

MARK JOHNSTON

## HOW TO SPEAK OF THE COLORS

It seems to me that the philosophy of color is one of those genial areas of inquiry in which the main competing positions are each in their own way perfectly true.

For example, as between those who say that the external world is colored and those who say that the external world is not colored, the judicious choice is to agree with both. *Ever so inclusively speaking* the external world is not colored. *More or less inclusively speaking* the external world is colored.

What is it to speak *ever so inclusively* about the colors? There are many beliefs about color to which we are susceptible, beliefs resulting from our visual experience and our tendency to take that visual experience in certain ways. Some of these beliefs are “core” beliefs in this sense: were such beliefs to turn out not to be true we would then have trouble saying what they were false of, i.e., we would be deprived of a subject matter rather than having our views changed about a given subject matter. Contrast the more “peripheral” beliefs; as they change, we are simply changing our mind about a stable subject matter. However, what some call the lack of any sharp analytic/synthetic distinction means that there typically are many legitimate ways of drawing the core/periphery distinction. Let’s say that we speak *more inclusively* about color as we underwrite more beliefs with some legitimate title to be included in the core. Then, speaking of color *ever so inclusively* is employing a conception of color which underwrites any belief included in the core on some one or other legitimate way of drawing the core/periphery distinction.

When the most inclusive way of talking about some phenomenon is either internally inconsistent or at odds with discovered facts, the question of elimination or revision of the talk arises. But when the question arises, the real issue is how inclusively we have to speak. In the case of color the interesting question is not “Is the external world

colored?" but rather "How far short of speaking ever so inclusively do we have to fall in order to say truly that the external world is colored?"<sup>1</sup>

These remarks about the concept of color are quite general. Corresponding remarks apply to many if not all concepts. Color can in many ways function as an illustrative case of the systematic reasons which favor conceptual revision over elimination, reasons made more prominent and probative by the vagueness of the analytic/synthetic distinction.

#### COLOR CONCEPTS AS CLUSTER CONCEPTS

Why does the external world fail to be colored ever so inclusively speaking?

Taking canary yellow as an example, beliefs with a legitimate title to be included in a core of beliefs about canary yellow include:

- (1) *Paradigms.* Some of what we take to be paradigms of canary yellow things (e.g. some canaries) are canary yellow.
- (2) *Explanation.* The fact of a surface or volume or radiant source being canary yellow sometimes causally explains our visual experience as of canary yellow things.
- (3) *Unity.* Thanks to its nature and the nature of the other determinate shades, canary yellow, like the other shades, has its own unique place in the network of similarity, difference and exclusion relations exhibited by the whole family of shades. (Think of the relations exemplified along the axes of hue, saturation and brightness in the so-called color solid. The color solid captures central facts about the colors, e.g. that canary yellow is not as similar to the shades of blue as they are similar among themselves, i.e. that canary yellow is not a shade of blue.)
- (4) *Perceptual Availability.* Justified belief about the canary yellowness of external things is available simply on the basis of visual perception. That is, if external things are canary yellow we are justified in believing this just on the basis of visual perception and the beliefs which typically inform it.

(Further philosophical explication of this belief would come to something like this: if you are looking at a material object under what you take to be adequate conditions for perceiving its color and you take yourself to be an adequate perceiver of color then your visually acquired belief that the material object is canary yellow is justified simply on the strength of (i) the information available in the relevant visual experience and (ii) those general background beliefs about the external causes of visual experience which inform ordinary perception.)

- (5) *Revelation.* The intrinsic nature of canary yellow is fully revealed by a standard visual experience as of a canary yellow thing.

Canary yellow is of course only an example. For each color property F, beliefs legitimately included in the core of beliefs concerning F will include the relevant instances of Paradigms, Explanation, Unity, Availability and Revelation.

The hardest of these beliefs to explicate is Revelation. Partly because of this, it is a quite controversial occupant of any core of beliefs about color. The content of Revelation was captured by Bertrand Russell in *The Problems of Philosophy* in these terms: “the particular shade of colour that I am seeing . . . may have many things to be said 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 itself is even theoretically possible.”<sup>2</sup> Russell’s view here is that one naturally does take and should take one’s visual experience as of, e.g. a canary yellow surface, as completely revealing the intrinsic nature of canary yellow, so that canary yellow is counted as having just those intrinsic and essential features which are evident in an experience as of canary yellow. Hence, canary yellow is a simple non-relational property pervading surfaces, volumes and light sources. It is just this idea that visual experience is transparently revelatory which Descartes denied when he wrote of our visual sensations as arbitrary signs of the properties that cause them,

employing the analogy of the sensations which a blind man receives of texture as a result of using a cane "to see".<sup>3</sup> Most recently, David Hilbert has stigmatized something very like Revelation as "the fallacy of total information," suggestion that it is a philosopher's imposition on common sense.<sup>4</sup>

Other contemporaries take a different, more Russellian, view. There are those who think that no family of properties whose natures are not wholly revealed in visual experience could deserve the name of the colors. Thus, for example, Galen Strawson, in a vivid and tantalizing paper, writes "color 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."<sup>5</sup> Strawson's claim is not only a lucid statement of Revelation, but also in effect a denial that there is any negotiating with Revelation when it comes to speaking of the colors. You must either completely endorse Revelation or cease to speak of the colors.<sup>6</sup>

What follows is for those who find the positions of both Hilbert and Strawson unsatisfying. Our visual experience is the occasion of our making a cognitive error, the error of taking features of our experience to transparently reveal the nature of certain external features, so that, as against Hilbert, we are ordinarily inclined to feel the pull of Revelation. Nonetheless, as against Strawson, properties which satisfy Paradigms, Explanation, Unity and Availability could still deserve the names of the colors even if their natures were not fully revealed by sight.<sup>7</sup>

Before we consider such a compromise, why should we admit that the external world is not colored ever so inclusively speaking? Well, given what we know from the psychophysics of perception it follows that Revelation and Explanation cannot be true together. For when it comes to the external explanatory causes of our color experiences, psychophysics has narrowed down the options. Those causes are either non-dispositional microphysical properties, light-dispositions (reflectance or Edward Land's designator dispositions<sup>8</sup> or something of that sort) or psychological dispositions (dispositions to appear colored) with microphysical or light-dispositional bases. Explanation therefore tells us that we must look among these properties if we are to find the colors. Revelation tells us that the natures of the colors are, in Gregory

Harding's useful idiom, *laid bare* in visual experience.<sup>9</sup> The nature of canary yellow is supposed to be fully revealed by visual experience so that once one has seen canary yellow there is no more to know about the way canary yellow is. Further investigation and experience simply tells us what further things have the property and how that property might be contingently related to other properties.

However, the natures of the non-dispositional microphysical properties and the surface reflectance properties in play in visual perception are not revealed or laid bare by our visual experience. It is not even evident in visual experience that such properties are implicated in its production. In any case, visual experience certainly leaves us with a lot more to know about the nature of both the categorical microphysical properties of surfaces and the reflectance properties of surfaces. So those properties do not satisfy Revelation. Hence, ever so inclusively speaking, no such property can be the property canary yellow. *Mutatis mutandis* for the other colors.

The remaining surface property which is a standard explanatory cause of visual experience as of canary yellow things, and hence the remaining candidate to be canary yellow, is the disposition to look canary yellow. Now the nature of a disposition to look a certain way *may* be revealed by a visual experience if that experience is appropriately construed. For when it comes to the disposition of objects to produce a certain experience, it is plausible to hold that if one has an experience of the kind in question, *and takes that experience to be a manifestation of the disposition in question*, one thereby knows the complete intrinsic nature of the property which is the disposition. Consider this example: twenty five years ago I felt nausea when I tasted a juicy apricot during a rough sea-crossing. I had the experience of nausea and I took it to be a manifestation of the power or disposition of juicy apricots to produce nausea in me during rough sea-crossings. What more was there to know about this dispositional property? Only certain extrinsic matters, matters concerning not the nature of the dispositional property of being nauseating for me on rough seas but rather its relations to other things. I did not know which things in general had the property, nor did I know the property's relations to other properties such as the chemical and biological properties responsible for the nauseating effect of juicy apricots on a susceptible subject.

But so far as knowing the *intrinsic* nature of the dispositional property, i.e. knowing that property in the sense relevant to Revelation, experiencing nausea and taking it to be a manifestation of the disposition sufficed. When a disposition is a disposition to produce a certain subjective response then a subjective response of the kind in question may indeed reveal the nature of the disposition so long as the subject takes his response to be the manifestation of that disposition. So the disposition to look canary yellow can be revealed by sensory experience if that sensory experience is appropriately construed.

That is, although we can immediately show that the colors-as-Revelation-represents-them-as-being are neither categorical microphysical properties nor light-dispositional properties on the grounds that we had more (in fact almost everything) to understand about what these properties were like even after having encountered the colors, the same point cannot be decisive against identifying the colors-as-Revelation-represents-them-as-being with dispositions to look colored.

The decisive consideration is rather that *steady* colors, as opposed say to highlights, do not appear to be relational properties and hence do not appear to be dispositions to look colored.

A basic phenomenological fact is that we see most of the colors of external things as “steady” features of those things, in the sense of features which do not alter as the light alters and as the observer changes position. (This is sometimes called “color constancy”.) A course of experience as of the steady colors is a course of experience as of light-independent and observer-independent properties, properties simply made evident to appropriately placed perceivers by adequate lighting. Contrast the highlights: a course of experience as of the highlights reveals their relational nature. They change as the observer changes position relative to the light source. They darken markedly as the light source darkens. With sufficiently dim light they disappear while the ordinary colors remain. They wear their light- and observer-dependent natures on their face. Thus there is some truth in the oft-made suggestion that (steady) colors don’t look like dispositions; to which the natural reply is “Just how would they have to look if they were to look like dispositions?”; to which the correct response is that they would have to look like colored highlights or better, like shifting,

unsteady colors, e.g. the swirling evanescent colors that one sees on the back of compact discs.

But if this is a good way of making the point that colors don't look like dispositions then it cannot be right to follow Paul Boghossian and David Velleman, and conclude that the external world is not colored because colors do not look like relations and so do not look like dispositions.<sup>10</sup> For some colors do look like relations. Within our visual experience there is a phenomenal distinction between steady and shimmering color appearances, and the latter appear as relational qualities in just this sense: a course of experience of such qualities reveals their dependence on the perceiver's position and the light source.<sup>11</sup> Given that the relational nature of the "unsteady" colors is apparent in visual experience, it is hard to motivate the claim that *they* look non-dispositional.

