

## Qualities and the Galilean View

### Abstract

It is often thought that sensible qualities such as colours do not exist as properties of physical objects. Focusing on the case of colour, I discuss two views: the Galilean view, according to which colours do not exist as qualities of physical objects, and the naïve view, according to which colours are, as our perception presents them to be, qualities instantiated by physical objects. I argue that it is far from clear that the Galilean view is better than the naïve view. Given the arguments in this paper, the naïve view ought to be taken seriously. The discussion here appeals especially to theorists who, like Goff, are already convinced that the quantitative language of physical science fails to capture all qualities.

What is yellow? pears are yellow,  
Rich and ripe and mellow.  
What is green? the grass is green,  
With small flowers between.  
- Christina Rossetti, 'Colour'

### 1. Introduction

The world around us seems to instantiate sensible qualities. Emeralds are green; lemons are sour; thunderstorms are loud. Our experience of the world not only presents objects as instantiating sensible qualities, but also presents these qualities as having certain qualitative natures. Our perception of a green object, in addition to presenting the object as green, presents what green is like, i.e. its qualitative – as opposed to quantitative – nature (see Kalderon 2007: 563). But Galileo questioned the existence of sensible qualities as properties of physical objects. He writes (1623/1996: 274):

I think that tastes, odours, colours, and so on are no more than mere names so far as the object in which we place them is concerned, and that they reside only in consciousness. Hence if the living creature were removed, all these qualities would be wiped away and annihilated.

Strictly speaking, Galileo does not deny the existence of sensible qualities. He reduces them to properties that 'reside only in consciousness'. But in doing so, he denies the

existence of sensible qualities as we ordinarily understand them – as properties of physical objects with certain qualitative natures manifested to us in our experiences of them. Here, I shall use the term ‘sensible qualities’ to refer to properties of this kind. Correspondingly, the term ‘colours’ is used to refer to qualitative colours, i.e. colours whose qualitative natures are manifested to us in perception. The claim that sensible qualities thus understood do not exist is referred to here as ‘the Galilean view’.<sup>1</sup>

In contemporary philosophy of mind, the Galilean view represents a ‘scientifically enlightened common sense’ (Allen 2016: 176) and is widely held among philosophers working on the hard problem of consciousness. Once the sensible qualities of physical objects are eliminated from our ontology, the only qualities which seem to have been left out by the quantitative language of the physical science are the qualia (i.e. phenomenal properties or phenomenal qualities) of conscious subjects. Goff (2019: 21) writes:

Galileo the philosopher created physical science by setting the sensory qualities outside of its domain of inquiry and placing them in the conscious mind. This was a great success, as it allowed what remained to be captured in the quantitative language of mathematics. ... However, those sensory qualities have come back to bite us, as we now seek a scientific explanation not only of the inanimate world but also of the conscious mind.

Like many others, Goff takes qualia in the mind, not sensible qualities in the world, as presenting a challenge to the physicalist worldview.

The Galilean view, however, is fundamentally at odds with the *manifest intuition* that sensible qualities, in the sense understood here, exist (see Moran this volume). The manifest intuition is particularly compelling in the case of colour, which I shall focus on in this paper. The intuition is based on a *phenomenological datum*. Consider the colour *green*. For a normal perceiver, in having a perceptual experience of a green object under a standard condition, it *phenomenally appears* to her that the object is green, and that green has a certain qualitative character. Perception also does not present green as any of the physical properties described by colour science, e.g. surface spectral reflectances (dispositions of surfaces to reflect certain proportions of incident light at certain wavelengths).<sup>2</sup>

The question of whether or not to take the phenomenological datum at face value, and what metaphysical conclusions should be drawn from it, divides those who reject the Galilean view from those who endorse it. In this paper, I shall pitch the Galilean view

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<sup>1</sup> Some theorists refer to this claim as the ‘Galilean intuition’ (Boghossian and Velleman 1989; Allen 2016). I think it is misleading to call this an ‘intuition’.

