledging an essential connection between colour and light (2006, 100, fn. 6); it is therefore puzzling that they should cite Westphal as a ‘clear example’ of a naïve realist, and Broackes as a possible proponent.

The claim that colours have ‘no non-chromatic nature’ is also inconsistent with what might seem like more paradigmatic versions of naïve realism: Campbell’s view that colours are the ‘grounds of the dispositions of objects to produce experiences of colour’ (1993, 178), and Yablo’s view that (for example) yellow is the ‘intrinsic, categorical feature that objects *appear* to have when they look yellow to us, that *makes* them look yellow to us, that yellow things have in common, and so on’ (1995, 486), where this is cashed out in terms of colours being non-physical determinables of physical determinates. The terms ‘grounds of the dispositions’ (as opposed to ‘the dispositions’), ‘intrinsic’ (as opposed to ‘extrinsic’ or ‘relational’), ‘categorical’ (as opposed to ‘dispositional’), ‘yellow-look-making’ (as opposed to ‘yellow-looking’), ‘common property’ (as opposed to ‘disjunctive property’), ‘non-physical determinable’ (as opposed to ‘physical property’) are none of them either topic neutral or purely chromatic.

Campbell’s simple view would be consistent with the claim that colours have ‘no non-chromatic nature’ if the claim that colours are the ‘categorical grounds of dispositions to affect perceivers’ did not itself describe the essential nature of colour, but merely served to fix the reference of the term ‘colour’ to a property that is specifiable using purely chromatic sentences—in the same way that ‘Johnston’s favourite colour’ serves to fix the reference of the term ‘canary yellow’ without describing an essential feature of yellowness. Similarly, Yablo’s naïve objectivism would be consistent with the claim that colours have ‘no non-chromatic nature’ if the claim that ‘colours are intrinsic, categorical, non-physical determinables of physical determinates’ were merely a contingent description of properties whose essential nature is specifiable using purely chromatic sentences.

But there are reasons to resist this suggestion, both as a philosophical claim and as an interpretation of Campbell and Yablo. First, if ‘categorical grounds of dispositions to affect perceivers’ and ‘intrinsic, categorical, yellow-look-making, non-physical determinables of physical determinates’ were contingent reference fixing descriptions, then either colours would not essentially be categorical grounds of dispositions to affect perceivers, or they would be categorical grounds that are only contingently associated with particular dispositions to affect perceivers. I have already argued that there are good reasons for naïve realists to disallow these possibilities in §3. Second, neither Campbell nor Yablo themselves appear particularly keen to accept Revelation. Campbell has since distanced himself from Revelation, distinguishing his original claim that colours are mind-independent properties whose essential nature is ‘transparent’ to us (1993, 178) from the claim that the essential nature of colour is ‘revealed to us’. According to Campbell, visual experience gives us knowledge of which colour an object is, but not what its essential nature consists in (Campbell 2005; see also §7 below). Similarly, Yablo also appears to distance himself from the Revelation-esque view that visual experience ‘should lay the color’s nature completely bare’ (1995, 490). In light of this, Byrne and Hilbert hesitate to

describe Yablo as a standard naïve realist (because on their view, naïve realism entails Revelation). Instead, they tentatively suggest that Yablo is better interpreted as neutral both on the truth of Revelation and between naïve realism and reflectance physicalism (Byrne and Hilbert 2006, 93). But this is not an obvious interpretation. Yablo does not *explicitly* rule out the possibility of reductively identifying colours with types of reflectance property, just disjunctions of microphysical properties. However, given that reflectance physicalists typically identify colours with disjunctions of surface reflectance profiles (Byrne and Hilbert 2006, 84), reflectance physicalism is problematic in exactly the same way as Yablo thinks microphysicalism is: the properties identified with the colours do not exhibit ‘commonality’, because they are not shared by all and only those things which are (for example) yellow (Yablo 1995, 482; see also §6 below).

One further advantage of understanding Distinctness as the weaker claim that colours are *sui generis* properties (rather than the stronger claim that colours have no non-chromatic nature) is that it makes possible a response to an objection that Byrne and Hilbert raise for Revelation-entailing views. If other species perceive colour, then the colours they perceive must have some nature in common with the colours perceived by humans—otherwise, why suppose that these properties are *colours*? Yet this might seem to be inconsistent with Revelation, because reflection on colour experience appears to exclude the possibility of colours that have no location within human colour space. Human colour space—standardly represented as a three-dimensional space with the axes hue, saturation, and lightness—represents essential relations of similarity, difference, and exclusion between the colours. However, human colour space is a ‘closed’ space, in which every location is occupied. Extra colours therefore cannot simply be ‘slotted in’. Byrne and Hilbert argue that ‘unlike reductive realists (physicalists, in particular), there is no lower-level description of the color properties that R[ealist]-primitivists can use to establish a kinship between the properties detected by [for example] goldfish and human vision’ (2006, 94). They conclude that views that accept Revelation are either committed to saying that the properties that members of different species perceive are not colours, or else that there is one single family of colours that members of most species (most like including humans) systematically misperceive. Neither of these options appears particularly attractive.