Nor is a version of the Boghossian-Velleman thesis restricted to the steady colors very appealing. The restricted thesis would be that nothing in the external world is colored except the backs of compact discs, highlighted spots, holographically colored patches on credit cards, and a few other odd exceptions. These very qualifications weaken the phenomenologically based denial that the external world is colored, for they count some overt dispositions as colors of external things. We should then want to know why the covert dispositions, dispositions to look steadily colored, do not also count as colors.

Even so, Boghossian and Velleman seem to me completely right to emphasize the disparity between *steady* colors-as-they-naively-seem-to-be and colors conceived of as dispositions. A property cannot appear as a disposition unless it appears as being a relation of the bearer of the disposition to the manifestation of the disposition and the circumstances of manifestation. Given that, Revelation is at odds with taking the steady colors to be dispositions. We have already concluded that Revelation is at odds with taking the colors to be either non-dispositional microphysical surface properties or light-dispositional surface properties: such properties can't have their natures laid fully bare to us in visual experience.

Barring a bizarre pre-established harmony of redundant causes of our visual experience, a harmony in which the colors-as-Revelation-

represents-them are extra causes of our visual experience on top of the causes that psychophysics recognizes, it follows that the colors-as-Revelation-represents-them-as-being are not among the external causes of our visual experience. That is, assuming both Revelation and what we know from psychophysics, it follows that Explanation is violated. So, ever so inclusively speaking, the external world is not colored (or at least not steadily colored.)

It would however be an instance of the characteristic fallacy of many Eliminativists in many areas of philosophy to draw the conclusion that the external world is not really (steadily) colored.

For we are not bound to speak ever so inclusively. Speaking ever so inclusively can seem like speaking strictly and so can seem demanded by philosophical seriousness. But it turns out to be just speaking under the aegis of one among several conceptions of color; indeed, the most belief-laden and incautious of these conceptions. Such is the shadow cast across Eliminativist projects by the vagueness of the analytic/synthetic distinction.

Any serious philosopher tempted by Eliminativism or Irrealism about color (more generally, about Xs) must consider this question: how far short of speaking ever so inclusively must we fall in order to say truly that the world is colored (or includes Xs)? The prospects of various accounts of color *more or less* inclusively speaking, accounts which abandon or weaken Revelation, need investigating.<sup>12</sup> The investigation begins at a familiar conceptual juncture.

#### ARE COLOR CONCEPTS PRIMARY OR SECONDARY?

As between those who say that the world is colored because colors are primary qualities and those who say that the world is colored because colors are secondary qualities the judicious choice is first to agree with neither, then to agree with both and finally to agree with the friends of the secondary qualities.

Agreeing with neither might be a way of registering the fact that there is a salient, "intuitively based" conception of color which they both fail to underwrite, namely the conception of the colors-as-Revelation-represents-them-as-being. But it might also be a way of highlighting the fact that the very distinction between primary and



secondary qualities has itself the dubious distinction of being better understood in extension rather than intension. Most of us can generate two lists under the two headings, but the principles by which the lists are generated are controversial, even obscure. Of course, on one well-known criterion, secondary qualities are supposed to be dispositions to produce a sensory response. Yet, even if we adhere to the dispositional criterion we still lack an adequate understanding of what dispositions are and what their exact relations to their bases might be. As we shall presently see, this means that we lack precisely the understanding which would allow us to appreciate what would *count* as an argument for taking canary yellow either to be a disposition to look canary yellow or to be the microphysical or light-dispositional basis of such a disposition.

One way to show that would be to show that a full dress account of dispositions invalidates most of the standard arguments against the dispositional or secondary quality theory of color. Fortunately, even the first steps in an account of dispositions — all that can be given here — suffice to show that *many* of the popular arguments against dispositional theories of color are better taken as arguments against an over-simplified conception of dispositions.

Let us say that the concept of the property F is a concept of a dispositional property just in case there is an a priori property identity of the form

- (6) The property F = the T disposition to produce R in S under C.

A T disposition is some specified type of disposition, e.g. an invariable disposition, a probabilistic disposition, or a standardly mediated disposition (more on these later). R is the manifestation of the disposition; S is the locus of the manifestation and C is the condition of manifestation.

Let us then say that the concept of the property F is a response-dispositional concept when something of the form of (6) is a priori and (a) the manifestation R is some response of subjects which essentially and intrinsically involves some mental process (responses like sweating and digesting are therefore excluded), (b) the locus S of manifestation is some subject or group of subjects (c) the conditions of manifestation are some specified conditions under which the specified subjects can respond in the specified manner. Moreover, we shall require (d) that

the relevant a priori identity does not hold simply on a trivializing “whatever it takes” specification of either R or S or C, e.g. “the F-detecting response, whatever that is” or “the F-detecting subjects, whoever they are” or “the F-detecting conditions, whatever they are”. In a manner of speaking these would not be specifications at all since in offering them one would not be evidencing any real knowledge of *who* the subjects or *what* the responses or conditions of response are.

According to one well-known criterion secondary quality concepts are response-dispositional concepts of *sensible* qualities.<sup>13</sup> Primary quality concepts are categorical concepts of sensible qualities. We may follow Locke and further distinguish concepts of Tertiary qualities, i.e., concepts of dispositions to produce effects other than subjective responses, e.g. dispositions to reflect light.

Hence, someone who alleges that it is a priori that

- (7) the property red = the standardly realized disposition to look red to standard perceivers under standard conditions

is claiming that the concept of red is a response-dispositional concept of a sensible quality, i.e., a secondary quality concept. But the following are also secondary quality accounts, if the identities are understood as true a priori

- (8) The property of being red = the disposition to look red to standard perceivers as they actually are under standard conditions as they actually are.
- (9) The property red for subjects  $S_i$  under conditions  $C_i$  = the disposition to look red to the  $S_i$ s under conditions  $C_i$ .

Talk of response-dispositions immediately provides useful consequences. As (8) indicates, it is not an objection to all secondary quality accounts of color concepts to observe that in a possible world in which the standard perceivers saw things differently in the standard conditions of the world, the colors of things need not be different from what they actually are. (8) allows just that. As (9) indicates, it is not an objection to all secondary quality accounts of color concepts to observe that for many or all of the things we take to be colored there are no standard

perceivers nor standard viewing conditions, so that the best we can do is talk about the color relative to this kind of perceiver or that kind of viewing condition. (9) allows just that.

Furthermore, the explicit focus on dispositions as opposed to mere counterfactual conditionals serves to show that many of the other sorts of arguments which have led philosophers to abandon the secondary quality account of color concepts do not in fact succeed. We can now see why they are better taken as arguments against an all too simple account of dispositions.

*Case 1.* There might have been a ray emitted from the center of green objects, a ray which acted directly on our visual cortices so that green objects always would look red to us in any viewing situations. But this would not be enough to make them green.

*Case 2.* There might have been a shy but powerfully intuitive chameleon which in the dark was green but also would intuit when it was about to be put in a viewing condition and would instantaneously blush bright red as a result. So although in the dark the chameleon is green it is not true of it in the dark that were it to be viewed it would look green. It would look bright red. (Although this seems like a bizarre case from the philosopher's wax museum, it turns out that we have something rather like shy chameleons in our eyes! For consider rhodopsin, the photoreactive chemical in the rods on the surface of our retinas. Before it is hit by enough photons to trigger electrical impulses in the rods, rhodopsin is crimson. Photons bleach rhodopsin so that it first becomes yellow and then transparent. But since the rods function as a backup system to the retinal cones to enable us to see under very poor lighting conditions, any good viewing condition is probably a condition in which the rods are firing as a result of their constituent rhodopsin having undergone a photochemical change with its resultant color change. How do we know that rhodopsin is crimson in the near dark? Well, we can in fact view it under very poor light, i.e. insufficient light to produce the photochemical change. So rhodopsin is not utterly "shy" in the manner of the chameleon.)

*Case 3.* Consider a transparent object whose surface is green but never looks and almost never would look surface green because the object's interior *radiates* orange light at such an intensity that the

greenness is masked or obscured. It is nonetheless surface green even though it would never look so, as is shown by the fact that it *reflects* just the same kind of light that some other surface green things reflect.

These sorts of cases would constitute good objections if a secondary quality account had to assert things like

- (10) It is a priori that  $x$  is red for  $S_i$  in  $C_i$  iff  $x$  would look red to  $S_i$ 's under  $C_i$ .

However, to assume that is to assume that something having a disposition to produce  $R$  in  $S$  under  $C$  is equivalent to the holding of the corresponding dispositional conditional: if the thing were to be in  $C$  it would produce  $R$  in  $S$ . That this is not so, that the relation between the holding of a disposition and the holding of its corresponding dispositional conditional is more complex, is shown by cases which precisely parallel those just discussed.

*Case 1\* Mimicking.* A gold chalice is not fragile but an angel has taken a dislike to it because its garishness borders on sacrilege and so has decided to shatter it when it is dropped. Even though the gold chalice would shatter when dropped, this does not make it fragile because while this dispositional conditional is not bare, i.e. the breaking when struck has a causal explanation, something *extrinsic* to the chalice is the cause of the breaking. *Mutatis mutandis* for the ray-bedeveled green surface. Even though the surface would look red if viewed, this does not make the surface itself disposed to look red.<sup>14</sup> For while this conditional is not bare, i.e. the surface's looking red when viewed has a causal explanation, something extrinsic to the surface is the cause of its looking red.

*Case 2\* Altering.* The glass cup is fragile but an angel has decided to make the cup shatterproof if it begins to fall to the ground or if it is about to be hit by a hammer, or enter any other condition of being struck. Even though the conditional corresponding to fragility does not hold, i.e. the cup would not break if struck, the cup was fragile before the angel did its work. Were it not for the extrinsic activities of the angel prior to the cup being struck then the cup would have broken when struck. *Mutatis mutandis* for the shy but intuitive chameleon. In the dark, there is an extrinsic property of the chameleon's skin, i.e. the

property of being the skin of a chameleon with a shy and intuitive psychology, which leads the chameleon's skin to change color before it goes into a viewing condition. Were it not for these extrinsic features, if the chameleon's skin were to be viewed then it would look green.

