

***The Red and the Real: An Essay on Color Ontology*, by Jonathan Cohen. Oxford: Oxford University Press, 2009, xvi + 260 pp.**

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The Red and the Real is a rich and engaging defence of ‘relationalist’ views of colour, and a ‘role functionalist’ form of relationalism in particular. According to relationalist theories, colours ‘are constituted in terms of relations to subjects’ (p. 7). The role functionalist form of relationalism holds more specifically that, for example, ‘red for *S* in *C* is the functional role of disposing its bearer to look red to [subject] *S* in [conditions] *C*’ (p. 178). Lucidly written, well argued, and wide-ranging in its scope, *The Red and the Real* represents a significant contribution to the contemporary philosophical debate about the nature of colour.

Cohen’s strategy is as follows. Part 1 presents the ‘master argument’ for relationalism: the argument from perceptual variation. As is well known, there is widespread variation in colour perception. Colours appear different against different backgrounds, under different illuminants, to different members of the same species—even to otherwise ‘normal’ human perceivers, who disagree about unique (or ‘pure’) instances of green, blue, yellow and red—and more dramatically still, to members of different species. Given this seemingly rampant variation in colour perception, ‘what makes it the case’ that any particular perceptual variant is veridical at the expense of the others? Suggesting that privileging any particular variant over the others would be *ad hoc*, Cohen argues for an ecumenical resolution of the dispute: objects really are all the colours that they appear, because colours are constituted in terms of relations to different subjects in different conditions. Part 2 then defends relationalist theories of colour in response to a variety of objections, clustering around issues relating to the linguistic and mental representation of colour (pp. 99-132), the metaphysics of relationalism (pp. 133-151), and the phenomenology of colour experience (pp. 152-174). Finally, Part 3 presents the case for Cohen’s favoured variant of relationalism, role functionalism.

Much of Cohen's defence of relationalism develops and defends themes that are familiar from previous discussions of dispositional theories of colour. Indeed, given certain assumptions about the metaphysics of dispositions—in particular that dispositions are distinct from, but functionally related to, their categorical bases—Cohen's role functionalist theory of colour itself turns out to be a refined version of a traditional dispositional theory (pp. 218-220). Yet Cohen's defence of relationalism goes far beyond previous discussions, not least in its detailed and comprehensive consideration of objections to relationalism and alternative theories of colour.

There is much to say about Cohen's arguments for relationalism and against the wide variety of alternative theories of colour he considers (including irrealism (pp. 64-74), non-relationalist forms of colour pluralism (pp. 74-94), non-relationalist realizer functionalism (pp. 184-217), and alternative forms of relationalism, such as non-functionalism forms of dispositionalism, enactive or ecological relationalism, and Matthern's sensory classification thesis (pp. 218-233)). However, in what follows I will focus on some specific aspects of Cohen's defence of relationalism, and in particular the extent to which the relationalist metaphysics coheres with our pre-theoretical views about colour. For whereas relationalist theories (following Locke) are often presented as error theories about our ordinary beliefs about colour, one of the interesting features of Cohen's relationalism is that he argues—with, I will suggest, varying degrees of success—that the relationalist metaphysics is consistent with our ordinary thought about colour, the phenomenology of colour experience, and even the semantics of our colour ascriptions.

For instance, one common objection to relationalism is that it is unable to respect the intuitive belief that colours cause our colour experiences. This is because dispositions (and functional roles) are in danger of being excluded from playing a causal role in the production of colour experiences by their categorical bases. But drawing on Yablo's claim that properties between which there are metaphysically necessary relations do not causally exclude each other (such as being *1037kg* and *being over 1000kg*), Cohen makes a strong case for thinking that functional role properties need not be precluded from playing a causal role by the categorical properties that realize the functional role. This is because the realizer properties at least partially metaphysically determine the role properties—that is, they determine the functional role relative to certain contingent facts about the laws of nature, the

nature of the coloured object (whether it is a surface, volume, light source), and the nature of visual systems (pp. 205-217).

