

WITTGENSTEIN'S REMARKS ON COLOUR

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Introduction

A four year old boy who had never spoken a word was sitting at the breakfast table.¹ Suddenly he turned to his mother and asked, "Eggs on toast?" When inquiries were made about why he had never said anything before, he replied, "Nothing seemed worth saying." In the *Philosophical Investigations*, Wittgenstein remarks on a situation similar if not identical to the one in this old joke, a case that had been cited by William James in order to show that thought is possible without speech. Mr. Ballard, a deaf-mute, states that before he could speak he had thoughts of God and the world, "It was during those delightful rides, some two or three years before my initiation into the rudiments of written language, that I began to ask myself the question: how came the world into being?" (I 342).

Two of the main themes of Wittgenstein's thought are that man does not speak because he thinks but rather thinks because he speaks, and that he speaks because he must get on in the world. With these views in mind, he could recast, in terms of speech, the foundationalist paradox of self-reference, which has long been, in its classical statement in terms of mind, the scandal of philosophy. Thinking is speech about speech, either about speech-mediated things or about the speech that mediates them, but truth seems to require as its ground some acquaintance to things prior to the fact of their mediation by speech, for otherwise it would be a correspondence, as it were, between speech and speech, and not, as foundationalism requires it to be, between statements and the things referred to by statements.

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Wittgenstein's anti-foundationalism lies precisely in his denial of any epistemically relevant access to things apart from language. All of our propositions are true, insofar as they are true, because of the manner in which we play our language games. Nor is there any way to establish a foundation for knowledge by assigning some special validity to our particular language games; they are just part of our form of life, which is, in turn, just given.

What interests Wittgenstein, in terms of his project of putting our foundationalist qualms to rest, is to describe language in such a way that we might recognize its irreducible facticity and hence also the world's. He is, moreover, at pains to address the special misconceptions of both the empiricist and the intellectualist versions of foundationalism. The former, often appearing in Wittgenstein's writings in the guise of logical atomism, wants language to be a convenience, a shorthand, for what might also be done in a more roundabout way, which is to picture the relationship among the data of sense; and the latter, often appearing in the form of psychologism, wants it to be the vehicle of thought without being its requisite embodiment. For empiricism would have language be the mere association of impressions that are gained and secured through sensation, and intellectualism would cast it in the role of a perceptible marker for thoughts of essences that already exist in the mind in the form of essential intuitions.

The inscrutability of his thought arises from the fact that Wittgenstein conceived of the possibility of disabusing advocates of both versions of foundationalism of their respective illusions, not by framing his own counter-theses, but rather just, as he says, by assembling reminders. The reader's difficulty, especially as so many of us have detached ourselves from the foundationalist project, is to see why in each case Wittgenstein reminds us of the particular niceties of language he does. The key for interpreting Wittgenstein's remarks is the realization that they are intended as neither logical nor empirical refutation but rather as a special, therapeutic form of genetic argument. He wants the reader to recognize that which he always knew by dint of being a speaker of his language, but which he had not taken sufficiently into account when he was being persuaded to take the foundationalist project in one or another of its versions seriously.

In other words, Wittgenstein deems it necessary to show what it is about language that leads the empiricist to think language somehow separable from the phenomenon of perception, and the intellectualist to think it independent of the a priori structure of the world. Generally the empiricist needs to be mindful that perception is not a passive and receptive phenomenon but an active one, and that the activity of perception is

intricately and inexorably bound up with the activity of speech; whereas the intellectualist commonly needs to be reminded that while there are indeed language-games of an a priori rather than an empirical character, they are not a priori in the Kantian sense of being universal and necessary, but only in the sense of the historical or concrete a priori—namely, that these language-games are so very characteristic of our manner of interacting with things that if we did not play them as we do, our form of life would itself be somewhat other than it is and our speech would have to have had, as it were, a different natural history, one which took an alternate course.

In order to make these points, it might seem best to discuss characteristic sensations, such as pain and color, for the benefit of the empiricist, on the one hand, and characteristic mental constructs, such as form and number, for the benefit of the intellectualist, on the other. Yet when the testing of these cases is in progress, we find both that form and number are as concrete and empirical as suffering and painting and that pain and color are as abstract and a priori as surveying and counting.

Thus it is that Wittgenstein's *Remarks on Colour* (hereafter RC, unless otherwise indicated all references are to this work) embodies his procedure and direction in an especially compact and powerful form. Let us comment on this small book, keeping constantly in mind to whom it is that these remarks are addressed. Our remarks will be divided into four sections, treating in turn of the possibility of a geometry of color, Goethe's phenomenology of color, the distinction between seeing and observing, and the notion of the purity of color.

1. The geometry of color

RC is a collection of three fragments written at the end of Wittgenstein's life. Part III is forty-seven pages from 1950, Part I is fourteen pages from 1951, and Part II is two pages of undated material. Nelson Goodman (1978) characterizes Part I as a condensed version of Part III, and proposes that interpreters explain "the omissions that reduce the earlier draft to the later." He notes "entirely relevant passages seem often to be dropped because Wittgenstein considered them out of keeping with his task...and approach. His purpose, he repeatedly insists, is not a psychology or a physics but a *logic* of color." (In Section 4 below, the reduction of the material from Parts III to I will be explained partly as the result of Wittgenstein's realization that in 1950 he was still confused about the notion of "pure or primary color.")

Goodman asserts, moreover, that Wittgenstein's question, "Why can't a white object, as well as a red one, be transparent?" is mistaken because "the

glass in a white light bulb is sometimes as transparent as that in a red one." In "White," Jonathan Westphal argues that Goodman's claim is beside the point because it does not follow from it that glass can be at one and the same time colored and transparent: in the case when a red glass is "as transparent" as white one, neither of them are transparent but rather translucent."

Westphal goes on to give an empiricist answer to Wittgenstein's question about the impossibility of a transparent white glass: since something is transparent when it transmits nearly all incident light, and since something is white when it scatters nearly all incident light back, it is a physical contradiction for something to be white and transparent at once (see Westphal, "Brown," for a parallel attempt to erase the line that Wittgenstein draws between science and logic). Admitting that according to this account of the physical essence of whiteness, mirrors and metallic surfaces must also be deemed white, Westphal adds that the reflection from white surfaces must be diffuse rather than directional.

