

‘Basic Color Categories’ in the Language-Game Perspective¹

Ondřej Beran

The Academy of Sciences of the Czech Republic, Praha

Abstract: In this paper I will discuss some interesting philosophical questions bound to color science, in its variant founded by Berlin and Kay’s linguistic and anthropological research. I will first refer to various criticisms, expressed by dissenting scientists. Further criticisms implied by a rather philosophical perspective will follow; a particular attention is paid to the question of synchronicity vs. diachronicity. The controversy about Berlin and Kay’s conception is paralleled by the development of Wittgenstein’s views on color that I will sketch in short. Wittgenstein’s philosophy offers tools for illuminating the problem from yet another point of view. In the final part of the paper, I will try to point to the limits of the conception of basic color categories, but also to assess its relevance and possible philosophical contribution in terms of language games variety; especially with respect to the Color Incompatibility Theorem and its implications.

Keywords: basic color terms, color incompatibility, environment, language games, Wittgenstein.

1 ‘Basic color terms’ thesis and the major criticisms

Brent Berlin and Paul Kay’s conception of ‘basic color terms’ (hereafter BCT; from their book of the same title; see Berlin – Kay 1969) represents a starting point for a new direction – now fecund and dominant – in the research of color vocabularies in empirical languages

¹ Work on this paper was supported by the grant project No. P401/11/1934 of the Czech Science Foundation.

(the project of World Color Survey). Yet it is very interesting for philosophy, too.

The presented view² goes, in short, as follows: There is certain general evolutionary scheme of basic color names or terms, various stages of which can be identified in contingent structures of natural languages. The whole spectrum of colors – as represented, for instance and most typically, by Munsell Color Chart – gains in successive steps still finer and more precise division, using particular basic color concepts. Concepts understood as ‘basic’ should be both monolexemic and primary, not classified by or derived from a reference to an external phenomenon (such terms as ‘light green’ or ‘blueish green’, and ‘Himmelblau’ or ‘vinaceous’ are therefore excluded). According to the basic BCT moral, the most primitive stage of the scheme is represented by the color spectrum division into two basic terms corresponding to clusters WHITE and BLACK and covering most light and warm hues on one hand, and most dark and cool hues on the other hand.³ In fact, these color terms should be called rather ‘macro-colors’, as they both comprise several of our singular color concepts (cf. Witkowski – Brown 1977). The subsequent division ends in the list of eleven basic color concepts (white, black, red, yellow, blue, green, brown, grey, pink, orange, purple) as it can be found in modern Western (mostly Indo-European – hereafter WIE) languages. However, this stage of evolution is not to be understood as final or absolute in any sense; it is likely that the differentiation of color vocabularies will continue.⁴

The alleged universality of the scheme is explained in neuro-physiological terms: there are three types of cells in retina and subsequently opponent pairs of cells in brain, and their unique responses encode different colors, perceived as such (see, e.g., Kay – McDaniel 1978, 617f). Indeed, some of these conclusions have been doubted later by the proponents of BCT themselves; but the theory still implies a distinct philosophical view on color as such. In this view, color nomenclature is

² I will refer here mostly to later versions of the conception; e.g. Kay – McDaniel (1978, 614f).

³ Kay and his associates usually report this variant of color categorization to be found in Dani language in New Guinea (see, e.g., Kay – McDaniel 1978, 616). However, results of the primary field research made by Eleanor Heider are not that straightforward – see Heider (1972).

⁴ Davies – Corbett (1998) suggest that in Russian a dissociation of ‘blue’ into two new basic color categories can be observed.

interpreted as determined reflection of human perceptual abilities. The claim of universality attached to the evolutionary scheme is built upon two presuppositions: that all the people are considered to have the same perceptual and mental apparatus; and that semantic structures and patterns of language are fully pre-defined by this pre-linguistic level. However, this is very strong *epistemological* commitment; though the scientists had probably no such intention.

Naturally, the BCT explanative machinery has become a target for various criticisms. I will refer here to a few of them. One line of criticism stems from John Lucy’s works. Lucy was interested, among other things, in factors influencing color memory, in particular the degree of easiness in recalling particular shades of color. This approach is concerned much more with our everyday linguistic practice. Despite the linguistic and neuro-physiological criteria of ‘basicness’ of a term (which are objectionable themselves) its importance in discursive practice – that is, its *pragmatics* – stems from different sources. In this variant sense, a term is pragmatically basic, if it is easy to be handled with, identified (repeatedly) or recalled. The experiments showed that it was exactly non-monolexemic and contextualized, hence use-limited color concepts that were easier to be identified and recalled and that played very, if not the most important role in discursive practices (see, e.g., Lucy – Shweder 1979; 1988).

An extensive and diversified critique is presented by Barbara Saunders. It results from a rather more philosophical perspective. Saunders criticizes the very idea of color categories evolution, as is presented by Kay and others. She argues that it stems from Euro-centric and Colonialist notion of (degrees of civilization) progress: in this scheme any differences from the Euro-American default model are interpreted as inferior position in the universal framework of historical development.⁵

⁵ Kay – Maffi (1999) admit their adoption of the idea of progress, where the supreme position is held by modern WIE languages, but they insist that ‘progress’ in this sense is to be interpreted in purely instrumental terms: higher degree of differentiation of color vocabulary corresponds to higher claims imposed by more developed technology of the respective culture. Hence, the progress in question is essentially a technological progress, and must not be identified with an alleged progress of ‘civilization’ or with general cultural inferiority/superiority. However, the question is whether these two levels can be (easily) distinguished (separated); or, whether the denial alone is enough to warrant that the issue avoids the dangerous associations.

