Colour Wars: Dividing the Spoils

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1. Introduction

This is a paper in defence of a distinction—in defence of the thesis that there is a significant and instructive distinction between certain perceptible properties of objects, those termed 'primary' and those termed 'secondary'. As will be seen, the defence might not add up to a vindication of the traditional way of drawing the distinction; but it nevertheless captures a contrast that accords well with the traditional account of the distinction. In fact I think the traditional account, on one interpretation of the secondary properties, is correct; but I will propose a contrast that can be taken as settling for less.

According to the traditional account of the distinction, primary properties like shape for example, are objective while secondary properties like colour for example, are subjective—under a suitable interpretation or qualification of that term. As will be seen, under the appropriate interpretation, I am sympathetic to this thesis. But for those less sympathetic I will argue that, at the very least, we can apply to colour as representative of secondary properties, a strategy of 'dividing the spoils' between objective and subjective demands, that has no parallel in the case of shape as representative of primary properties. What I will argue is that in the case of colour, were, what can be referred to as, 'intrinsic' and 'phenomenal' colour, to come apart, we would be wont to say, 'to each his own'; and we would be justified in doing so.

Objectivist accounts of colour take colour to be an intrinsic, observer-independent property of objects. It is the intrinsic property in objects that accounts for our colour experience. It is a property, the nature of which is to be discovered—if at all—by scientific investigation. For an object to be red, for example, is for it to have the appropriate intrinsic property.

Subjectivist accounts—the ones I am concerned with—take colour to be relational, to be a power or disposition of objects to produce certain characteristic sorts of experience, in certain subjects[1,2]. Colour, on this account, is a phenomenal property—a prop-

[1] Given the diverse possible interpretations of these terms, it is important to make their use in this paper clear. By a 'subjectivist' account of

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erty an object has in virtue of how it looks to certain subjects. For an object to be red is for it to look red, to the appropriate group of perceivers, in the appropriate conditions of observation.

Both objectivist and subjectivist (or phenomenalist) accounts of colour exert a powerful pull on us. There are strong arguments on both sides. And each side can concede much about the other's claims, even where the fundamental disagreement about what colour is, or what our colour terms refer to, remains. This suggests an alternative position: that we recognize that each account has some claim to providing an account of colour, or, at least, an important aspect of it; and that we accordingly adopt the strategy of 'dividing the spoils', recognizing so to speak, 'intrinsic' and 'phenomenal' colour.

However, it needs to be added that if this strategy is adopted, it is not as even-handed as it might seem. While it gives the subjectivist—at least the account I have in mind—all that he wants (or should want), it gives the objectivist something less. This can be shown by shifting focus from the status of properties like colour, to the comparison between them and properties like shape. For what will be illustrated is

colour, I do not mean one that takes colour to be 'in' us, rather than 'in' objects. By 'subjectivist' I mean an account that takes colour—that property of objects—to be observer- or subject-dependent: to be coloured is to look coloured—produce characteristic colour experiences—in appropriate perceivers. As I use the terms 'objective' and 'subjective', both objectivists and subjectivists about colour hold that colour is a property of (physical) objects rather than a property of mental objects, or mental states. Their disagreement is not over whether objects are coloured, but over whether colour is an objective subject- independent property in Nagel's sense, one that can be understood in itself, independently of a particular point of view; or whether it is a subjective subject-dependent property in Nagel's sense, one that can only be understood from a particular point of view—from the subject's point of view.

[2] The 'traditional' thesis is that with the secondary properties, we need to distinguish between the disposition and the ground of the disposition. Though the secondary properties are properties of objects, given that they are in part constituted by the experiences they give rise to, the ground of the disposition must be distinct from the disposition. What explains the disposition of objects to look coloured (and so be coloured) for example, are certain intrinsic properties of the object. Colour does not have an independent causal explanatory role. While primary properties are also dispositional, those very properties account for the relevant dispositions—they do have a causal explanatory role. The ground of the disposition is not distinct from the disposition. (See J. L. Mackie, *Problems from Locke* (Oxford: Clarendon Press, 1976), Chapter 1.) Whether this dispositional account needs to be modified will be considered again in section 5.

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that the strategy proposed for colour cannot be applied to shape. An important distinction remains between them, and crucially, that is one of the central points that the subjectivist has always maintained.