<sup>2</sup> Some theorists (e.g. McGinn 1996: 542; Tye 2000: 152-3; Chalmers 2006: 66) take perception to present colours as *intrinsic* features of physical objects (i.e. as independent of any relations to other objects and subjects) in the same way that shape is presented. I think it is less clear that colour phenomenology itself reveals colours as intrinsic. But it is certainly part of our commonsense view that colours are intrinsic – a tree is still green even when the sun goes down or there is no one there to see it (see Roberts et al. 2014 for empirical evidence).

against what I call ‘the naïve view’ of colour. The main example of the latter is *colour primitivism*, according to which colours are irreducible, non-disjunctive, intrinsic, qualitative properties of physical objects (e.g. Broackes 1992; Campbell 1993; Yablo 1995; McGinn 1996; Gert 2008; Allen 2016). The main example of the Galilean view is *colour eliminativism*, according to which colours as properties of physical objects simply don’t exist (e.g. Hardin 1993; Maund 2006; Chalmers 2006).<sup>3</sup> Galileo himself is best interpreted as an eliminativist about colour (Boghossian and Velleman 1989). Goff (2019) readily agrees with Galileo and summarily eliminates colours from the world.<sup>4</sup>

It is far from clear that the Galilean view is better than the naïve view. As I argue, the Galilean view involves significant costs and challenges, and, in contrast, advocates of the naïve view can make plausible manoeuvres in response to common objections. The goal here is not to argue that the naïve view fares better than the Galilean view. Rather, it is to show that the naïve view should be taken seriously instead of being quickly dismissed as is often done.<sup>5</sup>

The structure of the paper is as follows. §2 critically assesses the Galilean view. §3 expounds the naïve view and discusses two objections. §4 concludes by considering the implications of endorsing the naïve view for the problem of consciousness.

## 2. The Galilean View

The Galilean view commits to an error theory that renders much of our discourse surrounding colours erroneous. Consider:

- (i) The jacket is red.
- (ii) The redness of the jacket caught Noor’s eyes.
- (iii) The two jackets are different because one is pink and the other is red.
- (iv) The Chinese village looks festive because there are red lanterns everywhere.

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<sup>3</sup> Eliminativist primitivist views (e.g. Pautz 2020), which take colours to be primitive properties of physical objects but not actually instantiated, and mentalistic views, which take colours to be mental entities, e.g. properties of visual fields but projected onto physical objects (Boghossian and Velleman 1989), also count as colour eliminativism.

<sup>4</sup> Insofar as the Galilean view is supposed to capture Galileo’s own view, and by extension Goff’s view, of colour (though it is less clear what Goff actually thinks of colour), I shall exclude from the Galilean view *colour physicalism*, which identifies colours with either the surface reflectance properties of physical objects (e.g. Byrne and Hilbert 2003) or the lower-level microphysical properties that realise the surface reflectance profiles (e.g. Jackson 1996); and *colour relationalism*, the view that colours are dispositions to cause certain experiences in perceivers in standard conditions (e.g. Johnston 1992) or relations held between objects and perceivers under certain conditions (e.g. Cohen 2009). Colour physicalism and relationalism also face familiar problems (e.g. Boghossian and Velleman 1989, 1991; McGinn 1996; Pautz 2006), such that eliminativism is arguably to be preferred over them and are thus pitched against the naïve view.

<sup>5</sup> Moran (this volume) presupposes the naïve view and explores some of its consequences.

(v) Paul Klee's paintings demonstrate masterful arrangements of colour.

(i) is an ordinary attribution of colour; (ii) is a causal explanation that appeals to the colour of an object; (iii) is an explanation of object differences in terms of their colour differences; (iv) is an explanation that appeals to colour symbols; and (v) is a critical statement that appeals to the colours of paintings. On the Galilean view, all these ordinary attributions and explanations are strictly speaking false. Insofar as philosophical theories of colour should take our common-sense conception of colour into consideration, an assumption shared by many in the colour debate (e.g. Johnston 1992; Campbell 1993), an error theory of colour is unpalatable and counts as a substantial cost of the Galilean view.