The very instruments used for establishing the validity of the evolutionary scheme prove themselves to be highly problematic. First, the idea of mental/perceptual space or contents antecedent and independent with respect to the linguistic level of the phenomenon cannot be reasonably grounded. This role of language has been stressed also in the 20th century philosophical context – that the assumption criticized by Saunders is untenable was shown by such divergent thinkers as Wittgenstein⁶ and Heidegger⁷.

Saunders also points to the fact that comparative tools like Munsell's color chart (used broadly by field researchers) pre-determine and pre-define the results of the investigation. Moreover, the answers of native respondents had to be extensively corrected and modified in order that they could be implemented into the structure of basic color categories attributed to the respective language by the researchers. For despite the alleged universality of color, the respondents often did not even understand the question, based on *our* concept of (basic) color (see, e.g., Saunders – van Brakel 1997; Saunders 2000).

Another difficulty is involved in the presumption of the step-by-step division of the *whole* color spectrum. According to that, all the people should know and name all the shades, only in different patterns – use different numbers of basic color terms, but always covering the whole range of hues in different grains of division. However, there is a dissenting view on the origin of color names, namely that it is a kind of emergent phenomenon: narrow (specified) names for limited parts of the color spectrum emerge as the speakers cope with their specific environmental conditions, while some parts of the spectrum can remain unnamed or lack a consistent label. This 'Emergence hypothesis' is still being discussed.⁸

⁶ The later Wittgenstein's opus magnum, *Philosophische Untersuchungen* (Wittgenstein 1958a), focuses mostly on the problem of the relation between language and various mental phenomena like thinking or meaning and argues that they cannot be treated as independent, antecedent or even founding with respect to language semantics.

⁷ See Heidegger's *Sein und Zeit* (Heidegger 1977, § 34, in particular). Heidegger's later work on language, such as *Unterwegs zur Sprache* (Heidegger 1960), is even more specific in this point.

⁸ The hypothesis of emergence was suggested by Levinson (1997). Kay – Maffi (1999) admit only one language to be 'non-partitioning' in the present, yet they implement the emergence in the past into the evolutionary scheme

Another interesting perspective was provided by gender-oriented linguistic research. The pivotal work of modern gender linguistics, Robin Lakoff’s *Language and Woman’s Place*, pays some attention also to the color-naming patterns differing between women and men. According to Lakoff, the allegedly ‘basic’ color terms seem to be an instrument used quite specifically by *men*; whereas women use – besides the ‘basic terms’, too – more frequently the contextualized, derived or other more specific terms.⁹ As a result, women seem to display much broader, richer, and more nuanced set of color names than men do. In this light, the alleged basicity of Berlin and Kay’s set would rather reflect *poverty* of the vocabulary of the group of speakers that keeps political power and standards-defining authority.¹⁰

2 Synchronic vs. diachronic

The evolutionary scheme has the ambition to explain the differences among languages in terms of diachronicity. However, some implications of this approach are not unproblematic. As the evolution has only one direction, universally valid (due to our shared neuro-physiological equipment), we have to expect that *if* languages occupying lower position in the evolutionary scheme have enough time, they will develop the same pattern of color concepts as modern WIE languages have. How-

as a tool explaining some aberrant phenomena. Saunders (2009) points to the fact that people of some culture may have never met (and therefore reflected, named) some particular color. The first experience with a hitherto unseen color can take shape of an impression of something alien, ugly and unnatural (the example of people of Northwest Canadian tribes who saw ‘pure red’ for the first time in the 18th century, when it was imported from China).

⁹ Lakoff (2004, 43). Lakoff’s method was later criticized as unscientific, and her results as based mostly on the author’s own linguistic intuition and anecdotic evidence. However, many of them were confirmed, though in re-interpreted framework; including those concerning the usage of color terms (see, e.g., Rich 1977, or Nowaczyk 1982).

¹⁰ That BCT machinery takes *men* into account as paradigm is documented also by recent research discussing the possibility of tetrachromatic vision in women. Some women (what percentual proportion, is still under debate) may have different neuropsychological equipment in virtue of which they could distinguish much more colors than men and ‘ordinary’ women. See Jordan – Mollon (1993).

ever, it needn't be that simple. The problem is already with the very notion of expectation here. For the *pre-viewed* route of development may blend with pre-desired and finally *pre-enacted* by us. The evolutionists themselves admit that the differentiation of color nomenclature traces the technological needs and devices. But technologies in various cultures are not independent phenomena (technological importance of colors as well); the technology with which the speakers of 'lower' languages are confronted is and will be more and more *ours* one. That is, even if the color vision was rooted in the level of neuro-physiology, the nomenclature still reflects conditions of the environment with which speakers have to cope. If there is one and the same pattern of conditions to cope with, the same or similar pattern in vocabulary is ready to be expected, too. Unfortunately, this tells us nothing about the universality of color *vision*, beyond the universality of circumstances-dependent needs, tasks, devices and objects. Apart from the notorious observant-observed interdependence, in the interlinked 'globalized' world, there is no easy way how to establish *independently identical* ways of development of anything.