Whether relationalism is consistent with the phenomenology of colour experience is less clear. One of the most interesting strands of Cohen's response to the variety of phenomenological objections that have been levelled at relationalist theories (pp. 152-174), is that judgements about colour appearance standardly appeal to a data set that is too narrow. According to Cohen, the proper test for whether colours look like relational properties requires engaging in 'comparative phenomenology'. Intra-personally, this involves comparing experiences across perceptual conditions: against different backgrounds, and under different illumination. Inter-subjectively, it involves comparing the experiences of different subjects: both within and across species. But crucially in both cases, it relies on more than 'the unsystematic, ordinary phenomenology we undergo outside the psychophysics lab' (p. 157). When we take into account this broader range of evidence, Cohen suggests that the phenomenological evidence does indeed support the conclusion that colours are relational (p. 160).

There is a delicate balance to maintain here, however. Cohen is keen to avoid a theory of colour that is radically revisionary of ordinary views about colour, like irrealism (e.g. p. 1, p. 15). Yet he also wants to maintain that the phenomenological evidence that is consistent with (and supports) the relationalist metaphysics is *only* available on the basis of systematic observation and psychophysical testing. But if this is right, then an error theory about at least some of our pre-theoretical colour beliefs—based, as they are, on 'unsystematic, ordinary phenomenology'—would seem to be inevitable.

Of course, you might wonder whether psychophysical investigation is really necessary to engage in 'comparative phenomenology', given that facts about perceptual variation were discussed long before the advent of modern psychophysics (for instance, by Protagoras, Heraclitus, Galileo, Locke, Berkeley, Hume, etc.). Still, relaxing the criteria for admissible phenomenological evidence is not necessarily grist to the relationalist's mill. After all, one piece of (introspectively accessible) comparative phenomenological evidence that is frequently cited in support of the claim that colours do *not* look like relational properties is the fact that colours exhibit perceptual constancy: like shapes and sizes, colours appear to remain constant

throughout changes in the conditions under which they are perceived (particularly, in the case of colour, variations in the illumination).

In his brief discussion of colour constancy (pp. 53-7, although he does discuss this more extensively elsewhere), Cohen suggests that the constancy objection relies on a merely 'partial view of the data', noting that regions of an homogeneously coloured object that are differently illuminated (such as the part of a white wall that is in shadow) 'are obviously discriminable, and it is hard to say how they are discriminable except in respect of something like their color' (p. 54). However, the natural response to this is that the region partially in shadow is discriminable in respect of how it merely *looks* or *appears* with respect to colour (or perhaps in respect of its *apparent colour*), but that the two regions are nevertheless indiscriminable in respect of the colour they really *are*. Cohen's own view of colour constancy is difficult to determine, but he seems to suggest that we do not strictly speaking *perceive* the different regions to be the same colour, but instead are inclined to *believe* that the regions would look identical in colour, if illuminated the same way (or at least, that the apparent sameness of colour does not make a contribution to the phenomenal character of the experience). But although it is notoriously difficult to draw the line between perception and belief, this might seem to draw the line too early. It seems particularly strained given that Cohen himself describes as 'extremely plausible' (p. 92) a structurally disanalogous view of shape and size constancy, according to which objects' (real) shapes and sizes are presented in *perceptual experience* under Fregean modes of presentation that vary with the viewing conditions. Given the apparent similarities between colour constancy, shape constancy, and size constancy, these phenomena are more naturally thought of as demanding a uniform treatment.

Cohen's response to a third common type of objection to relationalism, focussing on the linguistic and mental representation of colours, also raises questions. Consistent with the relationalist metaphysics of colours, Cohen argues that ostensibly unrelativised colour ascriptions in language and thought are implicitly context-sensitive, and that the context makes a systematic contribution in fixing relational properties as the semantic values of colour predicates. Whereas the relational properties that visual experiences represent are very 'fine-grained'—and depend on precise nature and state of the perceiver's visual system and the

environmental conditions—in ordinary contexts, the relational properties that ordinary thought and talk attribute to objects are relatively ‘coarse-grained’. For instance, in normal circumstances, the sentence ‘the ripe lemon is yellow’ expresses the proposition that the ripe lemon *is yellow for the perceivers relevant in context K under the perceptual circumstances relevant in context K* (p. 100), where the relevant perceivers and perceptual circumstances are understood as those that are, broadly speaking, statistically normal (p. 120).

