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Colour terms

Evolution via expansion of taxonomic constraints

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Russian attributive constructions with colour terms are analyzed using the *Russian National Corpus*. We focus on recently emerging colour terms and their development through to the early twenty-first century. Terms are considered in a construction-based framework, as syntactic-semantic rule pairs, with the emphasis on dynamics in their taxonomic combinability. This is exemplified by constructions denoting the BROWN category: names for objects, having similar referential meaning, collocate exclusively with one of the contending colour terms, *buryj* (older) or *koričnevyyj* (newer). We argue that constraints on the usage of a colour term reflect a taxonomic boundary between two classes: the older term applies to *natural objects* whereas its new rival initially applies to *artefacts*, later expanding to natural objects. This finding indicates that discourse functioning of emerging colour terms is driven by the cognitive concept of 'naturalness'. Combinability with nouns from both taxonomic classes is suggested as a supplementary linguistic criterion of colour term basicness.

1. Introduction

The colour lexicon has been intensively studied since the seminal work of Berlin and Kay (1969) in which they put forward the broad hypothesis that all languages have a restricted number of semantic universals denoting colour, from two to eleven, named by basic colour terms (BCTs).¹ It should be emphasized that the Berlin and Kay (B&K) approach investigates colour semantics by means of psycholinguistic methods of naming and mapping; that is, it delineates the *referential*, context-free meaning of a colour

1. Berlin and Kay (1969) acknowledged that some languages might possess more than eleven BCTs, citing Russian and Hungarian. Extensive studies by the Surrey group (e.g. Davies & Corbett 1994) as well as our recent review provide evidence of the basic status of the two Russian terms for "blue", *sinij* and *goluboj* (Paramei 2007).

term in comparison with linguistic typological analysis that captures *attributive* or *descriptive* meaning.

The second B&K hypothesis refers to the evolutionary development of BCTs. It predicts that BCT systems unfold in a *partially fixed order* through seven stages, cumulatively gaining terms for: white and black (I) → red (II) → green or yellow (III) → green and yellow (IV) → blue (V) → brown (VI) → purple, pink, orange (VII), with grey being a ‘wildcard’ emerging at any stage between III and VII. Later studies led to refinements of the B&K model, to accommodate new empirical findings (for a review see Kay & Maffi 1999).

In the original B&K (1969) model and its later modifications the BCT sequence was derived from the analysis of contemporary data, which revealed the synchronic state of individual colour lexicons but held diachronic implications. As conjectured by Kay and Maffi (1999), the motivation driving the enrichment of a colour lexicon is the amount of information carried by the colours of objects as societies become technologically more complex. Deliberate manipulation in their manufacture, by using newly developed dyes and pigments, makes the colour of artefacts frequently the only feature by which they can be told apart. As a consequence, new lexemes denoting colour emerge. Due to their increasing functional load in linguistic communication the new terms are promoted in salience, with corresponding categories partitioning the psychological colour space more finely.

In view of this technological-control account of artefact colours, it is no surprise that, with the advent of the industrial revolution, the seventeenth and eighteenth centuries witnessed the emergence of many new colour terms. By the twentieth century some of these became basic. To name a few examples: Russian *koričnevyy* “brown”, *oranževyy* “orange” and *fiioletovyy* “purple” (Baxilina 1975); French *marron* “brown” (Forbes 1979, 2006); English *pink* (Kerttula 2002, 2007; Steinvall 2002, 2006); Hungarian *piros* “red” (Uusküla & Sutrop 2010).

The examples above support the B&K hypothesis of a multi-stage process of BCT emergence, and are also in accord with Kay and Maffi’s (1999) conjecture that demands of communication are the driving force of colour-lexicon development. This explanatory scheme captures the stages (= synchronic states) of lexical evolution and, in addition, considers *extralinguistic factors* driving it, but in our view it is missing a significant factor – the linguistic mechanisms of a colour term’s emergence. It is this factor, the *development in linguistic function* of colour terms, that we address in the present study.

2. Colour terms as words

In recent decades several studies set out to investigate the real-time development of colour inventories in individual languages. In the psycholinguistic approach, the

mapping procedure was employed after a two-decade lapse to capture ongoing changes in referential meaning of the colour terms (*French*: Forbes 1979, 2006).