2. Laying out the battle-lines

We ascribe colour to objects on the basis of our experience. There are a number of points here; that the (normal) basis for ascription is experiential; that the experiences involved, are the experiences of a (normal) group of perceivers; and that the experiences occur in appropriate (or normal) conditions of observation.

Though we ascribe colour to objects on the basis of our experience, we recognize that our experience can on occasion misrepresent the colour of an object. The colour we see an object as having might not be its 'real' colour. We might be suffering from a perceptual problem or abnormality, for example, have jaundice, or be colour blind. Or we might be observing the object under non-standard conditions of observation, for example under non-standard illumination, or at an abnormal distance, or under magnification and so on. The 'real' colour of the object is the colour it appears to have to normal perceivers, in normal conditions of observation. So it is within experience that the distinction between the real colour and the merely apparent is fixed.

Given the experiential basis for ascribing colour to objects, arguably, it is implicit in our ordinary practice that when we have exhausted experiential resources for determining the 'real' colour of an object, we have exhausted all resources. There is no determinate experience-independent notion of 'real' colour.

On the other side, there are those who would argue that our 'normal practice', if correctly described, under-determines a philosophically adequate account of colour. They would maintain that the 'inter-subjective basis' of colour ascription, under appropriate conditions of observation, has merely an evidential role. The thesis is that the subjective phenomenal patterns are indicative of the subject-independent objective patterns, say for example, wave-length of light reflected by objects (or better still 'triples of integrated reflectances', or whatever science in the fullness of time will discover to be the case[3]). Clearly these intrinsic, properties play a

[3] ' ....a triple of integrated reflectances is the result of taking the reflectance—that is certain proportions of reflected light to incident light—over three band-widths, scaling and then summing', (see Frank Jackson, 'The Primary Quality View of Colour,' *Philosophical Perspectives* **10** (1996), p. 215).

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significant role in the explanation of the phenomenal or experiential patterns; and these properties do, to some extent, parallel the patterns of phenomenal experience. So it is argued that when experience no longer offers a determinate answer to the question as to what the 'real' colour of an object is, these intrinsic properties—perhaps as measured by a spectrometer—could.

However this account is problematic. One problem—noted by some—is that the correspondence between intrinsic properties of objects and phenomenal patterns is imperfect. And they use this imperfect correspondence as a way of arguing against the identification of colour with the objective intrinsic properties, on the assumption that unless we discover a fairly homogeneous set of intrinsic properties to identify colour with, theoretical identification of this sort cannot work (see for example K. Campbell, 'Colours', in R. Brown and C. D. Rollins (eds), *Contemporary Philosophy in Australia* (London: Allen and Unwin, 1969)). I think this strategy is wrong. It does not lead to the phenomenalist account of colour in the right sort of way. For even if we were to discover a perfect match in the actual world between the phenomenal and the intrinsic, we would still have compelling reasons to resist the identification of colour with the relevant intrinsic property. At the very least we would have reason to resist the thesis that an intrinsic account of colour would be an exhaustive account of colour.

The argument will be pursued in two stages: first I begin with an argument to show that it makes sense to think of colour as contextually relative, in a way in which it does not make sense to think of primary properties like shape; then I employ the by now familiar inverted spectrum thought experiment to justify the stronger conclusion that colour is relative in a more radical way. Again a contrast will be drawn with the primary properties. By considering both the actual context as well as other possible contexts we can come to a better understanding of the nature of colour and the contrast between colour and shape for example.

3. Initial skirmishes—the contextual relativity of colour

An illustration of the difference between primary and secondary properties is provided by observing the ease with which in the case of colour (but not of shape), we could switch from an a-contextual ascription of colour to objects, to a contextual one. Instead of thinking of objects as having colours simpliciter, we could think of objects as having colours in a context of illumination.

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A standard form of the argument from illusion or relativity (for the existence of sense-data) begins with the recognition that the properties objects are perceived as having, vary under different conditions of observation. The round coin viewed at one angle looks elliptical; the straight stick viewed in water looks bent; the mountain covered with green foliage, looks blue at a certain distance; the red object in certain conditions of illumination looks brown. And so on. But it is argued that the coin is round, not elliptical; the stick is straight, not bent; the mountain is green, not blue; the object is red, not brown. So what is elliptical? What is bent? What is blue? What is brown? What has the properties we perceive the objects as having, if not the physical objects themselves? The answer standardly given brings in sensory or mental objects—objects internal to experience. These objects are introduced as bearers of the apparent properties. There are two steps here: the claim that what is perceived is something subjective (since not an objective feature of objects); and the claim that what is perceived is (thus) a property of a subjective item, a mental object or a sense-datum.

