Color Physicalism
October 2nd, 2002

1. **Why does 'red' pick out *this* physical property rather than some other one?**

   Armstrong's answer: because this property is the one that plays the *redness role*—it, and no other property, has all the properties we know characterise redness. It is visually detectable; it is had by the surfaces of ripe tomatoes, stop signs, blood, etc.; it is similar to orangeness, pinkness, purpleness; it is incompatible with greenness.

   Better: 'red', 'orange', 'pink', 'purple', 'green' pick out P1, P2, P3, P4, P5 because these five properties *jointly* play the various color roles: P1 is similar to P2, P3, and P4; P1 is incompatible with P5; etc.

2. **'Looks' and illusions**

   Berkeley thought that visual perception was a source of *infallible knowledge* of the colors of certain things.

   Anyone who thinks material objects are the only colored objects will disagree with this. Sometimes, vision is quite a misleading source of information about the colors of things, and has to be corrected by our other beliefs.

   Nevertheless, it seems very intuitive that visual perception does *tell* us about the colors of things, even if it's sometimes untrustworthy. Things can *look* red, green, white, etc, whether or not they are.

   The sense in which a page can *look white* seems different from the sense in which a person can *look French*, or a car *look unreliable*. In the latter cases, it is partly in virtue of our *background beliefs and assumptions* that things are said to "look" a certain way to us. An object's looking to have a certain color, by contrast, seems independent of our background beliefs and assumptions: these are only relevant to determining whether or not we will believe that the object really has the color it looks to have. The "narrowly perceptual" sense of "looks".

   When an object looks a certain way to someone (in the narrowly perceptual sense), and it isn't really that way, we say that the person is subject to a *visual illusion*.

   [Q: When you hallucinate pink rats, are you subject to a visual illusion?]

3. **Armstrong's "light-emission" theory**

   The color an object looks to have can depend on the illumination. For example, an object that looks blue in daylight might look purple in incandescent light. An object that looks white in daylight might look red under (cunningly concealed) red light. An object that looks red in bright light will look grey under very dim light.

There are two possible views:

(i) In any such pair of cases, at least one involves a color illusion.

(ii) Changing illumination can change the colors of objects.

Armstrong chooses (ii), on the grounds that it seems unduly arbitrary to privilege one kind of light as the one that reveals the true colors of objects.

Armstrong's view: for an object to have a certain color is for it to be emitting light of a certain sort.

Isn't it bizarre to say that objects are always changing their colors in this way? We don't normally think that things stop being red when we turn out the lights!

Armstrong allows that words like 'red' have another sense in which things don't change their colors all the time. In this sense, an object is red if it would be red (in the first sense) if it were under "normal illumination". (This might be a pretty vague notion.)

But it is not these properties, but the colors in the first sense, that things look to have (in the narrowly perceptual sense).

4. Metamers

The relevant properties of the light being emitted by a given point on the surface of an object can be captured by a *power distribution graph*: a graph where one axis measures power (intensity), and the other measures wavelength.

But this graph contains lots of "information" that makes no difference at all to the effects of light on the eyes, hence to visual perception.

So if redness is a light-emission property, it isn't a *physically natural* one like having a certain dominant wavelength. The power-distribution graphs that make for redness have nothing much in common, except for the fact that they would have similar effects on eyes of such-and-such sort.

5. Black, white and brown

A lump of coal under sunlight might have exactly the same power distribution graph as a sheet of paper under artificial light. Nevertheless, the former will look black, and the latter will look white, because of the effects on the eyes of the rest of the scene.

It seems that Armstrong will be forced to say that at least one of these two cases involves a color illusion. But which?

The phenomenon responsible for objects looking black and brown—simultaneous contrast—is responsible for some phenomena that would normally be classified as “color illusions”. So one could non-arbitrarily decide that nothing is really black or brown; these are *illusory* colors. But this seems preposterous. Also, it doesn’t tell us what to say about dark grey and white.

6. The unique hues

There isn’t such a thing as “pure orange”: every orange object looks reddish and yellowish. That’s what it is to be orange. Orange is a *binary hue*. But things do sometimes look to be “pure red” (not at all yellowish or bluish), “pure green” (not at all yellowish or bluish), “pure yellow” (not at all reddish or greenish), and “pure blue” (not at all reddish or greenish). There are just these four *unique hues*. This is due to a well-understood feature of the way information about colors is processed in the retinas of human beings and other primates.

Interesting fact: there is quite a bit of variation among different people as regards where exactly they report the unique hues, especially unique green.

Hardin uses this fact to cast doubt on the idea that there could be a philosophically satisfactory characterisation of the “standard observer”—a notion that features in the *dispositionalist* theory of the colors.

But the interesting fact raises further problems that Hardin doesn’t draw out. Suppose you and I differ slightly as regards where we locate unique red. We look at a Munsell color chip: I report that it looks unique red, and you say that it looks bluish. We can’t both be right: at least one of us must be subject to a color illusion. But which? Any choice would seem intolerably arbitrary. So both of us must be subject to a color illusion. Conclusion: nothing is really unique red: nothing is red without being at all bluish or yellowish

> Perhaps a similar argument can be made for each maximally determinate shade of red. If so, it’s hard to see how anything could be *red*.

7. Hardin’s conclusion

There is no philosophically significant line to be drawn between veridical and illusory color experience.

Hence, no objects are really colored. If you like, *all* experience of color is illusory!