Crucially, with time, colour terms may undergo changes in their connotations, a process that can be grasped solely by linguistic methods – by monitoring their *linguistic behaviour* (cf. Wierzbicka 1985). The latter implies variation in the colour terms' usage and collocation constraints which reveal changes in their semantic components, or in their attributive meaning (Lyons 1995: 206).

For exploring the development of colour term attributive meanings, in recent years a linguistic approach has been widely pursued using national language corpora; e.g. *French* Forbes (1979, 2006); *Russian* Rakhilina (2000, 2007); *English* Kerttula (2002), Steinvall (2002, 2006); *Ancient Indo-European languages* Normanskaya (2005); *Finnish* Kerttula (2007).

Our particular interest here is in those studies that focus on cases where a certain basic colour category is denoted by two colour terms, effectively referential synonyms, with one being older. Diachronically, different scenarios of the relationship between the two are possible:

- a. An emerging colour term becomes basic, fully supplanting the old BCT, e.g. Old English *sweart* supplanted by Middle English *black* (Kerttula 2002: 321).
- b. An emerging colour term contends with an old BCT and becomes basic, relegating the old to non-basic status, e.g. English *pink*, the competitor of *rose*, emerged as salient in the seventeenth century and became basic in the twentieth century, leaving *rose* for entrenched constructions (Steinvall 2006). The Hungarian *piros* "red", having emerged in the eighteenth century, surpassed the old *vörös* as the main colour term (Uusküla & Sutrop 2010).
- c. An emerging colour term becomes basic on a par with the older BCT. Referentially they either are synonyms or greatly overlap but differ in their attributive use, e.g. *brun* and *marron* for "brown" in French (Forbes 1979, 2006); *sinij* and *goluboj* for "blue" in Russian (Paramei 2007). (In these examples the older term is given first.)

3. Colour terms as components of linguistic constructions

In the present study we used the *Russian National Corpus* (RNC) to investigate the development of Russian colour terms: their linguistic origin, morpho-syntactic patterns, semantic interpretation and, especially, their discourse functioning. Attributive constructions with these colour terms are analyzed from the *typological perspective* and monitored for possible regularities in their syntagmatic collocations, i.e. combinability with object names that differ taxonomically.

Linguistic constructions – pairings of form and meaning – are considered the linguistic means of referring to extralinguistic situations, e.g. *černyj kamen'* "black stone".²

2. For English translations of the Russian colour terms here and in what follows we used the lists suggested by Frumkina & Mikhejev (1996: 86) and Davies & Corbett (1994: 73–74).

According to *Construction Grammar Theory* (Fillmore, Kay & O'Connor 1988; Goldberg 2003), a construction is defined by its syntactic structure, grammatical characteristics of its components and, in addition, by taxonomic constraints on lexical variables. A change in taxonomic category of a certain lexeme may coerce a shift of the construction's meaning entirely, a phenomenon that underlies the essence of a metaphor (cf. Lakoff & Johnson 1980), e.g. *black stone* vs. *black humour*. In this example, two taxonomic meta-classes, of names for *concrete objects* vs. *abstract concepts*, are opposed.

In attributive constructions with colour terms, other taxonomic boundaries were established, namely opposing *animate* and *inanimate* objects as in, for example, the use of one or other of two basic terms for "green" in Samoan (Snow 1971). More recently, taxonomic boundaries of colour term use were explored *within the class of natural objects*, in an extensive international project including Polish, Ukrainian and Russian (Grzegorzczkowska & Waszakowa 2000).

As part of this project, our analysis of Russian attributive constructions revealed that colour term usage is contingent on a taxonomic boundary of another kind – between names for *natural objects/surfaces* vs. *artefacts* (Rakhilina 2000, 2007). The rationale behind the significance of this semantic opposition is twofold. First, it may be sought in the fact that, in discourse, colour of many natural objects is affectively marked (e.g. eyes, hair or skin; cf. Rakhilina 2007).³ Second, colour characteristics *per se* differ between natural objects and artefacts. The colour of artefacts, imparted by dyes or pigments, is circumscribed in hue and lightness, and, frequently, is high in saturation, e.g. *sinjaja rubaška* "dark blue shirt". In contrast, the colour of natural objects such as skin, animals, plants or surfaces is quite diffuse; it may refer to blended hue areas and/or to the desaturated (greyish) core of the psychological colour space, e.g. the Russian construction *sineje more* "dark blue sea" may denote colours ranging from green through grey to black. This range is very different from that of *sineje nebo* "dark blue sky" (which in Russian denotes the saturated blue of a cloudless sky), and both certainly differ from the colour of shirts.