Even if we admit the structures reported to us as discovered in distant languages, the point is that the observed differences are essentially synchronic, not diachronic. The task and conclusions *claimed* by the color evolutionists then don't coincide with what they *really* do – which is description of various languages *in present*. When for instance biologists research the link(s) of evolution in the domains of plants or animals, they cannot see it as embodied straightforwardly in the *synchronic* variety of living organisms. They have to study also extensive diachronic material (fossils etc.). Some species that are contemporary to one another indeed can be placed to different evolutionary stages, but this *never* means different positions in *the same* line of development. Though our distant ancestors were amphibians, they cannot be identified with contemporary amphibians. In fact, it is a non-trivial taxonomic question whether they can be referred to as 'amphibians' in the same sense at all¹¹ (again, the danger of confusing synchronic and diachronic level). Analogously, there is no good sense in expecting the contemporary amphibians to evolve into actual 'human' forms in the future. The factor of interplay between the organism and its environment is also of

¹¹ For the survey of amphibians' taxonomy, as well as of the discussions about their phylogenetics, see Frost et al. (2006).

utmost importance. Let’s consider the trade-off in adaptive strategies or analogous equipments of independent origin, such as camera-type eye in cephalopods and in vertebrates. When we speak of evolution in biological sense, all this should be taken into account. The parallel between biology and language is of course rather superficial; but it illustrates how simplified and naïve may be the idea of evolution, extrapolated thus straightforwardly into the context of language. The ‘evolution theory’ of colors obviously admits no significant ramification; on the contrary it emphasizes (or postulates?) a unifying process.

Though the idea of color vocabularies evolution involves the assumption of a common rule governing the process, such as the natural selection in the case of biological evolution, uniformity can hardly be presumed here. Especially synchronically co-existing different forms cannot be interpreted as antecedent and subsequent phases of one and identical line of development. When we consider the development of natural languages, as it is known in their diachronicity, we see that longtime identity of one and the same language can scarcely be found. Even if we attribute the same name – such as ‘Greek’ – it needn’t be direct continuous development of a self-identical body, but it rather includes various discontinuities. The development often even breaks the identity of the language bearing one name: Latin dissociates into French, Italian, etc. The situation of Latin is particularly interesting, since it is a rather rare example of a language offering us rich text material for comparison of various evolutionary stages.¹² However, what we can observe here (with respect to color names pattern) 1) is definitely a diversification and 2) doesn’t follow the expected sequence of evolutionary stages. In an extreme case, we can even witness *reduction* of the structure of basic color names.¹³ What is to be concluded here? First of all, the general theory of color terms evolution provides no strong evidence for the occurrence of the unified development line. Secondly, the empirical material (study of diachronic phases of Roman languages, for example) doesn’t confirm the uniform evolution either. At best, such

¹² Surprisingly, Greek and Latin don’t fit well into the evolutionary scheme. They displayed many color concepts already in the antiquity; but there were also such terms as *kyanos* or *caeruleus*, difficult to translate consistently into modern WIE languages (at times, they were even doubted to be color names at all).

¹³ See, e.g., Kristol’s (1980) research of color names in Italian dialects.

tendencies as unification and diversification always co-exist with and influence each other. We mustn't also forget that there are reasons for considering the unification as a secondary phenomenon of 'cultural' origin. We can therefore ask: is there a more appropriate way of treating the synchronic diversity in color nomenclature, including the patterns of 'basic color categories' as they are observed in natural languages?

3 The development of Wittgenstein's views on color: what is the basic

The problems of color evolutionists, who must face the abovementioned objections to the claim of universality they raise, can be illuminated by the development of Ludwig Wittgenstein's philosophical views on color.

The starting point of Wittgenstein's considerations, represented by his *Tractatus logico-philosophicus*, is in a sense analogous to the tacit assumptions of the evolutionary conception. Color is declared to be a kind of universal – it is a 'form' of objects, in fact a transcendental prerequisite of their ability to be perceived, thought and spoken of meaningfully. In this context, color determination is claimed to be at the same level as determinants of space and time (Wittgenstein 1961, 2.0251). Each object (spoken of in any conceivable language) must have a color, in order that it can be grasped by human thinking. The category of color is understood here to be of the same kind in all languages.

The use of this universal is governed by various semantic rules or laws, which are assumed to hold in any language. One of them, perhaps the most famous, is the so-called Color Incompatibility Theorem (hereafter CIT). Wittgenstein himself expresses it as following:

It is impossible for two colors to be at the same time in one place of the visual field, that is to say, logically impossible, for the very logical structure of color excludes it. (...)

(It is clear that a logical product of two elementary propositions can be neither tautology, nor contradiction. The proposition that one point of the visual field has two different colors at the same time is contradictoric.) (Wittgenstein 1961, 6.3751; my translation)

This particular formulation excluding multiple color ascriptions at the same time is motivated by Wittgenstein's conception of elementary propositions, tautologies and contradictions, etc. The rule itself, how-

ever, is probably seen here as primary and intuitive; and the explanation operating with elementary propositions comes only subsequently. CIT became subject of a brisk discussion among logicians after Wittgenstein's death. Nevertheless, neither its participants doubted the validity of CIT; the debate centered about the question whether CIT is to be interpreted as an – in Kantian terms – analytical, or rather synthetic *a priori* proposition (see especially Putnam 1956; Pap 1957; Rozeboom 1958).

However, Wittgenstein himself later realized that the contradictoric character of multiple color ascriptions couldn't be explained using the Tractarian logical analysis. The solution he offers in "Some Remarks on the Logical Form" is the following: the impossibility to ascribe two or more colors at the same time is a primitive logical impossibility. That is, 'x is red and [at the same time] green' is neither an ordinary false proposition, nor a contradiction, but a functionally incorrect proposition. It is an incorrect propositional *form*, generating no properly formed and meaningful proposition at all. There is no further explanation, such as logical analysis of the multiple ascriptions into their elementary building blocks; the only thing that can be said about it is that the impossibility is rooted in the structure of phenomena themselves (Wittgenstein 1929, 168f). Wittgenstein thus expresses a view analogous to the Husserlian maxim "Zu den Sachen selbst"; but the idea of 'phenomenological language' he proposes aims rather at the intuition that the logic of our language emerges in the interaction with our everyday practice.