*Case 3\* Masking.* Consider a fragile glass cup with internal packing to stabilize it against hard knocks. Packing companies know that the breaking of fragile glass cups involves three stages: first a few bonds break, then the cup deforms and then many bonds break, thereby shattering the cup. They find a support which when placed inside the glass cup prevents deformation so that the glass would not break when struck. Even though the cup would not break if struck the cup is still fragile. The cup's fragility is masked by the packing which is a) something extrinsic to the glass cup and b) causes the glass cup when struck to withstand deformation without breaking. Were it not for such an extrinsic masker the cup would break when struck. *Mutatis mutandis* for the green thing which intensely radiates orange from its interior. Were it not for the masking properties extrinsic to the surface, if the surface were to be viewed then it would look surface green.

In order to say when something has the disposition to R in S under C let us first provide a general characterization of mimicking, altering and masking.

In the mimicking of x's disposition to R in S under C, something extrinsic to x and the circumstances C is the cause of the manifestation R. This includes the case of veridical mimicking, where e.g., x has the disposition to break when struck but a deranged guardian angel has decided to break x when struck in a way that is independent of its fragility.

In the case of altering with respect to the disposition to R in S under C, there are intrinsic changes in x before <sup>15</sup> x goes into the circumstances of manifestation C such that these changes are or include a cause of x's R-ing, and if x had not changed intrinsically in such ways then x would not have R-ed.

In the masking of x's disposition to R in S under C, something extrinsic to x and the circumstances C is a cause of a manifestation inconsistent with the manifestation R.

We are now able to present one (inevitably somewhat stipulative) notion of a disposition. A thing  $x$  has the disposition to  $R$  in  $S$  under  $C$  iff one or other of the following cases hold —

*The (Possibly Vacuous) Case of the Bare Disposition*

$x$  would  $R$  in  $S$  under  $C$  and no intrinsic feature of  $x$  or of anything else is the cause of  $x$ 's  $R$ -ing in  $S$ . (Because bare dispositions by definition lack a constituting basis there seems little to be made of the idea of a bare disposition being masked, altered or mimicked.)

*The Case of the Constituted Disposition*

There are intrinsic features of  $x$  which masking, altering and mimicking aside, would cause  $R$  in  $S$  under  $C$ . These intrinsic features of  $x$  are the "constituting basis" of  $x$ 's disposition to  $R$  in  $S$ . *We may therefore think of a constituted disposition as a higher-order property of having some intrinsic properties which, oddities aside, would cause the manifestation of the disposition in the circumstances of manifestation.*<sup>16</sup>

The dispositional thesis which many find in Locke,<sup>17</sup> may now be understood as the thesis that color concepts, like the concepts of the various sounds, tastes and smells, are concepts of *constituted* response-dispositions. In so far as Locke believed that redness was a power or disposition he did not believe that redness was a bare power or disposition but rather, in our terms, a constituted disposition.

EXPLANATION

Clarifying the Secondary/Primary distinction as a restriction of the dispositional/categorical distinction and recognizing some complexity in our concept of a disposition implies that the difference between Secondary and Primary accounts of color concepts must really be quite subtle. The Secondary account treats canary yellow as a constituted disposition to appear canary yellow, i.e. as the higher-order property of having some (lower-order) intrinsic properties which, oddities aside, would cause the appearance as of a canary yellow thing. The Primary account treats canary yellow as a disjunction of such lower-order

intrinsic properties, or at least ends up doing this once it assimilates the fact that the standard causes of the appearances of canary yellow are surprisingly disparate.<sup>18</sup>

Frank Jackson and Robert Pargetter suggest that when it comes to Explanation, i.e., counting a thing's having the property canary yellow as an explanatory cause of its appearing canary yellow, Primary Quality accounts do better because the Primary Qualities are most basic explainers of the canary yellow appearances than the dispositions are.<sup>19</sup> On their view, if dispositions are explainers at all, then they are explainers at one remove and by courtesy; as it were on the back of the explanatory role of the underlying, categorical Primary Qualities.

Given the present account of dispositions and the point that any Primary Quality account will have to make do with identifying canary yellow with a disjunction of those disparate properties responsible for (standard, veridical) appearances as of canary yellow things, there is no room for an invidious distinction when it comes to Explanation. Primary and Secondary Quality accounts of color are on all fours with respect to Explanation.

For consider Zinka the canary and a lifelike color photograph of her. The canary yellow appearance produced when one looks at Zinka is due to a physical property very different from the physical property responsible for the canary yellow appearance of the relevant part of the photograph. Call the relevant physical properties P1 and P2 respectively. The fact that Zinka's feathers have P1 explains the canary yellow appearance that occurs when one looks at Zinka. But P1 is not canary yellowness according to the Primary Quality Account. On that account, canary yellowness is what canary yellow things have in common and so is a disjunctive property which includes as disjuncts P1, P2 and so on. That disjunctive property is a property which standardly explains the occurrences of appearances as of canary yellow things. So we may also explain the appearance one has when one looks at Zinka in terms of Zinka's having the disjunctive property. However this appeal to the disjunctive property is as much an explanation at one remove from P1, an explanation by courtesy, as the explanation that the canary yellow appearance of Zinka is due to the property of having some property, in Zinka's case P1, which, oddities aside, causes the manifestation of the disposition to appear canary yellow. We get from P1 to the Primary

Quality of canary yellow by moving, as it were, sideways to the disjunction. We get from P1 to the Secondary Quality of canary yellow by moving, as it were, upwards to disposition, i.e., to the higher-order property of having some property which, oddities aside, would cause the appropriate visual experience in the appropriate viewing condition.

Hence the theoretical mood which prompts the remark that as between those who say that the external world is colored because colors are Primary Qualities and those who say that the external world is colored because colors are Secondary Qualities the judicious choice is to agree with both. Having understood better what constituted dispositions are, considerable subtlety is required to discern any advantage had by one theory and not the other. Is canary yellow a disposition constituted by different properties in different cases or simply a disjunction of these different properties? As a result of so clarifying the issue one might well have the feeling that here, as elsewhere, a vigorous dispute is simply fed by indeterminacy, i.e., that there is no fact of the matter between the disputants, so that the disputed positions simply represent roughly equally good styles of argumentative bookkeeping.

Contrary to such metaphilosophical ennui, there is really nothing intrinsically wrong with considerable subtlety. And indeed, with just a little subtlety, we can discern a significant weakness in the Primary Quality account of the colors, a weakness that ultimately turns on the fact that the account implies that vision does not acquaint us with the colors but only gives us knowledge of the colors by description.

#### UNITY AND AVAILABILITY

Recall the requirement of Unity. The family of similarity and difference principles holding among the colors includes the principle that canary yellow is not a shade of blue, i.e. that canary yellow is not as similar to the blues as they are among themselves.<sup>20</sup> The Primary Quality account of color has it that the shade canary yellow is the non-dispositional (and probably disjunctive) property which standardly explains the canary yellow appearances. *Mutatis mutandis* for the various shades of blue. Suppose that color science ends up discovering this: the non-dispositional property which standardly explains the canary yellow appearances and the various non-dispositional properties which standardly



explain the various appearances of the shades of blue are not, when taken together, as similar among themselves as are the various non-dispositional properties which standardly explain the various appearances of the shades of blue. On the simplest version of the Primary Quality account, this would be the discovery that canary yellow is not a shade of blue, i.e., not to be counted among the blues.<sup>21</sup>

But is it really a matter of scientific discovery that canary yellow is not a shade of blue? No: such similarity and difference principles surely have a different status. We take ourselves to know these principles just on the basis of visual experience and ordinary grasp of color language. No one had to wait until the end of the second millennium A.D. to find out whether or not canary yellow is a shade of blue.

That, of course, is just a first move against the Primary Quality account. The friend of the account should be allowed to answer that indeed it is not a matter of scientific discovery that canary yellow is not a shade of blue. Rather, he might say, such a principle, along with other unity principles, must be held true as a condition on any family of properties deserving the color names. So the principle that canary yellow is not a shade of blue turns out to be relatively *a priori* after all. More exactly what is *a priori* is a biconditional: P deserves the name "canary yellow" just in case (i) P is the categorical surface property standardly responsible for the appearances as of canary yellow things and (ii) this property stands in the right similarity relations to other standardly explanatory categorical properties.

On the envisaged account, a given property turns out to count as canary yellow only if a complex similarity condition on that property and a host of others is discovered to hold. For example, the candidate properties to be the blues have to show a natural or genuine similarity among themselves, a similarity which they do not share with the candidate to be canary yellow.

Suppose color science discovers this condition holds along with the other unity conditions which the Primary Quality theorist regards as central. Then some (complex, disjunctive) physical properties turn out to be canary yellowness, teal, turquoise, sky blue and so on. And particular things turn out to have these properties. But what then gives one the right to say that there are canary yellow things is not simply visual perception and the very general background beliefs which inform

visual perception, but also and crucially, *recherche* facts from color science. That is, on this version of the Primary Quality account one is not justified in believing that some things are canary yellow unless one knows that color science finds that among the causes of our experiences of color are physical properties which stand in certain complex similarity and difference relations. For this is a central precondition which this version of the account lays down on any property characterized in color science turning out to be canary yellowness, and hence on particular things turning out to be canary yellow. The unwelcome consequence is that the colors are not perceptually available.

The conclusion for which we are aiming is this: when the Primary Quality account is adjusted to accommodate Unity, it violates Availability, i.e., it will follow that the colors of things are not perceptually available. Given the adjusted account, we are not justified simply on the basis of visual perception and the background beliefs which characteristically inform perception in believing that Zinka is canary yellow. For we are evidently not justified simply on this basis in supposing that the non-dispositional surface causes of our visual experiences exhibit the relevant similarities and differences.

However, to successfully argue that on the present version of the Primary Quality account the colors of things are not perceptually available we must engage with a complication familiar to epistemologists. This is the idea that by a convenient "failure of deductive closure" we could still be perceptually justified in believing that there is a property, canary yellow, had by Zinka even though we are not perceptually justified in believing that any property satisfies the similarity condition for being the property canary yellow. Whatever the general merits of the idea that one need not be justified in believing all the deductive consequences of what one is justified in believing, the idea of failure of deductive closure has its limits, and it can be shown that the conclusion for which we are aiming cannot be plausibly evaded by an appeal to a convenient failure of deductive closure. For on the present version of the Primary Quality account, the requirement that a host of micro-physical similarity and difference relations hold is not just a collateral consequence of there being colors in general and canary yellow in particular. Instead, the present account has it that the claim that there are colors is conceptually equivalent to the claim that the

categorical surface properties standardly causally responsible for our experiences as of colored things exhibit the required similarities and differences.