A natural retort to this line of argument (though in the end not the strategy I would adopt in order to resist the sense-datum account[4]), is to reply that what is perceived in these cases is, contrary to what has so far been maintained, an objective state of affairs. This can be demonstrated by looking at the explanations for the perceived variations. The coin looks elliptical because, at that angle, it projects an elliptical shape onto a two-dimensional plane. One might say, that if we took a two-dimensional slice of the light patterns reaching the perceiver's eyes, there would be an elliptical shape in it. And in a similar manner we would say that the stick looks bent because of the effects of refraction. Again we could say that, taking refraction into account, there would be a bent shape in the perceiver's visual field; or we could say, that if we took a two-dimensional slice of the light patterns reaching the perceiver's eyes, there would be a bent shape in it. Indeed one might add, only if the coin at that angle looked round would there be a problem; or only if the stick in water looked straight would there be a problem. The

[4] The argument is better resisted by denying the shift from 'what is perceived is a subjective state of affairs' to 'what is perceived is a property of a subjective item—a mental object'. The point is not that with regard to primary properties it cannot be maintained that what is perceived is an objective state of affairs. The point is that cannot be maintained with regard to the secondary properties. So the same problem will arise again (even putting aside Berkeley's point that the primary properties are perceived 'through' the secondary ones).

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way we see these objects is the way such objects should look in the relevant context. Indeed the coin would need to be elliptical to look round when held at that angle, the stick would need to be bent in order to look straight when viewed in water, given the refraction of light in water.

One might want to go as far as suggesting that objects have properties in a context of observation; the coin is elliptical in the specified context—viewed at this angle; the stick is bent in this context, viewed in water. But this strategy is not sustainable; we have too good a sense of the objective basis of these properties to take such suggestions seriously. These ascriptions, would be belied by subsequent (or concurrent) reality. The coin that looks elliptical to me looks round to you, feels round to both of us and fits snugly into an appropriately sized round hole (not elliptical one); the stick that looks bent, feels straight and fits snugly into an appropriately sized cylinder (see H. P. Grice, 'Some Remarks About the Senses,' in R. J. Butler (ed.), *Analytical Philosophy* (First Series) (Oxford: Blackwell, 1962)). So at best the contextual ascriptions would become short-hand for what is literally true: that the round coin looks elliptical at this angle; that the straight stick looks bent in water. Having-a-property-in-a-context is merely appearing to have the property in that context.

But now consider colour. One way to respond to the argument from illusion would parallel the response to primary properties—focus on the patterns of light striking the retina under the given conditions of illumination or observation. That is, one could argue that what is being perceived is some objective state of affairs, accountable for by reference to the light reaching the retina; and indeed that in turn would account for why other instruments, cameras for example, would be affected in the same manner[5]. Photographs of the objects under the same conditions would exhibit the same variations in colour.

But there is a second response to the problem which seems to me equally effective. This time we could relativize colour to a context—take colour to be a property of an object, in a context of observation or illumination.

We ascribe colours to objects on the basis of experience; as seen, on the basis of the experience of normal observers, under normal conditions of observation. The mountain is green if it looks green viewed at an appropriate distance, in appropriate lighting condi-

[5] This of course is not to say that the objective account can ultimately be sustained. It cannot as I argue in what follows and in particular in the next section, when a more radical relativity is considered.

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tions—'normal' sunlight; an object is red if it looks red, viewed at a suitable distance, in appropriate lighting conditions. But one could just as easily ascribe colour to objects in a context of observation or illumination. We could say that the mountain is blue, because it looks blue viewed from a suitable distance; or that the object is brown because it looks brown viewed under certain conditions of illumination. The point is not that the mountain is blue and green simpliciter, at the same time, to the same perceivers, so that we are ascribing incompatible properties to it. The point is rather that the mountain is green in one context of illumination, but blue in another. Objects, on this account, have colours only in a context of illumination. Where patterns of colour experience of an appropriate group of subjects vary systematically with certain contexts of observation (or illumination), there is a basis for ascribing colours to objects in those contexts. More strongly, there is a basis for taking objects to have those colours in those contexts.