In the present study we are especially interested in cases where the colour of denoted natural objects and artefacts is very alike but the Russian colour terms, as components of attributive constructions, differ. We investigate the usage of these contending colour terms in their relation to the taxonomic category of a noun, in particular their diachronic relationship.

3. In phraseological units related to natural objects, their named colour may in addition be semiotically loaded, i.e. refer to culture-specific concepts rather than to the objects' denotata, e.g. *zelënaja ljaguška* "green frog" or *seryj volk* "grey wolf" in Russian folklore (Rakhilina 2007: 367).

4. Modern Russian: Lexical development of colour terms

To monitor lexical development, we undertook a linguistic analysis of changes in frequently-used historically recent colour terms by employing the *Russian National Corpus* (RNC). This includes 160 million words (by August 2007 when the data were extracted) and contains entries from the eighteenth to twenty-first centuries. We focused on the following aspects: (1) categories/types of coloured objects whose names serve as colour term referents; (2) variety of descriptive meanings of colour terms; and (3) combinability with noun classes.

4.1 Objects as referents of new colour terms

Below we delineate four categories of coloured objects common for native Russians and serving as referents for emerging colour terms.⁴ Within a category, each object name is listed according to the (diachronic) order of its occurrence as the colour term referent, and is accompanied by the corresponding adjectival form. Russian denominational adjectives, as a rule, are produced by adding the suffix ‘-v’ or ‘-n’ and (by convention) the (masculine, singular) ending ‘-yj’.

4.1.1 *Dyes and artefact fluids*

1. *Purpur* “crimson dye” > *purpurnyj* “crimson”
2. *Bordo* “Bordeaux” > *bordovyj* “wine red”, “claret”
3. *Černila* “ink”⁵ > *černil’nyj* “ink-coloured”

4.1.2 *Fruits and berries*

1. *Korica* “cinnamon” > *koričnevij* “brown”
2. *Limon* “lemon” > *limonnyj* “lemon yellow”
3. *Višnja* “cherry” > *višněvij* “cherry-coloured”
4. *Olivka* “olive” > *olivkovyj* “olive-coloured”

4.1.3 *Gems and semi-precious stones*

1. *Lazur* ‘pigment from lapis lazuli or azurite’ > *lazurnyj* “sky-blue”
2. *Birjuza* “turquoise” > *birjuzovij* “turquoise”
3. *Malaxit* “malachite” > *malaxitovij* “malachite-coloured”

4. Note that the category list greatly overlaps with the one delineated by Kerttula (2002: 251) for English.

5. Traditionally in Russia, the ink, produced from galls, abnormal swellings on oak trees, has a dark violet colour. Until recently it was widely used at schools and public offices.

4.1.4 Construction materials (very recent category)

1. *Kirpič* “brick”⁶ > *kirpičnyj* “brick-coloured”
2. *Asfal’t* “asphalt concrete” > *asfal’tovyj* “asphalt-coloured”

4.2 Descriptive meanings of colour terms as denominal adjectives

From a diachronic perspective, an emerging Russian colour term derived from an object name enters initially as the pattern *cveta X* “colour of X” (d below) whereas a denominal adjective *X-yj* possesses other meanings (a-c):

- a. “made of X/containing X”
- b. “intended for X”
- c. “where X is located”
- d. “colour of X”.

The “colour” meaning is established gradually; stages of this process can be pursued by real-language examples. In late twentieth-century Russian, according to the RNC, this early stage can be illustrated by the adjectival derivative of the noun *baklažan* “aubergine” vs. the pattern “colour of X”:

1. *baklažannaja ikra* “aubergine paste” (a)
but **baklažannaja mashina*
mašina cveta baklažan “a car of the colour of aubergine” (d).

At a more advanced stage, a Russian colour term acquires the proper adjectival form *X-yj* (e) but its meaning continues to co-exist with the meanings (a-c); this is exemplified by the following:

2. *limonnyj pirog* “lemon pie” (a)
limonnye oboi “lemon-coloured wallpaper” (e).
3. *višnevyj sok* “cherry juice” (a)
višnevyj pidžak “cherry-red jacket” (e).

