How to Speak of the Colours

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Starting at the end of things, rather than the beginning..

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. 34 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 unalike 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.

Core concepts in our understanding of colour:

Paradigms Some of what we take to be paradigms of canary yellow things (e.g. some canaries) are canary yellow .

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.)

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."

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."

Revelation "The intrinsic nature of canary yellow is fully revealed by a standard visual experience as of a canary yellow thing."

It is not possible to explain colour ever so inclusively because Explanation and Revelation are not compatible.

1. Psychophysics tells us that the causes of colours are either non-dispositional microphysical properties, light dispositions or psychological dispositions.
2. Explanation tells us that these properties must explain our experience of colour.
3. However, the microphysical properties and the light dispositions are not "laid bare" by our experience — these causes must be learned.
4. So, these two causes are not compatible with Revelation.
5. Some dispositional properties are compatible with Revelation — e.g. nausea-making properties of the peach.
6. However, we do not see colours *as* dispositional properties, or at least not all of them. Unlike glints of light, which we clearly do see as relational, we see colours as steady properties of the world, as unchanging as many of our relations to them change.
7. Revelation is therefore not compatible with Explanation, according to which, if colors were relational, we would see them as relational, as they really are.

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".

Now, secondary qualities are supposed to be sensible qualities. So someone who

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

This can be re-worded in two forms:

(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. (i.e. Whatever looks red under the standard conditions of that possible world)

(9) The property red for subjects S under conditions Ci = the disposition to look red to the S's under conditions Ci.

(8) takes care of the objection that in other possible worlds, the very same property might cause an object to look orange to those perceivers.

(9) allows that we may have to relativize the account of colours to certain perceivers and certain conditions.

Three cases show that our understanding of dispositional properties is more complex than the simple bi-conditional"

(10) It is a priori that x is red for Si in Ci iff x would look red to Si's under Ci.

1. A ray emitted from a red object, right to our visual cortex, that causes us to see the object as green.
2. T he intuitive cameleon that changes it's color from red to green whenever intuits that the lights will come on.
3. A transparent object whose surface is green but which emits orange light and hence its surface never looks green.

What these three cases show is that the relation is more complex: it doesn't follow that the a red object would look red to standard observers under standard conditions.

What we are left with:
Either we have an entirely empty notion of a disposition or the notion of a Constituted Disposition.:

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*

The dispositional thesis which many find in Locke, 17 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."

As Johnston says, if this is our notion of a disposition, then any differences between our understanding of primary and secondary properties are very subtle — because this notion of a disposition admits that there is a basis to the disposition. So colour is either disposition with a basis OR the basis itself, a disjunction of the lowe-order intrinsic properties.

Johnston: **Given this view of dispositions, neither he Primary nor Secondary account of colours fair any better with regards to Explanation**. Example: Zinka the canary and a photograph of Zinka. On the Primary account, we explain the causes of our perceptions in virtue of a disjunction of Zinka's properties and the photograph's properties; on the Secondary account, we explain the causes of our perception of canary yellow by "moving upwards" to the disposition.

"Is canary yellow a disposition constituted by different properties in different cases or simply a disjunction of these different properties?"

The NEXT Move to come: The Primary Account does not agree with Unity and Availability. It gives us access to colour properties *only by knowledge under a description*.

UNITY AND AVAILABILITY

Could it really be a matter of scientific discovery that canary yellow is a shade of blue? That is, what if it happened that we found out that there was more similarity between canary yellow things and blue things, than between canary yellow things and yellow things?

1st Move

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.

2nd Move

Response by the defender of Primary Properties views: we simply work into the definition of colours that these similarity relations must hold or else the terms will fail to refer. Here, the condition of Availability fails: we can't know which objects are canary yellow until we find out if the similarities hold.

3rd Move.

Failure of deductive closure. We don't' need to know all of the deductive consequences of our views, in order to hold them. We may know that Zinka is yellow, even if we don't know that the similarity relations actually hold.
Johnston: The defender would not even be said to know that there was something yellow.

UNITY

Two colours are similar “in virtue of what they essentially and intrinsically are”.

if teal is essentially the disposition to manifest a certain appearance Te and turquoise is essentially the disposition to manifest the appearance Tq 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 Te is similar to the appearance Tq.