The point is not (yet) that colour is not an intrinsic property of objects on the grounds that the same object can have different colours depending on the observers viewing it. For in this case we are holding the observers fast, while altering colours by shuffling contexts. On this account what is shown is that colour cannot (properly) be ascribed to objects independently of a specification of the relevant context. What is shown is that colour is a more complex property of a larger context rather than not an intrinsic property. For, it remains true, that an object cannot alter with respect to colour without an intrinsic change—albeit in the larger context. Objects have different colours in different contexts, but in relation to the same observers.

There might of course be pragmatic reasons for not pursuing this strategy, for this enriched system of ascribing colours to objects could become highly complicated and cumbersome; but there wouldn't be principled reasons of the sort that undercut the parallel strategy in the case of the primary properties. There would be nothing to belie the ascription of colour to objects on the contextual basis. At best we could refer to the fact that the object does not look to have that colour in a different context; but there is nothing of an objective sort that would contradict that ascription. The point illustrated again is that colour, has a phenomenal basis. We ascribe colours to objects in the way we do because objects look to have the colours they do. Fix your reference group of perceivers; fix your conditions—the normal conditions—of observation; and you have a foundation for the systematic ascription of colours to objects. But it would be in principle easy enough to move to a contextual basis. As

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long as a systematic relation obtained between the phenomenal experience (of objects), of normal perceivers, in different contexts of observation or illumination, there would be a perfectly good basis for ascribing colours to objects in those contexts. We might recognize that such a scheme is too elaborate, or we might recognize that such a scheme is unwarranted on practical or pragmatic grounds. But we could not discover that such a scheme is wrong. There would be nothing to belie the practice.

But as seen, the same is not true of a primary property like shape. Shape could not be given a purely phenomenal basis; contextual ascriptions (of shape) could be belied by the intrinsic properties of objects. A contrast between the two remains. And as will be seen in the next section this contrast can be seen to be even starker.

4. The main battle: the radical relativity of colour

i. The inverted spectrum: support for the subjective account

Consider now the possibility of a spectrum shift. Our colour experience is in part a function of our sensory mechanism. In imagining a shift in the colour spectrum, we imagine a change in, or to, that sensory mechanism. The inverted spectrum, as a function of a radical change in the sensory mechanism, is a philosophical fabrication; differences in colour experience, as a function of differences in sensory mechanisms, are not. Think again of the colour blind, or the jaundiced. The inverted spectrum is a more radical form of what we already have reason to accept. (As will be seen later, the possibility of such a shift will not play a discriminatory role, for the corresponding possibility with respect to shape perception will also be entertained. Accordingly it is worth going along with this at this stage).

So consider the possibility of a spectrum shift as a consequence say, of undergoing a radical change in the distribution of rods and cones in one's retinal system. How would we describe what has happened in the light of the systematic change in the character of one's (colour) experience? Would we say that the colour of objects had remained the same, since there would have been no intrinsic change in the objects themselves? Would we say that the green board remains green, despite the fact that it now looks yellow to us—that is, looks the way yellow objects looked prior to the shift? Or would we rather say that objects have changed in colour, despite not undergoing an intrinsic change, thereby demonstrating (the more radical thesis this time) that colour is not an intrinsic property of objects?

I think, given the experiential basis we employ for ascribing

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colour to objects, that we would take the colour of objects to have changed. Indeed reflection on this sort of case would lead us to see the severe limits that exist on the objective determinacy of colour. Before and after the shift our objective discriminative capacities would be the same; but we would be discriminating on the basis of subjectively different experiences. So were we to ask whether an object is really green (because appearing green before the switch) or yellow (because appearing yellow after the switch), the answer would be clear. Nothing would favour the one response rather than the other. 'Real' colour would be objectively indeterminate. The point is that there would be no hidden facts, which if only we possessed them, could decide the issue.

Crucially, given our practice with regard to colour—ascribing colour to objects on the basis of our experience—we would need some way of, and would have an obvious interest in, registering the difference 'in objects', before and after the shift. That difference I submit would be registered as a colour difference. If it involved no intrinsic change in objects, then we could say it is a difference in 'experiential' or 'phenomenal' colour. Nothing of an objective sort would belie that new ascription. Two points are crucial here, which go together; that colour is ascribed to objects on the basis of our experience; and that though intrinsic properties of objects constitute an objective ground for colour, those intrinsic properties would not belie a pattern of ascribing colour to objects, as long as that pattern was phenomenally and inter-subjectively systematic.

