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Wittgenstein as a Commentator on the Psychology and Anthropology of Colour

1 Introduction

As is well known, Wittgenstein had a life-long interest in the philosophy of colour, from the *Tractatus* all the way to the last notebooks that were posthumously published as two books, *Remarks on Colour* and *On Certainty*. Moreover, Wittgenstein's various reflections of the perception and classification of colours have already been analyzed by a number of influential interpreters. These interpreters have often sought to illuminate Wittgenstein's views by relating them to other, earlier treatments of phenomena of colour, for example those written by Georg Christoph Lichtenberg (1742-1799), Johann Wolfgang von Goethe (1749-1832), Philipp Otto Runge (1777-1810), Arthur Schopenhauer (1788-1860), Franz Clemens Brentano (1838-1917), or David Katz (1884-1953).[1]

One aim of my paper is to add a new "foil" to this list: I want to make plausible that a number of Wittgenstein's remarks on colour are responses to late-nine-teenth- and early-twentieth-century British and American work on the psychology and anthropology of colour. I am not the first to put forward this idea – it is mentioned in a recent paper by the historian of science Simon Schaffer (2010: 279). But Schaffer's comment is brief, and he provides only little evidence. So there remains plenty for me to do.

I have a second aim, too. I want to argue that Wittgenstein's comments are still of systematic interest today. The link between the historical thesis and the systematic concern is established by the fact that a very influential body of contemporary work in the anthropology of colour is strongly influenced by the early British work. Presumably, if Wittgenstein's comments work as criticism of the latter, it will also weaken the appeal of the former.

My paper falls into three parts. Section 2 gives an introduction to the relevant psychological and anthropological studies. Section 3 situates some of Wittgenstein's comments vis-à-vis these investigations. Chapter 4 summarises my observations.

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1 Cf. Bouveresse 2004, Brenner 1982, Lee 1999, 2005, McGinn 1991, Rove 1991, Vendler 1995, and Westphal 1987.

2 The Psychology and Anthropology of Colour

In 1898-99 a number of British psychologists and anthropologists went on a Cambridge-led expedition to the islands in the Torres Strait (between Australia and Papua New Guinea) to investigate the islanders from various anthropological, psychological, physiological and linguistic perspectives. The main results were later published as the *Reports of the Cambridge anthropological expedition to Torres Straits* (1901-1935). The expedition and its results are generally regarded as a landmark event in the history of social anthropology.[2]

The leader of the expedition was the anthropologist and zoologist A. C. Haddon. Other members included W. McDougall, C. S. Myers, S. Ray, W. H. R. Rivers, C. G. Seligman, S. Ray, and A. Wilkin. Most important for this paper is the work of the Cambridge anthropologist, neurologist, psychiatrist and psychologist William Halse Rivers Rivers (1864-1922).[3] He investigated the perception and classification of colours on three islands, Mabuaig, Mer (= Murray Island), and Kiwai.

The central context for Rivers' investigations were earlier claims by English and German classical philologists according to which the human colour perception "as we know it" is of recent origin. For instance, William Ewart Gladstone (1809-1898), the four-time British prime-minister and Homer scholar, argued in 1858 – on the basis of philological evidence – that Homer and his audience were unable to distinguish colours, that is, that Homer and his audience was able only to distinguish between differences in brightness. The German philosopher and philologist Lazarus Geiger (1829-1870) later offered an evolutionary scheme according to which colour perception developed through distinct stages. Evolutionary development adds more and more colours in the order of the spectrum. The last colour that Westerners have learnt to discriminate has been blue.[4]

The ideas of Gladstone and Geiger were controversial by the time Rivers undertook his investigations. Rivers wanted to test these ideas experimentally. In setting out to do so, he assumed that the islanders of the Torres Strait were at a lower evolutionary stage than himself and his Cambridge experimental subjects. Ultimately Rivers thought that his work confirmed Geiger's and Gladstone's claims:

> "One of the chief interests of the work described in this report is that it shows that defect in nomenclature for a colour may be associated with defective sensibility for that colour and so far lends some support to the views of Gladstone and Geiger." (Rivers 1901a: 49)

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2 Cf. Herle and Rouse 1996, Kuklick 1994, Saunders 2000, Slobodin 1978, and Stocking 1995: 98-114.
3 Cf. Slobodin 1978.
4 Cf. Kuklick 1994.