However, this argument only works if colours have no non-chromatic nature. In contrast, if colours are essentially such that they supervene on physical properties, then this provides one way of grouping together the properties that different species perceive as colours, even if these properties have no location within human colour space (see §6 on supervenience). If colours are essentially the categorical grounds of dispositions to appear coloured—properties that persist through variations in the illumination, and so exhibit perceptual constancy—then this provides another way of identifying properties perceived by members of other species as colours: the properties that different species perceive will be colours if—like the colours that we perceive—their appearance is sensitive to, and yet they exhibit constancy with respect to, changes in the illumination (for a more detailed discussion, see Allen 2009).

6. MOTIVATION

If Revelation is false, then it might seem that there is no reason to believe Distinctness, and hence no reason to accept naïve realism. Most naïve realists assume that colours supervene on physical reflectance properties. Although they are not always explicit about this, the supervenience in question is naturally thought of as a strong form of supervenience, such that physical reflectance properties metaphysically (not merely nomologically) determine colours. This is arguably necessary to secure colours a causal role, and thereby secure Mind-Independence: to allow that there could be an essential physical duplicate of the actual world in which the non-physical colours are differently distributed—or perhaps not distributed at all (the chromatic equivalent of a zombie world)—would be tantamount to admitting that colours do not make a causal difference to the physical world, and so do not make a causal difference at all (Tye 2000, 148, Byrne and Hilbert 2006, 96-8). But if colours supervene on reflectances of metaphysical necessity, then why suppose that Distinctness is true? We cannot rely on the apparent contingency of the connection between these properties, because if reflectance types metaphysically determine colours, then by hypothesis this contingency is *merely* apparent. Unless naïve realism is committed to Revelation, it might seem to be motivationally bankrupt (Byrne and Hilbert 2006, 98-9).

However, such a judgement is unfair. First, to say that reflectance types metaphysically determine colours only implies that it is metaphysically necessary that if an object has a particular reflectance type, then it has a particular colour. Yet this leaves open the possibility that the same colour could be realised by a physical property of some other kind completely. The apparent conceivability of objects instantiating colours but not reflectance types could therefore still form the basis of an argument for Distinctness (Watkins 2010, 127). Perhaps in something like this spirit (though he puts the point in epistemic rather than metaphysical terms), Campbell suggests that the naïve realist view of colours ‘would be available even to someone who rejected the atomic theory of matter: someone who held that matter is continuous and that there are no microphysical properties’ (1993, 178).

Besides, the apparent contingency of the connection between colours and reflectance types is not the only reason for believing Distinctness. For one thing, it does not follow without further argument that necessarily coextensive properties are identical—otherwise trilaterality would be identical with triangularity, and at least intuitively it is not. One reason for resisting the physicalist’s reduction of colours would be if neither reflectance-types, nor the microphysical grounds of these reflectance-types, instantiate the distinctive structural properties of the colours: if they neither admit of a distinction into elemental and compound, nor stand in the characteristic relations of similarity and difference that the colours stand in. If they do not, then there are properties of the colours that are not properties of reflectance types or their microphysical grounds, and so by Leibniz’s Law, these properties are distinct (e.g. Hardin 1988; for discussion, see e.g. Tye 2000, Byrne and Hilbert 2003, Dorsch 2010).

A different line of argument for Distinctness appeals to considerations relating to causal role. The problem of reconciling property distinctness with supervenience is not unique to naïve realism; analogous problems arise for reflectance-physicalism. Assuming that surface reflectance profiles themselves supervene on microphysical properties, what is the motivation for the claim that reflectances are distinct from these microphysical properties? The standard answer is that reflectances are distinct from microphysical properties because reflectances are multiply realised. But, of course, the same is true of reflectances and colours, as the phenomenon of metamerism brings out: objects with different reflectances can appear the same colour (in specific conditions). Reflectance-physicalists typically respond to the problem of metamerism by identifying colours, not with individual surface reflectance profiles, but with types or disjunctions of surface reflectance profile. But an exactly analogous response is available to the microphysicalist, who can identify individual surface reflectance profiles with types or disjunctions of microphysical property. Reflectance-physicalism is therefore a potentially unstable position: if supervenient properties can be identical to types or disjunctions of their realisers, then reflectance-physicalism threatens to collapse into micro-physicalism; if supervenient properties can be distinct from types or disjunctions of their realisers, then reflectance-physicalism threatens to be unmotivated.