Paul Gilbert responds to Westphal by reminding us (pace Goodman above): "Wittgenstein's question is a request for an elucidation of...the logical grammar of statements attributing whiteness or transparency to things. What needs to be explained is why our use of these notions rules out their joint attribution." Westphal's account fails to explain why the concept of a transparent white object is not only physically impossible, but also strictly unimaginable given the logic of our color terms. That Gilbert is correct about Westphal misconstruing Wittgenstein's question is clear from beginning of the RC, where Wittgenstein carefully distinguishes between two uses of certain sentences, one empirical and the other a priori. These sentences have the same surface grammar, but differ in their depth grammar, which difference is attributable to the fact that they are used in different kinds of language game.

In the first, empirical sense, the language game is, for example, to determine whether the color of a certain surface is lighter or darker than that of another. The sentence in this game might assume the form, "X is lighter than Y." In this game, the reported relationship, that of the relative lightness of two colors, is accidental and therefore external; and the proposition is bound to the situation of the two colors in question, and is therefore temporal. In the second, nonempirical sense, the language game is, to maintain the example, the determination of whether a certain saturated hue is lighter or darker than another. Again, a sentence in this game might be of the form, "X is lighter than Y." But this time the relationship reported is essential and therefore internal; and the proposition, not bound to any particular situation, is non-temporal.

The same point might be made about the employment of sentences of the form, "X is greater than Y," used in two language games, one in which the relative length of two sticks is determined, the other in which the relative magnitude of the two numbers is determined. The parallel between a perceptual case such as color and a conceptual one such as geometry is one main motivation of the book. In terms of the difference between the uses of these sentences about color, Wittgenstein distinguishes between an empirical and a nonempirical study of color. The first, which comprises scientific treatments of color, such as those of physics, physiology and psychology, is called "the natural history of color"; the second, "the mathematics of color," "the geometry of color," and ultimately, "the logic of color."

A natural history of color would produce temporal judgments, not ones of the nontemporal, essence of color (III 8, 135). Wittgenstein is presumably thinking of the natural history of color as the diachronic study which might be built up out of successive synchronic studies of the sort he provides, together with some account of what brought about the successive manners of dealing with color. For example, in all natural languages studied, there has been observed a regular development of color terms. At one stage, languages distinguish just dark and light, then at another dark, light and reddish, next a color term for the yellow-green range appears, then this color term is restricted to yellow or green and another term is introduced for the one not covered, and finally a term for blue appears. (It is even possible to extrapolate to a not yet attained state of language in which the cyan or sky blue range is distinguished from the deep or navy blue range by its own term in everyday language.)

Perhaps due to anti-philosophical scruples, Wittgenstein is not very explicit about one main implication of this natural history of color—namely, that the logic of our concepts is as much a product of natural history as are the empirical facts, and in fact, itself constitutes one order of empirical fact. He does admit this indirectly in *Philosophical Investigations* when he says that we can invent natural history to suit our purposes and then does so repeatedly in imagining tribes with very peculiar social practices. Yet since he does not seem to think true accounts of natural history have any more importance for his work than the invented histories he offers, his use of natural history seems no more than a reminder that things could be different than they are, that our own way of speaking and acting is not given once and for all but rather established according to our needs, interests and purposes. Taking one thing with another, Wittgenstein seems to endorse the view that the grammar of certain kinds of sentences functions as an a priori

background for our manner of being, even though this a priori order was established in the course of our natural history.

Wittgenstein is motivated, moreover, to point out the analogy between the logic of color concepts and the logic of concepts in geometry because philosophers have thought geometric concepts among the most certain and real of entities, but have rarely imaged such a status for colors. With the exception of Goethe's problematic efforts, natural science has, since Robert Boyle introduced the concept of "secondary property," assigned color second class citizenship in the republic of nature.

As a biographical note, several commentators have suggested that Wittgenstein was originally put on to the insight that color has something like a geometry by the difficulty of identifying any "atomic facts" in the sense given that notion in the *Tractatus*. There Wittgenstein posits the existence of facts that are simple in the sense that they are logically independent of other facts. Colors were thought at that time to be prime candidates for such facts, but unfortunately the fact that this is red is not logically independent of the fact that it is not green, for being green and being red exclude each other in some peculiar way. This exclusion reflects itself in the circumstance that colors are not related to color as species to genus, but as determinate and determinable; and his point seems to be that this circumstance, together with the manner in which we have characterized the differences among colors, makes the systematic relationship among colors part and parcel of their character. (For references to literature the color exclusion problem, see Austin 142 n. 1.)

Once more, at A1 Wittgenstein asks us to consider two sets of related language games: first game—report whether a certain body is darker or lighter than another; second game—state the relationship between the lightness of certain shades of color; third game—determine the relationship between the lengths of two sticks; and fourth game—determine the relationship between two numbers. In the first and the second games, on the one hand, and in the third and fourth games, on the other, the form of the proposition is the same: for the first two games, the propositional form is "X is lighter than Y"; for last two games, "X is greater than Y." Yet in the first and third games, the relationship reported is an external one, and the proposition is temporal; whereas in the second and fourth games, the relationship is internal, and the proposition timeless (compare III 131).

Wittgenstein introduces the concept of the "internal properties" of a color through the analogy with mathematics (see III 63) and illustrates this concept by asking us to consider the difference in the manner we treat of the color white in examples of the first two games above: "In a picture in which a piece of white paper gets its lightness from the blue sky, the sky is

lighter than the white paper. And yet in another sense blue is the darker and white the lighter color (Goethe). On the palette white is the lightest color" (I 2; see III 132). In the contrast of the palette, where colors are isolated, a white pigment, reflecting the full visible spectrum, will be lighter than any chromatically colored pigment, selectively absorbing the same incident light; but in the context of the canvas, something depicted as white may be rendered by a gray pigment, and appear less bright than an untinted blue sky (see III 56).

Nevertheless, the fact that the logic of the concept of white differs in these two language games does not mean that the concept of white in the first game, in which white is situated and hence takes on external properties, is somehow less valid or legitimate than the merely posited white of the second game. Lichtenberg says that few have seen pure white, but all that he did was to construct an ideal use from the ordinary one, which in no way makes the ordinary use wrong (I 3, III 201; see III 59). He constructed a geometry of color out of the logic of our ordinary concept (III 35; see also III 86), which shows us something about the way we use the concept (I 4; III 36).