Wittgenstein left the difficult question of the relationship between the realm of language and the realm of phenomena without a clear answer. He emphasizes repeatedly that for philosophical use and especially in the case of colors we must stick to the intuition that phenomenology blends with grammar: that is, the laws of what is possible within the realm of experience are closely interlinked with the rules of what can be meaningfully said (Wittgenstein 1964, 51). Wittgenstein's thinking *doesn't* proceed, however, *via* identification of color patterns with arbitrary linguistic constructions, which would be a case of some linguistic idealism.¹⁴ Much rather, he sees the structures embodied in language as the only meaningful criterion of our orientation within the world, i.e., of

¹⁴ This is what Austin (1980) attributes wrongly to him. For a detailed discussion and analysis of Wittgenstein's *transcendental* position see Noë (1994).

how we cope with our environment. Though the metaphor of language as a *game*, introduced into philosophy broadly by Wittgenstein, tempts us to understand it in purely conventional terms, Wittgenstein himself is closer to see it as such a type of game that is limited rather strictly by the conditions of its 'playground'. The example of chess used by Wittgenstein emphasizes the definition of game by its formal (functional, positional) characteristics; but language, especially those of its segments (games) that report something about the 'outer world', is strongly analogous to a situated, bodily, limited type of game – *sport*.¹⁵

Facing the variety of human cultures and environments, as well as the variety of human languages, one must rethink more carefully the claim of universality imposed on rules that govern the use of color terms. Wittgenstein suggests a 'perspicuous representation' (*übersichtliche Darstellung*) of the grammar of our color categories in the shape of color-octagon or color circle. Herein colors are given their respective positions determining possibilities of their blending, mixing etc. A paradigm of antagonistic colors is represented by red and green. They not only cannot be ascribed at the same time, they don't even produce a 'meaningful' mixture. That is, no color bearing the name 'color', either 'basic' or 'derived', stems from (can be said to be) a combination of red and green. Wittgenstein therefore chooses exactly this pair for his attempt to question the validity of CIT. His example introduced in *The Brown Book* is the following:

Imagine this game: A shows B different patches of colors and asks him what they have in common. [...] If then he pointed to pure red and pure green, the answer would be that these have nothing in common. But [...] 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 red and green garments, the other, the plebeian, wearing blue and yellow garments. Both yellow and blue would always be referred to as plebeian colors, green and red as patrician colors. Asked what a red patch and a green patch have in common, a man of our tribe would not hesitate to say they were both patrician. (Wittgenstein 1958b, 134).

¹⁵ Lance (1998) introduces the explanation of language as a sport explicitly in the context of polemics against Wittgenstein's rather misleading game-metaphor.

Of course, this is a trivial counterexample that doesn't refute, e.g., the impossibility of occurrence of two different colors at the same time in the same point of visual field. However, that was not its purpose. Wittgenstein tries to show that, with respect to the "impossibility of something being both red and green", there is nothing like a natural hierarchy of contexts, one of which would state this possibility or impossibility in a primary sense that the other contexts could modify only in 'transferred' or inaccurate sense. If we ask any question concerning color, the answer is impossible until we specify the game we play (Wittgenstein 1958, 133f). Unfortunately, to analyze the hierarchy among various language levels (games) would be a task of rather difficult kind.

The later Wittgenstein tries to treat the problem of variety of color nomenclatures from yet another perspective. In his *Remarks on Colors*, he asks himself the question whether and how it is even possible to grasp a different pattern of color naming bound to a different culture. The difficulty is obvious: language games are, so to speak, 'forms of life'. No speaker can choose her own life habitus, 'form of life' (which is determined also culturally). The way she speaks is closely tied to the way she lives; the foundations of her discursive patterns are to be explained in terms of embodiment in her everyday life practices. Of course, people *are* able to know and learn still new things; but even this ability stems from their specific cultural background and is limited by it. Wittgenstein's reasoning proceeds as follows:

Even if there were people for whom it would be natural to use consequently expressions like 'reddish green' or 'yellowish blue', and if they manifested abilities that we lack, still we wouldn't be forced to admit that they see colors we don't see. For there is no generally accepted criterium for what is a color, unless it is one of our colors. (Wittgenstein 1977, I, § 14; my translation)

The argument is analogous to the one displayed by Donald Davidson against Whorf's claim of essentially different languages. Its axis consists in pointing to a conceptual contradiction: we can call 'language' only a sign system that we are able to interpret as such – to translate into our language. Otherwise we couldn't recognize it as a language at all. But once we are able to translate it in a satisfying way, why should we call it essentially different? Wittgenstein's attitude to 'foreign' color concepts or color geometries is the same: it is in the very nature of our language (and thinking), that its descriptive abilities and tools operate on such

self-centered basis. Even that what we are able to identify as new, unusual, different, foreign, is such by virtue of fulfilling *our* (language's) criteria for being 'new', 'unusual', 'different', 'foreign'. The doubt whether something is a color at all would be one more step beyond the doubt about the precise translation of something we already interpret or reasonably conjecture to be a color. In general, foreign color terms conceived as such have to be analogous to our own ones.