In order to get a sense of Rivers' "evidence", we need to take a closer look at his experiments and measurements. A first central tool for studying the colour discrimination of the islanders was "Holmgren's Wools", a device developed in the 1870s to test for colour blindness. [5] A large number of skeins of wools of different colour shades were poured in front of the experimental subject, and the subject was asked to sort them into seven piles. Each pile had one specific colour shade as a starting point or anchor: red, green, pink, pale ("Holmgren's") green, yellow, blue, and violet. Rivers reported the following results. First, "there was a natural tendency to put together all the wools to which the same name was given [...]" (Rivers 1901a: 49). Second, while his subjects did not match red to green or yellow to blue, "confusion between green and blue was very common and also between blue and violet" (Rivers 1901a: 51). Put differently, "the pale green wool [...] was matched correctly by the majority, but in a large number of cases it was matched with a number of bluish or violet wools [...]" (Rivers 1901a: 49).

A second experiment used "Lovibond's tintometer".[6] It consists of a tube with slots for inserting small pieces of coloured glass and an eyepiece at one end. In Rivers' set-up, the tintometer was directed at a white surface. Central to the experiment were "three series of coloured glasses, red, yellow and blue, very delicately graded so that each forms a series by means of which one passes from a colour so faint as to be indistinguishable from colourless glass up to a glass of a high degree of saturation." (Rivers 1901a: 71) The experimental subject was looking through the eyepiece while Rivers inserted different glasses along the described series. The subject had to tell Rivers as soon as she or he was able to identify a colour. The idea was to find the threshold at which colours were recognised correctly. Comparing the islanders' performance with that of English experimental subjects back in Cambridge, Rivers concluded that "the Murray Islander is relatively rather more sensitive to red than the Englishman, and distinctly less sensitive to blue." (Rivers 1901a: 73)

A third line of inquiry concerned colour nomenclature directly. Rivers asked the islanders to name the colours of standard sets of coloured papers, of various objects of the environment, of the colours in the tintometer, and of Holmgren's wools. The islanders on Murray Island gave one word for red: "mamamamam", but several words for blue: "bulu-bulu", "golegole", "suserisuseri", "gausgaus", "giazgiaz", "lulam gimgam", "akosakos", "soskepusoskep" ("colour adjectives in Murray Island are formed by reduplication from the names of various natural objects." (Rivers 1901a: 56). The crucial observation for Rivers was that "there was great definiteness and unanimity in the nomenclature for red [...] and very great indefiniteness for blue [...]" (Rivers 1901a: 54-5). Rivers also suggested an evolutionary perspective on the differences in colour nomenclature on the three islands: "As regards blue, the three languages [...represent] three stages in the evolution of a nomenclature for this colour." (Rivers

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5 Cf. Collins and Drever 1925: 61-74 and Whipple 1924: 187-9.
6 Cf. Lovibond 1915.

1901a: 66) The inhabitants on Kiwai were thought to be at the lowest stage since they had no word for blue at all. The Murray Islanders were more advanced since they had adopted the term blue, or "bulu-bulu", from their English-speaking visitors. And the people of Mubaig were at a still higher level of development insofar as their word "maludgamulnga" "is used definitely for blue, but is also used for green". Alas, even the Mubaig Islanders still sometimes "confused" black and blue (Rivers 1901a: 66).

To sum up, Rivers was convinced that "the Papuan is characterized by a certain degree of insensitiveness to blue [...]" and that even "intelligent natives [...] regard it as perfectly natural to apply the same name to the brilliant blue of sky and sea which they give to the deepest black." (Rivers 1901a: 94) Rivers offered various explanations for why this might be so. A first explanation was physiological: the yellow pigmentation of the macula is greater in black-skinned than in white-skinned people, leading to a greater absorption of green and blue rays in the eyes of the former (Rivers 1901a: 79-80). A second explanation was that there are few blue pigments in the Torres Straits: "the nearest approach to a blue pigment was a bluish-grey clay" (Rivers 1901a: 96). Finally, in the third explanation the evolutionary scheme is again strong: "Another factor [... is] the absence of aesthetic interest in nature [...]. The blue of the sky, the [...] blue of the sea [...] do not appear to interest the savage." (Rivers 1901a: 96; cf. 64)

Rivers later sought to extend his investigations from the Torres Strait to other areas. In 1901 he published a paper on "The Colour Vision of the Natives of Upper Egypt" and in 1905 a study entitled "Observations on the Senses of the Todas", a tribe in Southern India. In both cases he claimed to have identified insensitiveness to blue.