AVAILABILITY

It must be conceptually available —perceptually justifiable — that Zinka has a constituted disposition that causes her to appear canary yellow. This fact is perceptually available: we can see that some objects have colour and some do not; we assume that there must be some commonality between the ones which present as having coloured surfaces, i.e. a disposition ot cause us to see canary yellow.

WHICH RESPONSE DISPOSTIONAL CONCEPTS ARE THE COLOUR CONCEPTS?

Standardly-mediated dispositions. This applies to the processes between the surface and the perceiver. This is a statistical notion of "standard"; it rules out the green light, that shines from the center of the red object, and which directly affects our visual cortex as thereby 'making' the object green; it does not rule out "shimmering" colours; it allows for gray-area cases in which it is not clear whether the causal path is as yet "standard". This replacement notion also handles the Benham disc and the Butterfield encoder. Both devices work because of the kind of temporal summation that each requires the eye to make —what Johnston calls conditions temporal inhomogeniety—when temporal integration must occur over time periods that are longer than the changes in the stimulus Thus integration happens over changes in the stimulus.

The same question arises for spatial inhomogeniety — for pictures produced by individually coloured dots. Here, Johnston suggests that we are on the way to making viewing of spatially inhomogeneous stimuli — dot printed photographs — as being standard conditions. Thus such photographs would be considered coloured if we consider spatial summation as a typical mediating process in vision.

Relativized Colours. Truth conditions for colour terms/colour perception are relativized to conditions; thus one object can be both pink and blue, but at different times, under different conditions. While the perceptions of the object as pink and blue under different conditions are both veridical, but we still advert to the "real" colour by picking the one that is the least transient. Thus, for an object or media with an ever-changing colour — e.g. the sea — we will quickly admit that the sea has no true or real colour.

Finally we have a dispositional theory of redness.

> 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?].

KRIPKE'S VIEW

Question: The Primary Property view fails to explain why it is not possible to find out that canary yellow is a kind of blue. But perhaps this is the result of the fact that we have appealed to determinate shades of colour, not colour categories (determinables). That is, if one could fix the categories first, then of course, we could just stipulate that canary yellow was yellow, not blue.

Kripke: Colour terms are like natural kinds, at least for the categories of colours. **On that account, the term "yellow" has its reference fixed in terms of the description "the manifest (i.e., non-disposifional) surface property which is normally responsible for things appearing yellow".**

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

However, this has paradoxical conclusions. Consider that colour has more than one dimension, hue, but also saturation and brightness. Consider 3 shades of brightness, B1 B2 and B3.

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(11) If there is a unique surface property normally responsiblefor 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 every shade of yellow is that it must have some brightness or other, B1, B2, or B3. But Definitions 11-13 make it the case that we might find out that none of these brightness terms refer—hence that canary yellow does not have a brightness.

To get around this, we might "frontload" the definition (as suggested by Railton):

> **(14) IF Y is the property normally responsible for the yellow appearances and B 1 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.**

The problem of Perceptual Availability: It may be that we eventually come to realize that the antecedent is satisfied and that there is such a property as yellowness. But surely we were justified all along in our belief that the things we think of as yellow really are yellow?

Again, this problem does not arise for a dispositional account.

1. Every colour experience is an experience of some shade of colour — with a certain hue, saturation and brightness quality.
2. Each experience is determinate — with a specific value along these three dimensions.
3. To be disposed to produce an appearance with a single hue quality is to be disposed to produce an appearance with a single brightness quality.
4. Hues with no brightness qualities are no more possible than experiences of of hues devoid of brightness.
5. Hence there is an intimate connection between experiences and colours on the dispositional view.

This argument shows only that the dispositional view is better than the bases view — for it rides roughshod over fewer of our pre-theoretic views about colour.

If we try to salvage the Primary Quality account by claiming that the Unity principle applies only to colour appearances: that way we can say, on the basis of appearances, that we know that their appearances are similar. But to say this is to admit that we gain no true knowledge of the colours through perception: **The Primary quality account of vision merely gives us knowledge of the colours by description "whatever they might be like", whatever might happen to cause our colour perceptions.**

> **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.**

REVELATION REVISTED

We don't want to follow Russell down the road to full revelation. On the other hand, we do want to explain how vision gives us *knowledge* of properties.

An operational account of acquaintance:

> If you know or are acquainted with the nature of properties F1, F2, . . . FN then you can know a family of similarity and difference relations (unity principles) holding among F1 through FN 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.

Vision acquaints us with the response dispositions of that are the colours of the Secondary Quality account.