On the other hand, this procedure, though somehow parallel to Colonialistic ignorance of other cultures, cannot be identified with it. It is a pragmatic feature of any language, not only modern WIE ones. However, also the criteria of evaluating the descriptive capacity of a language are internal to the speaker's language and reflect mostly its own descriptive dispositions, tools and strategies. What differs in these features from the reference language is going to be interpreted most likely in terms of *inferiority*, as Wittgenstein puts it:

What we believe depends on what we learn. We all believe that it is impossible to get on the Moon; but there might be people believing that it is possible and that it sometimes happens. We say: these people are ignorant of much that we do know. They can't even be that sure in their view – they are mistaken and we know that. If we compare their system of knowledge with ours, their system proves itself to be much poorer. (Wittgenstein 1969, § 286; my translation)

A possible – of course simplified – extrapolation of this moral to the context of color is the following: the pattern of color names *we* (let's consider this 'we' to be the native speakers of modern WIE languages here, for the sake of simplicity) have developed is adapted to the range of practical purposes we have to solve, including usual 'objects' we have to 'give name'. The pattern of color naming displayed by a contextually distant language or rather the segment of it which we are able to translate/interpret cannot fulfill practical needs that have emerged in the context of our language equally well as our language can. It is then natural for us to see it as poorer or weaker (*ärmer*). All these morally neutral steps belong to the equipment of our language. Despite the secondary Colonialist-like interpretations we can attach to the situation of languages variety, this is their necessary background. It may be also the reason why we tend naturally to explain the synchronic differences among color nomenclatures as degraded forms of our norm of identity – the BCT pattern of the reference language.

4 Making use of BCT patterns variety in another context

To see a possible relevance of BCT conception from another angle, let's resume briefly Wittgenstein's – though indirect – strategy of questioning the validity of CIT. CIT says, in simplified terms, the following: nothing can have two different colors in the same time. Wittgenstein replies: The patrician garments are or can be meaningfully said to be *both red and green* in the same time. This 'exception' from the CIT rule is of course trivial and perhaps even childish. However, the truth is that natural language *does* offer various ways how to doubt CIT, some of which are more disquieting than the patrician example. Let's consider first that 'colors' we talk about are non-homogenous scales: what we call 'red' comprises various 'shades', the differences of which may be in certain contexts striking and important. Moreover, there are usually¹⁶ no sharp borderlines between colors – on a scale red becomes purple *via* gradual transition.¹⁷ Hence, it is borderline cases what represents here, as often also elsewhere, a possible problem. Natural strategy in many languages (but not in all of them or not equally in the case of all 'basic' colors) is to produce such structures as 'blue-green'.¹⁸ But what if one had to decide between calling a thing 'blue' and calling it 'green'?

The problematic contexts I mean involve experiences with objects having an 'indeterminate' color in a sense. Let's consider this example:

¹⁶ Black and white may be perhaps considered as 'punctual' colors, as opposed to colors representing a scale. We would probably call a little bit darker white or a little bit lighter black (in a range perceptible with naked eye) already grey; that is: white and black can be separated by a sharp boundary from grey, and similarly also, e.g., pink or light blue in the case of white). (*Nota bene*: this point doesn't concern an alleged 'essence' of white and black as such, but rather the way we *use* the words 'white' and 'black'.)

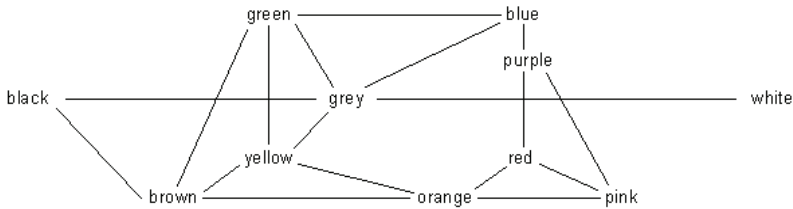
¹⁷ Hence another possible objection to the use of Munsell color chips in the field research: the subjects are forced to report their language as corresponding to a set of *discrete* samples. Which means, to put sharp boundaries upon their color nomenclature pattern, within which such boundaries may not occur.

¹⁸ The evolutionary framework reports particular affinity between blue and green – of the six primary basic colors blue and green are supposed to discern as the last pair. There are many languages (especially Native American languages) translated as having still one common term for blue and green, even when other primary basic colors have already emancipated. For this topic see, e.g., Kay – Kempton (1984).

A wooden board is painted with small yellow, green and brown spots. When we look at it from certain distance (or when a shortsighted person looks at it), we cannot discern individual spots anymore and we instead see a homogenous color. We are going to report this color probably as 'something between yellow, green and brown' or in a sense 'yellow *and* green *and* brown as well'. The reported object actually needn't be introduced in this complicated artificial way – for instance, autumn leaves serve the same purpose as well. Such objects or phenomena can act in our discursive procedures as having two or more different colors at the same time. The multiplicity of color can take shape of an ordinary disagreement among observers – some of them will describe the color of the object as yellow, some of them as brown etc. But some of the observers will probably insist that the object *cannot* be described adequately using *only one* color name.

A question has to be posed: which pairs (or groups) of colors can occur as members of multiple color ascription of this type? What clue is to be used for making the list? It seems that the pairs of colors that can play this role must fulfill various criteria: first, they ought to be both general – 'basic' – concepts. A counterexample: can something be reported as being both 'brown' and 'maroon'? Or both 'primrosy yellow' and 'lemon yellow'? We should ask, as Wittgenstein suggests, in what language game (context) one can meaningfully make use of these multiple ascriptions. 'Maroon' is used usually as a descriptive for color of hair or a tissue – but in such special games, those who content themselves with general terms like 'brown' will never be that good players as those who take the trouble with distinguishing between maroon, sienna or sometimes 'pure brown'. Let's imagine painters, hairstylists or fashion designers here. The same is true about different shades of the same 'general' color. In a game operating with them, the difference should be usually kept from good reasons; what is 'primrosy yellow', is usually *not* 'lemon yellow' at the same time.