If I call a sheet of paper pure white, and yet it appears more gray than some snow placed beside it, I would still be right to call it pure white and not light gray (I 5; III 160; in the terms of psychophysics: due to the phenomenon of color constancy, the paper would not appear gray next to the snow). We could, of course, construct a more refined use for "pure white" for use in the laboratory (I 5; III 36), as indeed we do. Such sophisticated usage, embedded in the language games of the laboratory, is motivated by special ends or goals not recognized in everyday life; and Wittgenstein surely has no objection to such refinements, except insofar as the prestige of science makes it seem that this sophisticated usage might throw the common one into jeopardy.

In objection to Wittgenstein, it might be asked why, since extraordinary usages become part of the everyday, garden-variety understanding—as, for example, the idea that the word "light" refers to electromagnetic radiation did in the U.S. after Sputnik—his emphasis on ordinary language is not a form of linguistic traditionalism, working to reduce the degree to which philosophy serves as a cultural force to change the way we speak and act? Why is philosophy, understood pragmatically, as it were, not a legitimate enterprise, but rather, as he claims, a bewitchment of our mind by language, a compulsion that must be resisted? Even if philosophers get carried away with ordinary and extraordinary usages, making them even more extraordinary still, and even if the compulsion to do philosophy is a bewitchment by these possibilities of language, why is that a particularly pernicious or unfortunate happenstance, worse than art, say? Is it because

philosophy has pretensions to a truth and hence to a dignity that art lacks? Then would a thinking that deems itself no better, albeit different, than poetry also be cause for regret?

Lichtenberg's idealized concept of pure white represents a refined concept inspired and justified by its use in a laboratory. What it shows about the logic of our color concepts is that we are able to invent new language games and integrate them into our form of life. Just as psychophysics has stipulated a concept of color according to which only light and not surface may be properly said to have color, so too certain geometers introduced non-Euclidean interpretations of parallel lines.² In such cases, the extraordinary logic comes to be adopted because there is reason for it, but it could have been rejected as a misuse (III 127). In other words, these novel transactions are sufficiently business-like to gain acceptance; but it is surely not as though there were new facts discovered about color, say, or about space.

Color blind people might have concepts that deviate from ours (I 9). Imagine that nearly everyone were red-green color blind; or that everyone were either red-green or blue-green color blind (III 12). If a tribe that used English were color blind, they would use our color words differently and learn them differently too, or if they used a foreign language, they would find it hard to translate between their color words and our own (I 13; III 128). Were there people for whom it were natural to use the expressions "reddish-green" or "yellowish-blue" and who use these words in language games in which they exhibited abilities which we lack, we should not be forced to say that they see colors we do not, because there is no commonly accepted criterion for what is a color, unless it be one of our colors (I 14). Here Wittgenstein is playing hard and fast with the reader, for, as he himself concedes in other contexts, the lack of such criteria in general use does not mean that we would have any difficulty in providing them, if and when need be, on the basis of the logic of our own color terms.

As an illustration of the second language game, Wittgenstein notes that in the Tricolor, the white cannot be darker than the blue or the red (III 2). The

² Consider here Merleau-Ponty, PP 273: "If what I perceive is a circle, says the logician, all its diameters are equal. But, on this basis, we should equally have to put into the perceived circle all the properties which the geometer has been able and will be able to discover in it. Now it is the circle as a thing in the world which possesses in advance and in itself all the properties which analysis is destined to discover in it. The circular trunks of trees had already, before Euclid, the properties that Euclid discovered in them. But in the circle as a phenomenon, as it appeared to the Greeks before Euclid, the square of the tangent was not equal to the product of the whole chord and its exterior portion: the square and the product did not appear in the phenomenon, nor necessarily did the radii."

importance of this example lies in the fact that traditionally and as a rule only saturated colors are used in flags. Thus a comparison of the lightness of the colors of a flag will tell us which of the saturated colors is the lightest independently of whatever surface they are on: "Here we have a sort of mathematics of color" (III 3).

Kant had already dealt with the parallel between color theory and geometry, between the mutually founded terms of color and space, and between intensive and extensive magnitudes, in his treatment of the Anticipations of Perception and the Analogies of Experience in the First Critique; but whereas his a priori is necessary and universal, Wittgenstein conceives of a radically finite apriority. Rather than the spontaneous expression of a transcendental ego, a priori concepts and propositions are for Wittgenstein the spontaneous expression of a form of life. They are not universal at all, but relative to the form of life which they express. The concept of the same a priori commitments occurring in two different forms of life cannot even be imagined, because any comparison would assume a third form of life familiar with the first two, and because forms of life are the kinds of unities with which one can be familiar only, as it were from the inside—because, in Merleau-Pontian terms, a form of life, like a world, is a synoptic unity. Nevertheless, these commitments, or conventions, of designation and belief, are still a priori because necessary for our world to be as it is. Without them, the form of life would be somehow different, not just in the particular detail which might be omitted, but in all the details internally related to this one, which would be modified in its absence, such that a nudge might send a shudder through the whole form of life realigning conception and credence.

We take it that for Wittgenstein forms of life are arbitrary in the sense that one could always imagine them to be different, as well as in the sense that no reference to its natural history might serve to justify or validate its parts, considered singly or in conjunction. Not even some totality of facts would make it comprehensible, because this concept, like those of life-world or universe, is an ideal construction, and because any such more inclusive unity stands in an internal relation to the form of life, one which does not admit of an adequate interpretation in terms of external relations. The totality of facts is just the presumptive unity of all the experiences available within a form of life and made determinate in the succession of experiences, imaginary or real, undergone by the community that shares in that form of life. The task, moreover, of comprehending things as a whole and in their essence, which defines philosophy, is corrupt not because there is no whole and no natural kinds, but because the coherence of the whole is presumptive and relatively indeterminate, and because the kinds in nature

are nothing but the reflective correlates of the intentional structure of our speech and activity, the style of our being, our form of life.

In light of what Derrida does by way of exhibiting the heterological sources of philosophy, it might be wondered why Wittgenstein stops just shy of deconstruction and related forms of thinking by restricting himself to an anti-philosophical investigation of the logic of our color concepts and does not go on to the post-philosophical pastime of examining their prelogic, as Merleau-Ponty does in the *Phenomenology of Perception* (hereafter PP). Perhaps the reason is that he never envisioned the possibility of setting out the perceptual, gestural, and tropological bases of conceptualization without such a discussion degenerating into a meta-foundationalism; but it is more likely that he just did not see the point of it.