The relevance of this last point may be brought out in the following way. Imagine a sophisticate who took the alleged conceptual equivalence to heart and found himself therefore hesitating in concluding just on the basis of the way Zinka the canary looks that Zinka is canary yellow. "Zinka certainly looks the way something would have to look to count as canary yellow" he thinks "but we must wait and see if color science discovers the similarities and differences required for there to be such a property as canary yellow." Given his lucid understanding of the Primary Quality concept of canary yellow the sophisticate would not be justified in concluding just on the strength of perception that there is such a property as canary yellow. Hence he is not justified just on the strength of perception in taking Zinka or anything else to be canary yellow. Yet on the present account the sophisticate has the correct understanding of the concept canary yellow. So we in our turn can hardly be justified in concluding just by looking that Zinka (or anything else) is canary yellow. For we gain no global advantage with respect to justification by failing to be conceptually lucid. Thus the Primary Quality account is at odds with Availability.

To be sure, there are well-known cases in which more *empirical* knowledge would put one at a comparative disadvantage with respect to empirical justification — cases in which one "knows more by knowing less" — and we can invent conceptual analogues of such cases.<sup>22</sup> However such cases never show the kind of *global* disadvantage with respect to justification from which our sophisticate suffers. If conceptual lucidity is not enough in itself to produce a global epistemic disadvantage and the Primary Quality account is true, then we can be no more perceptually justified in believing that things are canary yellow than is the conceptual sophisticate appraised of the Primary Quality account. Conclusion: on the Primary Quality account the colors of things are not perceptually available. The upshot is that in trying to secure the right status for the unity principles, and so avoid allowing that canary yellow might turn out to be a shade of blue, the Primary Quality account ends up violating Availability.<sup>23</sup>

Does the Secondary Quality account fare any better? First, does it

secure the right status for the unity principles, allowing for example that we can know just on the basis of perception and ordinary understanding of the color terms that canary yellow is not a shade of blue?

The problem may be reduced to its simplest form: take teal and turquoise. They are similar color properties. Indeed they are essentially and intrinsically similar. That is to say teal and turquoise exhibit a kind of similarity that is not a similarity in the other properties to which they are related, nor a mere similarity in their causes and effects, nor a similarity in the properties upon which they supervene. Rather, the similarity between teal and turquoise with which we are concerned is to be found in any possible situation no matter how their instances, effects or contingent relations with other properties (including lawlike relations) vary. This is what I mean to focus upon by saying that teal and turquoise are essentially and intrinsically similar. Suppose one could spell out the nature of teal and the nature of turquoise, i.e., the higher-order features these properties have in any possible situation. Then that specification of features would list some common features of teal and turquoise. That is the way in which teal and turquoise are similar. They are not similar simply in virtue of being (even nomically) related to similar consequences or similar bases. They are similar in virtue of what they essentially and intrinsically are.

If teal and turquoise were categorical microphysical properties then any essential and intrinsic similarity between them would have to be a similarity in some higher-order microphysical respect. What we know simply on the basis of perception is not sufficient to know that there is such a similarity.

However, if teal is essentially the disposition to manifest a certain appearance  $T_e$  and turquoise is essentially the disposition to manifest the appearance  $T_q$  then teal and turquoise will be essentially and intrinsically similar if these two manifestations are similar. *That these dispositions have similar manifestations is a fact available to us in visual perception.* For it is evident in visual perception that the appearance  $T_e$  is similar to the appearance  $T_q$ . That these manifestations are more similar to each other than either is to the manifestation of the disposition canary yellow is also a fact available to us in visual perception. By a simple extension of these considerations, the fact that canary yellow is not a shade of blue, i.e., the fact that canary yellow is not as

similar to the blues as the blues are among themselves, is guaranteed by the claim that these properties are dispositions and by the evident fact that the appearance of canary yellow is not as similar to the appearances of the blues as those appearances are among themselves.

Notice that the different status of color similarities on the Primary and Secondary Quality accounts derives exactly from the central difference between the two accounts. It is precisely because the Primary Quality account treats the color appearances as merely the standard effects of the microphysical properties it identifies as the colors that the account cannot allow for perceptual knowledge of intrinsic and essential similarities among the colors. On the Secondary Quality account the color appearances are not merely the standard effects of the dispositions whose manifestations they are. Since they are also the manifestations cited when attributing the relevant dispositions, we know something intrinsic and essential to these dispositions when we know their manifestations.

The Secondary Quality account provides no treat to Unity. But does it secure Availability? Are the dispositions to appear colored perceptually available?

Someone who has no reason to suppose that he is an inadequate color perceiver or is in bad viewing conditions is such that his spontaneous visually acquired belief about the color of a thing he is seeing is typically justified. He acquires the belief by perception and typically nothing he believes warrants his suspending this belief. Suppose then that Sam's belief that Zinka is canary yellow is a belief of this kind. We considered the epistemic situation of a sophisticate who lucidly accepted that version of the Primary Quality account, an account which has it that conditions involving similarities among the categorical causes of color experience are a priori constraints on anything turning out to be canary yellow. Such a person would not be justified in concluding just by looking that Zinka or anything else is canary yellow. But then, *given that one cannot be in a (globally) worse epistemic condition just as a result of conceptual lucidity, if the Primary Quality account in question is true then Sam cannot be perceptually justified in believing that Zinka is canary yellow.*<sup>24</sup>

Can a similar argument be run against a Secondary Quality account? Such an account treats colors as constituted dispositions to present

color appearances. So if the fact that Zinka is canary yellow is to be perceptually available then perception must be able to justify the belief that Zinka has a constituted disposition to appear canary yellow. Otherwise a sophisticate who accepts the Secondary Quality account would not be perceptually justified in concluding that Zinka (or anything else) is canary yellow. That is to say that perception must provide the materials to justify the claim that Zinka has the property of having some intrinsic property which, oddities aside, would cause the relevant appearance in the relevant circumstances. These materials do seem to be provided by having the relevant appearance in the relevant circumstances and employing the background beliefs on which perception feeds. These are beliefs about our perceptual experience being by and large the effects of our perceptual capacities, the circumstances of perception and the intrinsic properties of the things perceived. On the strength of having the appearance and enjoying these background beliefs we are justified in believing that the object perceived has some intrinsic properties which would typically cause the appearance in the circumstances. But that means that on the strength of perception one can be justified in believing that the object has the constituted disposition to appear so in the circumstances.

Indeed one can perhaps be justified in believing slightly more on this basis. It is a perceptually available fact that certain colored things standardly block out the colors of things behind them in the line of sight; while others, color volumes or filters, standardly transform those colors; while still others, transparent volumes such as unpolluted air, clear water or colorless glass, in no way obscure or transform those colors. Therefore, visual perception supports the hypothesis that transparent but not opaque bodies allow to pass through them some standard conveyor or class of standard conveyors of information about the colors of external things. That is, a course of experience as of opaque and transparent bodies encourages the belief that there is some standard conveyor or class of standard conveyors of information about color.<sup>25</sup> Since it is perceptually evident that there are some standard conveyors of information about color, it is therefore perceptually evident that there is some standard process or processes mediating between the dispositions to appear colored and their effects, viz. the various color appearances. But then, if a Secondary Quality theorist

were to identify colors with such standardly mediated dispositions, he would not threaten the ordinary perceptually based justification which we have for taking things to be the color they seem to be. Let us now turn to the motives for just such an identification.

#### WHICH RESPONSE-DISPOSITIONAL CONCEPTS ARE THE COLOR CONCEPTS?

Just what form should the Secondary Quality account take? The reasonable choice emerges from a critical version of the method of cases. We look to our intuitive judgments in both real and imaginary cases, we examine to what extent these intuitions are influenced by a bogus conception of colors driven by Revelation and then try to save the undebunked intuitions.<sup>26</sup>

*Rigidification.* Is it really so that in a possible world in which ripe tomatoes are chemically as they actually are but standardly look violet, they are nonetheless red because they standardly look red in the actual world? For a dispositionalist this is the question of whether to rigidify, i.e., fix on actual responders and actual conditions. Whichever way one is drawn, the main point is that the rigidified and the unrigidified response-dispositions are equally response-dispositions. If a case can be made for the colors being rigidified response-dispositions then so be it. However, we may run into indeterminacy here even if our intuitions initially favor the idea that in a possible world in which ripe tomatoes are chemically as they actually are but standardly look violet they are nonetheless still red. For this intuition may be influenced by a conception of color driven by Revelation. In imaginatively picturing the relevant possible world to ourselves we slap onto the tomato surfaces redness-as-Revelation-represents-it-as-being, thereby providing an independent standard of correctness by which to criticize the counterfactually standard appearances. As a result, a simple reliance on intuition might here make things seem more determinate than they could in fact be.

*Standard Mediation.* As well as the consistent fancy of the strange ray from the *center* of a red-surfaced ball masking the redness of the surface by acting directly on the visual cortex to produce an impression of a green surface, we have the equally consistent fancy of such a

strange ray emanating from the *surface* to likewise obscure the redness of the surface by directly producing the appearance of a green surface. In this second case it is utterly implausible to deny that the surface itself has the constituted disposition to look green. Yet it is not green but red.

Fatal for the dispositional theory? No; a dispositionalist who identifies the colors with standardly mediated dispositions need not count the surface as green. For the strange ray bypasses the eye. This is sufficient to make the processes involving it non-standard causes of visual experiences. But then the disposition of the red ball to look green, based as it is in such a process, will not be a standardly mediated disposition to look green. So although the red surface is disposed to look green, the right sort of dispositionalist need not count it green.<sup>27</sup>

No doubt this use of the modifier “standardly” to qualify the way in which the target dispositions are to be mediated or realized will prompt the question as to just what might or might not count as the processes involved in the standardly mediated dispositions to appear colored. The processes of refraction-influenced reflection frequently involved in producing the appearances of the shimmering colors may be counted standard enough, even if the processes of reflection without refraction involved in producing the appearances of the steady colors are more commonly in play. There will of course be a region of indeterminacy, in which there is no fact of the matter as to whether or not a given process is common enough to be a standard mediator. But there will also be clear cases on the other side, where the disposition to appear colored is not standardly mediated, as with the case of the rotating Benham disc.

The top of one typical kind of Benham disc is divided along a diameter into black and white regions. If the disc is rotated at a rate of about seven cycles per second and viewed under bright tungsten light various colored bands will appear on the top of the disc. But it feels very strained to say that while rotating the top of the disc changes color. Contrast a disc whose surface is chemically prepared so that the air rushing by as the disc rotates sets off a color-affecting chemical change on the surface.