Rivers' study was widely discussed in English-speaking anthropology and psychology; here are but a few examples of the subsequent debate. To begin with, other Cambridge psychologists also worked on colour, often influenced by Rivers' work. For example, C. S. Myers – another veteran of the Torres Strait expedition – published a paper on "the development of the colour sense" in 1908. In this study, Myers related the colour sensitivity of so-called "primitive people" to that of children. The lesser sensitivity for blue was explained in terms of "attraction": "Both primitive peoples and infants are attracted most by red and next by yellow [...]" (Myers 1908: 361-2). At the same time Myers rejected arguments like Gladstone's and (in part) Rivers' that drew conclusions about colours sensibility from linguistic data (Myers 1908: 361-2).

Robert S. Woodworth (1869-1962), the influential American psychologist wrote on "The Puzzle of Color Vocabularies" in 1910. Woodworth stressed the importance of *salience* for the development of different colour vocabularies:

> "Green and blue, in nature, are predominantly background colours, while red and yellow are usually the colours of small objects [...] recognized most readily by their colour. [...] Red and yellow are the usual colours of such important objects as ripe fruits, domestic animals, wild animals [...], blood and flesh." (Woodworth 1910: 333)

Woodworth also hypothesized that the availability of pigments had a significant impact on vocabularies of colour: "With the introduction of green and blue paints and dyes [...] names for green and blue have become stereotyped in European languages." (Woodworth 1910: 334) – Interestingly enough, Woodworth felt that these kinds of considerations made evolutionary explanations superfluous.

The most detailed discussion of Rivers' work in the Torres Strait was Edward Bradford Titchener's (1867-1927) paper from 1916: "On Ethnological Tests of Sensation and Perception with Special Reference to Test of Colour Vision and Tactile Discrimination Described in the Reports of the Cambridge Anthropological Expedition to Torres Straits". Titchener challenged Rivers on almost every point. For instance, Titchener suspected that the different colour discrimination thresholds of Islanders and Englishmen was an artefact of the different lighting condition in dark huts on the one hand, and a well-lit psychological laboratory in Britain. He also interestingly objected to Rivers' translations of native words and expressions. Rivers had translated "golegole" as "black" on the grounds that "gole" means cuttlefish, and that therefore "golegole" ought to stand for the colour of the cuttlefish's ink. Titchener did not find this translation compelling:

> "[...] the word *gole* means, not cuttle ink, but cuttlefish; and it is characteristic of these animals that they change colour, chameleonwise, to suit the colour of their surroundings. May it not be that the thought in the native's mind, when he uses the word *gole*, is "can't find him", "can't see him"? [...] And if this is the case, is it not natural that the adjective *golegole* should be applied to any large expanse within which no discriminable features can be made out? The dark of night, the skin of the body, the expanse of sea and sky [...]" (Titchener 1916: 224-5)

Of course, if "golegole" does not mean (primarily) black but "not having discriminable features" then the Torres Islanders are not "confused" in applying it to both black and blue surfaces.

Finally, Arthur Maurice Hocart's (1883-1939) "The 'Psychological Interpretation of Language'" from 1912 emphasised most forcefully the need to make sense of colour vocabularies against the background of cultures and their customs. Only against this background, Hocart insisted, could one meaningfully evaluate the "analytic strength" of a given nomenclature. For instance, in Central Asia horses are classified on the basis of their colour, and there is no general term for horse as such. For Hocart this fact alone tells us nothing about the analytic skills and general intelligence of the people living there. Indeed, Hocart claimed that their practice was not far from that of horsemen in his own English culture: "I think I am right in saying that a horsey person never speaks of a stallion or a mare as a horse." (Hocart 1912: 271; cf. Scuba 2002.)
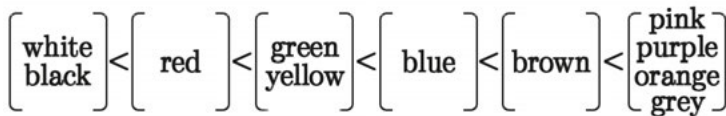
As I mentioned in my introduction, Rivers' work is still important even today, at least as an influence on the important research project of Brent Berlin (1936-) and Paul Kay (1934-). As the two men write in their classic *Basic Color Terms*: "Rivers' work was the last attempt to discuss the evolution of colour nomenclature until the present study nearly seventy years later." (Berlin & Kay 1969/1999: 149; cf. Saunders 2000.)