One could take the point and the contrast further. We could wake up tomorrow and have the experience of the inverted spectrum, because of changes in us, because of changes to our colour mechanism. We could also wake up tomorrow and have the experience of the inverted spectrum because of changes to objects, because, for example, a cosmic painter, has repainted the world with the inverted spectrum as his colour chart. As long as the changes were systematic and sustained over time, whether our colour experience changed because of changes in us, or whether our colour experience changed because of changes to objects, we would describe matters the same way—as changes in the colours of objects. Nothing in the objects themselves would belie this system of description. And the ground for this 'pattern of description'—experience—would be the same. Indeed it is perfectly conceivable that we could be ignorant of the source of the change in colour (and in principle could remain ignorant of it). This is not to say that there would be no difference between the two scenarios, namely that in the one case, but not the other, changes would have been made to objects; nor that these

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differences would not be relevant to us. The point is rather that those differences will not affect how objects are described. After the switch, I will describe my board as yellow, whether or not its changed appearance was a function of changes in me—designer experiences—or changes to the board—a change brought about in the more conventional way. It is correctly described as yellow either way. We would only be wrong if we implied, in the one case, that it is yellow because of an objective or intrinsic change in it. In either case we will take the colour to have changed. The differential feature is whether the change occurs with or without an intrinsic change.

ii. The objective view reasserted

On the other, the objectivist side, it might be argued that given that there is a systematic phenomenal basis for ascribing colour to objects, there would be an objective basis which would account for, or explain it. And that accordingly, that objective basis could (and should) be taken as what our experience 'imprecisely' signifies. Experience on this account would be 'symptomatic' of colour, not constitutive of it. What is important is not the actual character of the experience, but what the character of experience signifies—the relevant intrinsic properties of objects. The possibility of a spectrum shift would exhibit, not that colour has a phenomenal basis, but that the phenomenal character of experience is one indicator, amongst other possible indicators, of colour, that objective property of objects. Being red is not necessarily looking red, at least not necessarily looking the way red objects currently look to us[6].

[6] Consider Shoemaker for example. His claim is that the subjectively engineered colour spectrum shift would leave colours unchanged, whereas the parallel shift with tastes would produce a change. He takes colour concepts to be more objective than concepts of flavours: 'Our dominant interest in classifying things by flavours is our interest in having certain taste experiences and avoiding others, and not our interest in what such experiences tell us about other matters. With colour it is the other way around; the evidential role of colour dominates such interest as we have in the having or avoiding of colour experiences.' (S. Shoemaker, 'Self Knowledge and "Inner Sense",' *Philosophy and Phenomenological Research* **LIV** (1994), pp. 302–3.) As I have argued, I think this is wrong with respect to colour: at best we need to concede that we also have an interest in the objective ground of colour; but certainly we have an interest in the phenomenal classification. I also think it is wrong with respect to flavours. We have some interest in what the flavours objectively signify; what the grounds of the flavours are and what 'other matters they tell us about'. It is, for example, an evolutionary significant matter that harmful items tend to taste bad to us.

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iii. Dividing the spoils

Though I think that the phenomenal account of colour is correct, perhaps we can settle for—what appears to be something less—a more inclusive account, recognizing and distinguishing between 'intrinsic' and 'experiential' or 'phenomenal' colour. I submit that at the very least we would distinguish between these. We might hold that with respect to 'intrinsic' colour—the objective ground of colour in objects—there has been no change; but we most certainly would say that with respect to 'experiential' or 'phenomenal' colour that there has been a change. The point behind this conciliatory strategy is that a case could be made for the two ways of viewing colour, without contradiction or overt conflict. As long as neither account is accorded a privileged position, the two accounts can cohabit. The existence of the objective ground would not belie the phenomenal classification; and the phenomenal or experiential stand-off would not preclude the objective specification. If not in conflict, the two accounts can have lives of their own. But the point is not merely the negative one, about the absence of conflict. On the positive side it is clear that we would have an interest in the two ways of classifying objects. We would have an interest in both the intrinsic and phenomenal aspects; an interest in what it is about objects in virtue of which they give rise to our colour experiences; and an interest in the look of the objects— the colours they have—specified in phenomenal terms. Martians without sight (and Mary the scientist) could have a full understanding of the former; but only suitably sighted creatures would have an understanding of the latter (see T. Nagel, 'What is it like to be a bat?' *Philosophical Review* (1974) and F. Jackson, 'What Mary didn't know,' *Journal of Philosophy* **LXXXIII** (1986)).