Psychologists call the colors which appear during the rotation of Benham discs “subjective” colors, thereby registering a conviction that these discs only seem to change color while rotating. The intuition to be captured is thus that these achromatic discs remain achromatic



throughout rotation. How is the dispositionalist to capture that intuition? In his informative discussion of Benham discs, C. L. Hardin supposes that the best move for the dispositionalist bent on excluding such subjective colors is to insist that the real colors are those that appear to standard perceivers under standard *viewing* conditions and then to claim that movement with respect to the eye is not a standard viewing condition. Hardin rightly rejects this last claim and consequently rejects dispositionalism. He writes

There are at least three difficulties with this initially plausible restriction 'on movement'. First we need not move the black-and-white stimulus at all. It is the pulsed sequence of presentations which matters. One stillborn proposal for color television derived a chromatic effect from a suitably pulsed set of black-and-white signals. The "Butterfield encoder" gave a fairly good color rendition including skin tone. . . . One can in fact see faint, desaturated subjective colors by looking closely at the noise pattern of an unoccupied channel on a black-and-white television set. . . . The second difficulty with the restriction is that the eye moves involuntarily and incessantly in a random series of drifts and jerks, and these are sufficient to generate "subjective" colors on a stationary black-and-white pattern. . . . The third difficulty is the mate of the second: if all relative motion between target and eyeball is prevented, both the outline and the colors of the object soon disappear.<sup>28</sup>

Surely these are effective considerations against the idea that the standard viewing condition for color rules out movement. Many things constantly move relative to us, indeed rotate relative to us, without this in any way undermining our confidence that we have seen them in their true colors. We cannot capture the intuition that the colors of rotating Benham discs are "subjective" by stipulating that only color appearances which arise under standard viewing conditions are veridical. The thing to do is not to require that the viewing condition be standard but that the processes which mediate the relevant dispositions to produce color appearances be among the processes which are standard or typical when it comes to seeing color.

Hardin's example of the Butterfield encoder and his emphasis on pulses suggests just this idea. In the case of an encoder beginning to work at some time  $t$ , if  $d$  is the time taken for light from a given region of the encoder's screen to reach the observer's eye and  $e$  is a period just shorter than the resolution time of the human eye, i.e., the time required for the eye to process light, then the light arriving from that region at  $t + d + e$  will be light that is very different in its subjective effects from light that arrived at  $t + d$ . When these conditions are satisfied

let us say that the light is temporally *inhomogeneous*. In such cases very different kinds of light “bunch up” in the eye forcing the receptors to integrate across such inhomogeneities. Now the finite resolution time of the receptors in the eye means that there is always “bunching up.” That is to say that where  $d$  is the time light takes to reach the eye from the viewed region, the light from the region that the eye is responding to at  $t + d$  is never just the light that left the region at  $t$ . Rather it includes the light that left the region during the period between  $t$  and  $t - e$ . But standardly this does not matter, for the bundle of light that left the region at  $t$  is light with the same subjective effects as the bundle of light that left the region at  $t - e$ . What bunches up is more or less the same sort of light. In the case of temporal inhomogeneity this last condition is not met. This makes for a non-standard process mediating the appearances and hence realizing the dispositions to appear. The eye is forced to integrate across temporally inhomogeneous packets of light coming in swift sequence from the same region of the scene before the eyes.

Hence a dispositionalist has the resources to say that despite the fact that the screen of the Butterfield encoder is disposed to look yellow, green and blue, it is really achromatic. And he will say the same about the process mediating the subjective colors of the Benham disc. They too are produced by the eye integrating in a case of temporal inhomogeneity. The light coming from a given region of the scene before the eyes is temporally inhomogeneous thanks to the rotation of black and white portions of the disc through that region. The eye is forced to integrate across inhomogeneous packets of light coming in swift sequence from the same region of the scene. This is a non-standard process mediating the visual appearances. So although various hues are disposed to appear across the Benham disc during rotation they are not standardly so disposed. The Benham disc remains achromatic throughout rotation.

Let us now turn to a spatial analog of temporal inhomogeneity; the case of pointillism. Pointillism or the optical fusion of small adjacent regions of different color arises because the eye also integrates over spatial inhomogeneities. One need not think that there is a deep ontological divide between space and time to think that while integrating over temporal inhomogeneity is non-standard, integrating over spatial inhomogeneity is on the way to becoming standard. The stand-

ard technology of four-color printing means that most of the printed colors other than cyan, magenta, yellow and black which we now see are the products of the optical fusion of a mixed selection of dots of these four colors. It is a bit too severe to say that the only veridical colors that we now see on the pages of magazines are white, black, cyan, magenta and yellow, the rest being illusory color appearances. But it is not obvious that a dispositionalist is required to say this. "Standardly mediated" is not equivalent to "naturally mediated" but rather to "typically mediated," and the pointillistic realization of printed color has arguably now become typical or standard. Again the dispositionalist may happily admit that indeterminacies may well arise when we consider cases in which a mode of realizing color appearances is *becoming* standard. The dispositionalist should not be disturbed by the fact that this admission is at odds with a naive conception of color, i.e., a conception which conforms to Revelation and as a result thinks of surfaces as wrapped in phenomenally revealed features which will always make it a determinate fact what the real color of the surface is. (For we have shown that such a conception is not coherent, not consistent with the idea that we *see* colors.)

*Relativized Colors.* It is one thing to say that there are indeed red patches of color on the pages of many magazines. But it would be strange to deny what the closest viewing of some of these patches reveals: that these patches are made up of small magenta and yellow dots, that therefore these patches are motley in color. How can the same patch be red and motley yellow and magenta? Relativism to the rescue: the patches are standardly disposed to look red to the naked eye from a normal reading distance and standardly disposed to look motley yellow and magenta to the closest view. They are, according to the best kind of dispositionalist, red for perceivers employing the naked eye at reading distance, and motley yellow and magenta for perceivers at the closest viewing range. The best kind of dispositionalist is a color relativist.

It is not widely recognized that a color relativist can consistently find some truth in many remarks about "real" colors. Chromatic lights are said to obscure the real colors of patches viewed under them. The color relativist avoids one kind of invidious distinction between the standard disposition of a cloth to look pinkish-blue in daylight and the standard

disposition of the same cloth to look simply pink under pink light. For the relativist, both are equally *veridical* colors. But the second color is, as things ordinarily go, the color associated with the more transient and interrupted appearance of the cloth. If we mean by “real color” the least transient veridical color then daylight and ordinary indoor light *do* typically reveal the real colors of things. When the colored thing is something whose color appearance changes as the quality of the daylight changes, e.g. the sea, there may be no simple answer to questions which seek to pinpoint the real color. Is the sea *really* green or grey or blue? Or greenish-blue or bluish-grey or grayish-bluish-green? Again we should not be too perturbed by indeterminacy.

Hence we arrive at the following account of when a surface has a relative color

X is hue H for perceivers P under conditions C iff X is [?actually?] *standardly* disposed to look H to perceivers P [?as they actually are?] under conditions C [?as they actually are?].

What is standard in the way of the processes mediating a visual response-disposition will vary from possible world to possible world. Once again some may feel the temptation to rigidify or fix on what is actually standard in the way of causally mediating between visual response-dispositions and visual responses. And once again there is the question of how much of the alleged intuitive privilege of the actual world’s mechanisms is due to picturing the imagined alternatives as exemplifying the colors-as-Revelation-represents-them-as-being. Were there such colors then they could be systematically misrepresented in any alternative world by that world’s standardly mediated appearances. But there cannot be such colors. Perhaps that saps much of the temptation to rigidify or fix on the processes that are actually standard. In any case it would be odd to do this once it is allowed, as in the case of four color printing, that what is standard may vary over time. For we can imagine our world evolving in the direction of what is standard in some other world. What was always standard there becomes standard here.

If one wants to avoid the consequences of not rigidifying on the actually standard processes mediating the color appearances one had probably better understand “standard mediating processes” as “natural

mediating processes” and so disparage pointillism and therefore accept the slightly odd view that the pages of magazines are filled with occasions for color illusions. Neither choice is wholly comfortable, but either way the resultant and, I think, relatively mild discomfort *is not peculiar to the Secondary Quality account*. Recall that the Primary Quality account picks out its favored properties as the non-dispositional properties standardly or normally responsible for the relevant color appearances. Similar discomfort arises when this account gets explicit about what it means by “standard” or “normal”. The discomfort is mostly an aftershock of the inevitable denial of Revelation.

#### KRIPKE’S REFERENCE-FIXING ACCOUNT

In order to justify the claim that such a Secondary Quality account of the colors allows us to speak more inclusively of the colors than any Primary Quality account allows, it must be shown that the kind of problem illustrated by the fact that we know in advance that canary yellow could not turn out to be a shade of blue arises because of the central idea behind the Primary Quality account, and not just because the argument concentrated on a determinate shade like canary yellow rather than on the determinable hue that is yellow.

Someone might think that if we began with a Primary Quality account of the hues — red, blue, green, yellow, etc. — then we could just stipulate that canary yellow is a yellow and not a blue, thereby getting round the problem of canary yellow threatening to turn out to be a shade of blue.

Indeed, when one of the most inventive advocates of the view that colors are Primary Qualities gives his account of the color properties he naturally treats the hues and not the shades. Thus in *Naming and Necessity* Saul Kripke writes of yellow, not canary yellow, claiming that the hue term “yellow” is akin to a natural kind term.<sup>29</sup> On that account, the term “yellow” has its reference fixed in terms of the description “the manifest (i.e., non-dispositional) surface property which is normally responsible for things appearing yellow”. Of course, something will then count as yellow only if this description denotes, so that the reference fixing account for “yellow” will treat the following conditional as having a priori status.

- (10) If there is a unique manifest surface property normally responsible for things appearing yellow, say Y, then yellowness is Y, otherwise “yellow” does not denote.

This account yields its own paradoxical consequences. To see why, recall that hue is just one color determinable, along with saturation and brightness. Let us focus on brightness and its determinates — being (quite) bright, being dark and being intermediate in brightness. These stand to the determinable brightness as yellow stands to hue. If “yellow” gets a reference-fixing treatment then so should the names for these brightness qualities.<sup>30</sup> So we have

- (11) If there is a unique surface property normally responsible for things looking bright, say B1, then brightness is B1, otherwise ‘brightness’ does not denote.
- (12) If there is a unique surface property normally responsible for things looking dark, say B2, then darkness is B2, otherwise ‘darkness’ does not denote.
- (13) If there is a unique surface property normally responsible for things looking intermediate in brightness, say B3, then the property of being intermediate in brightness is B3, otherwise the “the property of being intermediate in brightness” does not denote.