basic colour terms are best understood *via negationis*. The following colour terms are not basic: "(a) crimson, (b) scarlet, (c) blond, (d) blue-coloured, (e) bluish, (f) lemon-coloured, (g) salmon-coloured, (h) the colour of rust on my aunt's old Chevrolet" (Berlin & Kay 1969/1999: 5). Berlin and Kay lay down a number of criteria to exclude all of (a) to (h). Such criteria include, for instance, that basic colour terms should be "monolexemic", "psychologically salient", or not specific to a narrow domain (Berlin & Kay 1969/1999: 6).

Berlin and Kay claim to have found that

> "[…] although different languages encode in their vocabularies different numbers of basic colour categories, a total universal inventory of exactly eleven basic colour categories exists from which the eleven or fewer basic colour terms of any given language are always drawn." (Berlin & Kay 1969/1999: 2)

These eleven colours are: white, black, red, green, yellow, blue, brown, purple, pink, orange, grey. Moreover, however many basic colours – two to eleven – a given language encodes, there are "strict limitations on which categories it may encode". The idea is best captured in the following well-known picture:

$$\begin{bmatrix} \text{white} \\ \text{black} \end{bmatrix} < \begin{bmatrix} \text{red} \end{bmatrix} < \begin{bmatrix} \text{green} \\ \text{yellow} \end{bmatrix} < \begin{bmatrix} \text{blue} \end{bmatrix} < \begin{bmatrix} \text{brown} \end{bmatrix} < \begin{bmatrix} \text{pink} \\ \text{purple} \\ \text{orange} \\ \text{grey} \end{bmatrix}$$

Basic colour terms; cf. Berlin & Kay 1969/1999: 4.

What to Rivers were Holmgren's Wools, Lovibond's Tintometer or standardized coloured papers, to Berlin and Key is the Munsell Colour Chart, a standardized way of ordering and numbering colours and their shades. Different colours and their shades are captured in a coordinate system, with hue on the horizontal axis, and chroma on the vertical. The data collection was then carried out as follows:

> "First, the basic colour words of the language in question were elicited from the informant, using as little as possible of any other language. Secondly, each subject was instructed to map both the focal point and the outer boundary of each of his basic colour terms on the array of standard colour stimuli [i.e. the Munsell Colour Chart]." (Berlin & Kay 1969/1999: 5)

3 Enter Wittgenstein

In this section I shall try to relate one strand of comments in Wittgenstein to the above work in the anthropology and psychology of colour. My first task is to make plausible that Wittgenstein knew about the work on colour by Rivers, Myers and others – even though he never mentions it explicitly in his writings.

Between 1911 and 1913 Wittgenstein did experimental-psychological work in Cambridge on the psychology of music, a field important to C.S. Myers (by then the head of the experimental psychology unit). Myers' project included a cross-cultural perspective. As we saw above, Myers also had interests in the psychology and anthropology of colour. Rivers was in Cambridge, too, but in anthropology. He was a fellow in St. John's College, and thus only a stone's throw from Trinity College where Wittgenstein was a student. Rivers and Myers were friends, and it is likely that Rivers visited the psychology unit at least occasionally. Wittgenstein knew Myers personally, and debated the relationship between psychology and logic with him. In July 1912 Wittgenstein read (as he wrote to Bertrand Russell) a "most absurd paper on rhythms" to the British Psychological Society when it met at Cambridge. He also demonstrated "an apparatus for psychological investigation of rhythm" at the opening ceremony of the new psychological lab in May 1913 (McGuinness 1988: 125-128, Pinsent 1990: 27). Add to this Wittgenstein's life-long and strong interest in other areas of anthropology – e.g. the work of Trinity fellow James Georg Frazer – and it seems hard to imagine that Wittgenstein did not learn a fair amount about the Torres Strait work already in the early 1910s.