It is an extremely significant counter-intuitive consequence of a purely objectivist account of colour, that creatures would see the same colours despite having radically different experiences, or that creatures could have a perfectly good understanding of colour despite having no acquaintance with colour experience at all. Recognizing a role or place for both 'intrinsic' and 'phenomenal' colour, defuses to some extent the concern that our intuitions have been transgressed.

However let me make myself clear on this point. In suggesting that they could have lives of their own, I do not mean to suggest that there isn't a very important connection between them. There must be. The phenomenal pattern needs to be grounded in and explained by the objective intrinsic pattern. What is suggested is that one can

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admit the possibility of the same intrinsic patterns giving rising to different phenomenal ones (the inverted spectrum); and (as we will see later) the same phenomenal patterns being grounded in different intrinsic ones—the variable realizability of colour.

It is also crucially important to stress here that on the subjectivist thesis I have defended, it is not the case that the **full** nature of colour is given in experience. It couldn't be, given that colour is a property of objects, not experience. What is the case is that our experience (of colour) is an essential aspect of colour. That we have the characteristic experience in the appropriate conditions, is in part constitutive of what it is for an object to be coloured. It is this 'hybrid' character of colour that prevents an exhaustive account of colour either in purely intrinsic objective terms or in purely phenomenological or subjective terms. (Put in the currency of recent discussions of colour, the revelation thesis—the thesis that the full nature of colour is revealed in experience—is not true; but the partial revelation thesis is (see P. W. Ross, 'The appearance and nature of colour,' *Southern Journal of Philosophy* **XXXVII** (1999).)

iv. The contrast with the primary properties

I do not think that there really is a stand-off between the phenomenal and intrinsic accounts, that there really are two notions of colour, 'phenomenal' and 'intrinsic' colour. But I can see the attractions of the position, of settling for less. However, I do think that if this position is maintained, holding that there is a need and room for both, an equivalent strategy could not be applied in the case of the primary properties, like shape. With respect to the primary properties we could not say: 'to each his own'.

This can be shown by considering the parallel possibility with regard to shape—a shift in our *experience* of shape. Just as our colour experience is in part a function of a sensory mechanism, so our experience of the primary properties is in part a function of a sensory mechanism. Accordingly, in this case too we could imagine a (radical) change in the sensory mechanism, leading to a (radical) change in the character of shape experience—at least for a period[7].

[7] As Kohler's experiments with inverting prisms exhibit, in the case of the primary properties it is less clear that the inversion can be maintained over time. Subjects who put on the inverting prisms, and who were allowed to move around their environment, discovered that the visual field 'corrected' itself in time without removal of the prisms (see I. Kohler, 'The Formation and Transformation of the Perceptual World,' *Psychological Issues* **3** (1964, monograph 12)).

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In this way we could imagine, what can be referred to as 'experiential' and 'intrinsic' shape coming apart. But, if we could imagine 'experiential' and 'intrinsic' shape coming apart, this time it would not be possible for experiential shape to take on a life of its own. On the contrary, we would need to stand ready to 'correct' or at least make accommodations for, the incorrect representations of the shape of objects.

In the case of the primary properties, any phenomenally-based pattern of ascription, could and would be belied by the intrinsic properties of objects (see Grice, op. cit. and J. Bennett, *Locke, Berkeley, Hume* (Oxford: Clarendon Press, 1971)). Where experience could not decide the issue as to whether an object was round or square, we would still retain hold of the idea that there was nonetheless a determinate answer. For with the primary properties we have the Gricean platitudes about the relations between objects with various shapes: round objects (suitably sized) go through round holes (suitably sized), not square ones; and square objects (suitably sized) go through square holes (suitably sized) and not round ones (see Grice op. cit., p. 150). In the case of shape, we have experience-independent criteria that enable us to maintain that there is a determinate answer to the question as to the real shape of an object, even where we cannot *tell* or *determine* that shape; we know what would decide the issue—what experience-independent facts would settle the issue—if only we had access to them. The only indeterminacy in this case is epistemic.

More importantly, with the primary properties we have reason to believe that a phenomenally-based ascription would be belied by further experience or by the way the experience- independent shape of objects would constrain our actions. Were this not the case, were the discrepancy between the phenomenal representation and the actual shape of objects not to show up in experience in one way or another, unlike in the case of colour, we would have to give up the notion that the subject continues to have access to and commerce with the objective world. The crucial point is that the primary properties of objects have implications not only for more than one sense, but also for their relations to other objects including our bodies (and the motion of our bodies).