The emancipation of colour denotation from other meanings in Russian may be indicated by means of affix diversification, as in denominal adjectives from the noun *kori-ca* “cinnamon”. Having entered Russian in the seventeenth century, the adjective emerged in two forms, *koričnyj* and *koričnevyyj*, both meaning “containing cinnamon” (a) and “brown” (e) (Baxilina 1975). However, by the twentieth century the form *koričnevyyj* acquired the colour denotation as its only meaning (e):

4. *koričnevyyj pol* “brown floor” (e).

6. In Russia, bricks are usually of a (matt) orange colour.

5. Usage constraints of the emerging Russian colour terms: Driven by the noun taxonomic class

When considering the development of emerging Russian colour terms, especially of very recent ‘newcomers’, our primary interest is in their functioning as components of attributive constructions. Below we examine several colour terms with respect to their collocations with nouns signifying certain classes of objects.

5.1 *Koričnevyyj*: The Russian case of “browns”

Koričnevyyj is considered to be the Russian term for “brown” (Berlin & Kay 1969; Frumkina & Mikhejev 1996; Rakhilina 2000, 2007). It has a high frequency of occurrence, ranking ten, and rather high morphological production, ranking fourteen (Corbett & Morgan 1988: 57).

Importantly, though in attributive constructions *koričnevyyj* is broadly combinable with denoted objects, its usage is constrained solely to nouns from the taxonomic class of artefacts. For denoting natural objects and in conventional constructions, the older term *buryj* “(dust/greyish) brown” is used. The *koričnevyyj* vs. *buryj* exclusive collocations are illustrated by the following examples:

5. *buryj medved’* “brown bear”
buryj ugol’ “brown coal”
 vs. *koričnevyye botinki* “brown boots”.

Buryj is rich in morphological derivations, ranking nine (Corbett & Morgan 1988: 57); its frequency rank, however, fell dramatically during a short period: from eleven (Corbett & Morgan 1988: 57) to 41.5 (Davies & Corbett 1994).

The taxonomic constraints on *koričnevyyj*, as well as its frequency in the list task and derivational development – linguistic indices contributing to the measure of relative basicness (cf. Kerttula 2002: 336) – provide evidence that *koričnevyyj* is not yet fully established as the basic term. In passing it is worth noting that the watershed in combinability of the two Russian browns – with natural objects vs. artefacts – is strikingly similar to that between the French older *brun* and recent *marron* (cf. Forbes 1979: 302, Table 1).

The above observation led to the following hypothesis: an emerging colour term initially expands over denotations of artefacts, whereas an older colour term with a similar referential meaning continues to denote natural objects. In the light of this hypothesis, we analyze development in combinability of several other relatively ‘young’ colour terms.

5.2 Linguistic behaviour of Russian highly frequent non-basic colour terms

5.2.1 *Birjuzovyj* “turquoise”

According to the RNC, the term *birjuzovyj* was already used in Russian in the mid-eighteenth century but originally meant only “made of turquoise” (in relation to “stone”, “ring”, “necklace”, etc.). The mid-nineteenth century registered the usage of *birjuzovyj* predominantly in the sense of “turquoise-coloured”, as related to the colour of a “collar” or “skirt” and, rarely, of “sky” or “sea”. By the beginning of the twentieth century not only had the frequency of *birjuzovyj* usage increased significantly (by 50%) but also its combinability expanded – from nouns for artefacts (e.g. “fabric”, “carpet”) to those for “eyes” and natural surfaces (e.g. “water”, “sky”). The data from the list task indicate that currently *birjuzovyj* is among the most frequently used Russian non-basic colour terms, ranking eighteen (Davies & Corbett 1994: 81).

5.2.2 *Bordovyj* “wine red”, “claret”

The Russian term *bordovyj* originates from *Bordeaux* “claret”. According to the RNC, as denoting the colour, it was first used as the form “red-*bordo* silk blanket” in Leo Tolstoy’s *Resurrection* (1889). As the proper adjectival form *bordovyj*, it was used from the beginning of the twentieth century. For example, in the *bordovaja knižec̣ka* “wine-red little book”, the term is used metonymically to denote a document.⁷ However, the term collocates exclusively with names for artefacts: the RNC reveals no combinations of it with nouns denoting natural objects. It is worth noting that, although taxonomically constrained, *bordovyj* is one of the most frequent non-BCTs, ranking fifteen, and, along with the basic term *fioletovyj* “purple”, is a member of a family of several terms refining Russian nomenclature for the purple category (Davies & Corbett 1994: 81).