2. Goethe's phenomenology of color

Not the least uncanny part of RC is that it almost appears to be conversation with the late Eighteenth and early Nineteenth centuries: Wittgenstein treats Kant and Lichtenberg, Goethe and Runge, almost as though they were his own contemporaries. What he wants to establish is neither a physiological nor a psychological theory of color, but rather a comprehension of the logic of the color concepts, thereby accomplishing "what some people have unjustly expected of a theory" (I 22; see III 188). There is, however, a temptation to believe in a phenomenology of color, where phenomenology is understood as a discipline that mediates between the physics of color and the logic of the color concepts (II 3; a theme familiar from *Philosophical Remarks*).

Phenomenology in the manner of Goethe, for example, is to be an analysis of concepts that could neither agree with nor contradict physics (II 16; on Wittgenstein's Goethe-interpretation, see Stock, and Westphal, "Is Wittgenstein's Goethe Stock's Goethe?"). Elsewhere Wittgenstein remarks, "What Goethe was really seeking, I believe, was not a physiological, but a psychological theory of colors," and credits Goethe with tackling and wrestling with problems of the intellectual world that no philosopher, perhaps not even Nietzsche, has confronted, specifically, "with the idea that a hypothesis (taken in the wrong way) already falsifies the truth." (*Culture and Value* [hereafter CV] 18, 9–11 [1931]). For three reasons, Goethe's theory of the origin of the spectrum is not really a theory at all: first, because it has no predictive value; second, because it is a vague schematic outline like James' psychology; and third, because there is no crucial experiment that could decide for or against it (I 70; III 124).

With regard to the lack of predictive value, Wittgenstein claims that since Goethe's observations about the moral properties of colors are about colors considered non-temporally, they could be of little use to the painter or decorator who uses color temporally (I 73; III 90);³ and as for crucial experiments, let us observe that it was Newton who speaks of a crucial experiment (*experimentum crucis*) in connection with his prismatic manipulations. By contrast, Goethe refers at I 174 of *Goethe's Color Theory* to a base or primary phenomenon (*Urphänomen*). Goethe's belief that no lightness can come from darkness is a matter of the concepts of colors and not of experiments with the spectrum (I 72; III 57, 126). Here Wittgenstein's judgment is somewhat surprising, given the huge number of apparatuses and experiments Goethe employs to observe colors in vivo and not in vitro pace Newton. (As Goethe's editor Mattaei interprets it, Goethe's theory of the spectrum has in fact a properly empirical character; see his note at I 241).

If someone agrees with Goethe's theory, it is because he "believes that Goethe correctly recognized the nature of color," such that the nature of color is to be found in the concept of color and not in the experience of color, or in experiments conducted with regard to it (I 7; III 92). In other words, insofar as Goethe was right he was saying much the same thing as Wittgenstein. If there were a theory of color harmony in the sense that Goethe and many others believe there to be "...it would begin by dividing

³ Comparison of Goethe's account of red (*Goethe's Color Theory*, I 790-880) with Arthur Danto's exhibits on the first page of *The Transfiguration of the Commonplace* suggests, however, that Wittgenstein is wrong on this point. Each of Goethe's remarks might be taken as part of a critical appraisal of Danto's items as follows: 794 on "Nirvana", 795 on the mere artifact, 796 on "Kierkegaard's Mood", 797 on "Israelites Crossing the Red Sea", 798 on "Red Square", 799 on unused ground for Giorgione's *Conversazione Sacra*, and 880 on "Red Table Cloth". In these far-fetched applications, Goethe's remarks on the moral characteristics of color are useful. Wittgenstein's error can be attributed to the fact that he is evidently not operating with anything like an institutional theory of art.

Consider Wittgenstein's own moralistic applications of color from CV: first, a. "Wisdom is grey.' Life on the other hand and religion are full of color." (61e [1947]); "Wisdom is passionless. But faith by contrast is what Kierkegaard calls a *passion*." (53 [1946]); "Wisdom merely conceals life from you (Wisdom is like cold grey ash, covering up the glowing embers.)" (56 [1947]); "I believe that one of the things Christianity says is that sound doctrines are all useless. That you have to change your *life*. (Or the *direction* of your life.) It says that wisdom is all cold; and that you can no more use it for setting your life to rights than you can forge iron when it is cold." (53 [1946]); second, "Never stay up on the barren heights of cleverness, but come down into the green valleys of silliness." (76 [1948]); "For a philosopher there is more grass down in the valleys of silliness than up on the barren heights of cleverness." (80 [1949]); "Don't *for heaven's sake*, be afraid of talking nonsense. But you must pay attention to your nonsense." (56 [1946]; see also 39 [1940]); and third, "Envy is a superficial thing—i.e., the color characteristic of envy does not go down deep—further down passion has a different color." (35 [1939-40]).

the colors into groups and forbidding certain mixtures or combinations and allowing others. And, as in harmony, its rules would be given no justification" (I 74; see III 91). "Mayn't that open our eyes to the nature of those differentiations among colors?" (III 92). Colors are not differentiated in their sensuous character simpliciter, but in their sensuous character as it is made determinate by the logic of our color concepts. The colors we see are internally related to the language games we play with color. Thus the puzzlement we have about the nature of color must be resolved by an investigation of the grammar of our language. Any phenomenological problem is to be addressed in terms of grammar.

Furthermore, even though there may be phenomenological problems, there is no such thing as phenomenology (I 53; III 248). Goethe's phenomenological problems, which we too encounter when we reflect about the nature of color, are "embedded in the indeterminateness of our concept of the sameness of color" (I 56), or "in the fact that we have not one but several related concepts of the sameness of color" (III 251). For the indefiniteness of the concept of color lies in the indefiniteness of the concept of the sameness of color, that is, in the language games in which colors are compared (III 78).

At first, Goethe's theory of color and the problems of color were just a riddle, but "a riddle that stimulates [*anregt*] us—not one that disturbs [*aufregt*] us" (CV 66–67 [1948]). Yet eventually we realize that people have somewhat different color concepts that do not impair their mutual understanding overly much (I 32). As philosophers, we feel our inability to sort out the various color concepts a source of torment and shame, because we are lost where we should know our way around (I 33). Nevertheless, we can get along very well without knowing these things. That is why there is no phenomenology: it is a temptation, corresponding to our compulsion to philosophize, but we should rather just be at peace with things.