One of the things we know about yellow just on the basis of sight and without relying upon information about scientific discoveries is that there cannot be a yellow with no brightness quality whatsoever, a yellow which is neither bright nor dark (i.e., brownish) nor intermediate in brightness. However, on the reference fixing account so far adumbrated this is at most a matter of scientific discovery — a discovery to the effect that everything that has Y also has at least one of B1 or B2 or B3. For all we know now it might actually turn out that there are things with Y but none of B1 or B2 or B3. On the present account such things would be a shade of yellow that was neither bright nor dark nor anywhere in between on the scale of brightness. Were there such shades, they could not be the object of fully veridical perception, since

any visual perception would present some brightness quality. So in that sense they would be not be fully visible shades of yellow.

Furthermore, on the reference-fixing account it is at most a matter of scientific discovery that everything that has Y has at most one of B1 or B2 or B3. For all we know now it might actually turn out that there are things with Y and both B1 and B3. On the account under discussion, such things would be a shade of yellow that was at once bright and dark, e.g., as bright as the yellow on the disc of the moon and as dark as a dark brown. (Dark yellow gets called brown.)<sup>31</sup>

As against all this we know in advance that there cannot be such strange yellows just as we know in advance that canary yellow is not a shade of blue. Or rather, to put the point in a way that takes proper note of the vagueness of the analytic/synthetic distinction: any account which has it coming out true that we know these things in advance thereby better deserves the name of an account of the *colors*.

What about the strategy of conditionalizing on what we know in advance? What about articulating in an antecedent of a conditional just the requisite relations between hue and brightness. An example of the required “frontloading” (Peter Railton’s nice term) would be —

- (14) IF Y is the property normally responsible for the yellow appearances and B1 is the property normally responsible for the bright shade appearances and B2 is the property normally responsible for the dark shade appearances and B3 is the property normally responsible for the appearances of intermediate shades AND it is a consequence of the laws of color science that anything that has Y has one and at most one of B1 and B2 and B3 THEN yellowness is Y, otherwise the term “yellowness” does not denote.

Once again a problem about the perceptual availability of the colors arises. Suppose that in the year 2000 as a result of discoveries in color science we come to know that the antecedent of (14) is satisfied. Then the account employing (14) implies that some parts of the external world were colored yellow all along. But we were not justified in believing this all along. For until 2000 we were ignorant of a central precondition on things being yellow. Indeed, even after the year 2000 we can only know that surfaces are yellow by relying upon knowledge

of what holds up as a lawlike statement of color science. As against this, we have Availability: if there are yellow surfaces, good perceivers can be justified in believing this just by looking at them and without relying upon exotic scientific discoveries. Once again, the properties alleged to be the colors are not perceptually available, and this is because the account which identifies or conditionally identifies the colors with the non-dispositional, microphysical properties talked about in color science thereby concerns itself with properties one step too remote from the appearances — the microphysical bases of dispositions to appear colored rather than the dispositions themselves.

The dispositional account fares better with the internal relations among hue, saturation and brightness. Beginning again with the fully determinate shades, notice first that every color experience is an experience of some shade of color. That is to say that every color experience is simultaneously an experience of a certain hue quality, a certain saturation quality and a certain brightness quality. Each appearance of a shade is an appearance of something with a specific value along these three dimensions. So to be disposed to produce an appearance with some single hue quality is ipso facto to be disposed to produce an appearance with some single saturation quality and is ipso facto to be disposed to produce an appearance with some single brightness quality. Hues with no brightness quality, saturationless hues and so on are no more possible than *experiences* of shades devoid of hue, saturation or brightness are possible. This is just because of the intimate connection between the experiences and the colors according to the dispositional view.<sup>32</sup>

The perceptual availability of the colors; our being able to tell there are colors, and what colors things are, just on the basis of perception, has played an important role in the argument so far. It has not been assumed that an account which violates Availability could not deserve the name of an account of the colors, but only that *ceteris paribus*, an account which does *not* violate this principle better deserves the name of an account of the colors. *Mutatis mutandis* with Unity. Our conclusion should therefore not be that the Primary Quality account is hopeless as an account of the colors. Rather we should conclude that while we can speak of the colors as response-dispositions and still speak more or less inclusively, we must speak less inclusively if we



speak of the colors as the categorical bases of such dispositions. For we must then give up either Unity or Availability.

There is a reply in the offing. As against this attempt to produce a contradiction among Unity, Availability and the Primary Quality account, the friend of the account may urge that we treat “similar” wherever it occurs in the formulation of a unity principle as simply short for “looks similar” so that the unity relations are indeed knowable just on the basis of visual perception. Then canary yellow would be a shade of blue only if it looked as similar to the blues as they look among themselves. We know just on the basis of visual perception that this last condition is not satisfied. The Primary Quality theorist may thus hope to escape our arguments so far by replying that Unity is much less demanding than we thought.

I think it can be shown that the reply falsifies the contents of the unity principles which are central to our beliefs about the colors. For the reply entails that in knowing on the basis of vision that canary yellow is not a shade of blue we simply know that canary yellow does not look as similar to the blues as the blues do among themselves. That implies that what we know on the basis of vision leaves it open that canary yellow may nonetheless be as similar to the blues as they are among themselves. But that means that vision tells us almost nothing about what canary yellow, teal, turquoise, sky blue are like. And that is to say that on the Primary Quality account, vision merely gives us knowledge of the colors by description, i.e., allows us to know the colors just as the properties, *whatever they might be like*, which are standardly causally responsible for the color appearances. However, if vision gives us only knowledge by description of the colors, if vision does not acquaint us at all with the way the colors are intrinsically, then the colors can hardly be said to be visible properties.

On the other hand, vision can acquaint us with the natures of the color properties if these properties are dispositions to produce visual responses. The similarities that color vision reveals will then be visually apparent similarities among the colors, not mere similarities among the visual appearances which the colors, whatever they might be like, cause. There will be, after all, a grain of truth in Revelation — visual experience taken, not naively, but as a series of manifestations of visual response-dispositions, can acquaint us with the natures of the colors.

(Despite this grain of truth, Revelation as it stands is still false on the Secondary Quality account, for Revelation implies that if colors are dispositions then all colors, even the steady colors, look like dispositions.)

#### REVELATION REVISITED

The Secondary Quality account can recognize a grain of truth in Revelation. This grain of truth is important when it comes to accounting for the value of vision. The faculty of vision either represents itself as (or is spontaneously taken by its possessors as) a mode of revelation of the natures of certain properties of visible things, viz. their colors and euclidean shapes. A particular counts as visible only if it has visible properties and it has visible properties only if it has properties with whose natures vision acquaints us. That is to say that although it is a necessary condition of a property *F* being visible that something's having *F* at sometime explains a visual experience, this is not sufficient. For many fundamental physical properties satisfy this necessary condition while nonetheless not being visible properties. They fail to count as visible properties because vision does not acquaint us with the nature of these properties but only with their effects.<sup>33</sup>

The notion of acquaintance with a property, equivalently of knowing the nature of a property, is somewhat obscure. We do not want to follow Russell's line in *The Problems of Philosophy* and say that when one is acquainted with a property one has nothing more to know about it except which particulars in fact have it. For then, as we have seen, it would follow that *no* causes of our experience are visible.

In lieu of Russell's all too demanding account, we might offer the following operational consequence of being acquainted with a number of properties. If you know or are acquainted with the nature of properties *F*<sub>1</sub>, *F*<sub>2</sub>, . . . *F*<sub>*N*</sub> then you can know a family of similarity and difference relations (unity principles) holding among *F*<sub>1</sub> through *F*<sub>*N*</sub> and know these without relying upon knowledge of the laws in which the properties are implicated or upon knowledge of which particulars have the properties. Obviously acquaintance can be a matter of degree on this view. So we do not need a complete revelation of the nature of a

property to be acquainted with the property. Vision can thus acquaint us with the response dispositions that are the colors of the Secondary Quality account, even though vision fails to represent them as dispositions. Contrast Kripke's Primary Quality account of the colors as properties picked out by reference-fixing descriptions which mention mere effects of the properties: on this view since vision gives us only knowledge by description of the microphysical causes of our experience of colors, and those causes are the colors, vision gives us only knowledge by description of the colors.

Return now to the defensive suggestion of the Primary Quality theorist to the effect that the only unity conditions worth underwriting are similarity and difference conditions among appearances. Notice that this manoeuver and our operational account of acquaintance together imply that we are not at all acquainted with the colors but only with their visual effects. Given that visible properties are the properties with which vision can acquaint us, it follows that the colors are invisible.

The Primary Quality theorist can of course allow that the colors are visible in a less demanding sense, namely that they are properties which in a standard and systematic way explain our visual experience. So the whole issue ultimately turns on this question: "Why is it so bad if we are not acquainted with the colors and with other visible qualities by vision but know them only by description?"

This is a question about the comparative interest and point of concepts of the colors and of other *visibilia*. And I think that the question has an interesting answer which favors the Secondary Quality account. For I believe that our implicit cognitive values favor acquaintance with objects, people, places, and hence with their properties. If that is so then we have reason to want vision to be a mode of access to the natures of visible properties. But then we have reason to refigure our concepts of the colors along the lines suggested by the Secondary Quality theorist.

That our implicit cognitive values favor acquaintance with things emerges if we consider what would be so bad about the situation which the skeptic claims we are actually in. Consider two familiar philosophical cartoons by which the traditional skeptical problem of the external world is typically presented — the case of the eternal movie buff and the case of the brain in the vat. The eternal movie buff has spent all his

life in a dark room watching images on a screen before his eyes. Never having left his room he has no idea whether the images correspond to anything outside his chamber. The brain in the vat is fed a full sensorium by feindishly clever neural stimulation. A computer coordinates the pattern of stimulation so that the brain has a complete and consistent sensory illusion, say as of living an ordinary life in Boise, Iowa. These bizarre predicaments are employed to highlight a skeptical worry about our own predicament. The eternal movie buff cannot be justified in holding any visually generated beliefs about the external world, restricted as he is to mere images which he cannot check against external reality. He can only check experience against experience. But this is also our predicament. We also can only check our experiences against other experiences. It is no more possible for us to attempt to match our experience against external reality as it is in itself, as it is independently of how it is experienced by us. The case of the brain in the vat deflates the natural thought that we have an epistemic advantage over the eternal movie buff by possessing a number of potential windows on the world which we can use to triangulate to an external reality as it is in itself. The triangulations of the envatted brain lead it to beliefs about a life lived in Boise Iowa. But all these beliefs are false.