Still stronger evidence emerges from even a superficial investigation into colour-related passages in Wittgenstein's oeuvre from the 1930s onwards. I begin with Wittgenstein's socio-cultural accounts of unexpected colour similarity judgements. He discusses a number of hypothetical cases in which members of other cultures make (to us) surprising similarity judgements concerning colour-samples. Wittgenstein offers rationales for the responses in terms of social or cultural factors – reminiscent of Hocart and Woodworth. And he does not invoke explanations in terms of colour-blindness as an evolutionary lag.

(A) Socio-cultural accounts of similarity judgements

Example I: (To us) red objects are judged by members of another culture to have something in common with, or be similar to, (to us) green objects. (Think of someone matching the green skein with a red skein in the Holmgren test.)

> "Red and green the same. [...] But don't the people see the difference?! Of course they do. But they have a word, say, "leaf-colour" [...it it] means red *or* green; and [...] two modifiers 'sharp' and 'blunt' [...] which separate red from green. [...] would these people be colour blind? Well, if we teach them our language they turn out to be normal." (LWPP I, 220)

Wittgenstein thus describes a possibility: the tribesmen apply the same term to what we call "red" and "green"; but they are able to learn our terms. Their use of the modifiers "sharp" and "blunt" in combination with their word for "red or green" shows that they are able to discriminate what we call "red" and "green". Note that Wittgenstein seeks to explain the tribesmen's vocabulary not in terms of an alleged cognitive deficit,

or evolutionary lag, but in terms of their needs and aims: "It's just that the difference between red and green isn't as important to them as it is to us." (LWPP I, 221) Wittgenstein also makes the further suggestion that such classification might also plausibly find an expression in an artistic convention: "A type of painting, in which the illuminated side of figures is always painted green, the shadows always red" (LWPP I, 223). So much for Rivers' claim that not having an equivalent of our term "blue" must be an expression of a lack of aesthetic appreciation of nature. For Wittgenstein the key explanatory resource instead is salience and practical interests (cf. RPP I, 47 and 626; also WLPP, p. 115-238, in particular p. 121).

Example II: (To us) yellow objects are judged by members of another culture to be similar to (to us) blue objects; and (to us) green objects are judged by members of another culture to be similar to (to us) red objects.

> "Imagine a use of language (a culture) in which there was a common name for green and red on the one hand and yellow and blue on the other. Suppose, e.g., that there were two castes, one the patrician caste, wearing blue, red and green garments, the other, the plebeian, wearing blue and yellow. [...] Asked what a red patch and a green patch have in common, a man of our tribe would not hesitate to say that there were both patrician." (BB, p. 134)

If the members of this culture did use the same terms in these cases, Rivers, Gladstone and Geiger would presumably judge them to be on a lower evolutionary stage than Westerners. This is not Wittgenstein's position. He offers a social-cultural explanation that treats the other culture in a neutral, non-evaluative way. The members of the other culture act as we could imagine ourselves acting.

Example III: (To us) light blue objects are judged by members of another culture not to be similar to, and not to have something in common with, dark blue objects:

> "We could also easily imagine a language (and that means again a culture) in which there existed no common expression for light blue and dark blue, in which the former, say, was called 'Cambridge', the latter 'Oxford'. If you ask a man of this tribe what Cambridge and Oxford have in common, he'd be inclined to say 'Nothing'." (BB, p. 134-135)

Wittgenstein is not just picking these colours randomly: light greenish blue is called "Cambridge blue" and darkish blue "Oxford blue". Every-one in England is aware of this contrast (not least because of the annual Boat Race down the Thames). Of course Wittgenstein ironically pushes the example further than its real-world starting-point: he pushes it counterfactually to the point where Rivers would have said that the English are on a lower evolutionary scale than other Caucasians since at least in some contexts they do not emphasise the common features of light blue and dark blue.

(B) Differences in seeing

Unexpected similarity judgements to one side, Wittgenstein is also interested in cases where there is a temptation to describe differences in colour judgements between us and another culture as "differences in seeing". Such cases raise issues about symmetry, translatability and shared concepts. Let me explain.