3. Seeing and observing

One main motivation of RC is to place questions of the essence of color—that is, questions about what they are—beyond the reach of scientific methodology. His point is that explanations of what causes us to see colors do not bear upon our understanding of colors in their appearance, because science already presumes the logic of our color concepts in these explanations and because there is an internal relationship between this logic and the appearance of color itself.

The shortcoming of psychology is easily stated: "When psychology speaks of appearance, it connects it with reality. But we can speak of

appearance alone, or we connect it with appearance" (III 232); and, "Psychology connects what is experienced with something physical, but we connect what is experienced with what is experienced" (III 234). An investigation of the logic of our color concepts connects what we see with what we see, both being experienced, but psychology, especially psychophysics, connects what we see with what we do not see, electromagnetic radiation, for example.

It is just this restriction of philosophical interest to the logical structure of our experience that puts philosophers of a scientific predilection out of sympathy with Wittgenstein. "Why," they may be imagined to ask, "is it not philosophically interesting to know about electromagnetic radiation, about nerves and rods and cones, about neurochemical processes in the brain, and so on? All of these things connect with the others to expand our comprehension of color. Explanation is a vehicle, albeit not the exclusive one, of comprehension." The answer is that explanations of our natural history not only beg the question, but are liable to contribute to all variety of neo-Darwinist whiggery, by proposing themselves as justifications of our form of life.

Psychology, on Wittgenstein's account, thinks it can get behind appearance and explain it by reference to an underlying reality, as though reality were the physical substrate of experience, as though reality were not rather a matter of the ways in which our experiences of the psychological, the physical or whatever are interconnected. Key to exhibiting the grammar of color language is that in connecting the experience of seeing a color with the experience of naming it, we apply a concept of the color in the context of the language game of identifying colors. One can identify a color as a color only because the appearance of the color is related in a rule-governed manner (as determined by the language game) with the appearance of the same color at other times and places. One can identify, moreover, the appearances and reappearances of the same color just because these appearances are related systematically with the appearances and reappearances of other colors. The rule-like manner in which colors are identified is itself the conceptual character of the color. Note that this line of argument is an extension of the ordinary language argument, and ultimately of Kant's Refutation of Idealism.

Just as colors differentiate themselves in terms of their internal relations (e.g., light blue is blue and not yellow, light and not dark, and so on), so too our color concepts exhibit precisely these same internal relations. That this fit is so miraculous is not to be explained, as indicated above, by some neo-Darwinist hypothesis to the effect that our concepts have developed along with our evolving sensibilities, but rather by the constitutive function our

color concepts exert upon the colors we recognize.⁴ There is an internal relationship between concept and experience in the sense that if we changed our concepts (or if they were changed, modified, abandoned, and so forth), our experience would change in the very process.

In saying, "Psychology describes what was observed" (I 80), Wittgenstein means to distinguish what psychology can say about color from what an examination of the logic of our color concepts might reveal about color; and in order to see the way in which this task limits the competence of psychology, he compares the statements, "I feel X" and "I observe X" (I 57). Even when it stands for the same verbal expression, "X" does not stand for the same concept. When it stands for "a pain," for example, and we ask in response to these statements, "What kind of pain?", the answer differs markedly in cases of feeling and observation. With regard to what I feel, I could answer, "This kind," and stick the questioner with a needle; but with regard to what I observe, I must answer differently, for example, by saying, "The pain in my foot." Again, I can say that I observe *my* pain, but I cannot say that I feel my pain, for whose pain could I feel other than my own?

When Wittgenstein remarks that he treats color concepts like concepts of sensations, and that they are to be treated in this matter, he means to

⁴ Various aspects of color vision that seem to be conditioned by the course of our evolution. The visible spectrum corresponds to the most intense radiation from the sun, even though there has been a progressive shift in this radiation over the eons. Blue and green function as the background colors they were in the sea when we were fish, and (more plausibly) in the jungle canopy when we were brachiating apes, in the sense that our vision is less acute in those hue ranges; by contrast, we make much finer sensory, and linguistic, distinctions in the red range.

Since red is, moreover, the color of blood, fire, the coats of the predatory mammals that once hunted us, and the color of the sun at the time we once had to search desperately for shelter from dread night, red (and, to a lesser extent, yellow) is adductive in the sense that it seems to jump out of the picture plane toward us (almost like something that moves) and that our perception of low intensity red improves if we adopt a bodily posture of withdrawal (see Merleau-Ponty's discussion adductive and abductive colors in PP). Stop signs and red-light districts exploit the perceptio-motile and emotional content of red. One might just as well say that red is an exciting and dangerous color because certain things are red as to say that certain things seem exciting and dangerous because they are red.

At least in our culture, most people find a certain pale yellowish green nauseating, a certain brown disgusting, and a certain pink calming. As a result of racial differentiation, we speak of blue movies, the Chinese, of yellow movies. Other color connotations are less biologically conditioned: when we are sad we are blue, but the Portuguese say they are blue when they are happy (blue like a bright sky). It appears, however, that this kind of speculation is just not of special concern to Wittgenstein: "I find scientific questions interesting, but they never really grip me. Only conceptual and aesthetic questions do that. At bottom I am indifferent to the solution of scientific problems; but not the other sort." (CV 79 [1949]).

suggest that the cases of feeling and observing pains have their parallel in cases of feeling and observing colors, except of course that we do not speak of feeling colors but of seeing them. Just as it makes no sense—that is, does not communicate anything—for psychology to say, "There are people who see" (I 86), so too it makes no sense for it to say, "There are people who see colors." "The description of the phenomena of color-blindness is part of psychology; and therefore the description of normal vision, too? Psychology only describes the deviations of color-blindness from normal vision" (I 16). The reason why psychology cannot describe seeing is that it is not an activity (I 81), that is to say, not a process or *kinesis* but an *energeia* or activity in the Aristotelian sense. We need just compare the way in which we test the truth of the statement, "I see a red circle"—say, by looking to see if there is a red circle to be seen—and the statement, "I see," in the sense of not being blind—say, by asking if the person in question can, for instance, tell us how many fingers we are holding up in front of his eyes (I 82). The logic of the concept of seeing is quite different in these two cases, for in the second sense, we see or are seeing even when we are asleep.