Hence in the end, basic color concepts remain. Once again: which pairs of them can form multiple color ascriptions, and which ones can't? It seems quite intuitive that even the list of pairs of BCTs cannot be without limitations: no competent speaker of English will describe an object as white and black, or blue and orange at the same time, for example. We must consider here that the 'space of colors' (space of color *terms*) has certain structure or 'topology'. Some colors neighbor one another, some do not. Let's consider this scheme:



The scheme is based – not straightforwardly – on color evolutionists' sphere of basic color terms, providing here a preliminary key for creating the list of multiply ascribable color names (Kay – McDaniel 1978, 628). The list will consist of the pairs of connected colors. Clearly, there are many striking asymmetries) but we have to realize we deal with structures of natural languages that don't have to comply with the claim of 'symmetry'). Combinations of white or black (in practice spoken of as points rather than continua) with chromatic colors should rather be excluded, with possible exception of black-brown combination. It is also not quite clear why some combinations including grey seem more plausible than some others. The reason may be our familiarity with describing color of human eyes in terms of, e.g., blue-grey or green-grey combinations; a related familiarity – with human skin colors – may have influenced the apparent plausibility of black-brown. We can also conjecture adding one possible triple ascription: brown + green + yellow (which is in fact: brown + the missing BCT between green and yellow); etc. This is only a rough sketch requiring detailed analyses of our everyday use of color terms in order to become refined enough. However, it is clear that such a list can be neither infinite nor indefinite.

Here I think it is striking that the evolutionist approach, though in itself objectionable, offers a non-trivial analysis that can be applied in the *philosophical* analysis of language. The list of eleven 'basic color terms' it identifies in English, as well as in most modern WIE languages, grasps important features of *real* color semantics, or rather pragmatics. It recognizes well one level in the hierarchy of color terms as they are actually used in one group of natural languages (culturally akin), though perhaps mainly by notoriously color-insensitive men. In this sense, it provides a ground for – in this discipline – unique cooperation between philosophy and sciences. The structure of node concepts of color identified as 'basic color terms' obviously reflects a real and im-

portant point of natural language pragmatics and helps us understand better the limits of validity of CIT, for instance.

But what about the universality of the evolutionary framework? Well, in (mostly *men's* practice of) English one can *sometimes* meaningfully ascribe certain pairs of colors at the same time. Does it work equally well in 'less evolved' languages occupying 'lower' stages in the evolutionary scheme? Consider the most extreme case: Dani language containing only two alleged macro-color BCTs: dark and cool *mili* and light and warm *mola*. Can anything be meaningfully said to be both *mili* and *mola*? Even if the object could be placed somewhere on the boundary which dissects the color spectrum into *mili* and *mola*, such statement would produce utter confusion. If we translated the assumed Dani statement (and the very idea of *translation* can be problematic here), we would get: 'x has both the color of one half of the whole color spectrum and the color of the other half of it'. Hence, in a sense, x has all the colors at the same time.

The problem may lurk in the macro-color character of the terms *mili* and *mola*. Let's try then to restrict this CIT-application of evolutionary scheme on languages of those stages, where all the 'primary' basic colors (black, white, red, yellow, green, blue) has been distinguished. Does it work already in the case of just the six emancipated BCTs? The results obtained here seem to be more plausible at the first sight than in the case of Dani. However, since black and white cannot be easily used in the list of exceptions from CIT, our list will consist of only four pairs of which only two agree with 'our' list: green + yellow and green + blue. Since in our language such structures like 'orange' work, we could hardly conceive what the speakers of such language can 'mean' by the ascription 'x is both red and yellow' that *we* would attribute to them as something they should *meaningfully* use. Should it mean our 'orange'? Or whatever from the scale red-to-yellow, except the extreme points?

Clearly, this application of the scheme is far from being glorious. In fact, we can get results looking as plausible only in the case of those languages in which the list of 'basic colors' varies from our list in, say, two items at most. It is Davidsonian-Wittgensteinian argument revisited: only such languages (and their structural features) can be compared meaningfully, that don't differ considerably.

An objection can be expected: perhaps the evolutionary framework cannot be applied for particular *philosophical* needs equally well in all

languages – but does it mean that it is not valid in itself? The objection is at least partly mistaken. I do not intend here to raise polemics against all the BCT machinery and to refute it. My aim is much rather to pose the question about the meaning of *our* concept ‘basic color’. Though my argument originates outside the concept of color science and adopts a rather philosophical point of view, I think the question of semantics of the notion ‘basic’ is not irrelevant also for color science. The function of ‘basic’ color concepts in our language reflects the hierarchy of their use with respect to other, ‘non-basic’ concepts. Certainly, this use varies widely across language games; but some rules hold universally. For instance, what has a non-basic color (maroon), can be often implied to belong to the domain the respective basic color (brown) and under certain conditions it can be called brown (unless this ‘basic’ concept is of no use in the particular game). On the other hand, the basic cannot be easily qualified to be any of its subspecies (brown to be maroon) or all. The special case of multiple ascriptions tracking ‘gaps’ among basic terms is, I suppose, characteristic for our type of language, displaying a larger number of BCTs among which we place non-monolexic transitive color terms like blue-green. When a language doesn’t display this pattern (its variety of so-called ‘basic’ terms is considerably poorer), we may have problems identifying ‘basic’ concepts within it. We can perhaps identify them in the simple game of color naming. But they will probably fail to fulfill several functions – play other games – that we expect our set of basic color concepts to fulfill. What *we* understand as basic color concept, reflects particular functions and needs of *our* language and is tacitly supposed to be able to fulfill these or analogous functions. Hence, considering the meaning of our concept ‘basic color’, it is highly questionable whether and to what extent terms like *Dani mili* and *mola* can be understood as ‘basic’ color terms at all. And, consequently, to be ‘colors’ in our sense at all as well.