This context sensitive semantics for colour terms not only explains away the apparent mismatch in form between ordinary colour ascriptions and the relationalist metaphysics of colour properties, but is pressed into service to deal with a number of common objections to relationalism. On the one hand, it is used to explain intersubjective agreement in colour judgements, despite seemingly rampant variation in colour perception: otherwise normal subjects who perceive different fine-grained colours will nevertheless normally ascribe the same coarse-grained colour in language and thought (pp. 125-128). At the same time, the distinction between fine- and coarse-grained colours forms the basis of an account of the possibility of error in colour ascriptions. The relationalist cannot allow that visual representations of fine-grained colours are ever illusory (perhaps barring hallucination or deviant causal chains). Nevertheless, error in judgement is still possible. If a subject is unaware that the perceptual conditions are not normal, then when they believe that an object is yellow, they really believe that the object is yellow for normal perceivers in normal perceptual circumstances; but this belief will be false if the conditions are such that the object is not one of the fine-grained colours that it would appear to normal perceivers in normal circumstances (pp. 128-132).

There are, however, a number of questions here. First, we might wonder whether this account really allows for the right kind of error. It might seem that the errors we want to account for are errors of perception, not (primarily) belief: for instance, if we falsely believe of the white wall illuminated by yellow light that it is yellow, then this is because the wall (misleadingly) *appears* yellow in yellow light.

Second, there is a residual problem about agreement and disagreement. Although we standardly ascribe coarse-grained colours to objects, Cohen wants to allow that Lewisian ‘mechanisms of accommodation’ can bring it about that, in the same context, John can truly utter ‘Lemon *l* is pure yellow’ and Jane can truly utter

‘Lemon *l* is green-yellow’. This is because the contextually relevant perceivers and circumstances can shift from those that are statistically normal, to highly determinate sorts of perceivers and visual circumstances. So, for instance, in the context of disagreement about the unique hues, John can truly attribute to *l* the property *pure yellow for a perceiver with an instance of John’s precise perceptual system type*, whereas Jane can truly attribute to *l* the property *green-yellow for a perceiver with an instance of Jane’s precise perceptual system type* (pp. 117-121).

But what if Jane utters instead: ‘No, John, lemon *l* is not pure yellow, it is green-yellow’? Jane appears to be disagreeing with John. Yet Cohen’s account seems to imply that Jane is saying that *l* is not *pure yellow for Jane, it is green-yellow for Jane*. If so, then Jane is not disagreeing with John at all, because John did not say that it was *pure yellow for Jane*. The same problem arises if Jane is interpreted as saying that the lemon is not *pure yellow for a statistically normal perceiver*, as John did not say that either. Jane’s utterance would only contradict John’s if she said that *l* is not *pure yellow for John, is green-yellow for Jane*. But this seems like an odd interpretation of Jane’s remark. The mid-sentence context shift means that the final clause is a non-sequitor, as being *green-yellow for Jane* is compatible with being *pure yellow for John*. Moreover, the denial that the lemon is *pure yellow for John* is inevitably going to be false (unless John is hallucinating or his experience is the result of a deviant causal chain).

Third, and more generally, it is controversial whether ordinary colour ascriptions are implicitly context-sensitive. For one thing, it is difficult to see why our ordinary unrelativized colour ascriptions should tacitly express relational properties, if the evidence for the relationalist metaphysics is, as Cohen suggests, only available on the basis of *recherché* psychophysical experiments. If this is right, then an error theory might seem more appropriate. Indeed, if overtly unrelativised colour ascriptions *are* context-sensitive, then we should be able to fill out the extra linguistic material that the context supplies. But it is controversial whether statements such as ‘the ripe lemon *is green for normal perceivers under this illumination*’ are acceptable (as opposed to, say, ‘the ripe lemon *looks green to normal perceivers under this illumination*’).

Of course, even if relationalism is not consistent with the phenomenology of colour experience or the semantics of ordinary colour ascriptions, it might still be

true. And Cohen's penetrating arguments in this fine book make an impressive case for relationalism.