Consider these points in turn. If a visual experience represents a square object as round, then this would, in the normal context, be revealed by a tactile experience. Further, if a visual experience represents a square object as round—imagine a side of the square to be the same length as the diameter of the 'round object'—that experience would be belied when the agent attempted to go 'round' the

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object. He would be constrained by the jutting edge of the square object. But then either he would feel the edge of the square, or at least he would somehow need to recognize that his motion was being impeded by the object. Were this not to be the case, we would have to forego the assumption that the agent was operating on and had continued commerce with the objective world. For, in order for the discrepancy not to become apparent, in order for it not to be revealed in experience, the agent would need to be insulated from commerce with objects. This contrasts very strongly with the case of colour.

In this way it can be seen that were we to undergo the radical shift in experience, the phenomenally-based ascription would have to be 'corrected' to ensure congruence with the objective world, and to enable (the possibility of) continued commerce with that objective world. The objectivity of shape weighs against the phenomenal representation acquiring a life and an interest of its own.

Now consider the case where we wake up tomorrow and where our experience of shape has changed because the shapes of objects have changed. This time our experientially-based classification would not be belied by the objective world. And so it would permit commerce with the objects of that world. Clearly in the case of shape there would be all the difference in the world as to whether our shape experience changed because of changes in us—changes in our mechanism of shape experience—or because of changes in (or to) the objects in the world. For in the case of shape, but not in the case of colour, there would be an objective world, and experience-independent constraints to vindicate or belie our ascription of shapes to objects. The experiential or phenomenal based ascription would not acquire an independent interest or life of its own[8]. In the case of shape, 'experiential' shape, would lack an independent rationale or ballast[9]. Were there a systematic shift in shape

[8] It is important to see that this discussion has occurred in the context of a general realist account of objects and their properties. The point is that even if one assumes realism one can be led—even if not definitively—to a phenomenalist account of colour. The same is not true of a primary property like shape.

[9] The contrast between the properties in this respect can be illustrated by reference to, or understood in terms of, a difference in their 'directions of fit'. An item counts as red—at least in terms of the experiential or phenomenal classification of colour—if it looks red to the relevant group of perceivers, under appropriate conditions of observation. The experience is in part constitutive of what it is for an object to be red. To follow Searle, there is a world-to-mind direction of fit (see J. Searle, *Intentionality*

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experience, and were that shift objectively sustainable over time, our only interest in our experience would be an interest in the objective shapes to which it would give us access, albeit so inaccurately.

v. Taking stock

Given the difference between shape and colour with regard to inversion, though the 'bi-partisan' view of colour appears to involve a compromise with the objective account, closer examination might suggest otherwise. It would seem that once one has granted that 'phenomenal' or 'experiential' colour could and would take on a life of its own, one has done enough to show that colour is, as Modern philosophers have long taught us, a secondary property. Separate out the phenomenal or experiential classification from the intrinsic one, and you undermine the claim that the intrinsic properties that ground 'phenomenal' or 'experiential' colour is colour. But, as indicated, I could settle for an account which stopped one step earlier.

5. Colour: the functional model

If it is correct that phenomenal and intrinsic colour could come apart, that under certain conditions phenomenal colour could have a life of its own, that would establish, I think (as already indicated), that the connection between the two would be that of property and (objective) ground of property—a connection that cannot be viewed as that of identity. Importantly this is a thesis, which if true, is knowable a priori. It would not require the discovery that in fact colour has no objective ground in some unitary sense (as indicated earlier). But equally then it would not be undermined if we were to discover that colour has an objective ground in that unitary sense. The thesis would bear important similarities to the variable realization argument against reduction of the type proposed by central state materialists.

Indeed the parallel with the mental case can be taken further. Colour is a functional rather than a natural kind property. Colour

(Cambridge: Cambridge University Press, 1983)). But not so with the primary properties: the direction of fit goes, as it were, the other way round. We cannot get at being round by reference to looking round; we would rather need to get at looking round by reference to being round, by reference to the way round objects look. Following Searle again, there is a mind-to-world direction of fit. Primary properties are objectively anchored.

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terms are functional terms rather than natural kind terms (see M. Leon, *Representing Experience* (Unpublished PhD.: University of London, 1986))[10,11].