However, the folk-scientific intuition defends strongly the basic presuppositions of the evolutionary approach. It seems natural to presuppose the common basis of light rays with different wavelengths perceived by all people who share the same neuro-physiological equipment. Such background can be of course reflected differently in language – admits the folk color-realist – but these differences are of a secondary nature and can be meaningfully interpreted as contingent variations of the same pre-supplied material.

Natural as these presumptions may seem, they produce only problems when inspected from the philosophical point of view. Our conceptual machinery serves us, from its very nature, no tool for independent treatment of the pre-conceptual, so that it could be compared with the conceptual, as if both were seen from 'outside'. The conceptual tools we use for conceiving the pre-linguistic level of the matter come from our language again – the position of 'naïve realism' can't be adopted here. On the other hand, it is not refuted in favor of linguistic conventionalism. What we can experience and say about the world and its colors is non-trivially rooted in 'reality' that cannot be defined simply as mental construct or linguistic construct. Certain language games, like just those that reflect colors, resemble much rather sports appropriated to their playgrounds (environments). And one should be rather careful in speaking of various cultural environments as of 'one world'; this is documented by various socio-linguistic differences.

As for the alleged uniformity of the language-independent observer's psyche (pre-linguistic level of her experience), it's not a necessary requisite either. Another way how to overcome the postulated duality of the environment and the observer is to thematize the dynamic interplay between them. Language is a bodily and embodied phenomenon itself; hence there is no reason why the variety of language games we play should operate independently on our bodily existence merged into the everyday environment of our lives. Color terms, understood as a way we perceive and process one level of the world, should better be understood as historically developed 'exosomatic organ' – "an institutional structure that substitutes for, extends, or compensates for the inchoate powers of the human body (as do print, microscopes, telescopes, and computers)" (Saunders – van Brakel 1997, 219). Such 'organ' belongs neither to subjective, nor to objective realm; this distinction makes no sense here. A step towards new, illuminating view on the structures of color we perceive in the world is then to interpret them in Bourdieuan terms, as a kind of 'habitus'.¹⁹ According to Bourdieu, differences in cognitive schemata with which we interpret the world – differences stemming from different social, cultural, historical structures – are not differences in terms of 'forms of consciousness' or linguistic convention; they are essentially a bodily matter. There is no need to postulate the same sensory experience interpreted in different ways by

¹⁹ This interpretation is suggested by Saunders (2009).

various cultural schemes.²⁰ In consequence of our previous contingent experience and training which is bodily itself, we are differentially attuned to the specific conditions of our environments (see, e.g., Bourdieu 1972). To adopt certain way of color-description of one’s ‘world’ (among many possible descriptions thereof) means to transcribe one’s body (bodily equipment), to put it metaphorically. According to this, a shift in the structure of color vision, if not impossible, is definitely not a matter of immediate arbitrary decision; it would require a difficult and long-time training.

5 To conclude

My aim was to show that our discursive procedures concerning colors are essentially language-game-relative, and as such serve us with a ‘contingent *a priori*’ of the world vision. They can be treated neither as objective, nor as subjective. Our theoretical tools for color description and analysis originate in the same realm. The evolutionary framework – and the very concept of ‘basic color’ – introduced by Berlin and Kay therefore reflects the language games of its contingent cultural background. However, this is why it can provide us with a valuable explanatory tool for the structure of color concepts found in modern WIE languages; at least in the segment of English spoken mostly by men. This way it contributes to the solution of problems within the domain of analytical philosophy, first of all the problem of multiple color ascriptions, unpleasant for CIT. On the other hand, the more distant a language is to the modern WIE pattern of color concepts, the less adequate is the description suggested by the BCT conception. The hypothesis of diachronicity of different evolutionary stages reflects much rather a *synchronic* difference in degrees of importance of – in our sense – ‘basic’ color concepts for the respective languages. Lower number of concepts interpreted as ‘basic color terms’ by us means foremost their lower utility in the particular language. Uncertainty about the real meaning of their ‘basic’ character is a natural consequence.²¹

²⁰ Davidson (1974) criticized this opposition of conceptual scheme and sensory content as the ‘third dogma of Empiricism’.

²¹ For comments on the topic I owe thanks to Petr Glombíček, Barbara Saunders, Jaroslav Peregrin and Vladimír Svoboda.