Aristotle might say that seeing in this second sense of not being blind is a potentiality, a being sighted. For him, seeing in the first sense of seeing something is the paradigm of an *energeia* or activity, the active exercise of a second potentiality, that of being sighted, whereas observing is the active exercise of a first potentiality, that is, a *kinesis*. In observing an event, we have not necessarily observed the event, because it might not have transpired in its entirety or because we do not observe competently; but when we see something, we have already seen it. In the Aristotelian rubric, seeing something is whole in the whole and whole in the part. "One observes in order to see what one would not see if one did not observe" (III 326); "we say, for example, 'Look at this color for a certain length of time.' But we don't do that in order to see more than we had at a first glance" (III 327). As Aristotle puts it in *De Anima*, to see is at once to have seen. (From the parallels with Aristotle here and James and Kant above, it can be gathered that the common view that Wittgenstein was not well versed in the history of philosophy may well be mistaken—in fact, reading him accurately often requires identifying the historical sources of his concerns and treatments.)

Against Wittgenstein, it might be pointed out that there are types of color-blindness in which one cannot distinguish certain shades of color unless one looks at the colors for a long while, which phenomenon has to do with the rates at which different hues exhaust the cones. Nevertheless, in this case being observant enough to distinguish colors may not constitute actually seeing colors, for the people in question learn to distinguish hues not by seeing the difference we see, but by distinguishing some other factors and

inferring the color from these. They do not see our colors, but only observe factors that are concomitant with what we see. "I observe this patch. 'Now it's like so'—and simultaneously I point to e.g. a picture. I may constantly observe the same thing and what I see may then remain the same, or it may change. What I observe and what I see do not have the same (kind of) identity. Because the words 'this patch', for example, do not allow us to recognize the (kind of) identity I mean" (III 318). Thus the color blind person might observe the color patch for some time and what they see at the beginning is not what they see eventually. This reply is correct as far as it goes, but it requires a refining of, rather than a mere reminding us about, what we normally say about seeing and observing.

The main point, however, is that when we experience colors we are seeing them, which is like feeling pains and not like observing a pain or a patch. "When we're asked 'What do "red," "blue," "black," "white," mean?' we can, of course, immediately point to things which have these colors,—but that's all we can do: our ability to explain their meaning goes no further" (III 102). For just as we answer the question of what pain we feel by sticking the questioner with a needle, we answer the question of what color we see by pointing to some example of this color, or by what amounts to the same thing, by naming the color. But we do not answer as we would to the question of what color we are observing, "The color of the patch." Even the concept of color in these two cases varies, for in the first, the color cannot change, but in the second the color of the patch can change and it is precisely the modification of the color or its endurance which might be observed over time.

Yet can we not describe the color? It is a tint or a shade or a saturated color. It is a green or a blue, or it is greenish or bluish. Or it is a bright color, or a dark one. Or it is a warm color or a cool one. Or it is a heavy color or a light one. Or it is a surface color or a transparent one.⁵ If we cannot describe the color we see in these terms, and so describe it thus as the color we see, it is because the distinction between seeing a color and observing it is the difference between, say, an immediate impression, a mere sensation, and an understanding mediated by concepts, that is, an elaborated sensation, a perception. Although it is doubtful that Wittgenstein wants to endorse any such psychological talk or theorization, what he says comes very close to this sort of thing. We see a color on a color patch, and by observing the patch

⁵ Phillip Otto Runge (1777–1810), a painter and friend of Goethe's, claims that there are transparent and opaque colors, and that white is an opaque color; but this shows the indeterminateness in the concept of the sameness of color (I 17; see also I 21). The question is, "Can we say that a transparent green glass has the same color as a sheet of opaque green paper?"

further, we are able to see a different color, one better elaborated, by means of the conceptual operations we brought into play in the process of observation, but a description of this process of exploring the inner horizon of the color is not a description of the color we see or of seeing itself, because here "the color we see" refers not to one thing but several successive ones. We see the patch as red, then as warm red, then as warm, saturated red, then as a unitary warm saturated red, but the color is not the same color in each case, not in the sense of the color we see at one and the same time.

A sympathetic interpretation of this point might be to the effect that since the ordinary language distinction Wittgenstein notes had long before "grown into" the metaphysics of faculty psychology, he is just concerned to point out the suggestive temptation over to which some philosophers and psychologists, back when these pursuits were not yet distinct, had given themselves. Seeing is not itself a process. In order to comprehend what color it is we see at any one moment, we must refer to an examination of the logic of our color concepts, pointing out the language games into which these enter, and referring ultimately to our forms of life. By contrast, the fact that in describing the process of observation we find our perception of the color of the patch to be richer upon a progressive inspection does not touch upon the logical aspect of this process, but can only presume an everyday understanding of it.

4. The purity of color

It is not always clear what Wittgenstein means when he speaks of "pure colors." He refers to pure colors in three distinct senses: first, in the sense of primary, or unitary, colors, of which there are generally taken to be four—certain hues of red, yellow, green, and blue; second, in the sense of saturated colors, or those in which the hue is most vivid, being neither tinted by white nor shaded by black; and third, in that special sense in which white may be untinged and hence optimally bright. In much of Part III, Wittgenstein seems to confuse the first and second senses of "pure color," because he is working without a clear understanding of the difference between hue and tone and is hence confused about the sense in which a color might be pure in the sense of primary and also pure in the sense of saturated.

"Pure yellow is lighter than pure, saturated red, or blue," and while I do not know if pure red is lighter than pure blue, I would if I saw them to compare (III 4, 161). This remark is troublesome because there is not just one hue that is saturated and yellow or saturated and red. Just as there are an indefinite number of tones of the yellow that is primary, so too there are an

indefinite number of red hues that are saturated. There is, however, only one red that is both saturated and primary, a specific hue not toned at all.

Wittgenstein's confusion makes it very hard to make out what he may be thinking in the following statement: "I call a color (e.g. red) 'saturated' if it contains neither black nor white, if it is neither blackish nor whitish.... What is the importance of the concept of saturated color? One fact is obviously important here: Namely that people reserve a special place for a given point on the color wheel, and they don't have to go to a lot of trouble to remember where the point is, but always find it easily" (III 5-7). In subtractive mixtures, a color may fail to be fully saturated in two different ways: it can be tinted by the presence of too much white, like the pastels, or it can be shaded or darkened by the presence of too much black, like the browns. Of course, since additive mixture are never blackish, his account is adequate only for surface color and not for light.