In response, Boghossian and Velleman (1989: 101) argue that talk of colours is analogous to talk of the sun rising, the falsity of which 'makes no difference to everyday life'. I think taking the Galilean view seriously does make a difference to how we value some of our experiences and their objects. Consider two scenarios. Imagine a world,  $w_1$ , in which objects instantiate qualitative colours. People in  $w_1$  admire exotic birds such as crimson rosellas for the beautiful hues of their feathers. Imagine another world,  $w_2$ , in which objects are colourless and crimson rosellas are grey. Imagine further that human beings in  $w_2$  are completely colour blind. But the scientists in that world have invented a harmless pill which affects the visual system in such a way that it can project vibrant colours onto objects, such as red and blue onto colourless crimson rosellas, so they appear just as they do in  $w_1$ .

It seems intuitive to say that we would prefer to be in  $w_1$  even though the pill in  $w_2$  guarantees phenomenally identical colour experiences. The intuition here echoes the point made by Nozick's 'experience machine' thought experiment. Nozick (1974) asks us to consider a machine that can simulate all pleasurable experiences. Most of us are not inclined to plug ourselves into such a machine, because the extent to which we value our experiences depends not only on their phenomenology but also on their veridicality, i.e. whether our experiences actually correspond to reality. The experience of admiring a crimson rosella is more valuable in  $w_1$  than in  $w_2$  (after having taken the pill), because subjects in  $w_1$ , unlike those in  $w_2$ , are actually connected to the colours of the bird. Such a connection, to quote Nozick (1989: 106), 'is valuable *in itself*'.

Of course, the world according to the Galilean is not as unappealing as a world where people are all plugged into Nozick's experience machines. One's experiences of friends and family to be projections of one's mind is far worse than for one's colour experiences to be so. Indeed, the point being made here – namely, that the Galilean view affects how we value certain visual experiences – does not apply *equally* to all our colour experiences. It applies especially to a class of our aesthetic experiences, which most of us do value. In aesthetically appreciating a painting or a bird, we often take ourselves to be attending to and appreciating the colours of these objects themselves. If the crimson rosella which I so admire does not in fact instantiate these vibrant colours, it seems that my admiration is simply misdirected, and as a result I might value the aesthetic experience somewhat less. According to the Galilean view, our world is identical to  $w_2$  except that there is no need for us to take the pill since our mind automatically projects

colours. Just as aesthetic experiences of crimson rosellas seem less valuable in  $w_2$  than in  $w_1$ , the Galilean view would diminish the value of our aesthetic experiences of colourful objects.

Corresponding to this difference in how we value our aesthetic experiences is a difference in how we value the objects of these experiences. One would naturally value crimson rosellas in  $w_1$ , which actually instantiate vibrant colours, more than the colourless ones in  $w_2$ . Thus it is no surprise that Keats, writing of the colours of the rainbow in *Lamia* (1990: 320), laments: 'Do not all charms fly? At the mere touch of cold philosophy?' Goff also laments the disenchantment of nature by the modern scientific worldview which, he points out, 'seems to present us with an immense universe entirely devoid of meaning' (2019: 216). Goff argues that his panpsychism 'offers a way of "re-enchanting" the universe' (2019: 217), because 'on the panpsychist worldview, humans have a deep affinity with the natural world: we are conscious creatures embedded in a world of consciousness' (2019: 191). But the world would surely be in less need of re-enchantment were it not stripped of the colours, sounds and other sensible qualities that ground much of its beauty.

Furthermore, advocates of the Galilean view are faced with the task of supplementing their error theory with an alternative explanation of our ordinary colour discourse. In particular, they are obliged to provide an explanation for the phenomenological datum which underpins this discourse – if colours don't exist as qualities of physical objects, why do they *seem* to exist? Here, advocates of the Galilean view would appeal to the notion of systematic misrepresentation: colour experiences represent physical objects as having colours that they don't possess. Consider an elaboration on this by Chalmers (2006). Chalmers holds the view that colours presented to us in perceptual experience, or what he calls 'perfect colours' (which he takes to be simple, qualitative properties of physical objects) are not instantiated in our world (for reasons I will turn to in the next section). Nevertheless, colour experiences represent uninstantiated perfect colours (see also Pautz 2020). Chalmers calls this representational content of perceptual experience 'Edenic content', satisfied only in an 'Edenic world' where perfect colours are instantiated.