Department of Logic
 Institute of Philosophy
 The Academy of Sciences of the Czech Republic
 Jilská 1
 110 00, Praha 1
 Czech Republic
 ondrej.beran@flu.cas.cz

References

- AUSTIN, J. (1980): Wittgenstein's Solutions to the Color Exclusion Problem. *Philosophy and Phenomenological Research* 41, 142-149.
- BERLIN, B. – KAY, P. (1969): *Basic Color Terms*. Berkeley: University of California Press.
- BOURDIEU, P. (1972): *Esquisse d'une théorie de la pratique*. Geneve: Droz.
- DAVIDSON, D. (1974): On the Very Idea of a Conceptual Scheme. *Proceedings and Addresses of the American Philosophical Association* 47, 5-20.
- DAVIES, I. – CORBETT, G. (1998): A Cross-Cultural Study of Color-Grouping: Tests of the Color Universals. *Ethos* 26, 338-360.
- FROST, D. R. – GRANT, T. – FAIVOVICH, J. – BAIN, R. H. – HAAS, A. – HADDAD, C. F. B. – DE SÁ, R. O. – CHANNING, A. – WILKINSON, M. – DONNELLAN, S. C. – RAXWORTHY, C. J. – CAMPBELL, J. A. – BLOTTO, B. L. – MOLER, P. E. – DREWES, R. C. – NUSSBAUM, R. A. – LYNCH, J. D. – GREEN, D. M. – WHEELER, W. C. (2006): The Amphibian Tree of Life. *Bulletin of the American Museum of Natural History* 297, 1-370.
- HEIDEGGER, M. (1960): *Unterwegs zur Sprache*. Pfullingen: Günther Neske.
- HEIDEGGER, M. (1977): *Sein und Zeit*. Frankfurt am Main: Vittorio Klostermann.
- HEIDER, E. R. (1972): Probabilities, Sampling, and Ethnographic Method: The Case of Dani Color Names. *Man, New Series*, 7, 448-466.
- JORDAN, G. – MOLLON, J. D. (1993): A Study of Women Heterozygous for Color Deficiencies. *Vision Research* 33, 1495-1508.
- KAY, P. – KEMPTON, W. (1984): What Is the Sapir-Whorf Hypothesis? *American Anthropologist, New Series*, 86, 65-79.
- KAY, P. – MAFFI, L. (1999): Color Appearance and the Emergence and Evolution of Basic Color Lexicons. *American Anthropologist, New Series*, 101, 743-760.
- KAY, P. – MCDANIEL, C. K. (1978): The Linguistic Significance of the Meanings of Basic Color Terms. *Language* 54, 610-646.
- KRISTOL, A. M. (1980): Color Systems in Southern Italy: A Case of Regression. *Language* 56, 137-145.
- LAKOFF, R. T. (2004): *Language and Woman's Place. Revised and Expanded Edition*. Oxford: Oxford University Press.
- LANCE, M. (1998): Some Reflections on the Sport of Language. *Noûs* 32, Supplement: Philosophical Perspectives 12 (Language Mind and Ontology), 219-240.

- LEVINSON, S. C. (1997): The Theory of Basic Color Terms and Yélidnye. In: *Working Papers of the Cognitive Anthropology Group*. Nijmegen: Max Planck Institute for Psycholinguistics.
- LUCY, J. A. – SHWEDER, R. A. (1979): Whorf and His Critics: Linguistic and Nonlinguistic Influences on Color Memory. *American Anthropologist*, New Series, 81, 581-615.
- LUCY, J. A. – SHWEDER, R. A. (1988): The Effect of Incidental Conversation on Memory for Focal Colors. *American Anthropologist*, New Series, 90, 923-931.
- NOË, R. A. (1994): Wittgenstein, Phenomenology and What It Makes Sense to Say. *Philosophy and Phenomenological Research* 54, 1-42.
- NOWACZYK, R. H. (1982): Sex-Related Differences in the Color Lexicon. *Language and Speech* 25, 257-265.
- PAP, A. (1957): Once More: Colors and the Synthetic A Priori. *The Philosophical Review* 66, 94-99.
- PUTNAM, H. (1956): Reds, Greens, and Logical Analysis. *The Philosophical Review* 65, 206-217.
- RICH, E. (1982): Sex-Related Differences in Color Vocabulary. *Language and Speech* 20, 404-409.
- ROZEBOOM, W. W. (1958): The Logic of Color Words. *The Philosophical Review* 67, 353-366.
- SAUNDERS, B. (2000): Revisiting Basic Color Terms. *The Journal of the Royal Anthropological Institute* 6, 81- 99.
- SAUNDERS, B. (2009): Peirce on Color (with reference to Wittgenstein). In: Munz, V. – Puhl, K. – Wang, J. (eds.): *Language and World: Papers of the 32nd International Wittgenstein Symposium*. Kirchberg am Wechsel, ALWS.
- SAUNDERS, B. – VAN BRAKEL, J. (1997): Are There Nontrivial Constraints on Color Categorization? *Behavioral and Brain Sciences* 20, 167-228.
- WITKOWSKI, S. R. – BROWN, C. H. (1977): An Explanation of Color Nomenclature Universals. *American Anthropologist*, New Series, 79, 50-57.
- WITTGENSTEIN, L. (1929): Some Remarks on the Logical Form. *Proceedings of the Aristotelian Society*, Supplementary volume, 9, 162-171.
- WITTGENSTEIN, L. (1958a): *Philosophische Untersuchungen*. Oxford: Basil Blackwell.
- WITTGENSTEIN, L. (1958b): *The Blue and Brown Books*. Oxford: Basil Blackwell.
- WITTGENSTEIN, L. (1961): *Tractatus logico-philosophicus*. London: Routledge & Kegan Paul.
- WITTGENSTEIN, L. (1964): *Philosophische Bemerkungen*. Oxford: Basil Blackwell.
- WITTGENSTEIN, L. (1969): *Über Gewißheit*. Oxford: Basil Blackwell.
- WITTGENSTEIN, L. (1977): *Bemerkungen über die Farben*. Oxford: Basil Blackwell.