Troublesome is the reference to color wheels. Typically, a color wheel, in distinction to a color solid which also shows tone, is an arrangement of saturated hues in such a way that each may be seen to blend into the next without gaps. Since there are no non-saturated points on such a wheel, the special points we reserve belong rather to the so-called primary colors. It is very likely, in fact, that Wittgenstein omits discussion of saturated hues in Part I, which is largely a revision of the material in Part III, because he came to recognize his confusion. As we review Wittgenstein's remarks on pure colors in Part III, we will have occasion to document several other errors of this kind.

Propositions of the form, "saturated yellow is lighter than saturated blue" do not belong to the realm of psychology, because it is a nontemporal proposition; and since it is not part of natural history, it must be part of the mathematics of color (III 8-9). But can we distinguish the temporal and the non-temporal uses (III 11)? Although according to the logical sense, a color cannot be darker at one time and lighter at another (III 12-13), it is not clear that such an application is particularly useful. To determine the usefulness of the nontemporal sense, we could provide simple language games in which the concept of saturated red appears, but these might be of little utility because what we usually call saturated red is a red that appears in a particular surrounding and would hence be used temporally (III 14-15).

A salt of a certain acid (III 16), for example, or the flowers of certain plants (III 17) might be recognizable by their saturated colors, but in these contexts "there could be lighter and darker saturated red" (III 18). Here Wittgenstein is not making any sense, because "lighter and darker shades of a saturated color" is a contradiction in terms; and again in Part I, he abandons

the attempt to provide a simple language game in which "pure red" is used in a nontemporal sense.

The shift from III 25 to III 26—that is, from the question of saturated colors to that of primary colors—is another indication of Wittgenstein's confusion of pure colors as saturated and as primary, as is the shift within III 28 from the saturated colors to the "four pure colors", the primaries. The difficulty of sorting out these confusions might explain in part why there have been few commentaries on RC, as well as the reservations with which the editor published Part III.

Another difficulty in Part III concerns the concept of "white glass." He remarks, "We don't say of something which looks transparent that it looks white" (III 153), and launches into an extended discussion of possible meanings of the phrase "white glass" (already discussed in Section 1 above). Yet in English, Portuguese and other Indo-European languages, it is not uncommon for speakers to refer to transparent glass as white glass. Perhaps it is upon being apprised of these locutions that Wittgenstein expunges this discussion from Part I.

Other remarks are unobjectionable. We must bear in mind the question of how people learn color names (III 61); can the meaning of "saturated green" be learnt, for example, by teaching the meaning of "saturated red, saturated blue, and so on (III 21)? Why do we not just determine the saturated colors by picking them out, this, or this, or this, of that? Just because we determine or recognize them in a different way—according to a geometry of color, as it were.

The question of what we mean by "primary color" must be decided by the ways the phrase is used in various language games, and not directly by looking at the color" (I 6; III 6), for we could be in agreement that green is a primary color, but in disagreement over what that means (I 6; III 158).

We should be suspicious about primary colors because some people have recognized three primary colors, others four. The thought that green is an intermediate color between blue and yellow seems wrong even apart from any experience. Blue and yellow, red and green, seem to be opposites to me, though perhaps only because I am accustomed to seeing them arranged at opposite points on the color wheel. Yet what importance does the question of pure colors have (III 26)? The logical import of the question arises from the fact that if green were not an intermediate color between blue and yellow, then one should be able to pick out a somewhat bluish yellow from among some color samples, as we can when asked for a somewhat reddish yellow (I 27). If someone had pointed out the logical

difference between green and orange to Runge, perhaps he would have given up his idea that there were only three primary colors (III 113).⁶

We communicate about the colors of things with six color words and do not say "reddish-green" or "yellowish-blue" (III 52). One's feeling is that blue obliterates yellow (III 39), because one sees nothing blue in greenish yellow (III 40). Green is for me one of two color paths from blue to yellow, and red the other (*ibid.*). Is there an advantage to knowing a direct path, and does everything depend upon the language games possible with the form "ish"? (III 41).

Could there not be people who failed to understand our way of calling orange a reddish-yellow, and who were only inclined to say reddish-green when orange occurs in an actual transition from red to yellow? (I 78; III 129; on perfect pitch, see also III 292). And for them, would there not very well be a "reddish-green"?

We can describe language games in which colors are mixed or selected in terms of the concepts of more or less yellowish or bluish (I 7), and the concept of intermediate or mixed colors does not depend upon the practice of mixing (I 8). This last point is clearly correct because the concept of mixed colors would depend on the practice of mixing only if the concept of the primary colors that are mixed in the mixed colors depended on that practice. Consider that the primary colors for additive and subtractive mixtures are only three, not four, and not the same three in both cases. When we mix light, only certain hues of red, yellow and green are needed, in principle at least, to produce the full range of hues; and in mixing pigments, slightly different hues of red, yellow and blue are needed. What is more, it does not seem that the idea of the four primaries arises from combining the additive and subtractive primaries together; but rather from the way in which the colors appear to us. Green is a primary color because there are no reddish greens in the way in which orange is a reddish yellow; red, a primary color because there are no greenish reds in the way in which the color leaf is a greenish yellow.

It could be maintained against Wittgenstein that the concept of mixed colors would *not* make sense in the absence of the practice of mixing colors. Nevertheless, if all the members of a society had achromatic vision, but knew what mixing was from mixing other sorts of things and what colors were from the reports of foreigners, and if, without ever taking to mixing

⁶ Runge designed, in the year of his death, a color solid based upon the globe of the earth, in which the equator was the circle of saturated hues, which were shaded downwards toward the black of the South Pole and tinted upwards toward the white of the North Pole. In thinking only red, yellow and blue the primary colors, he followed the lead of the color pyramid of Lambert (1772) and the double pyramid of Mayer (1745).

colors themselves, they had conceived of a Divine Colorist who mixed the colors of the world, then it might be that mixed colors made sense to them without the practice of mixing them.

Wittgenstein goes on to consider the case of when someone, who knows how to mix colors, is asked to mix a reddish-green, and he shows us a blackish brown (I 10; III 129).⁷ This fellow should be able to produce a color series between red and green that passes through blackish brown. (This would be easy enough using standard color solids.) Then we discover that he identifies what is for us a single shade of brown as either brown and reddish-green, depending, for example, upon his ability to discriminate, where we cannot, between two chemical compounds, which difference he marks by these two color names (I 11; III 163).