Chalmers' account raises an initial worry. We can represent in thought uninstantiated properties such as *being a unicorn*, which presumably is a complex property whose representation involves the representation of a horse with a horn. But how do we come to *perceptually* represent seemingly simple but uninstantiated qualities like colours? In response, Chalmers (2006: 83) claims that there are other examples where uninstantiated seemingly simple properties are represented in perception. He points to a certain version of the Humean view of causation,<sup>6</sup> on which we perceptually represent the simple property or relation of causation in our experience even though no such causation exists in our world. Chalmers' example appeals to 'phenomenal causality' – the idea that causation is automatically perceived – which was studied and argued for, most notably, by Michotte (1963) using launching events where a moving object contacts

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<sup>6</sup> On the Humean view, causes and effects are merely constantly conjoined events.

a stationary object and the latter starts moving in the same direction upon contact. However, causation certainly does not seem to be presented in perceptual experience in the same way that colours are. Many subjects report no causal perception, and whether we perceive causation is also influenced by prior experience and knowledge (e.g. Schlottmann and Anderson 1993). In contrast, the existence of colour is just as perceptually salient and persistent as that of shape and size. If there are no other robust examples where seemingly simple and uninstantiated properties are perceptually represented, then colour experience, which on Chalmers' picture systematically represents uninstantiated colours, remains mysterious.

In sum, advocates of the Galilean view face the challenge of providing a fully satisfactory explanation for the phenomenological datum that does not render the projection of colours as properties of physical objects mysterious. Moreover, even if such an account is available, the Galilean view still faces the cost of a systematic error theory which potentially diminishes the value of some of our experiences and their objects.

### 3. The Naïve View

The naïve view takes the phenomenological datum about colour at face value. There are two tenets to the view. First, on this view colours *exist* as qualities of physical objects. Second, this view draws on a close connection between *colours* and *colour perception*, such that the qualitative natures of the former are *manifested* through the latter.

Let me elaborate on the second tenet. Regarding *colour perception*, the naïve theorist can be either a relationalist or a representationalist. On relationalism, in perceiving a green object, I am related or acquainted with the greenness instantiated by the perceived object. On representationalism, in perceiving a green object, my experience represents the property green. The notion of *manifestation* is closely related to the thesis of *revelation* about colour, according to which, as Johnston (1992: 223) puts it, '[t]he intrinsic nature of canary yellow is fully revealed by a standard visual experience as of a canary yellow thing'. Depending on what counts as the 'intrinsic nature' of a colour, *revelation* may turn out to be unnecessarily strong. On a liberal conception of 'intrinsic nature', *manifestation* need not commit to the idea that the intrinsic nature of a colour is fully revealed – only its qualitative nature.

The naïve view preserves the common-sense view about colour and the validity of our ordinary colour judgements. Indeed, one might think that the phenomenological datum provides *prima facie* support for the naïve view. However, it faces objections. I shall discuss two common objections here – the argument from science (e.g. Chalmers 2006), and the argument from perceptual variation (e.g. Berkeley 1734; Hardin 1993). The aim here is to show that these considerations do not give compelling reasons to eliminate colours from physical objects – at least not for a theorist who, like Goff, is already convinced that our quantitative science fails to include all qualities.

According to the argument from science, colours as we naively conceive them don't feature in the scientific explanation of colour perception, and if they are irreducible to physical properties, then they are causally idle and should not be admitted in our

ontology. This objection parallels the causal exclusion argument against nonreductive views of consciousness (Kim 1993). It seems reasonable to think that if there is an adequate solution in the latter case, the same solution will also apply to the colour case (Campbell 1993; Yablo 1995; Allen 2016; Cutter 2018). But more importantly, if we agree with Goff that quantitative science cannot in principle accommodate phenomenal or sensible qualities in its description of our world, then it is no surprise that colours do not feature in our scientific explanations. If qualia are not eliminated simply because they may be causally idle, nor should colours.