(i) Consider a tribe with a complex mathematical system for identifying colours. We might call it the "tribe of the Lovibonds" to mark the similarity of Wittgenstein's thought experiment with the scaling of colours in Lovibond's tintometer:

> "Let us imagine men who express a colour intermediate between red and yellow, say by means of a fraction in a kind of binary notation like this: R, LLRL and the like, where we have (say) yellow on the right, and red on the left. [...] They would be related to us roughly as people with absolute pitch are to those who lack it." (Z, 368)

The first interesting feature here is the last sentence: people with absolute pitch can do something most of us are unable to do. By analogy, Wittgenstein seems to be suggesting that we should be careful about regarding our ordinary colour vision as the ultimate standard. There is at least the possibility that some people (individuals or other cultures) have colour vision that is superior to ours in more than one dimension. Or perhaps the point is this: we do not regard our musical ability deficient because we do not have absolute pitch. But then there is no good reason either to regard so-called "colour blindness" as a defect.

Wittgenstein is interested also in another aspect of this scenario: "We cannot imagine what it would be like to associate numerals with colours" (WLPP, p. 133). Or: "[...] a whole tribe [...] they give a set of numbers to shades of colours [...] One wants to say that one cannot imagine their experience" (WLPP, p. 253). Wittgenstein seems willing to allow for the possibility that there may be forms of colour experience that we can only characterise abstractly, but that we are unable to experience. The comparison with absolute pitch shows that there is no mystery here. After all, we "ordinary" people are not able to experience what it would be like to have absolute pitch either.

(ii) Another important thought experiment about "differences in seeing" concerns a tribe with "different colour poles" (WLPP, p. 19). For some purposes we use what Wittgenstein calls "colour poles"; terms around which we organise our "colour geometry". For us such colour poles are red, blue, yellow (and perhaps also green). We use these poles to define other colours. We say, for example, that purple is a bluish red. Assume now that there were a different culture with different colour poles, say purple, orange, blue-green, and yellow-green. And members of that other culture call red a purplish orange. Wittgenstein is doubtful whether such a language would be translatable into ours: "this tribe and we couldn't learn one another's language." And he likens this difference in colour poles to the difference between a colour-blind and a

normally seeing person (WLPP, p. 19; cf. WLPP p. 138 and p. 258-259 as well as RPP I, 622). This suggests once more that for Wittgenstein the colour vision of people we call "colour-blind" need not be regarded as deficient; it is just a different way of organising the space of colours. The point is explicitly made elsewhere: "We speak of 'colour-blindness' and call it a *defect*. But there could easily be several different abilities, none of which is clearly inferior to others." (RC III, 31)

(iii) The third example of a difference in seeing is an encounter between us and a colour-blind tribe:

> "There could very easily be a tribe of people who are all colour-blind and who nonetheless live well; but would they have developed our colour names, and how would their nomenclature correspond to ours? What would their natural language be like?? Do we know? Would they perhaps have three primary colouPs: blue, yellow and a third which takes the place of red and green? – What if we were to encounter such a tribe and wanted to learn their language? We would no doubt run into certain difficulties." (RC III, 128; cf. RC I, 9, 13, and 66; also RC III, 32 and 154)

Wittgenstein's point about difficulties in translating the colour vocabulary of a tribe with a different organization of colours in noteworthy not least since it can be read as a criticism of Rivers. After all, Rivers and other authors of his tradition paid little attention to the difficulties of translating the language of a colour-blind tribe. Or put differently, they overlooked the difficulties that arise as we go from *one colour-blind person within our society to a whole tribe of the colour-blind*.

Although Wittgenstein considers the possibility of very different colour experiences and colour terms, he also feels the pull of our "universalistic intuitions":

> "Can't we imagine people having a geometry of colours different from our normal one? [...] The difficulty is obviously this: isn't it precisely the geometry of colours that shows us what we're talking about, i.e. that we are talking about colours?" (RC III, 86)

This consideration puts limits to how much variation in colour perception and colour nomenclature there could be.

(C) Languages without colour concepts

A further pertinent theme in Wittgenstein's reflections on colour concerns languages that do not have a distinct or separate system of colour terms. This idea has sometimes been used as a criticism of Berlin and Kay, and without reference to Wittgenstein.[7] Wittgenstein's first example is of a hypothetical linguistic community that, because of the character of its particular natural environment, has no need for colour concepts at all:

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7 Cf. Kuschel & Monberg 1974, Lucy 1997.