Psychology and psychophysics speak of primary colors in at least four connections.⁸ What Wittgenstein means by that term are the so-called

⁷ At III 30, someone asked to point to reddish green indicates an olive green rather than brown, which is more plausible because olive is a shade of yellow that appears greenish because of a peculiarity of the configuration of the chromatic field—namely, our identification of color seems to involve not only hue but intensity; thus not only is a shade of yellow called a variety of green, but blue tints are not commonly distinguished from saturated forms of cyan.

It seems that since saturated yellow is so bright, the shades of yellow are so extensive as to admit of a further differentiation in which very dark shades are assimilated phenomenally and verbally with lighter shade of green. In the same way, saturated blue is so dark that its tints are differentiated by means of the lighter of these becoming assimilated with relatively saturated varieties of cyan. It is this latter effect that lends itself to the fact that ordinary language does not distinguish cyan and blue except indirectly in terms of the distinction between light or sky blue on the one hand and dark or navy blue on the other, but this way of drawing the distinction is not just one of wavelengths (as the cyan/blue distinction is) but also of brightness.

Incidentally, the phenomenon just mentioned could be used in answering the sceptic in the spectral inversion problem, on which problem see treatments by Hardin, "A New Look at Colour," and especially Peacocke, who treatment of Wittgenstein's distinction between "being red" and "looking red" is relevant to the present essay.

⁸ There are, first of all, the "invariable hues" of the Bezold-Brucke phenomenon. When luminescence is increased, all chromatic colors except for a certain invariable blue, yellow, green and red appear increasingly like blue or yellow and decreasingly like green or blue. The four so-called invariable hues are believed to exhibit little or no shift with respect to wavelength, regardless of luminance variation, and lie within the vicinity of 474_{mn}, 571_{mn}, 506_{mn}, and 494_C, respectively. A second set of primaries are the invariable hues of the color zones. These are the hues of stimuli that produce the same hue wherever they are seen in the visual field. These are a blue at 464_{mn}, a yellow at 571_{mn}, a green at 489_{mn}, and a bluish red in a non-spectral region. A third set of primaries are the so-called psychologically primary hues, identified as statistical norms for non-anomalous persons, in the vicinities of 476_{mn} for blue, 575_{mn} for yellow, 521_{mn} for green, and 494_C for red. This last concept, though not well-defined in psychophysics, is undoubtedly related to the procedure for identifying primary colors mentioned by Wittgenstein. Finally, there are

psychologically primary colors. "I may have impressed a certain grey-green upon my memory so that I can always correctly identify it without a sample. Pure red (blue, etc.) however, I can, so to speak, always reconstruct. It is simply a red that tends neither to one side nor to the other, and I recognize it without a sample, as i.e. I do a right angle, by contrast with an arbitrarily acute or obtuse angle" (III 133). In other words, some colors, especially shades and tints, must be memorized in some special manner in order to be reidentified, either because they are not primary hues or because they are not saturated colors, but primary saturated yellow, for example, may always be identified by picking out a color sample, or mixing a color, that is yellow, neither reddish nor greenish, and neither tinted nor shaded. The comparison between the procedures for constructing right angles and the primary colors is one reason Wittgenstein wants to say that we have a geometry of color (III 133).

Wittgenstein claims that "in this sense there are four (or with white and black, six) primary colors" (I 134). Primary white is presumably that white which does not tend toward black, nor favor any chromatic color, that is, is not tinged and hence merely whitish; primary black, that black that does not tend toward white, nor favor any chromatic color, that is, is not tinged and hence not merely blackish. It is peculiar, though unexceptional, to speak of primary black or white, because the dimension in which there is a primacy for black and white—namely, the lightness/darkness continuum—is discontinuous with that of the primacy of the chromatic colors; and in fact, we restrict talk of primary colors to the chromatic colors or hues. The insistence on speaking of white and black as primaries may be a result of Wittgenstein's confusion of tone and hue. For whereas the chromatically primary colors are more properly called "primary hues," black and white, being achromatic, are not hues at all. Pure black and Lichtenberg's pure white are the opposites, not of the primaries, but rather of all saturated hues; they are fully unsaturated, reflecting all, or none, of the light throughout the visible spectrum.

If Wittgenstein wants to make out a sense of primary color for the non-chromatic colors, then he should also recognize a primary gray, one that is neither blackish nor whitish, not in the sense that it has no black nor white in it (for grays must have both), but in the sense that it stands halfway between black and white. Such a gray does not seem any lighter or darker when the lights are dimmed, whereas lighter grays will seem lighter and darker ones darker. People can identify this gray (which is not in fact half as light as white, but almost two thirds as light) as readily as they can the

the eleven basic color terms and the corresponding basic color categories in the researches of Berlin and Kay, and others, on which see Hardin, and Lakoff.

primary chromatic colors. In other words, people find as much consensus about this gray as they do about pure red, pure green, and so on. Note, however, that this gray is logically a closer analogy to a saturated color of any wavelength than to the privileged wavelengths of the primary hues.

One final peculiarity of Wittgenstein's discussion is his concern with color words such as red, yellow, green, blue, and so on, to the exclusion of context-specific terms such as brunet (hair), celadon and apesblood (pottery), and dapple-gray (horses), or of thing-derived terms such as brick-red and leaf, lavender and lilac, and the Chinese "blue-of-a-thousand-hills" and "blue-of-the-sky-after-rain". Languages that lack generalized color terms such as red and blue or shade and tint would seem also to be without the resources to project a geometry of color. Here too philosophy suffers from a poverty of examples.

Conclusion

Our commentary on RC went in several directions. First, we found that Wittgenstein distinguishes between the natural history and the geometry of color, in order to discredit empiricist and intellectualist versions of foundationalism, and that the geometry of color embodies both a concept of the concrete a priori and the thesis that there are historically given structures of perception inherent in language. Second, in the light of Wittgenstein's particular interest in the logic of our color concepts we examined his interpretation of Goethe's color theory. Third, we observed Wittgenstein's distinction between seeing and observing to be an attempt to make seeing out to be an order of activity and sense in which there might be something like a geometry of color, that is, an internal and timeless usage of color terms. Here Wittgenstein seems to be motivated by an interest to limit psychology to the treatment of external and temporal usages, so that psychologism cannot get started. Finally, certain infelicities of Wittgenstein's preliminary reflections on color, published as Part III of the RC, were separated out from his genuine insights in a manner parallel to the revisions he made himself, published as Part I.

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