The argument from perceptual variation builds on the fact that an object's colour can appear in different ways. Such variations come in three categories (see Allen 2016): (i) intrapersonal variations, where an object might appear to have different colours to the same perceiver under, say, different illumination conditions; (ii) interpersonal variations between colour-blind subjects and 'normal' subjects, as well as between 'normal' subjects, e.g. an object might appear unique green to one perceiver and yellowish green to another under the same condition; and (iii) interspecies variations where the same object may appear to have different colours to members of different species due to differences in photoreceptors, mechanisms of visual processing, and sensitivities to different ranges of the electromagnetic spectrum.

Let  $C_1$  and  $C_2$  be two determinate colours whose qualitative natures are revealed by their veridical appearances.  $S_1$  and  $S_2$  can be two perceivers from the same or different species, or the same perceiver under different circumstances. Given perceptual variation, an object  $x$  can appear  $C_1$  to  $S_1$  and  $C_2$  to  $S_2$ . This raises the question of which colour  $x$  in fact has, that is, which of  $x$ 's colour appearances is veridical. Consider the following argument:

- (1) If  $x$ 's  $C_1$  appearance and  $C_2$  appearance are both veridical, then  $x$  has both  $C_1$  and  $C_2$  all over at the same time.
- (2) Nothing is both  $C_1$  and  $C_2$  all over at the same time. [INCOMPATIBILITY]
- (3) It is not the case that  $x$ 's  $C_1$  appearance and  $C_2$  appearance are both veridical.
- (4) Either only one of the colour appearances is veridical or neither is.
- (5) It is not the case that only one of the colour appearances is veridical.
- (6) Neither of the colour appearances is veridical.
- (7) Colour appearances are systematically non-veridical, i.e. objects never have the colours they appear to have. (adapted from Kalderon 2007: 567)

(1) is unproblematic – if an object's colour appearance is veridical, then it has the colour it appears to have. (2) – INCOMPATIBILITY – is intuitive. Colours stand in exclusion relations – if something is red all over, then it cannot be green all over at the same time. (3) follows from (1) and (2). (4) is entailed by (3). Suppose that either  $x$  has  $C_1$  or  $C_2$  but not both. The question of which colour is instantiated, or which appearance is veridical, might seem hard to settle on non-arbitrary grounds. For instance, if  $x$  appears to be  $C_1$  with respect to one species and  $C_2$  with respect to another, it is not clear which species

should be prioritised in deciding  $x$ 's colour. (5) is then drawn. (6) follows from (4) and (5). Cases then generalise, and we arrive at (7), which entails that the naïve view is false.

However, it is far from clear that the above argument is persuasive. How one should respond will plausibly depend on what type of perceptual variation is at issue. For instance, (5) can plausibly be denied with respect to cases of intrapersonal and interpersonal variations (see Allen 2016, ch.3; for discussion on colour-blindness, see Broackes 1992: 216). Due to limited space, I shall focus on interspecies variations. There are two responses here. One is to reject (5) by denying that non-human animals perceive colours and embracing the view that there are only *human* colours. But such a response seems unjustifiably anthropocentric. The second response, then, is to reject (2), INCOMPATIBILITY, and adopt colour pluralism, according to which objects simultaneously instantiate multiple colours (Mizrahi 2006; Kalderon 2007). Colour pluralism denies colour monism, on which there is only one family of colours (where a family of colours is defined as a group of colours which stand in relations of chromatic similarities, differences, determinations and exclusions) (Kalderon 2020).<sup>7</sup>

Colour pluralism, when first encountered, is likely to provoke an 'incredulous stare'. Indeed, proponents of the Galilean view might point out that their view was criticised precisely for contradicting our commonsense view of colour, but that the naïve view, in embracing colour pluralism, ends up contradicting our common sense to at least the same extent. While a full defence of colour pluralism is beyond the scope of this paper, points can be made that diminish its counterintuitiveness.