> "Suppose I were to come to a country where the colour of things – as I would say – changed constantly [...] The inhabitants never see unchanging colours. [...] It might be that their language *lacked* words for colours. [...] We might explain it by saying that they had little or no use for certain language-games." (RPP I, 198)

More realistic is a second case in which information about colour is encoded together with information about another dimension, here colour and form.

> "And what about people who only had colour-shape concepts? Should I say of them that they do not *see* that a green leaf and a green table – when I show them these things – have the same colour or have something in common? What if it had never 'occurred to them' to compare differently shaped objects or the same colour with one another?
> Due to their particular background, this comparison was of no importance to them, or had importance only in very exceptional cases, so that no linguistic tool was developed." (RC III, 130)

This tribe thus has one set of colour terms for leaves and a different set of colour terms for chairs. As Hocart (1912) reports in his above-mentioned paper, such "lack of abstractness" was one of the critical comments often directed at "savage" colour terminologies. Hocart of course countered this criticism with his emphasis on the need to consider the needs and environment of the respective language community. Wittgenstein clearly sides with Hocart (cf. RC III, 155; also MS 137, p. 8a-9b).

(D) Morphological differences

A final observation by Wittgenstein worth mentioning here can also serve as a critical observation on the idea of basic colour terms. He alludes to *morphological differences* in colour systems, for instance the possibility that colour terms might not be adjectives but verbs. ("In German we say '*es blaut*', [...] there might be a language where all colour words were verbs." (WLPP, p. 25)) As empirical research has shown, this phenomenon does indeed occur. The Berlin-Kay type of analysis pays insufficient attention to such variations.[8]

(E) A Grammar of Colour

At this point it is inviting to ask what Wittgenstein's alternative to the paradigm of Rivers, Berlin and Kay might be. Here one should keep in mind that, although Wittgenstein does not aim for a psychology, physiology or anthropology of colour, his suggestions might still be of substantive and methodological interest especially to the last-

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8 Cf. Lucy 1997.

mentioned field. Wittgenstein's goal is a "grammar of colour". This is best taken in the sense of the famous remarks from the *Investigations*, to wit that "grammar tells us what kind of object anything is" (PI, §373). Applied to this context, the grammar of colour judgements enables us to see and reconstruct our explicit and implicit commitments and assumptions about colours. I shall give a brief overview over some of this grammar's central pillars.

(i) A grammar of colour is a study of the "logic" of our colour concepts. "Logic" or "grammar" here contrasts with precisely the mentioned empirical studies: "We do not want to establish a theory of colour (neither a physiological one nor a psychological one), but rather the logic of colour concepts. [...]" (RC I, 22) That is to say, the focus is on the language games in which colour terms figure, not on individual-psychological or physiological abilities that allow us to discriminate between colours.

(ii) A grammar of colour focuses on what types of colour judgements are meaningful in what contexts. To understand these types one has to study both their role in various colour-related practices, and their relation to other types of judgements, both other types of judgements that pertain to colour, and to types of judgements concerning other dimensions, such as texture:

> "Describe the game with colours. The naming of colours, the comparison of colours, the production of colours, the connexion between colour and light and illumination, the connexion of colour with the eye, of notes with the ear, and innumerable other things." (RPP I, 628)[9]

(iii) It follows from (ii) that colour ascriptions are highly context-dependent:

> "If I say a piece of paper is pure white, and if snow were placed next to it and it then appeared grey, in its normal surroundings I would still be right in calling it white and not grey. It could be that I use a more refined concept of white in, say, a laboratory [...]." (RC I, 5)
> "I see in a photograph (not a colour photograph) [...] a boy with [...] blond hair [...] I see the boy's hair as blond [...] despite the fact that everything is depicted in lighter and darker tones of the photographic paper." (RC I, 63)

(iv) This context-dependence can also be expressed by saying that there is "*indeterminateness in the concept of colour or again in that of sameness of colour*" (RC I, 17). The two levels are alluded to in the following two passages:

> "Can a transparent green glass have the same colour as a piece of opaque paper or not? [...]" (RC I, 18)
> "It is easy to see that not all colour concepts are logically of the same sort, e.g. the difference between the concepts 'colour of gold' or 'colour of silver' and 'yellow' or 'grey'." (RC I, 54)

(v) A further important function of the grammar of colour is to identify dimensions of colour that have often been overlooked. As is familiar to every reader of *Remarks on*

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9 Cf. Schneider 1978.