5.3 Linguistic behaviour of the Russian colour term ‘new-comers’

5.3.1 *Černil’nyj* “ink-coloured”

In the nineteenth century the term *černil’nyj* was used solely with the ‘non-colour’ meaning, e.g. “ink spot/drop/pencil”. In the twentieth century the RNC shows its first rare usages with a colour-descriptive meaning in literary, mostly poetic, texts or as part of compounds, e.g. *černil’no-sinij* (“ink-coloured, dark blue”) related to “eyes/tongue/window” (V. Nabokov) or *černil’no-černyj/-fioletovyj* “ink-coloured, black/purple”. By the end of the twentieth century the colour meaning of *černil’nyj* became more frequent, expanding to natural objects and surfaces “night/sky/darkness/water/bruises/clouds/storm clouds”, but the usage is still marked and restricted to poetic texts.

7. In the Soviet Union, certificates or membership documents were frequently issued with jackets of this colour.

5.3.2 *Kirpičnyj* “brick-coloured”

The vast majority of modern usages of *kirpičnyj* registered in the RNC have the “made of X” meaning (a), as in “brick wall/building/gate”, etc. With a colour-descriptive meaning the usage is constrained to the form *kirpičnogo cveta* “colour of brick” (d). However, on the Internet there are a few cases of *kirpičnyj* as a colour term (e), e.g. *kirpičnoe platje* “brick-coloured dress”.

5.3.3 *Asfal'tovyj* “asphalt-coloured”

This very recent term appears in the RNC only in the conventional form *cveta mokrogo asfal'ta* “colour of wet asphalt”, related to artefacts like “car/dress/suit/PC” and sometimes to “eyes/sky”. On the Internet, in comparison, the advanced, adjectival form *asfal'tovyj cvet* “asphalt-coloured” is recorded, related to “car/PC peripherals/dinner jacket”, etc., though the usage is with quotation marks; the only entry without marks is a description of eye shadows to yield “smokey eyes”.

6. Conclusions

1. Delineating the exact mechanisms that underlie the evolution of a BCT inventory through the stages of the B&K model requires a more extensive analysis of colour lexicons of individual languages, and is a task for future studies. However, based on our examples of the linguistic behaviour of (relatively) new Russian colour terms, the process can be reconstructed as follows.

Lexically, a refinement of a colour category manifests itself through the emergence of a new colour term that complements the older one. New colour terms are derived from names of coloured objects and enter the language *gradually*. Initially the new term conforms to the pattern “colour of X”. At the next stage it develops to the standard adjectival form “X-coloured” (in Russian usually X-*yj*). The ‘colour’ meaning may co-exist with other, non-colour meanings of the denominal adjective. At this stage, it may also function as a component of a compound name including a BCT, e.g. “X-black”, “X-red”, etc. The ‘colour’ meaning of the emerging term is then emancipated from other meanings and, ultimately, becomes the only one.

Analysis of Russian attributive constructions with colour terms indicates that the typical path of linguistic development of the emerging term is its initial collocation with a narrow taxonomic class of names for certain *artefacts*. The term then gradually expands to a much broader artefact zone and to *natural objects*, rivalling the older term in denoting a basic colour category. Further expansion of the contender term results in it supplanting the older one as a BCT, whereupon the older colour term becomes increasingly constrained in denoting certain natural objects, and in conventional constructions. Before becoming basic, the new colour term contender develops through all these stages – as is illustrated here by the two Russian terms for “brown”, older *buryj* and more recent *koričnevyyj*.

2. The regularities in the linguistic functioning of emerging colour terms indicate the significance of the cognitive boundary between natural and artefact colour. Along with bestowing manufactured objects with the chromatic distinctness needed for effective communication, dyes, pigments and lights apparently evoke new qualities of perceived colour, not seen in nature, that call out to be reflected linguistically. The cognitive significance of this boundary is unlikely to be an idiosyncratic feature of Russian colour naming since converging evidence, as mentioned above, comes from English, Estonian and French. This assumption requires further empirical investigation across languages, but the material presented here strongly suggests that ‘naturalness’ of the colour, as the cognitive concept behind the colour term denoting it, significantly determines the term’s linguistic behaviour and, ultimately, whether it becomes basic.

Our findings on the constraints in taxonomic class combinability shed light on some linguistic mechanisms of colour term evolution. We suggest that the *combinability* of a colour term with names denoting *both artefacts and natural objects* may serve as a *complementary linguistic criterion* of basicness of the colour term in question.

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