First, there are many properties of objects that are not detected by our visual systems (e.g. fingerprints in crime scenes). By analogy, it should not be too odd to think that a surface might have other colours than the ones we can see. We know that flowers like marsh marigolds have surface features that reflect varying amounts of ultra-violet light, forming patterns detectable by some birds and insects, but invisible to humans (Primak 1982). It should not be counterintuitive to suppose that objects like marsh marigolds have multiple colours visible to different species.<sup>8</sup>

Second, the intuitiveness of INCOMPATIBILITY (nothing is both  $C_1$  and  $C_2$  all over at the same time), which contradicts colour pluralism, seems to derive from the following intuitive claim (Harman 2001: 661):

INCOMPATIBILITY-A: Nothing *appears* to be  $C_1$  and  $C_2$  all over at the same time to the same perceiver.

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<sup>7</sup> Colour pluralism has also been appealed to in dealing with interpersonal variation of fine-grained colours (Kalderon 2007) and even intrapersonal variations (Mizrahi 2006).

<sup>8</sup> It is worth noting that all theories that treat colours as mind-independent features of objects, not only the naïve view, face the problem presented by perceptual variations in colour experiences and will potentially have to embrace colour pluralism as a result. Indeed, colour pluralism is compatible with various metaphysical theories of colour including colour primitivism, physicalism and relationalism.

While INCOMPATIBILITY<sub>A</sub>, which concerns *colour appearances*, seems to be a truism, it does not entail INCOMPATIBILITY, which concerns *colours* themselves. Indeed, as Harman (op. cit.) remarks, ‘something could be both red all over and green all over at the same time without looking both red all over and green all over at the same time’. The counterintuitiveness of colour pluralism seems to diminish once we distinguish INCOMPATIBILITY from INCOMPATIBILITY<sub>A</sub>. On colour pluralism, colour perception grants a species access to only some, but not all, colours of objects. A pluralist can further hold that different visual systems *select* different families of colours for perception, determining which colours *appear* to the viewer perceptually (see Kalderon 2007, 2020; Allen 2016).<sup>9</sup>

Let’s now take stock. I have argued that the Galilean view is committed to a systematic error theory and faces the task of explaining how our mind projects colours onto physical objects. I have also shown that while the naïve view faces objections, responses can be made to diminish the force of these objections. As it stands, it seems far from clear that the Galilean view should be the default view, as it is often assumed in the literature on consciousness. Given the arguments in this and the last sections, the naïve view ought to be taken seriously. In the next section, I shall explore implications which the naïve view of colour has for the problem of consciousness.

#### 4. The Problem of Consciousness

As several theorists have noted, the problem of colour – how colours arise from colourless microphysical properties of objects – is structurally parallel to the problem of consciousness (e.g. Shoemaker 2003; Byrne 2006; Kalderon 2007; Moran this volume).<sup>10</sup> Just as anti-physicalists have raised the knowledge argument (Jackson 1982), conceivability argument (Chalmers 1997), and revelation argument (Goff 2017) against physicalist theories of consciousness (see also Goff 2019), one can raise parallel arguments against physicalist theories of colour. One could say that what Jackson’s Mary learns upon leaving her room are non-physical facts about what colours are like; that a minimal physical duplicate of our world devoid of colours is conceivable and also

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<sup>9</sup> Given the number of potential visual systems, one might worry that colour pluralism leads to the unacceptable consequence of ‘colour explosion’, such that each object simultaneously has infinite colours (e.g. Chalmers 2006: 68). Note that such an explosion is quantitative not qualitative (Allen 2016: 67). While qualitative parsimony concerning *types* of entities is generally favoured, there is no clear reason to maintain quantitative parsimony, which concerns the number of entities within the same type (Lewis 1973).

<sup>10</sup> In solving the problem of consciousness, Goff motivates his panpsychism by appealing to the idea that science fails to reveal the intrinsic nature of fundamental entities. Taking the latter idea seriously, the naïve view of colour opens up a Russellian monist view of colour, according to which colours are grounded in the intrinsic natures of fundamental entities and their causal dispositions (Cutter 2018; see also Moran this volume).

possible; and that the essence of a colour is revealed in standard visual experience of that colour and is not revealed as physical (Johnston 1992; Campbell 1993).