Colour, Wittgenstein became especially fascinated with the distinction between transparent and opaque colours. (This theme is extensively discussed elsewhere in this volume.[10])

(vi) Finally, Wittgenstein thinks that grammatical sentences concerning colour (i.e. rules governing the use of colour terms) behave similarly to other types of grammatical sentences: for instance, similarly to mathematical theorems. This idea is referred to when Wittgenstein speaks of a "geometry of colours" (RC I, 66) or when he writes: "We have a colour system as we have a number system" (RPP II, 426; Z 357, cf. LFM, p. 233-234.) To begin with, neither mathematical theorems nor grammatical sentences concerning colour are true in a correspondence-theoretical sense:

> "We have a colour system as we have a number system. Do the systems reside on our nature or in the nature of things? How are we to put it? – Not in the nature of numbers or colours." (RPP II, 426)

While not true in a correspondence-theoretical sense, grammatical sentences about colour, and thus systems of colour terms, can be more or less useful, given the needs of the respective language community. These sentences and systems are thus naturally related to "general facts of nature" about us and our way of life:

> "Then is there something arbitrary about this system? Yes and no. It is akin both to what is arbitrary and to what is not arbitrary." (Z 358)
> "'There is no greenish red' […] What would go wrong if we denied these laws? […] It would come to building a system which would be decidedly impractical." (LFM, p. 235)

Moreover, one and the same sentence, say, "this is red" can sometimes express a grammatical rule, and sometimes an empirical proposition "*so that their meaning changes back and forth*" (RC I, 32). Conflating these two uses leads to confusions – both here and in the case of mathematics (RC I, 88).

4 Conclusions

Above I have suggested that one important strand in Wittgenstein's reflections on colour are naturally read as responses to Rivers and other early twentieth-century psychologists and anthropologists working on the discrimination, perception and classification of colours. I have also claimed that Wittgenstein's criticism of Rivers might also – mutatis mutandis – be read as applying to aspects of Berlin's and Kay's work. Lest my main points are lost in the details, I shall conclude by highlighting my

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10 Cf. Horner 2000.

main claims, and hinting at some implications for a broader perspective on Wittgenstein and the philosophy of the social sciences.

Wittgenstein's main points against Rivers and Berlin and Kay are the following. First, we must not diagnose a conceptual, intellectual or physiological defect in another culture simply on the grounds that its members draw conceptual lines (regarding colour) differently from us. Second, it would be a mistake to draw conclusions about how advanced a culture is on the back of its colour taxonomy. Third, phenomena we ordinarily classify as instances of colour-blindness need not be regarded as deficiencies in all contexts. Sometimes it might be more naturally to simply speak of a different organization of colours. Fourth, it is arbitrary to treat our colour taxonomy or vision as the standard or framework of analysis for all others. Fifth, Rivers underestimates the difficulties that might arise when we try to translate the colour terms of another culture. Sixth, if there are languages with form-colour concepts or with a different morphology then Rivers' methodology is not be applicable in a straightforward way.

In the past, reflections on Wittgenstein's importance for the philosophy of the social sciences in general and anthropology in particular have often focused on his "Comments on Frazer". If this paper is at least roughly near the mark, then this focus can now be widened by including a good number of Wittgenstein's remarks on colour into the corpus of relevant texts. The following more general precepts can then perhaps be formulated. A study of taxonomies, nomenclatures or vocabularies should be neutral and symmetrical in that the analyst does not evaluate linguistic phenomena, and in that he or she seeks to explain all of these phenomena on the grounds of their usefulness to particular cultures. Moreover, such study should focus on how language is used in ordinary contexts; a heavily constrained stimulus (be it skeins of wool, coloured glass, or colour chips) do not give us a good access to the rules underlying our language games. Furthermore, an investigation into taxonomies should not assume from the start that (what seem to us to be) distinct dimensions must be encoded in different and distinct categories. And finally, a satisfactory investigation into taxonomies must give special heed to the folk theories, or folk certainties, that surround and embed the central terms.[11]

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