Whatever the force of these cartoons in presenting the traditional problem of the justifiability of our beliefs about the external world, and even if their force is undermined by noting that a spontaneous and utterly natural belief is justified in the absence of a good case against it, the cartoons also serve to illustrate a deeper epistemic anxiety about our own condition.

This deeper problem of the external world is the problem of acquaintance, the problem of how we could be acquainted with anything given the nature of information transmission. The nature of any signal received is partly a product of the thing sending the signal and partly a product of the signal receiver. We cannot, it seems, separate out the contribution of our own sensibility to our experience from the contribution of the objects sensed. The case of the brain in the vat shows that our experience does not discriminate between many different kinds of external objects so long as their effects on our sensibility are isomorphic in certain ways. But that suggests that relative to the problem of acquaintance, even if we are not brains in vats things are as bad as they

would be if we were brains in vats.<sup>34</sup> We cannot take our experiences to reveal the natures of external things. No sensory experience could at the same time reveal two things so intrinsically unlike as the nature of life in Boise and the nature of the inner workings of the vat computer. But for all that could be revealed in a fully coherent experience either could be the causes of that course of experience. Conclusion: sensory experience does not reveal the nature of its causes.

In both cartoons sensory experience is clearly depicted as simply an effect of external causes whose natures are in no way revealed by the experiences they cause. Sensory experience in no way acquaints the brain or the buff with the nature of the external causes of that experience. In this respect, sensory experience is unsatisfyingly like morse code transmission; both involve interpretable effects at the end of an information-bearing process or signal. But the intrinsic natures of the originators of the signal are not manifest in the signal. This is a very depressing comparison. Perception represents itself as (or is at least spontaneously taken by its possessors as) a mode of access to the natures of things. When I see the sun setting against the magenta expanse of the sky, I seem to have something about the nature of the sky and the sun revealed to me. I seem not just to be partly under their causal influence in a way that leaves completely open what their natures might be like. The acquaintance with external features which vision seems to provide is something we very much value, or so it seems to me.

The general problem of acquaintance is a difficult one, but we have already accumulated the materials for a solution to that problem as it arises for vision and color. Part of my pleasure in seeing color is not simply the pleasure of undergoing certain experiences but the pleasure of having access to the natures of those features of external things that are the colors. This need not be a pleasure founded in a false belief, a pleasure which philosophical reflection would have me see through. For suppose the colors are response-dispositions. These are genuine, albeit relational, features of external objects. Their manifestations are the various experiences in various subjects as of the various colors. These sensory manifestations are not simply the effects of the dispositions they manifest. They are or can be manifestations in a more interesting sense. About any disposition of objects to produce a given experience, it is plausible to hold that if one has an experience of the kind in

question and takes that experience to be a manifestation of the disposition in question, one thereby knows the complete intrinsic nature of the disposition. Of course one does not thereby know the facts concerning how in general the disposition is specifically secured or realized. But these are facts concerning the disposition's contingent relations to other properties. They do not concern the intrinsic and essential nature of the disposition. So, as claimed earlier, I take myself as having come to understand the complete nature of the property of being nauseated one afternoon twenty five years ago when I tasted a juicy apricot on a ferry crossing from Melbourne to Hobart. Similarly, if I conceive of the magenta of the sunset as a (constituted) disposition to produce a certain visual response in subjects like me, and I now discover myself to be responding just so, I can be in possession of all there is to know about the essential nature of the dispositional property that is magenta. I do not thereby know the contingent details of how magenta might be physically realized here before my eyes or anywhere else. But that is ignorance of the relation between the disposition and the other properties which happen to realize the disposition. I do seem to know everything intrinsic and essential to the response-disposition that is magenta. *Mutatis mutandis* for the other colors. Vision can be a mode of revelation of the nature of visual response-dispositions. It cannot be a mode of revelation of the properties which the Primary Quality Theorist identifies with the colors. Since we are inevitably in the business of refiguring our inconsistent color concepts, we should make the revision which allows us to secure an important cognitive value — the value of acquaintance with those salient, striking and ubiquitous features that are the colors.<sup>35</sup>

The point here is not simply that the Primary Quality Account does not satisfy even a qualified form of Revelation. What is more crucial is that as a result, the account does not provide for something we very much value: acquaintance with the colors. The ultimate defect of the Primary Quality View is therefore a practical one. From the point of view of what we might call the ethics of perception, the Secondary Quality Account is to be preferred. It provides for acquaintance with the colors.

I began by indicating that the possibility of speaking more or less inclusively about the colors is a typical consequence of the vagueness of

the analytic/synthetic distinction. But that means that the vagueness of the analytic/synthetic distinction will typically have this consequence: without clearly changing the topic we will always face a choice of precisely which concepts to use. Such a choice is not dictated by the natures of the things under discussion. For those natures, admit of many types of true descriptions. (For example, there is no doubt that colored objects have both the features favored by the Secondary Quality theorist and the features favored by the Primary Quality theorist.) What should guide such conceptual choices? Surely here, Pragmatism is entirely vindicated: it is human interests, broadly construed, which make it reasonable to confront the world armed with these concepts rather than those.

So although the philosophy of color may be one of those genial areas of inquiry in which the main competing positions are each *in their own way* perfectly true, *it may also be that given what we value only one account is the right one for us to employ.*<sup>36, 37</sup>

## NOTES

<sup>1</sup> If one wants a reason for being interested in the answer, the quick reason is that unless the external world is colored it is invisible. For if the external world is not colored then we do not see the colors of external things. They are not visible. Now the surfaces of material objects are visible only if they are either visibly translucent, visibly transparent, visibly opaque or visibly reflective. Determinables like transparency, opacity, etc. are visible only if their determinates are visible. The various volume colors are the determinate ways of being transparent and translucent, the various barrier colors are the determinate ways of being opaque, and the various colors of virtual images in mirrors are the determinate ways of being reflective. So if colors are not visible then no surface of a material object is visible. But if no surface of a material object is visible, then no material object is visible. Such is the consequence of denying that nothing corresponds to external color, the proper sensible of sight. Unless the external world is colored we do not see it and that means we do not see, period. If the world is not colored, we may get some kind of schematic propositional knowledge about our environment by sight but sight does not acquaint us with the natures of any external things. Our question might as well be "How far short of speaking ever so inclusively do we have to fall in order to say truly that we see?" or "In what sense do we see external things?" The last section of this paper addresses, in a preliminary way, the question as to why we should care about seeing external things in one or another sense of "seeing".

<sup>2</sup> See *The Problems of Philosophy* (London, OUP, 1912) p. 47.

<sup>3</sup> For this analogy, see the first few pages of part one of Descartes' *Optics*.

<sup>4</sup> See David R. Hilbert *Color and Color Perception* (CSLI, Stanford, 1987) pp. 29–42.

<sup>5</sup> "Red" and Red" *Synthese* 78, 1989; p. 224.

<sup>6</sup> I cannot help thinking that it is this conviction which is driving some of the provoca-

tive arguments of Paul Boghossian and David Velleman to the conclusion that the external world is not colored. When for example they discuss Christopher Peacocke's version of the dispositional theory their main point is that if colors were that kind of disposition then visual experience could be convicted of misrepresenting the nature of the colors. To which a friend of the Peacocke account should reply "Just so! Revelation is a bit of an overstatement. We can't completely save the phenomenology of color experience." Nor do Boghossian and Velleman themselves completely save the phenomenology of color experience, for that experience represents the external world as colored. See Paul A. Boghossian and J. David Velleman "Color As A Secondary Quality" *Mind* 1989.

<sup>7</sup> The same point about the relevant error can be made in the terms allowed by those, like Gilbert Harman, who take what others regard as sensational features of perceptual experience to be none other than further representational features of perceptual experience. The error in question involves taking these further representations as indicating the complete nature of sensory qualities. See Gilbert Harman "The Subjective Character of Experience" unpublished ms.

<sup>8</sup> The reflectance of a surface is given by a set of proportions of reflected light to incident light for each wavelength of visible light. For the original version of Land's theory see *Scientific American*, 237, Dec 1977. In the latest version of the theory Land shows how the color appearance of an illuminated patch is associated with a triple of "designators." A designator is a weighted proportion of the light of a given wavelength coming from the colored patch to the light of that wavelength coming from a given surround. When we have a designator for each of the long, medium and short wavelengths coming from and around an illuminated patch, we have enough physical information to determine the color appearance of the patch to normal perceivers. So we could identify colors with dispositions to give off light conforming to an appropriate set of triples of designators. This would be a complex and scientifically realistic light-dispositional theory.

<sup>9</sup> See Gregory Harding "Color and the Mind-Body Problem" unpublished manuscript. As I understand him Harding completely endorses Revelation and builds his ontology around the result.

<sup>10</sup> See "Color as a Secondary Quality" op. cit.

<sup>11</sup> For the distinction between steady and unsteady or "shimmering" colors see Hazel Rossotti *Color: Why the World Isn't Grey* (Princeton University Press, 1983) chapters 3 and 4. Rossotti uses "stable colors" for what I am calling "steady colors". "Stable" sounds to me to be the opposite of "transient" and there can be transient colors that are nonetheless steady, e.g. the greyness of the sky when it is overcast.

<sup>12</sup> Why abandon or weaken Revelation rather than Explanation? The answer turns on the fact that Explanation is also a very plausible condition on colors being visible. It would be the perverse to allow that the colors are indeed properties satisfying Revelation but that they are invisible.

<sup>13</sup> Sensible qualities are qualities that are visible, audible, testable, etc.

<sup>14</sup> Some tell me that their intuition is that something extrinsic to the ray-bedeveled surface disposes it to look red, so the surface is indeed disposed to look red. I do not so much want to deny the intuition as to separate out a conception of dispositions which requires an intrinsic basis for the disposition. Maybe the ordinary notion of a thing's power or capacity tends to carry this implication of there being in the thing an intrinsic basis for the disposition that is the power. At least it seems more strained to say that the ray-bedeveled surface *itself* has the power to look red. That seems to suggest that it would continue to have that power were the surface hived off from the ray-emanating core.