Those who take the problem of colour seriously often claim that the problem of consciousness 'derives from a particular response to' the former (Kalderon 2007: 594), and it disappears 'once we recognize the source of the puzzlement' which lies with sensible qualities presented or represented by experience (Byrne 2006: 243; Allen 2016). Does the naïve view of colour make the problem of consciousness disappear?

Regarding the problem of consciousness, we should distinguish between two questions (Pautz 2010):

QUALITY QUESTION: Why does a particular conscious state have the phenomenal character it has?

GENERAL QUESTION: Why is a conscious state conscious at all?

The quality question asks why the phenomenal character of seeing a red apple is the way it is, as opposed to, say, the phenomenal character of seeing a green apple. The question becomes particularly perplexing if we focus on the brain states that underlie our experiences. Thus, Levine (1983: 356-7) expresses the quality question as a question about how the former can give rise to the latter:

Let's call the physical story for seeing red 'R' and the physical story for seeing green 'G'. ... When we consider the qualitative character of our visual experiences when looking at ripe Macintosh apples, as opposed to looking at ripe cucumbers, the difference is not explained by appeal to G and R. For R doesn't really explain why I have the one kind of qualitative experience – the kind I have when looking at Macintosh apples – and not the other.

According to the naïve view of colour, as we saw, colours are qualitative properties of physical objects, and their qualitative natures are manifested in perception. With this view in mind, the qualitative differences between the colours themselves – red and green – would naturally feature in an explanation for the phenomenal difference between seeing a red apple and seeing a green apple.<sup>11</sup>

There is a long philosophical tradition that treats colours as less objective and real than shapes. Empirical evidence suggests that philosophers are less likely than non-philosophers to treat colours as being as objective as shapes (Roberts et al. 2014). But suppose that we were never enthralled by the Galilean view; suppose Galileo and other enlightenment scientists and philosophers never proposed to eliminate colours from the physical world, and instead treated them as something real but beyond the reach of physical science. It then seems that the question of why my experience is the way it is – that is, why my experience is like *this* (pointing inwardly) when seeing a red apple as

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<sup>11</sup> Some theorists take the phenomenal character of a colour experience to be wholly determined by the colour presented or represented by the experience (Campbell 1993; Byrne 2006). Here I am only committed to a weaker claim that colours *partially* determine corresponding colour phenomenology.

compared to *that* (again pointing inwardly) while seeing a green apple – doesn't seem to be particularly interesting. Naturally, one would point to the colours of the apples themselves, as well as viewing conditions, in explaining the phenomenal differences between the two experiences. In this sense, Levine's formulation of the quality problem of consciousness indeed 'derives from a particular response to' the problem of colour (Kalderon 2007: 594). The quality problem becomes pertinent once we eliminate colours from the world and focus only on the physical states that underly our conscious experiences.

Nevertheless, unlike those who think the source of the problem of consciousness lies with the problem of colour (e.g. Byrne 2006; Kalderon 2007; Allen 2016), I do not believe that the admission of sensible qualities like colours into our ontology makes the problem of consciousness completely disappear. To begin with, the *quality question* concerning non-sensory experiences arguably remains. It is far from clear that the phenomenal characters of many emotions, moods, or *je-ne-sais-quoi* experiences which we have no words for (Camp 2006), can be explained by making reference to qualities or values presented or represented by experience. Unlike colours, these qualities or properties do not *seem* to exist out in the world. More importantly, the *general question* remains. Why are we conscious rather than not conscious? Why is it that we are *conscious of* colours, for example?

Given that the problem of consciousness does not completely disappear, advocates of the Galilean view, including Goff, who think that only consciousness is physically irreducible, are likely to point to the consideration from simplicity to argue that an ontology which admits irreducible colours as well as consciousness is bloated and inelegant. But the consideration from simplicity never exists in a vacuum. We should not prioritise simplicity if there are good reasons against eliminating a certain type of entity which seems to exist. Moreover, while a worldview that includes colours is ontologically less simple than a worldview without them, it is far from obvious that the latter is theoretically simpler or more elegant overall. Eliminating colours from the world, as we saw, has significant costs.

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