Moreover, whether physicalists identify colours with types of reflectance property or types of microphysical property, there are well-known problems with identifications of this kind. In particular, it is not clear that disjunctive properties are able to occupy the relevant causal roles: at least on the face of it, it is not an object's instantiating the disjunctive property of having reflectance r_1, r_2, r_3, \dots that causes it to reflect light in a particular way, but the object's instantiating one particular disjunct of this disjunction. *If* disjunctive properties cannot be causes (and this requires more detailed discussion than is possible here), then there are two options: identify colours with non-disjunctive microphysical properties that differ across objects that appear identical in colour, and so allow that (appearances to the contrary) there is no property that is common to everything that appears (say) red; or identify colours with non-disjunctive *sui generis* properties that are common to objects that appear identical in colour (see e.g. Yablo 1995 and Watkins 2005, 2010).³

³ In a footnote at the end of their paper, Byrne and Hilbert (2006, 102 n. 35) mention the possibility of a position which they label 'R[alist]-semiprimitivism', which accepts that colours are metaphysically determined by (but not identical to) reflectance types, but which denies Revelation (specifically, Self-Intimation). If what I have argued is correct, then R-semiprimitivism just is naïve realism. Byrne and Hilbert suggest that this 'isn't really another alternative', because semiprimitivists allow that colours have 'hidden essences' and at the same time '(somehow) respect the "qualitative nature" of color', and however the semiprimitivist 'manages to pull off this feat, the reflectance physicalist can do likewise'. The preceding lines of argument, if successful, show that naïve realism and reflectance-physicalism are *not* equally well suited to give an account of the essential nature of colour.

7. ACQUAINTANCE

If Revelation is false, might certain epistemological commitments associated with naïve realism have to be abandoned? Understood just as the conjunction of Mind-Independence and Distinctness, for instance, naïve realism is consistent with knowledge of the colours being impossible: for example, because colours are properties of angels. This would clearly be a most unwelcome consequence.

I have argued that naïve realism is inconsistent with Revelation. But there is a distinct epistemological thesis that Revelation is liable to be confused with, that is consistent with a naïve realist theory of colour, and which secures our epistemic access to the colours. In motivating the claim that Revelation is a core common sense belief, Johnston quotes Russell's famous claim that 'I know the colour perfectly and completely when I see it, and no further knowledge of it itself is even theoretically possible' (1912, 25; see §2 above). Although Russell's claim is sometimes taken to be an expression of the intuition that there is something special about *colour*, Russell's point is really that there is something special about *perception*. Russell's remark occurs within the context of distinguishing *knowledge by description* from *knowledge by acquaintance*. Knowledge by description is concerned with 'truths about' a colour. Knowledge by acquaintance, in contrast, is a different, supposedly irreducible, type of knowledge: a form of direct cognitive contact, that is 'essentially simpler than any knowledge of truths, and logically independent of knowledge of truths' (1912, 25). In emphasising that colours are themselves revealed to us in perception, Russell's point is not that perception is of itself sufficient for knowledge *that* the essential nature of colour is any particular way; indeed Russell himself contrasts knowledge by acquaintance with knowledge of truths about colour, such as a particular shade of colour's being brown, rather dark, and so on. Nor is Russell's point that there is anything special about colour *per se*: in the sentence immediately following that quoted by Johnston, Russell generalises the point to 'shape, hardness, smoothness, etc.; all these are things of which I am immediately conscious when I am seeing and touching my table' (1912, 25). His point is rather that perceptual experience puts us in direct cognitive contact with colours (for Russell, properties of sense-data) in a way that we are not in direct cognitive contact with mind-independent material objects and their properties (which for Russell, we know of only indirectly and by description).

The existence of a distinctive non-propositional cognitive relation might be doubted; Russell himself later came to describe it as 'something like a mystic union of knower and known' (1921, 234). But the idea that perceptual experience *acquaints* us with objects and properties in our environment is a natural one. Indeed, something like the Russellian relation of acquaintance features in modern naïve realist or relationalist theories of perception (as defended, for instance, by Campbell). The main difference is that whereas Russell (motivated by considerations about illusion and hallucination) thinks that the objects of acquaintance are sense-data, naïve realists (motivated by the transparency of perceptual experience and its cognitive role in our mental economies) think that the objects of acquaintance are objects and properties in the mind-independent environment. Within this framework, the claim that perceptual experience is

sufficient for knowledge *of* the colours (i.e. knowledge by acquaintance) is consistent with the denial of the claim that perceptual experience is sufficient for knowledge *that* the essential nature of colour is any particular way (i.e. knowledge by description).

8. CONCLUSION

The background worry with Revelation is that it makes knowledge of the essential nature colour improbably easy. I have argued that naïve realism leaves room for the distinctive kind of empirical and theoretical investigation that knowledge of mind-independent phenomena demands; according to the naïve realist, colours can be complex properties that constitute a legitimate domain of empirical and theoretical inquiry in their own right. The naïve realist should therefore perhaps agree with H.H. Price when he says (tongue-in-cheek) that ‘*naïveté* itself is often a most laborious achievement, which only the most sophisticated can attain to’ (1932, 14).⁴

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