The related case of the strange ray emanating from the surface is discussed below in the main body of the text.

<sup>15</sup> Why not also allow the case where x changes intrinsically as x goes into the circum-



stances C? Because this would rule out an absolutely straightforward case of the manifestation of a disposition, a case in which putting x in C changes x in precisely the way that is causally responsible for the manifestation.

<sup>16</sup> This is not, of course, an analysis of the notion of a disposition, since it does not tell us the conditions for attributing dispositions when the oddities are in play. I attempt a full-blown analysis in "Dispositions: Predication with a Grain of Salt" unpublished ms.

<sup>17</sup> For reasons to hesitate in attributing the dispositional thesis to Locke see A. D. Smith "Of Primary and Secondary Qualities" *The Philosophical Review* XCLX, 1990.

<sup>18</sup> On the disparate nature of the standard causes, even of appearances of the same shade, see C. L. Hardin *Color For Philosophers* (Hackett, 1988) pp. 1–52.

<sup>19</sup> "An Objectivist's Guide to Subjectivism About Color" *Revue Internationale de Philosophie* 1987.

<sup>20</sup> Since similarity is always similarity in some respect it is a fair question as to what respect I have in mind here. The answer is similarity in respect of hue, the most salient of the similarities among the shades.

<sup>21</sup> Or at least it would be that discovery if the similarity in question was plausibly identified with a similarity in respect of hue. For more on what this involves see the discussion of Saul Kripke's view below.

<sup>22</sup> Suppose that I am a waif brought up in a monastery. As a matter of strict monastic rule no married male is allowed to enter the gates of the monastery. I have a highly predictive stereotype associated with the concept of a bachelor inhabiting the monastery, viz. that of a male inhabiting the monastery. Now as a result of monkish gossip it is widely but wrongly suspected that Brother Bernard, who we all know to have been a man of the world, has a wife or two in Tuscany. I know of the gossip and accept it, but because of my stereotype of a bachelor as a male inhabiting the monastery, I adhere to my true and well-grounded belief that Brother Bernard is a bachelor. In rhetoric class I am finally taught the definition of "bachelor" and I conclude that Brother Bernard is not a bachelor. As a result of conceptual lucidity I know less by knowing more.

Nonetheless the crucial point is that even in such cases being conceptually lucid does not confer a **global** disadvantage when it comes to justified applications of the concept in question. When it comes to applying the concept bachelor outside the monastery, where there are indeed married males, I am not disadvantaged as a result of what I learned in the rhetoric class. Nor is this so within the monastery when it comes to the bachelorhood of the other monks beside Bernard. And there are many *possible* cases in which thanks to my newly acquired conceptual lucidity I would be better placed when it comes to having justified belief about who the bachelors are. The thing that it is hard to believe about our color sophisticate is that in every actual and possible case he is worse off than we as a result of his conceptual sophistication, so that he never could be justified simply on the basis of perception in judging the colors of things, while we are almost always so justified. This is not made any easier to believe by examining cases in which one ignores a misleading defeater thanks to a conceptual mistake.

<sup>23</sup> By the way, it is tempting to see here the form of a general worry about any natural kind account of concepts for which analogues of Unity and Availability hold. Most observational concepts seem to me to have such analogues.

<sup>24</sup> The strategy of considering the epistemic position of the relevant philosophical sophisticate has wide application. It also has at least three attractive features. It does not assume what is anyway crazy, i.e., that *ordinary* subjects' possession of justified belief depends upon their employing implicitly or explicitly the right philosophical account of those beliefs. Secondly, the strategy provides a way around all too convenient appeals to the failure of deductive closure — to one's not having to know all of the consequences of what one knows. Thirdly, the strategy does not entail the paradox of analysis because it does not depend upon supposing that we can always substitute into belief contexts on the basis of the conceptual equivalences that make up philosophical accounts. It is enough to warrant suspension of the perceptually based belief that

canary yellow is not a shade of blue if this belief is conceptually equivalent to a belief for which one could possess no perceptual justification, *viz.*, that the microphysical causes of the appearances of canary yellow are not as similar microphysically to the microphysical causes of the appearances of the blues as this latter class of causes are similar among themselves.

<sup>25</sup> However, as against Goethe, who suggested that we can see that the colors are the deeds and vicissitudes of light, it is *not* perceptually evident whether light is such a standard conveyor or simply a medium of ambient brightness which allows such standard conveyors to propagate. Hence Newton's Tertiary Quality account of being red as being such as to give off light which is "Rubiferick", light which is such as to cause in perceivers the appearance of a red thing, goes beyond what is perceptually evident about the relation between color and light. Thus the persistence among astute phenomenologists of vision of the classical doctrine of "visual rays" — the doctrine that seeing is achieved by exploratory rays which in illuminated conditions go out from the eye to the object perceived. Avicenna in his *Treatise on Meteorology* written in the first half of the 11th century still finds the need to argue against this classical theory of vision by pointing to the implausibility of supposing that the eye has something that extends into the celestial spheres. See David C. Lindberg *Theories of Vision From Al-Kindi to Kepler* (University of Chicago, 1976) pp 44–49.

<sup>26</sup> Compare the method employed in the paper "Human Beings" *Journal of Philosophy* 1987; where the strict analogue of the Revelation-driven conception of color is the Bare Locus view of personal identity, according to which we are subjects of reflective consciousness capable of surviving any amount of psychological and physical change, however abrupt. This view comes about as a result of taking the simple way in which we are presented to ourselves in conscious experience as the presentation of a simple subject of that experience. To adequately theorize about personal identity in the wake of this error we must examine the extent to which our judgments about cases are driven by this error.

<sup>27</sup> Notice that we have in this case, as with the first sort of ray-bedeveled red surface, an example of a persistent color illusion; fools green, if you like. On the dispositionalist view we are here developing, fools green can arise in at least two ways; either by the mimicking of the disposition to look green or as a result of the non-standard nature of the processes involved in the disposition to look green.

<sup>28</sup> See *Color For Philosophers* op. cit. p. 72.

<sup>29</sup> *Naming and Necessity* (Harvard University Press 1980) fn71, p. 140. This footnote offers a very clear formulation of a straightforward reference-fixing account of the hue concepts. In a Spring Colloquium held at the University of Michigan in 1989, Kripke presented a much more detailed treatment of these issues in which color concepts did seem to be turning out to be more like cluster concepts.

<sup>30</sup> This assumption simply makes things neater. I leave it to the reader to verify that the problem that follows would apply even to a mixed account which treated the hues as Primary and the brightness qualities as Secondary.

<sup>31</sup> Once again, since visual experience cannot present a shade with incompatible brightness properties such shades would not be fully visible. Notice that the Primary Quality theorist is badly placed to rule out such not-fully-visible shades. First his account implies that there are such shades. But secondly, on his account it is a natural assumption that not all the properties importantly associated with the causing of a visual experience are manifested in that visual experience.

<sup>32</sup> The astute reader may be thinking of the possibilities opened up by allowing the masking of dispositions. Even with a perpetually masked disposition to look say surface green, the masked manifestation will be an appearance of a green surface. Such an appearance will ipso facto be the appearance of a surface with some saturation and some brightness quality.

<sup>33</sup> The physical properties associated with sound could also have been the dominant

cause of our visual experiences. But we would not then have seen sound in the relevant sense. The trouble with the idea that we could have seen the sound properties is that vision could tell us nothing about the natures of such properties, it could not acquaint us with the way these properties intrinsically are, it could only acquaint us with their effects. So in the bizarre possible world in which the similar physical processes are causally responsible for both the appearances of canary yellow and the sound of B-flat it would be wrong to say that we see B-flat as we see canary yellow. It would have been equally wrong to say this if the actual world had turned out to be bizarre in just this way.

The composer Alexander Scriabin (1872–1915) had synesthesia and so “saw” B-flat in the sense that he had, thanks to neural cross-wiring, certain visual experiences when he heard B-flat. It is an interesting question what it was like to be Scriabin, in particular whether the visual experiences he had when he heard B-flat presented themselves as revelations of the nature of B-flat, a nature missed by all great musicians except Scriabin, or whether these experiences simply seemed to Scriabin to be the “visual signatures” of B-flat. Even if the former, it is hard not to imagine Scriabin then going on to think of B-flat as a sensible complex with two sides to its nature, the one which all people with perfect pitch knew, and the other reserved for him and a few other select souls. What he couldn’t have coherently thought is that B-flat was a simple quality whose nature was as much revealed by vision as by hearing. That would be the absurd thought that he saw the sound B-flat, the thought ruled out by our intuitive condition on visibilia.

<sup>34</sup> In *Reason, Truth and History* (Cambridge, 1983) Ch 2, Hilary Putnam claims that if we were brains in vats then we couldn’t mean the standard thing by “WE ARE BRAINS IN VATS” so that we could not formulate to ourselves the traditional problem of the external world. Notice that even if this were so it would not in anyway deal with the deeper epistemic anxiety.

<sup>35</sup> It may be worth noting how the distinction between Primary and Secondary Qualities looks for someone who appreciates that response-dispositions can have their natures revealed by their manifestations. As well as the dispositional criterion, Locke had another way of demarcating Secondary from Primary Qualities. Our experiences of Primary qualities “resemble” their causes in external things. This resemblance thesis is notoriously difficult to coherently fill out. But if the resemblance thesis implies that we can come to know the nature of certain sensible properties on the basis of our experience of them then there is an interesting consequence to be drawn. Since response-dispositions but not their bases have their natures revealed by their manifestations, the qualities that are Secondary by the dispositional criterion are Primary by the resemblance criterion and the qualities that are Primary by the dispositional criterion are Secondary by the resemblance criterion.

<sup>36</sup> For more on this Pragmatic approach to concept employment see “Objectivity Refigured: Pragmatism minus Verificationism” forthcoming in J. Haldane and C. Wright eds. *Realism and Reason*.

<sup>37</sup> Thanks to Paul Boghossian, C. L. Hardin, David Lewis, Peter Railton, David Velleman and Stephen Yablo. An earlier draft of this paper was delivered as an invited paper at The Eastern Division of the American Philosophical Association, December 1989. An outline of many of these ideas was presented at the 1989 Spring Colloquium of the University of Michigan Philosophy Department, although then I was more favorable towards the Primary Quality account than I am now. I am told that Charlie Martin discussed, mimicked and masked dispositions thirty years ago in his classes at Sydney University.

*Department of Philosophy*  
*Princeton University*  
*Princeton, NJ 08544*  
*USA*