An object is coloured in virtue of having a certain causal or functional role: it is coloured because it tends under appropriate conditions, to produce an appropriate sort of experience, in the appropriate perceivers. And an object has that causal or functional role in virtue of having certain intrinsic properties. But, importantly, objects can be coloured in virtue of different intrinsic properties playing that causal role. What is involved here is supervenience not identity. Different intrinsic properties can constitute the ground, the supervenient base, of colour.

On a functionalist account, colour—that property of objects—supervenes on certain intrinsic properties—those properties with the appropriate causal role. For an object to be coloured it must have certain (intrinsic) properties causally responsible for colour experience. On this account, unlike with natural kind terms, colour terms do not rigidly designate one and the same intrinsic property in all possible worlds. Rather, colours so to speak, can be different things in different possible worlds, if different things occupy the same causal role in those worlds. Colour supervenes on, without being identical to these intrinsic properties of objects. What would make an object coloured is the effect it would have on certain creatures; what would make objects have the same colour, is that they would have the same effect on those creatures. Colour experience acts, as it were, like a template. But the objects would have the specified effect in virtue of their intrinsic properties, albeit a possible disjunctive set of intrinsic properties.

The thesis can be illustrated in the following way. Our colour

[10] It is sometimes thought that a dispositional account is problematic because phenomenologically, colour does not seem to be dispositional. This has led McGinn to modify his earlier dispositional account (see C. McGinn, 'Another look at colour,' *Journal of Philosophy* **XCIII** (1996)). It is not at all clear to me that if colour is dispositional that phenomenologically it should seem to be a dispositional property. Nevertheless there are reasons, as will be seen, to accept the functionalist account. If this involves a modification of the dispositional position, then it is a modification worth accepting independently of the problem of the 'phenomenology of dispositions'.

[11] It needs to be made clear that the functionalist thesis is a thesis about colour, not about colour experience. Colour experience we have reason to believe cannot be functionally specified, precisely because of the possibility of the inverted spectrum.

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experience, and hence our disposition to ascribe colour to objects, can vary with variations in the underlying (perceptual) mechanism, as well as with variations in the intrinsic properties of objects which, in part, explain our colour experience—say, the differential capacity of different objects to reflect light of different wavelengths. But there is reason to think that our colour experience could also vary with other, intrinsic, properties of objects. If our experience were to vary systematically with other properties of objects, perhaps in other possible worlds, then those objects would be taken to be coloured. They would have real colour; not 'fools colour' (see C. McGinn, *The Subjective View* (Oxford: Clarendon Press, 1983)). The reason for this claim remains the same; if experience is the ground for ascribing colours to objects, a ground that cannot be belied by non-experiential factors, then in so far as the appropriate experience occurs—in a suitably systematic and grounded fashion—the conditions for ascribing colour to objects obtains.

Alternatively, the point can be put this way: if, contrary to the current empirical evidence, we were to discover that there is more than one intrinsic property that gives rise to identical colour experiences, we would nevertheless take the objects which have them, as having the same colour. Further research might correct our belief that there is a single ground for colour; but it will not however correct our ascription of colour to objects. So consider: could we not imagine an alternative mechanism that stimulated the appropriate parts of the visual cortex, producing colour experience in a non-standard manner. If tomorrow someone were to invent (or discover) a new paint with the capacity to produce experiences indiscernible from those now produced by ordinary paint, would we take the 'trade descriptions act' to be contravened if it was advertised as say, 'red paint', if the basis for the experience had nothing to do with an object's capacity to reflect light of a certain wave-length? I think not. Clearly we would have some interest in the different grounds of the identical experiences, but I do not think that we would take the newcomer onto the market as anything other than the real thing. This is not 'fool's' or even synthetic (in the sense of non-real) red. This is the real thing, but with a different intrinsic ground. We would be as interested in the fact that it would be appropriately classified with other objects with the same 'phenomenal' property, as we would be in the fact that it differed intrinsically from those objects.

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6. Conclusion

There is much to be said for a fairly standard interpretation of the thesis that colour, unlike shape, is a subjective or phenomenal property. But if the standard thesis fails to do justice to the objective 'aspect' of colour, and justice in this regard is called for, then we can settle for less; we can settle for the strategy of dividing the spoils. But, if we do settle for this, we need to realize that the same 'egalitarian' division cannot be made in application to the primary properties. And that surely is the crucial insight at the heart of the traditional distinction.

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